Practice: 101 - CNMP Design and Implementation Activity

Scenario #4 - Design-CNMP Revision

Scenario Description:

A Comprehensive Nutrient Management Plan (CNMP) will be revised to address changes in manure management, volume or analysis, plants and crops, or plant and crop management or to adjust the nutrient balance on an Animal Feeding Operation (AFO). No modifications are required to engineered practices in the farmstead/production area. This scenario is where the services of a professional engineer are typically not required. The producer may export manure or organic products from the farm. The producer has an animal production area and land applies nutrients.

Before Situation:

The owner/operator of an AFO has an existing written Comprehensive Nutrient Management Plan (CNMP) that addresses the current required resource concerns and client objectives present on the facility production area and land application areas. The CNMP is out of date or does not meet current needs or objectives. Various levels of management and conservation implementation have changed on the operation. Soil tests, manure analyses, or changes in cropping system require that the nutrient balance be adjusted to bring the CNMP up to date.

After Situation:

Utilize a certified Technical Service Provider (TSP) to design planned conservation practices that address the handling, storage, and application of animal waste in an environmentally safe manner. Design and implementation will meet the general and additional applicable criteria found in each conservation practice. Design all conservation practices found in Comprehensive Nutrient Management Plan (CPA 102)or Conservation Plan that addresses the planned practices for land application of manure and nutrients, and the handling, transfer, storage and treatment of animal wastes. Management and conservation practices in the CNMP document delivered to the client ensure that, if implemented, the AFO will properly, within applicable NRCS standards and specifications, store, handle, and contain manure and wastewater materials generated by the AFO; dispose of AFO mortality; implement conservation practices to reduce soil erosion on land application areas to sustainable levels; land apply waste material nutrients in a manner than meets NRCS 590 Nutrient Management standard technical criteria.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $4,714.45

Scenario Cost/Unit: $4,714.45

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, agronomist	1295	Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner.	Hours	$103.89	40	$4,155.60
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	5	$558.85

Practice: 101 - CNMP Design and Implementation Activity

Scenario #20 - Design- Livestock Operations greater than 300 AU without Land Application and Minimal Engineering

Scenario Description:

Animal Feeding Operation (AFO) currently greater than 300 animal units (AU). The producer exports (material transferred to another owner with written documentation of the transfer) manure or organic products from the farm. The operation has an animal production area, cropland, and applies most nutrients (manure and commercial fertilizers). No State requirement for Professional Engineer.

Before Situation:

Currently the production area and land application areas do not meet NRCS quality criteria for water quality and soil erosion. Soil tests are not current. Manure not frequently tested. Various levels of management and conservation implementation have occurred on the farm. Little documentation of the systems used and practices installed exists. The producer may or may not have a conservation plan or a nutrient management plan. Partial implementation of CNMP-related practices for the AFO has potentially occurred.

After Situation:

Utilize a certified Technical Service Provider (TSP) to design planned conservation practices that address the handling, storage, and application of animal waste in an environmentally safe manner. Design and implementation will meet the general and additional applicable criteria found in each conservation practice. Design all conservation practices found in Comprehensive Nutrient Management Plan (CPA 102)or Conservation Plan that addresses the planned practices for land application of manure and nutrients, and the handling, transfer, storage and treatment of animal wastes. Management and conservation practices in the CNMP document delivered to the client ensure that, if implemented, the AFO will properly, within applicable NRCS standards and specifications, store, handle, and contain manure and wastewater materials generated by the AFO; dispose of AFO mortality; implement conservation practices to reduce soil erosion on land application areas to sustainable levels; land apply waste material nutrients in a manner than meets NRCS 590 Nutrient Management standard technical criteria.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $4,857.74

Scenario Cost/Unit: $4,857.74

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, agronomist	1295	Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner.	Hours	$103.89	36	$3,740.04
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	10	$1,117.70

Practice: 101 - CNMP Design and Implementation Activity

Scenario #36 - Design- Dairy less than 300 AU Land Application

Scenario Description:

Dairy Animal Feeding Operation (AFO) currently less than 300 animal units (AU) land application. The producer may export (material transferred to another owner with written documentation of the transfer) modest amounts of the manure or organic products from the farm. The operation has an animal production area, cropland, and applies most nutrients (manure and commercial fertilizers).

Before Situation:

Currently the production area and land application areas do not meet NRCS quality criteria for water quality and soil erosion. Soil tests are not current. Manure not frequently tested.

After Situation:

Utilize a certified Technical Service Provider (TSP) to design planned conservation practices that address the handling, storage, and application of animal waste in an environmentally safe manner. Design and implementation will meet the general and additonal applicable criteria found in each conservation practice. Job sheets and implementation requirement documents found in State's eFOTG Section IV Conservation practices may be used. Design all conservation practices found in Comprehensive Nutrient Management Plan (CPA 102) or Conservation Plan that address the planned practices for land application of manure and nutrients, and the handling, transfer, storage and treatment of animal wastes.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $11,327.54

Scenario Cost/Unit: $11,327.54

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, agronomist	1295	Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner.	Hours	$103.89	66	$6,856.74
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	40	$4,470.80

Practice: 101 - CNMP Design and Implementation Activity

Scenario #52 - Design- Dairy greater than 300 AU and less than 700 AU with Land Application

Scenario Description:

Dairy Animal Feeding Operation (AFO) currently greater than 300 animal units (AU) and less than 700 AU with land application. The producer may export (material transferred to another owner with written documentation of the transfer) modest amounts of the manure or organic products from the farm. The operation has an animal production area, cropland, and applies most nutrients (manure and commercial fertilizers).

Before Situation:

Currently the production area and land application areas do not meet NRCS quality criteria for water quality and soil erosion. Soil tests are not current. Manure not frequently tested.

After Situation:

Utilize a certified Technical Service Provider (TSP) to design planned conservation practices that address the handling, storage, and application of animal waste in an environmentally safe manner. Design and implementation will meet the general and additonal applicable criteria found in each conservation practice. Job sheets and implementation requirement documents found in State's eFOTG Section IV Conservation practices may be used. Design all conservation practices found in Comprehensive Nutrient Management Plan (CPA 102) or Conservation Plan that address the planned practices for land application of manure and nutrients, and the handling, transfer, storage and treatment of animal wastes.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $11,327.54

Scenario Cost/Unit: $11,327.54

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, agronomist	1295	Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner.	Hours	$103.89	66	$6,856.74
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	40	$4,470.80

Practice: 101 - CNMP Design and Implementation Activity

Scenario #68 - Design- Non Dairy Operation greater than 300 AU and less than 700 AU with Land Application

Scenario Description:

Animal Feeding Operation (AFO) currently greater than 300 animal units (AU) and less than 700 AU with land application. The producer may export (material transferred to another owner with written documentation of the transfer) modest amounts of the manure or organic products from the farm. The operation has an animal production area, cropland, and applies most nutrients (manure and commercial fertilizers).

Before Situation:

Currently the production area and land application areas do not meet NRCS quality criteria for water quality and soil erosion. Soil tests are not current. Manure not frequently tested.

After Situation:

Utilize a certified Technical Service Provider (TSP) to design planned conservation practices that address the handling, storage, and application of animal waste in an environmentally safe manner. Design and implementation will meet the general and additonal applicable criteria found in each conservation practice. Job sheets and implementation requirement documents found in State's eFOTG Section IV Conservation practices may be used. Design all conservation practices found in Comprehensive Nutrient Management Plan (CPA 102) or Conservation Plan that address the planned practices for land application of manure and nutrients, and the handling, transfer, storage and treatment of animal wastes.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $10,672.68

Scenario Cost/Unit: $10,672.68

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, agronomist	1295	Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner.	Hours	$103.89	64	$6,648.96
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	36	$4,023.72

Practice: 101 - CNMP Design and Implementation Activity

Scenario #84 - Design- Non Dairy Operation Less than 300 AU with Land Application

Scenario Description:

Animal Feeding Operation (AFO) currently less than 300 animal units (AU) with land application. The producer may export (material transferred to another owner with written documentation of the transfer) modest amounts of the manure or organic products from the farm. The operation has an animal production area, cropland, and applies most nutrients (manure and commercial fertilizers).

Before Situation:

Currently the production area and land application areas do not meet NRCS quality criteria for water quality and soil erosion. Soil tests are not current. Manure not frequently tested.

After Situation:

Utilize a certified Technical Service Provider (TSP) to design planned conservation practices that address the handling, storage, and application of animal waste in an environmentally safe manner. Design and implementation will meet the general and additonal applicable criteria found in each conservation practice. Job sheets and implementation requirement documents found in State's eFOTG Section IV Conservation practices may be used. Design all conservation practices found in Comprehensive Nutrient Management Plan (CPA 102) or Conservation Plan that address the planned practices for land application of manure and nutrients, and the handling, transfer, storage and treatment of animal wastes.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $9,458.97

Scenario Cost/Unit: $9,458.97

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, agronomist	1295	Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner.	Hours	$103.89	62	$6,441.18
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	27	$3,017.79

Practice: 101 - CNMP Design and Implementation Activity

Scenario #100 - Design- Non Dairy Operation greater 700 AU with Land Application

Scenario Description:

Animal Feeding Operation (AFO) currently greater than 700 animal units (AU) with land application. The producer may export (material transferred to another owner with written documentation of the transfer) modest amounts of the manure or organic products from the farm. The operation has an animal production area, cropland, and applies most nutrients (manure and commercial fertilizers).

Before Situation:

Currently the production area and land application areas do not meet NRCS quality criteria for water quality and soil erosion. Soil tests are not current. Manure not frequently tested.

After Situation:

Utilize a certified Technical Service Provider (TSP) to design planned conservation practices that address the handling, storage, and application of animal waste in an environmentally safe manner. Design and implementation will meet the general and additonal applicable criteria found in each conservation practice. Job sheets and implementation requirement documents found in State's eFOTG Section IV Conservation practices may be used. Design all conservation practices found in Comprehensive Nutrient Management Plan (CPA 102) or Conservation Plan that address the planned practices for land application of manure and nutrients, and the handling, transfer, storage and treatment of animal wastes.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $12,813.52

Scenario Cost/Unit: $12,813.52

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, agronomist	1295	Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner.	Hours	$103.89	76	$7,895.64
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	44	$4,917.88

Practice: 101 - CNMP Design and Implementation Activity

Scenario #116 - Design- Small Livestock Operations less than 300 AU without Land Application

Scenario Description:

Animal Feeding Operation (AFO) currently less than 300 animal units (AU). The producer exports (material transferred to another owner with written documentation of the transfer) the manure or organic products from the farm. The operation has an animal production area, cropland, and applies most nutrients (manure and commercial fertilizers).

Before Situation:

Currently the production area and land application areas do not meet NRCS quality criteria for water quality and soil erosion. Soil tests are not current. Manure not frequently tested. Various levels of management and conservation implementation have occurred on the farm. Little documentation of the systems used and practices installed exists. The producer may or may not have a conservation plan or a nutrient management plan. Partial implementation of CNMP-related practices for the AFO has potentially occurred.

After Situation:

Utilize a certified Technical Service Provider (TSP) to design planned conservation practices that address the handling, storage, and application of animal waste in an environmentally safe manner. Design and implementation will meet the general and additonal applicable criteria found in each conservation practice. Design all conservation practices found in Comprehensive Nutrient Management Plan (CPA 102)or Conservation Plan that addresses the planned practices for land application of manure and nutrients, and the handling, transfer, storage and treatment of animal wastes. Management and conservation practices in the CNMP document delivered to the client ensure that, if implemented, the AFO will properly, within applicable NRCS standards and specifications, store, handle, and contain manure and wastewater materials generated by the AFO; dispose of AFO mortality; implement conservation practices to reduce soil erosion on land application areas to sustainable levels; land apply waste material nutrients in a manner than meets NRCS 590 Nutrient Management standard technical criteria.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $7,036.53

Scenario Cost/Unit: $7,036.53

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, agronomist	1295	Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner.	Hours	$103.89	29	$3,012.81
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	36	$4,023.72

Practice: 101 - CNMP Design and Implementation Activity

Scenario #132 - Design- Livestock Operations greater than 300 AU without Land Application

Scenario Description:

Animal Feeding Operation (AFO) currently greater than 300 animal units (AU). The producer exports (material transferred to another owner with written documentation of the transfer) manure or organic products from the farm. The operation has an animal production area, cropland, and applies most nutrients (manure and commercial fertilizers).

Before Situation:

Currently the production area and land application areas do not meet NRCS quality criteria for water quality and soil erosion. Soil tests are not current. Manure not frequently tested. Various levels of management and conservation implementation have occurred on the farm. Little documentation of the systems used and practices installed exists. The producer may or may not have a conservation plan or a nutrient management plan. Partial implementation of CNMP-related practices for the AFO has potentially occurred.

After Situation:

Utilize a certified Technical Service Provider (TSP) to design planned conservation practices that address the handling, storage, and application of animal waste in an environmentally safe manner. Design and implementation will meet the general and additional applicable criteria found in each conservation practice. Design all conservation practices found in Comprehensive Nutrient Management Plan (CPA 102)or Conservation Plan that addresses the planned practices for land application of manure and nutrients, and the handling, transfer, storage and treatment of animal wastes. Management and conservation practices in the CNMP document delivered to the client ensure that, if implemented, the AFO will properly, within applicable NRCS standards and specifications, store, handle, and contain manure and wastewater materials generated by the AFO; dispose of AFO mortality; implement conservation practices to reduce soil erosion on land application areas to sustainable levels; land apply waste material nutrients in a manner than meets NRCS 590 Nutrient Management standard technical criteria.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $7,730.79

Scenario Cost/Unit: $7,730.79

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, agronomist	1295	Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner.	Hours	$103.89	26	$2,701.14
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	45	$5,029.65

Practice: 101 - CNMP Design and Implementation Activity

Scenario #148 - Design- Small Livestock Operations greater than 300 AU with Land Application and Minimal Engineering

Scenario Description:

Animal Feeding Operation (AFO) currently greater than 300 animal units (AU) with land application and minimal engineering. The producer exports (material transferred to another owner with written documentation of the transfer) modest amounts of manure or organic products from the farm. The operation has an animal production area, cropland, and applies most nutrients (manure and commercial fertilizers). State laws do not require a PE.

Before Situation:

Currently the production area and land application areas do not meet NRCS quality criteria for water quality and soil erosion. Soil tests are not current. Manure not frequently tested. Various levels of management and conservation implementation have occurred on the farm. Little documentation of the systems used and practices installed exists. The producer may or may not have a conservation plan or a nutrient management plan. Partial implementation of CNMP-related practices for the AFO has potentially occurred.

After Situation:

Utilize a certified Technical Service Provider (TSP) to design planned conservation practices that address the handling, storage, and application of animal waste in an environmentally safe manner. Design and implementation will meet the general and additonal applicable criteria found in each conservation practice. Design all conservation practices found in Comprehensive Nutrient Management Plan (CPA 102)or Conservation Plan that addresses the planned practices for land application of manure and nutrients, and the handling, transfer, storage and treatment of animal wastes. Management and conservation practices in the CNMP document delivered to the client ensure that, if implemented, the AFO will properly, within applicable NRCS standards and specifications, store, handle, and contain manure and wastewater materials generated by the AFO; dispose of AFO mortality; implement conservation practices to reduce soil erosion on land application areas to sustainable levels; land apply waste material nutrients in a manner than meets NRCS 590 Nutrient Management standard technical criteria.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $8,470.25

Scenario Cost/Unit: $8,470.25

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, agronomist	1295	Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner.	Hours	$103.89	74	$7,687.86
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	7	$782.39

Practice: 101 - CNMP Design and Implementation Activity

Scenario #164 - Design- Small Livestock Operations less than 300 AU with Land Application and Minimal Engineering

Scenario Description:

Animal Feeding Operation (AFO) currently less than 300 animal units (AU) with land application and minimal engineering. The producer exports (material transferred to another owner with written documentation of the transfer) modest amounts of manure or organic products from the farm. The operation has an animal production area, cropland, and applies most nutrients (manure and commercial fertilizers). State laws do not require a PE.

Before Situation:

Currently the production area and land application areas do not meet NRCS quality criteria for water quality and soil erosion. Soil tests are not current. Manure not frequently tested. Various levels of management and conservation implementation have occurred on the farm. Little documentation of the systems used and practices installed exists. The producer may or may not have a conservation plan or a nutrient management plan. Partial implementation of CNMP-related practices for the AFO has potentially occurred.

After Situation:

Utilize a certified Technical Service Provider (TSP) to design planned conservation practices that address the handling, storage, and application of animal waste in an environmentally safe manner. Design and implementation will meet the general and additonal applicable criteria found in each conservation practice. Design all conservation practices found in Comprehensive Nutrient Management Plan (CPA 102)or Conservation Plan that addresses the planned practices for land application of manure and nutrients, and the handling, transfer, storage and treatment of animal wastes. Management and conservation practices in the CNMP document delivered to the client ensure that, if implemented, the AFO will properly, within applicable NRCS standards and specifications, store, handle, and contain manure and wastewater materials generated by the AFO; dispose of AFO mortality; implement conservation practices to reduce soil erosion on land application areas to sustainable levels; land apply waste material nutrients in a manner than meets NRCS 590 Nutrient Management standard technical criteria.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $6,727.76

Scenario Cost/Unit: $6,727.76

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, agronomist	1295	Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner.	Hours	$103.89	54	$5,610.06
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	10	$1,117.70

Practice: 101 - CNMP Design and Implementation Activity

Scenario #180 - Design- Livestock Operations less than or equal to 300 AU without Land Application and Minimal Engineering

Scenario Description:

Animal Feeding Operation (AFO) currently less than or equal to 300 animal units (AU) with land application and minimal engineering. The producer exports (material transferred to another owner with written documentation of the transfer) modest amount of manure or organic products from the farm. The operation has an animal production area, cropland, and applies most nutrients (manure and commercial fertilizers). No State requirement for Professional Engineer.

Before Situation:

Currently the production area and land application areas do not meet NRCS quality criteria for water quality and soil erosion. Soil tests are not current. Manure not frequently tested. Various levels of management and conservation implementation have occurred on the farm. Little documentation of the systems used and practices installed exists. The producer may or may not have a conservation plan or a nutrient management plan. Partial implementation of CNMP-related practices for the AFO has potentially occurred.

After Situation:

Utilize a certified Technical Service Provider (TSP) to design planned conservation practices that address the handling, storage, and application of animal waste in an environmentally safe manner. Design and implementation will meet the general and additonal applicable criteria found in each conservation practice. Design all conservation practices found in Comprehensive Nutrient Management Plan (CPA 102)or Conservation Plan that addresses the planned practices for land application of manure and nutrients, and the handling, transfer, storage and treatment of animal wastes. Management and conservation practices in the CNMP document delivered to the client ensure that, if implemented, the AFO will properly, within applicable NRCS standards and specifications, store, handle, and contain manure and wastewater materials generated by the AFO; dispose of AFO mortality; implement conservation practices to reduce soil erosion on land application areas to sustainable levels; land apply waste material nutrients in a manner than meets NRCS 590 Nutrient Management standard technical criteria.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $6,519.98

Scenario Cost/Unit: $6,519.98

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, agronomist	1295	Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner.	Hours	$103.89	52	$5,402.28
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	10	$1,117.70

Practice: 101 - CNMP Design and Implementation Activity

Scenario #196 - Design- Dairy greater than or equal to 700 AU with Land Application

Scenario Description:

Dairy Animal Feeding Operation (AFO) currently greater than or equal to 700 animal units (AU) with land application. The producer may export (material transferred to another owner with written documentation of the transfer) modest amounts of the manure or organic products from the farm. The operation has an animal production area, cropland, and applies most nutrients (manure and commercial fertilizers).

Before Situation:

Currently the production area and land application areas do not meet NRCS quality criteria for water quality and soil erosion. Soil tests are not current. Manure not frequently tested.

After Situation:

Utilize a certified Technical Service Provider (TSP) to design planned conservation practices that address the handling, storage, and application of animal waste in an environmentally safe manner. Design and implementation will meet the general and additonal applicable criteria found in each conservation practice. Job sheets and implementation requirement documents found in State's eFOTG Section IV Conservation practices may be used. Design all conservation practices found in Comprehensive Nutrient Management Plan (CPA 102) or Conservation Plan that address the planned practices for land application of manure and nutrients, and the handling, transfer, storage and treatment of animal wastes.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $12,589.98

Scenario Cost/Unit: $12,589.98

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, agronomist	1295	Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner.	Hours	$103.89	76	$7,895.64
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	42	$4,694.34

Practice: 102 - Comprehensive Nutrient Management Plan

Scenario #158 - Planning- Small Livestock Operations greater than 300 AU with Land Application and Minimal Engineering

Scenario Description:

Animal Feeding Operation (AFO) currently greater than 300 animal units (AU). The producer uses and may export (material transferred to another owner with written documentation of the transfer) the manure or organic products from the farm. The operation has an animal production area, cropland, and applies most nutrients (manure and commercial fertilizers). State laws do not require a PE.

Before Situation:

Currently the production area and land application areas do not meet NRCS quality criteria for water quality and soil erosion. Soil tests are not current. Manure not frequently tested. The owner/operator of a livestock AFO has not received a written Comprehensive Nutrient Management Plan (CNMP) that addresses all resource concerns present on the facility production area and land waste application areas. Various levels of management and conservation implementation have occurred on the farm. Little documentation of the systems used and practices installed exists. The producer may or may not have a conservation plan or a nutrient management plan. Partial implementation of CNMP-related practices for the AFO has potentially occurred. Resource concerns on the AFO production area and land application areas remain to be addressed through the development of a complete CPA-CNMP.

After Situation:

Utilize a certified Technical Service Provider (TSP) to plan conservation practices that address the handling, storage, and application of animal waste in an environmentally safe manner. CPA-CNMP describes the conservation practice solutions to all identified resource concerns on the AFO production area and land application areas. Collection, transfer, and storage of manure and wastewater systems, mortality management facilities, as well as any rainfall or runoff diversion systems will be inventoried-evaluated and planned for adequacy according to applicable NRCS conservation practice standard technical criteria by a Professional Engineer. Decisions presented within the CNMP have been made to mitigate, if feasible, negative air quality impacts and improve farmland safety and security.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $6,311.26

Scenario Cost/Unit: $6,311.26

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	8	$894.16
Cap Labor, conservation scientist	1300	Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering.	Hours	$83.34	65	$5,417.10

Practice: 102 - Comprehensive Nutrient Management Plan

Scenario #174 - Planning- Dairy less than 300 AU Land Application

Scenario Description:

Dairy Animal Feeding Operation (AFO) currently less than 300 animal units (AU). The producer may export (material transferred to another owner with written documentation of the transfer) modest amounts of the manure or organic products from the farm. The operation has an animal production area, cropland, and applies most nutrients (manure and commercial fertilizers). State requires a PE to perform inventory and evaluation.

Before Situation:

Currently the production area and land application areas do not meet NRCS quality criteria for water quality and soil erosion. Soil tests are not current. Manure not frequently tested. The owner/operator of a small sized dairy AFO has not received a written Comprehensive Nutrient Management Plan (CNMP) that addresses all resource concerns present on the facility production area and land waste application areas. Various levels of management and conservation implementation have occurred on the farm. Little documentation of the systems used and practices installed exists. The producer may or may not have a conservation plan or a nutrient management plan. Partial implementation of CNMP-related practices for the AFO has potentially occurred. Resource concerns on the AFO production area and land waste application areas remain to be addressed through the development of a complete CPA-CNMP.

After Situation:

Utilize a certified Technical Service Provider (TSP) to plan conservation practices that address the handling, storage, and application of animal waste in an environmentally safe manner. CPA-CNMP describes the conservation practice solutions to all identified resource concerns on the small-sized dairy AFO production area and land application areas. Collection, transfer, and storage of manure and wastewater systems, mortality management facilities, as well as any rainfall or runoff diversion systems will be inventoried-evaluated and planned for adequacy according to applicable NRCS conservation practice standard technical criteria by a Professional Engineer. Decisions presented within the CNMP have been made to mitigate, if feasible, negative air quality impacts and improve farmland safety and security.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $7,745.59

Scenario Cost/Unit: $7,745.59

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	35	$3,911.95
Cap Labor, conservation scientist	1300	Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering.	Hours	$83.34	46	$3,833.64

Practice: 102 - Comprehensive Nutrient Management Plan

Scenario #190 - Planning- Dairy greater than 300 AU and less than 700 AU with Land Application

Scenario Description:

Dairy Animal Feeding Operation (AFO) currently greater than 300 and less than 700 animal units (AU). The producer may export (material transferred to another owner with written documentation of the transfer) modest amounts of the manure or organic products from the farm. The operation has an animal production area, cropland, and applies most nutrients (manure and commercial fertilizers). State requires PE perform inventory and evaluation.

Before Situation:

Currently the production area and land application areas do not meet NRCS quality criteria for water quality and soil erosion. Soil tests are not current. Manure not frequently tested. Currently the production area and land application areas do not meet NRCS quality criteria for water quality and soil erosion. Soil tests are not current. Manure not frequently tested. The owner/operator of a dairy AFO has not received a written Comprehensive Nutrient Management Plan (CNMP) that addresses all resource concerns present on the facility production area and land waste application areas. Various levels of management and conservation implementation have occurred on the farm. Little documentation of the systems used and practices installed exists. The producer may or may not have a conservation plan or a nutrient management plan. Partial implementation of CNMP-related practices for the AFO has potentially occurred. Resource concerns on the AFO production area and land waste application areas remain to be addressed through the development of a complete CPA-CNMP.

After Situation:

Utilize a certified Technical Service Provider (TSP) to plan conservation practices that address the handling, storage, and application of animal waste in an environmentally safe manner. CPA-CNMP describes the conservation practice solutions to all identified resource concerns on the small-sized dairy AFO production area and land application areas. Collection, transfer, and storage of manure and wastewater systems, mortality management facilities, as well as any rainfall or runoff diversion systems will be inventoried-evaluated and planned for adequacy according to applicable NRCS conservation practice standard technical criteria by a Professional Engineer. Decisions presented within the CNMP have been made to mitigate, if feasible, negative air quality impacts and improve farmland safety and security.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $9,444.72

Scenario Cost/Unit: $9,444.72

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	42	$4,694.34
Cap Labor, conservation scientist	1300	Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering.	Hours	$83.34	57	$4,750.38

Practice: 102 - Comprehensive Nutrient Management Plan

Scenario #206 - Planning- Non Dairy Operation Less than 300 AU with Land Application

Scenario Description:

Animal Feeding Operation (AFO) currently less than 300 animal units (AU). The producer may export (material transferred to another owner with written documentation of the transfer) modest amounts of the manure or organic products from the farm. The operation has an animal production area, cropland, and applies most nutrients (manure and commercial fertilizers). State requires a PE perform inventory and evaluations.

Before Situation:

Currently the production area and land application areas do not meet NRCS quality criteria for water quality and soil erosion. Soil tests are not current. Manure not frequently tested. The owner/operator of a livestock AFO has not received a written Comprehensive Nutrient Management Plan (CNMP) that addresses all resource concerns present on the facility production area and land waste application areas. Various levels of management and conservation implementation have occurred on the farm. Little documentation of the systems used and practices installed exists. The producer may or may not have a conservation plan or a nutrient management plan. Partial implementation of CNMP-related practices for the AFO has potentially occurred. Resource concerns on the AFO production area and land waste application areas remain to be addressed through the development of a complete CPA-CNMP.

After Situation:

Utilize a certified Technical Service Provider (TSP) to plan conservation practices that address the handling, storage, and application of animal waste in an environmentally safe manner. CPA-CNMP describes the conservation practice solutions to all identified resource concerns on the small-sized non-dairy AFO production area and land application areas. Collection, transfer, and storage of manure and wastewater systems, mortality management facilities, as well as any rainfall or runoff diversion systems will be inventoried-evaluated and planned for adequacy according to applicable NRCS conservation practice standard technical criteria by a Professional Engineer. Decisions presented within the CNMP have been made to mitigate, if feasible, negative air quality impacts and improve farmland safety and security.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $6,713.18

Scenario Cost/Unit: $6,713.18

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	28	$3,129.56
Cap Labor, conservation scientist	1300	Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering.	Hours	$83.34	43	$3,583.62

Practice: 102 - Comprehensive Nutrient Management Plan

Scenario #222 - Planning- Non Dairy Operation greater than 300 AU and less than 700 AU with Land Application

Scenario Description:

Animal Feeding Operation (AFO) currently greater than 300 and less than 700 animal units (AU). The producer may export (material transferred to another owner with written documentation of the transfer) modest amounts of the manure or organic products from the farm. The operation has an animal production area, cropland, and applies most nutrients (manure and commercial fertilizers). State requires a PE perform inventory and evaluations.

Before Situation:

Currently the production area and land application areas do not meet NRCS quality criteria for water quality and soil erosion. Soil tests are not current. Manure not frequently tested. The owner/operator of a livestock AFO has not received a written Comprehensive Nutrient Management Plan (CNMP) that addresses all resource concerns present on the facility production area and land waste application areas. Various levels of management and conservation implementation have occurred on the farm. Little documentation of the systems used and practices installed exists. The producer may or may not have a conservation plan or a nutrient management plan. Partial implementation of CNMP-related practices for the AFO has potentially occurred. Resource concerns on the AFO production area and land waste application areas remain to be addressed through the development of a complete CPA-CNMP.

After Situation:

Utilize a certified Technical Service Provider (TSP) to plan conservation practices that address the handling, storage, and application of animal waste in an environmentally safe manner. CPA-CNMP describes the conservation practice solutions to all identified resource concerns on the small-sized non-dairy AFO production area and land application areas. Collection, transfer, and storage of manure and wastewater systems, mortality management facilities, as well as any rainfall or runoff diversion systems will be inventoried-evaluated and planned for adequacy according to applicable NRCS conservation practice standard technical criteria by a Professional Engineer. Decisions presented within the CNMP have been made to mitigate, if feasible, negative air quality impacts and improve farmland safety and security.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $8,524.08

Scenario Cost/Unit: $8,524.08

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	36	$4,023.72
Cap Labor, conservation scientist	1300	Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering.	Hours	$83.34	54	$4,500.36

Practice: 102 - Comprehensive Nutrient Management Plan

Scenario #238 - Planning- Livestock Operations less than or equal to 300 AU without Land Application and Minimal Engineering

Scenario Description:

Animal Feeding Operation (AFO) currently less than or equal to 300 animal units (AU). The producer exports (material transferred to another owner with written documentation of the transfer) manure or organic products from the farm. The operation has an animal production area. No State requirement for Professional Engineer.

Before Situation:

Currently the production area and land application areas do not meet NRCS quality criteria for water quality and soil erosion. Soil tests are not current. Manure not frequently tested. Various levels of management and conservation implementation have occurred on the farm. Little documentation of the systems used and practices installed exists. The producer may or may not have a conservation plan. Partial implementation of CNMP-related practices for the AFO has potentially occurred.

After Situation:

Utilize a certified Technical Service Provider (TSP) to plan conservation practices that address the handling, storage, and application of animal waste in an environmentally safe manner. CPA-CNMP describes the conservation practice solutions to all identified resource concerns on the small-sized AFO production area and land application areas. Collection, transfer, and storage of manure and wastewater systems, mortality management facilities, as well as any rainfall or runoff diversion systems will be inventoried-evaluated and planned for adequacy according to applicable NRCS conservation practice standard technical criteria by a Professional Engineer. Decisions presented within the CNMP have been made to mitigate, if feasible, negative air quality impacts and improve farmland safety and security.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $5,284.70

Scenario Cost/Unit: $5,284.70

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	10	$1,117.70
Cap Labor, conservation scientist	1300	Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering.	Hours	$83.34	50	$4,167.00

Practice: 102 - Comprehensive Nutrient Management Plan

Scenario #270 - Planning- Small Livestock Operations less than 300 AU with Land Application and Minimal Engineering

Scenario Description:

Animal Feeding Operation (AFO) currently less than 300 animal units (AU). The producer may export (material transferred to another owner with written documentation of the transfer) the manure or organic products from the farm. The operation has an animal production area, cropland, and applies most nutrients (manure and commercial fertilizers). State laws do not require a PE.

Before Situation:

Currently the production area and land application areas do not meet NRCS quality criteria for water quality and soil erosion. Soil tests are not current. Manure not frequently tested. The production area and land application areas do not meet NRCS quality criteria for water quality and soil erosion. The owner/operator of a livestock AFO has not received a written Comprehensive Nutrient Management Plan (CNMP) that addresses all resource concerns present on the facility production area and land waste application areas. Various levels of management and conservation implementation have occurred on the farm. Little documentation of the systems used and practices installed exists. The producer may or may not have a conservation plan or a nutrient management plan. Partial implementation of CNMP-related practices for the AFO has potentially occurred. Resource concerns on the AFO production area and land waste application areas remain to be addressed through the development of a complete CPA-CNMP.

After Situation:

Utilize a certified Technical Service Provider (TSP) to plan conservation practices that address the handling, storage, and application of animal waste in an environmentally safe manner. CPA-CNMP describes the conservation practice solutions to all identified resource concerns on the AFO production area and land application areas. Collection, transfer, and storage of manure and wastewater systems, mortality management facilities, as well as any rainfall or runoff diversion systems will be inventoried-evaluated and planned for adequacy according to applicable NRCS conservation practice standard technical criteria by a Professional Engineer. Decisions presented within the CNMP have been made to mitigate, if feasible, negative air quality impacts and improve farmland safety and security.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $5,284.70

Scenario Cost/Unit: $5,284.70

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	10	$1,117.70
Cap Labor, conservation scientist	1300	Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering.	Hours	$83.34	50	$4,167.00

Practice: 102 - Comprehensive Nutrient Management Plan

Scenario #286 - Planning- Livestock Operations greater than 300 AU without Land Application and Minimal Engineering

Scenario Description:

Animal Feeding Operation (AFO) currently greater than 300 animal units (AU). The producer exports (material transferred to another owner with written documentation of the transfer) manure or organic products from the farm. The operation has an animal production area. No State requirement for Professional Engineer.

Before Situation:

Currently the production area do not meet NRCS quality criteria for water quality and soil erosion. Soil tests are not current. Manure not frequently tested. Various levels of management and conservation implementation have occurred on the farm. Little documentation of the systems used and practices installed exists. The producer may or may not have a conservation plan. Partial implementation of CNMP-related practices for the AFO has potentially occurred.

After Situation:

Utilize a certified Technical Service Provider (TSP) to plan conservation practices that address the handling, storage, in an environmentally safe manner. CPA-CNMP describes the conservation practice solutions to all identified resource concerns on the AFO production area. Collection, transfer, and storage of manure and wastewater systems, mortality management facilities, as well as any rainfall or runoff diversion systems will be inventoried-evaluated and planned for adequacy according to applicable NRCS conservation practice standard technical criteria by a Professional Engineer. Decisions presented within the CNMP have been made to mitigate, if feasible, negative air quality impacts and improve farmland safety and security.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $3,617.90

Scenario Cost/Unit: $3,617.90

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	10	$1,117.70
Cap Labor, conservation scientist	1300	Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering.	Hours	$83.34	30	$2,500.20

Practice: 102 - Comprehensive Nutrient Management Plan

Scenario #302 - Planning- Livestock Operations greater than 300 AU without Land Application

Scenario Description:

Animal Feeding Operation (AFO) currently greater than 300 animal units (AU). The producer exports (material transferred to another owner with written documentation of the transfer) manure or organic products from the farm. The operation has an animal production area. State requires a PE to complete inventory and evaluation.

Before Situation:

Currently the production area do not meet NRCS quality criteria for water quality and soil erosion. Soil tests are not current. Manure not frequently tested. Various levels of management and conservation implementation have occurred on the farm. Little documentation of the systems used and practices installed exists. The producer may or may not have a conservation plan. Partial implementation of CNMP-related practices for the AFO has potentially occurred.

After Situation:

Utilize a certified Technical Service Provider (TSP) to plan conservation practices that address the handling, storage in an environmentally safe manner. CPA-CNMP describes the conservation practice solutions to all identified resource concerns on the AFO production area. Collection, transfer, and storage of manure and wastewater systems, mortality management facilities, as well as any rainfall or runoff diversion systems will be inventoried-evaluated and planned for adequacy according to applicable NRCS conservation practice standard technical criteria by a Professional Engineer. Decisions presented within the CNMP have been made to mitigate, if feasible, negative air quality impacts and improve farmland safety and security.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $6,137.60

Scenario Cost/Unit: $6,137.60

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	40	$4,470.80
Cap Labor, conservation scientist	1300	Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering.	Hours	$83.34	20	$1,666.80

Practice: 102 - Comprehensive Nutrient Management Plan

Scenario #318 - Planning- Dairy greater than 700 AU with Land Application

Scenario Description:

Dairy Animal Feeding Operation (AFO) currently greater than 700 animal units (AU). The producer may export (material transferred to another owner with written documentation of the transfer) modest amounts of the manure or organic products from the farm. The operation has an animal production area, cropland, and applies most nutrients (manure and commercial fertilizers). State requires PE perform inventory and evaluations.

Before Situation:

Currently the production area and land application areas do not meet NRCS quality criteria for water quality and soil erosion. Soil tests are not current. Manure not frequently tested. The owner/operator of a dairy AFO has not received a written Comprehensive Nutrient Management Plan (CNMP) that addresses all resource concerns present on the facility production area and land waste application areas. Various levels of management and conservation implementation have occurred on the farm. Little documentation of the systems used and practices installed exists. The producer may or may not have a conservation plan or a nutrient management plan. Partial implementation of CNMP-related practices for the AFO has potentially occurred. Resource concerns on the AFO production area and land waste application areas remain to be addressed through the development of a complete CPA-CNMP.

After Situation:

Utilize a certified Technical Service Provider (TSP) to plan conservation practices that address the handling, storage, and application of animal waste in an environmentally safe manner. CPA-CNMP describes the conservation practice solutions to all identified resource concerns on the small-sized dairy AFO production area and land application areas. Collection, transfer, and storage of manure and wastewater systems, mortality management facilities, as well as any rainfall or runoff diversion systems will be inventoried-evaluated and planned for adequacy according to applicable NRCS conservation practice standard technical criteria by a Professional Engineer. Decisions presented within the CNMP have been made to mitigate, if feasible, negative air quality impacts and improve farmland safety and security.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $10,753.63

Scenario Cost/Unit: $10,753.63

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	47	$5,253.19
Cap Labor, conservation scientist	1300	Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering.	Hours	$83.34	66	$5,500.44

Practice: 102 - Comprehensive Nutrient Management Plan

Scenario #334 - Planning- Small Livestock Operations less than 300 AU without Land Application

Scenario Description:

Animal Feeding Operation (AFO) currently less than 300 animal units (AU). The producer exports (material transferred to another owner with written documentation of the transfer) the manure or organic products from the farm. The operation has an animal production area.

Before Situation:

Currently the production area do not meet NRCS quality criteria for water quality and soil erosion. Soil tests are not current. Manure not frequently tested. Various levels of management and conservation implementation have occurred on the farm. Little documentation of the systems used and practices installed exists. The producer may or may not have a conservation plan. Partial implementation of CNMP-related practices for the AFO has potentially occurred.

After Situation:

Utilize a certified Technical Service Provider (TSP) to plan conservation practices that address the handling, storage in an environmentally safe manner. CPA-CNMP describes the conservation practice solutions to all identified resource concerns on the small-sized AFO production area. Collection, transfer, and storage of manure and wastewater systems, mortality management facilities, as well as any rainfall or runoff diversion systems will be inventoried-evaluated and planned for adequacy according to applicable NRCS conservation practice standard technical criteria by a Professional Engineer. Decisions presented within the CNMP have been made to mitigate, if feasible, negative air quality impacts and improve farmland safety and security.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $4,936.56

Scenario Cost/Unit: $4,936.56

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	30	$3,353.10
Cap Labor, conservation scientist	1300	Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering.	Hours	$83.34	19	$1,583.46

Practice: 106 - Forest Management Plan

Scenario #50 - FMP Less Than or Equal to 20 acres

Scenario Description:

Nonindustrial Private Forest Land typically unmanaged or limited management activities. Typical site is approximately 1 to 20 acres in size and consists of existing uneven-aged mixed species stands of harvestable trees. Natural Resource Concern: Fish and Wildlife; Soil Erosion; Soil Condition; Water Quality; Plant Condition; on Forest Land.

Before Situation:

The producer currently manages forested lands without an existing forest management plan, or with an outdated plan. Resource concerns exist which are not addressed by a management plan. A Forest Management Plan or Conservation Plan Activities (CPA), as defined by EQIP regulation, is needed to allow the producer to apply for financial assistance through EQIP or other programs to help implement needed conservation practices. Associated Practices: 472, 666, 654, 655,384, 394, 383, 379, 338, 381, 391, 791, 490, 612, 660, 311, 380, 314, 315.

After Situation:

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Forest Management Conservation Plan Activities (CPA). The CPA criteria requires the plan to identify approved Field Office Technical Guide conservation practices where needed to address identified resource concerns. The Forest Management CPA is not considered a Forest Harvest Plan, but should complement the needs for harvest if desired by the land user. Additional CPA plan criteria is detailed in the Field Office Technical Guide.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $974.04

Scenario Cost/Unit: $974.04

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, forester	1302	Conservation Activity Plan labor to manage nonindustrial private forest lands for conservation, economic, and recreational purposes. Will inventory the type, amount, and location of standing timber and appraise the timber's condition. Will determine how to conserve wildlife habitats, improve water quality and soil stability, and how best to comply with environmental regulations. May devise plans for planting and growing new trees, monitoring trees for healthy growth, determining optimal thinning schedules, and increasing carbon capture and storage.	Hours	$81.17	12	$974.04

Practice: 106 - Forest Management Plan

Scenario #51 - FMP 21 to 100 acres

Scenario Description:

Nonindustrial Private Forest Land typically unmanaged or limited management activities. Typical site is approximately 21 to 100 acres in size and consists of existing uneven-aged mixed species stands of harvestable trees. Natural Resource Concern: Fish and Wildlife; Soil Erosion; Soil Condition; Water Quality; Plant Condition; on Forest Land.

Before Situation:

The producer currently manages forested lands without an existing forest management plan, or with an outdated plan. Resource concerns exist which are not addressed by a management plan. A Forest Management Plan or Conservation Plan Activities (CPA), as defined by EQIP regulation, is needed to allow the producer to apply for financial assistance through EQIP or other programs to help implement needed conservation practices. Associated Practices: 472, 666, 654, 655,384, 394, 383, 379, 338, 381, 391, 791, 490, 612, 660, 311, 380, 314, 315.

After Situation:

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Forest Management Conservation Plan Activities (CPA). The CPA criteria requires the plan to identify approved Field Office Technical Guide conservation practices where needed to address identified resource concerns. The Forest Management CPA is not considered a Forest Harvest Plan, but should complement the needs for harvest if desired by the land user. Additional CPA plan criteria is detailed in the Field Office Technical Guide.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $1,217.55

Scenario Cost/Unit: $1,217.55

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, forester	1302	Conservation Activity Plan labor to manage nonindustrial private forest lands for conservation, economic, and recreational purposes. Will inventory the type, amount, and location of standing timber and appraise the timber's condition. Will determine how to conserve wildlife habitats, improve water quality and soil stability, and how best to comply with environmental regulations. May devise plans for planting and growing new trees, monitoring trees for healthy growth, determining optimal thinning schedules, and increasing carbon capture and storage.	Hours	$81.17	15	$1,217.55

Practice: 106 - Forest Management Plan

Scenario #52 - FMP 101 to 250 acres

Scenario Description:

Nonindustrial Private Forest Land typically unmanaged or limited management activities. Typical site is approximately 101 to 250 acres in size and consists of existing uneven-aged mixed species stands of harvestable trees. Natural Resource Concern: Fish and Wildlife; Soil Erosion; Soil Condition; Water Quality; Plant Condition; on Forest Land.

Before Situation:

The producer currently manages forested lands without an existing forest management plan, or with an outdated plan. Resource concerns exist which are not addressed by a management plan. A Forest Management Plan or Conservation Plan Activities (CPA), as defined by EQIP regulation, is needed to allow the producer to apply for financial assistance through EQIP or other programs to help implement needed conservation practices. Associated Practices: 472, 666, 654, 655,384, 394, 383, 379, 338, 381, 391, 791, 490, 612, 660, 311, 380, 314, 315.

After Situation:

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Forest Management Conservation Plan Activities (CPA). The CPA criteria requires the plan to identify approved Field Office Technical Guide conservation practices where needed to address identified resource concerns. The Forest Management CPA is not considered a Forest Harvest Plan, but should complement the needs for harvest if desired by the land user. Additional CPA plan criteria is detailed in the Field Office Technical Guide.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $2,110.42

Scenario Cost/Unit: $2,110.42

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, forester	1302	Conservation Activity Plan labor to manage nonindustrial private forest lands for conservation, economic, and recreational purposes. Will inventory the type, amount, and location of standing timber and appraise the timber's condition. Will determine how to conserve wildlife habitats, improve water quality and soil stability, and how best to comply with environmental regulations. May devise plans for planting and growing new trees, monitoring trees for healthy growth, determining optimal thinning schedules, and increasing carbon capture and storage.	Hours	$81.17	26	$2,110.42

Practice: 106 - Forest Management Plan

Scenario #53 - FMP Greater Than 1000 acres

Scenario Description:

Nonindustrial Private Forest Land typically unmanaged or limited management activities. Typical site is approximately 1001 acres or greater in size and consists of existing uneven-aged mixed species stands of harvestable trees. Natural Resource Concern: Fish and Wildlife; Soil Erosion; Soil Condition; Water Quality; Plant Condition; on Forest Land.

Before Situation:

The producer currently manages forested lands without an existing forest management plan, or with an outdated plan. Resource concerns exist which are not addressed by a management plan. A Forest Management Plan or Conservation Plan Activities (CPA), as defined by EQIP regulation, is needed to allow the producer to apply for financial assistance through EQIP or other programs to help implement needed conservation practices. Associated Practices: 472, 666, 654, 655,384, 394, 383, 379, 338, 381, 391, 791, 490, 612, 660, 311, 380, 314, 315.

After Situation:

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Forest Management Conservation Plan Activities (CPA). The CPA criteria requires the plan to identify approved Field Office Technical Guide conservation practices where needed to address identified resource concerns. The Forest Management CPA is not considered a Forest Harvest Plan, but should complement the needs for harvest if desired by the land user. Additional CPA plan criteria is detailed in the Field Office Technical Guide.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $4,383.18

Scenario Cost/Unit: $4,383.18

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, forester	1302	Conservation Activity Plan labor to manage nonindustrial private forest lands for conservation, economic, and recreational purposes. Will inventory the type, amount, and location of standing timber and appraise the timber's condition. Will determine how to conserve wildlife habitats, improve water quality and soil stability, and how best to comply with environmental regulations. May devise plans for planting and growing new trees, monitoring trees for healthy growth, determining optimal thinning schedules, and increasing carbon capture and storage.	Hours	$81.17	54	$4,383.18

Practice: 106 - Forest Management Plan

Scenario #54 - FMP 251 to 500 acres

Scenario Description:

Nonindustrial Private Forest Land typically unmanaged or limited management activities. Typical site is approximately 251 to 500 acres in size and consists of existing uneven-aged mixed species stands of harvestable trees. Natural Resource Concern: Fish and Wildlife; Soil Erosion; Soil Condition; Water Quality; Plant Condition; on Forest Land.

Before Situation:

The producer currently manages forested lands without an existing forest management plan, or with an outdated plan. Resource concerns exist which are not addressed by a management plan. A Forest Management Plan or Conservation Plan Activities (CPA), as defined by EQIP regulation, is needed to allow the producer to apply for financial assistance through EQIP or other programs to help implement needed conservation practices. Associated Practices: 472, 666, 654, 655,384, 394, 383, 379, 338, 381, 391, 791, 490, 612, 660, 311, 380, 314, 315.

After Situation:

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Forest Management Conservation Activity Plan (CPA). The CPA requires the plan to identify approved Field Office Technical Guide conservation practices where needed to address identified resource concerns. The Forest Management CPA is not considered a Forest Harvest Plan, but should complement the needs for harvest if desired by the land user. Additional CPA plan requirements are detailed in the Field Office Technical Guide.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $2,759.78

Scenario Cost/Unit: $2,759.78

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, forester	1302	Conservation Activity Plan labor to manage nonindustrial private forest lands for conservation, economic, and recreational purposes. Will inventory the type, amount, and location of standing timber and appraise the timber's condition. Will determine how to conserve wildlife habitats, improve water quality and soil stability, and how best to comply with environmental regulations. May devise plans for planting and growing new trees, monitoring trees for healthy growth, determining optimal thinning schedules, and increasing carbon capture and storage.	Hours	$81.17	34	$2,759.78

Practice: 106 - Forest Management Plan

Scenario #55 - FMP 501 to 1000 acres

Scenario Description:

Nonindustrial Private Forest Land typically unmanaged or limited management activities. Typical site is approximately 501 to 1000 acres in size and consists of existing uneven-aged mixed species stands of harvestable trees. Natural Resource Concern: Fish and Wildlife; Soil Erosion; Soil Condition; Water Quality; Plant Condition; on Forest Land.

Before Situation:

The producer currently manages forested lands without an existing forest management plan, or with an outdated plan. Resource concerns exist which are not addressed by a management plan. A Forest Management Plan or Conservation Plan Activities (CPA), as defined by EQIP regulation, is needed to allow the producer to apply for financial assistance through EQIP or other programs to help implement needed conservation practices. Associated Practices: 472, 666, 654, 655,384, 394, 383, 379, 338, 381, 391, 791, 490, 612, 660, 311, 380, 314, 315.

After Situation:

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Forest Management Conservation Plan Activities (CPA). The CPA criteria requires the plan to identify approved Field Office Technical Guide conservation practices where needed to address identified resource concerns. The Forest Management CPA is not considered a Forest Harvest Plan, but should complement the needs for harvest if desired by the land user. Additional CPA plan criteria is detailed in the Field Office Technical Guide.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $3,409.14

Scenario Cost/Unit: $3,409.14

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, forester	1302	Conservation Activity Plan labor to manage nonindustrial private forest lands for conservation, economic, and recreational purposes. Will inventory the type, amount, and location of standing timber and appraise the timber's condition. Will determine how to conserve wildlife habitats, improve water quality and soil stability, and how best to comply with environmental regulations. May devise plans for planting and growing new trees, monitoring trees for healthy growth, determining optimal thinning schedules, and increasing carbon capture and storage.	Hours	$81.17	42	$3,409.14

Practice: 116 - Soil Health Management Plan

Scenario #84 - Organic Crops + Livestock, <5

Scenario Description:

Evaluate soil health concerns and develop a transitional cropping management plan to improve overall soil health and address all 4 soil health principles. The plan includes management activities or land management practices associated with crop and forage production. The soil health management plan ensures that the purposes of crop and forage production and preservation of natural resources related to soil health are compatible. May simultaneously implement 216 Soil Health Testing CEMA to evaluate baseline soil health and inventory basic or additional soil health indicators. The plan is developed for fewer than 5 Soil Health Management Units (SHMU) for organic crops and livestock. A SHMU is 1 or more planning land units with similar soil type, land use, and management. A SHMU can vary in size or acreage depending on soil texture, topography, and cropping system.

Before Situation:

The producer currently manages without an existing soil health management plan, or with an outdated plan. Resource concerns exist which are not addressed by a management plan.

After Situation:

After EQIP contract approval, participant has obtained services from a certified TSP for development of a Soil Health Conservation Plan Activity (CPA). The CPA criteria requires the plan to identify approved Field Office Technical Guide conservation practices where needed to address identified resource concerns.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $2,333.52

Scenario Cost/Unit: $2,333.52

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Cap Labor, conservation scientist	1300	Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering.	Hours	$83.34	28	$2,333.52

Practice: 116 - Soil Health Management Plan

Scenario #100 - Organic Crops, 5 or more

Scenario Description:

Evaluate soil health concerns and develop a transitional cropping management plan to improve overall soil health and address all 4 soil health principles. The plan includes management activities or land management practices associated with crop and forage production. The soil health management plan ensures that the purposes of crop and forage production and preservation of natural resources related to soil health are compatible. May simultaneously implement 216 Soil Health Testing CEMA to evaluate baseline soil health and inventory basic or additional soil health indicators. The plan is developed for 5 or more Soil Health Management Units (SHMU) for organic crops. A SHMU is 1 or more planning land units with similar soil type, land use, and management. A SHMU can vary in size or acreage depending on soil texture, topography, and cropping system.

Before Situation:

The producer currently manages without an existing soil health management plan, or with an outdated plan. Resource concerns exist which are not addressed by a management plan.

After Situation:

After EQIP contract approval, participant has obtained services from a certified TSP for development of a Soil Health Conservation Plan Activity (CPA). The CPA criteria requires the plan to identify approved Field Office Technical Guide conservation practices where needed to address identified resource concerns.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $2,333.52

Scenario Cost/Unit: $2,333.52

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Cap Labor, conservation scientist	1300	Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering.	Hours	$83.34	28	$2,333.52

Practice: 116 - Soil Health Management Plan

Scenario #116 - Small Farm

Scenario Description:

Evaluate soil health concerns and develop a transitional cropping management plan to improve overall soil health and address all 4 soil health principles. The plan includes management activities or land management practices associated with crop and forage production. The soil health management plan ensures that the purposes of crop and forage production and preservation of natural resources related to soil health are compatible. May simultaneously implement 216 Soil Health Testing CEMA to evaluate baseline soil health and inventory basic or additional soil health indicators. The plan is developed for a small farm (<10 acres).

Before Situation:

The producer currently manages without an existing soil health management plan, or with an outdated plan. Resource concerns exist which are not addressed by a management plan.

After Situation:

After EQIP contract approval, participant has obtained services from a certified TSP for development of a Soil Health Conservation Plan Activity (CPA). The CPA criteria requires the plan to identify approved Field Office Technical Guide conservation practices where needed to address identified resource concerns.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $2,000.16

Scenario Cost/Unit: $2,000.16

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Cap Labor, conservation scientist	1300	Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering.	Hours	$83.34	24	$2,000.16

Practice: 116 - Soil Health Management Plan

Scenario #132 - Organic Crops + Livestock, 5 or more

Scenario Description:

Evaluate soil health concerns and develop a transitional cropping management plan to improve overall soil health and address all 4 soil health principles. The plan includes management activities or land management practices associated with crop and forage production. The soil health management plan ensures that the purposes of crop and forage production and preservation of natural resources related to soil health are compatible. May simultaneously implement 216 Soil Health Testing CEMA to evaluate baseline soil health and inventory basic or additional soil health indicators. The plan is developed for 5 or more Soil Health Management Units (SHMU) for organic crops and livestock. A SHMU is 1 or more planning land units with similar soil type, land use, and management. A SHMU can vary in size or acreage depending on soil texture, topography, and cropping system.

Before Situation:

The producer currently manages without an existing soil health management plan, or with an outdated plan. Resource concerns exist which are not addressed by a management plan.

After Situation:

After EQIP contract approval, participant has obtained services from a certified TSP for development of a Soil Health Conservation Plan Activity (CPA). The CPA criteria requires the plan to identify approved Field Office Technical Guide conservation practices where needed to address identified resource concerns.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $2,666.88

Scenario Cost/Unit: $2,666.88

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Cap Labor, conservation scientist	1300	Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering.	Hours	$83.34	32	$2,666.88

Practice: 116 - Soil Health Management Plan

Scenario #148 - Crops+Livestock, 5 or more

Scenario Description:

Evaluate soil health concerns and develop a transitional cropping management plan to improve overall soil health and address all 4 soil health principles. The plan includes management activities or land management practices associated with crop and forage production. The soil health management plan ensures that the purposes of crop and forage production and preservation of natural resources related to soil health are compatible. May simultaneously implement 216 Soil Health Testing CEMA to evaluate baseline soil health and inventory basic or additional soil health indicators. The plan is developed for 5 or more Soil Health Management Units (SHMU) for crops and livestock. A SHMU is 1 or more planning land units with similar soil type, land use, and management. A SHMU can vary in size or acreage depending on soil texture, topography, and cropping system.

Before Situation:

The producer currently manages without an existing soil health management plan, or with an outdated plan. Resource concerns exist which are not addressed by a management plan.

After Situation:

After EQIP contract approval, participant has obtained services from a certified TSP for development of a Soil Health Conservation Plan Activity (CPA). The CPA criteria requires the plan to identify approved Field Office Technical Guide conservation practices where needed to address identified resource concerns.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $2,333.52

Scenario Cost/Unit: $2,333.52

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Cap Labor, conservation scientist	1300	Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering.	Hours	$83.34	28	$2,333.52

Practice: 116 - Soil Health Management Plan

Scenario #164 - Crops+Livestock, <5

Scenario Description:

Evaluate soil health concerns and develop a transitional cropping management plan to improve overall soil health and address all 4 soil health principles. The plan includes management activities or land management practices associated with crop and forage production. The soil health management plan ensures that the purposes of crop and forage production and preservation of natural resources related to soil health are compatible. May simultaneously implement 216 Soil Health Testing CEMA to evaluate baseline soil health and inventory basic or additional soil health indicators. The plan is developed for fewer than 5 Soil Health Management Units (SHMU) for crops and livestock. A SHMU is 1 or more planning land units with similar soil type, land use, and management. A SHMU can vary in size or acreage depending on soil texture, topography, and cropping system.

Before Situation:

The producer currently manages without an existing soil health management plan, or with an outdated plan. Resource concerns exist which are not addressed by a management plan.

After Situation:

After EQIP contract approval, participant has obtained services from a certified TSP for development of a Soil Health Conservation Plan Activity (CPA). The CPA criteria requires the plan to identify approved Field Office Technical Guide conservation practices where needed to address identified resource concerns.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $2,000.16

Scenario Cost/Unit: $2,000.16

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Cap Labor, conservation scientist	1300	Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering.	Hours	$83.34	24	$2,000.16

Practice: 116 - Soil Health Management Plan

Scenario #180 - Organic Crops, <5

Scenario Description:

Evaluate soil health concerns and develop a transitional cropping management plan to improve overall soil health and address all 4 soil health principles. The plan includes management activities or land management practices associated with crop and forage production. The soil health management plan ensures that the purposes of crop and forage production and preservation of natural resources related to soil health are compatible. May simultaneously implement 216 Soil Health Testing CEMA to evaluate baseline soil health and inventory basic or additional soil health indicators. The plan is developed for fewer than 5 Soil Health Management Units (SHMU) for organic crops. A SHMU is 1 or more planning land units with similar soil type, land use, and management. A SHMU can vary in size or acreage depending on soil texture, topography, and cropping system.

Before Situation:

The producer currently manages without an existing soil health management plan, or with an outdated plan. Resource concerns exist which are not addressed by a management plan.

After Situation:

After EQIP contract approval, participant has obtained services from a certified TSP for development of a Soil Health Conservation Plan Activity (CPA). The CPA criteria requires the plan to identify approved Field Office Technical Guide conservation practices where needed to address identified resource concerns.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $2,000.16

Scenario Cost/Unit: $2,000.16

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Cap Labor, conservation scientist	1300	Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering.	Hours	$83.34	24	$2,000.16

Practice: 116 - Soil Health Management Plan

Scenario #196 - Crops, 5 or more

Scenario Description:

Evaluate soil health concerns and develop a transitional cropping management plan to improve overall soil health and address all 4 soil health principles. The plan includes management activities or land management practices associated with crop and forage production. The soil health management plan ensures that the purposes of crop and forage production and preservation of natural resources related to soil health are compatible. May simultaneously implement 216 Soil Health Testing CEMA to evaluate baseline soil health and inventory basic or additional soil health indicators. The plan is developed for 5 or more Soil Health Management Units (SHMU) for crops. A SHMU is 1 or more planning land units with similar soil type, land use, and management. A SHMU can vary in size or acreage depending on soil texture, topography, and cropping system.

Before Situation:

The producer currently manages without an existing soil health management plan, or with an outdated plan. Resource concerns exist which are not addressed by a management plan.

After Situation:

After EQIP contract approval, participant has obtained services from a certified TSP for development of a Soil Health Conservation Plan Activity (CPA). The CPA criteria requires the plan to identify approved Field Office Technical Guide conservation practices where needed to address identified resource concerns.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $2,000.16

Scenario Cost/Unit: $2,000.16

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Cap Labor, conservation scientist	1300	Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering.	Hours	$83.34	24	$2,000.16

Practice: 116 - Soil Health Management Plan

Scenario #212 - Crops, <5

Scenario Description:

Evaluate soil health concerns and develop a transitional cropping management plan to improve overall soil health and address all 4 soil health principles. The plan includes management activities or land management practices associated with crop and forage production. The soil health management plan ensures that the purposes of crop and forage production and preservation of natural resources related to soil health are compatible. May simultaneously implement 216 Soil Health Testing CEMA to evaluate baseline soil health and inventory basic or additional soil health indicators. The plan is developed for fewer than 5 Soil Health Management Units (SHMU) for crops. A SHMU is 1 or more planning land units with similar soil type, land use, and management. A SHMU can vary in size or acreage depending on soil texture, topography, and cropping system.

Before Situation:

The producer currently manages without an existing soil health management plan, or with an outdated plan. Resource concerns exist which are not addressed by a management plan.

After Situation:

After EQIP contract approval, participant has obtained services from a certified TSP for development of a Soil Health Conservation Plan Activity (CPA). The CPA criteria requires the plan to identify approved Field Office Technical Guide conservation practices where needed to address identified resource concerns.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $1,666.80

Scenario Cost/Unit: $1,666.80

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Cap Labor, conservation scientist	1300	Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering.	Hours	$83.34	20	$1,666.80

Practice: 120 - Agricultural Energy Design

Scenario #4 - High Complexity, 6+ Designs

Scenario Description:

An agricultural producer wishes to conserve energy through an EQIP contract with multiple energy practice scenarios. Associated scenario(s) provide for retrofits that impose several variables in the design process. The scenarios may involve a change in service levels that cannot be evaluated or designed through use of simple tools or manual calculations. Four factors typically indicate a “High Complexity” system, as follows. 1) Client objectives require a change of output (hp, Btu/hr, lux, etc.) that varies more than about 30% from old devices. 2) System constraints prevent new devices from being installed in the same location as the old devices. 3) The retrofit requires substantive changes to two or more of the electrical, mechanical, plumbing, or structural systems. 4) Complex analysis to evaluate alternatives is required to confirm level of service and appropriate device output, placement, etc. (For example, a detailed simulation is required to determine systems sizing and layout.) “High Complexity” practice scenarios include but are not limited to: comprehensive lighting system redesign; radiant heating systems; convert to tunnel ventilation; or convert to bench heating. Each “Design” indicates that new devices or components are closely related to other devices or components even if numerous scenarios are contracted. If more than five practices are contracted, then, at a minimum, “6+ Designs” shall be contracted for the Ag Energy DIA. Use this scenario if at least one design is deemed high complexity. The Ag Energy DIA includes reviewing, and, when needed, revising alternatives to address energy concerns. The Ag Energy DIA documents: a) the client’s final decisions related to the associated energy practice scenarios, b) estimated energy and greenhouse gas benefits; and c) design deliverables described in the associated NRCS Conservation Practice Statements of Work. Natural Resource Concern: Energy Efficiency of Equipment and Facilities.

Before Situation:

Producer wants to transition their agricultural operation to become more energy efficient. Producer intends to work with a certified TSP to develop designs to implement one or more practice scenarios to address Energy Efficiency resource concerns using the Ag Energy DIA. The DIA 120 criteria incorporates recommended measures to increase energy conservation and efficiency. Associated Practices: 374 Farmstead Energy Improvement, 670 Energy Efficient Lighting System, 672 Energy Efficient Building Envelope, 533 Pumping Plant, or other applicable practices in the NRCS Field Office Technical Guide.

After Situation:

The producer has obtained services from a certified TSP to develop practice scenario designs using the Ag Energy DIA. The DIA 120 criteria include tasks needed to document the client’s decision, energy savings and design of conservation practices which address energy efficiency. The Ag Energy DIA meets the quality criteria for the DIA 120 activity as cited in the NRCS Field Office Technical Guide.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $11,095.05

Scenario Cost/Unit: $11,095.05

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	78	$8,718.06
CAP Labor, Manager	1603	Conservation Activity Plan labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$48.55	15	$728.25
CAP Labor, Administrative Assistant	1739	Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers.	Hours	$32.23	6	$193.38
CAP Labor, Energy Auditor	1740	Conservation Activity Plan labor involving analyzing energy efficient measures and conducting energy audits of industrial areas and facilities.	Hours	$60.64	24	$1,455.36

Practice: 120 - Agricultural Energy Design

Scenario #20 - Medium Complexity, 6+ Designs

Scenario Description:

An agricultural producer wishes to conserve energy through an EQIP contract with multiple energy practice scenarios. Associated scenario(s) provide for retrofits that impose some variables in the design process. The scenarios may involve a change in service levels that can be evaluated or designed through use of simple tools or manual calculations. Four factors typically indicate a “Medium Complexity” system, as follows. 1) Client objectives require a change of output (hp, Btu/hr, lux, etc.) that varies more than about 10% from old devices. 2) System constraints prevent new devices from being installed in the same location as the old devices. 3) The retrofit requires substantive changes to either electrical, mechanical, plumbing, or structural systems. 4) Analysis beyond the scope of NRCS methodology to evaluate alternatives is required to confirm level of service and appropriate device output, placement, etc. (For example, a simplified heat transfer model to determine heating, ventilation, and cooling loads may be required if existing device capacity cannot be estimated.) “Medium Complexity” practice scenarios include but are not limited to: change of lighting fixture counts or layout; wall insulation; grain dryers; add reverse osmosis to syrup production; or add evaporative cooling systems (cooling cells). Each “Design” indicates that new devices or components are closely related to other devices or components even if numerous scenarios are contracted. If more than five practices are contracted, then, at a minimum, “6+ Designs” shall be contracted for the Ag Energy DIA. If at least 1 scenario is more complex than indicated herein, use an alternate scenario for contracting. The Ag Energy DIA includes reviewing, and, when needed, revising alternatives to address energy concerns. The Ag Energy DIA documents: a) the client’s final decisions related to the associated energy practice scenarios, b) estimated energy and greenhouse gas benefits; and c) design deliverables described in the associated NRCS Conservation Practice Statements of Work. Natural Resource Concern: Energy Efficiency of Equipment and Facilities.

Before Situation:

Producer wants to transition their agricultural operation to become more energy efficient. Producer intends to work with a certified TSP to develop designs to implement one or more practice scenarios to address Energy Efficiency resource concerns using the Ag Energy DIA. The DIA 120 criteria incorporates recommended measures to increase energy conservation and efficiency. Associated Practices: 374 Farmstead Energy Improvement, 670 Energy Efficient Lighting System, 672 Energy Efficient Building Envelope, 533 Pumping Plant, or other applicable practices in the NRCS Field Office Technical Guide.

After Situation:

The producer has obtained services from a certified TSP to develop practice scenario designs using the Ag Energy DIA. The DIA 120 criteria include tasks needed to document the client’s decision, energy savings and design of conservation practices which address energy efficiency. The Ag Energy DIA meets the quality criteria for the DIA 120 activity as cited in the NRCS Field Office Technical Guide.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $9,551.75

Scenario Cost/Unit: $9,551.75

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	66	$7,376.82
CAP Labor, Manager	1603	Conservation Activity Plan labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$48.55	14	$679.70
CAP Labor, Administrative Assistant	1739	Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers.	Hours	$32.23	5	$161.15
CAP Labor, Energy Auditor	1740	Conservation Activity Plan labor involving analyzing energy efficient measures and conducting energy audits of industrial areas and facilities.	Hours	$60.64	22	$1,334.08

Practice: 120 - Agricultural Energy Design

Scenario #36 - Low Complexity, 6+ Designs

Scenario Description:

An agricultural producer wishes to conserve energy through an EQIP contract with multiple energy practice scenarios. Associated scenario(s) provide for one-to-one device retrofits. The scenario(s) may provide for a new component to modify the operation of an existing device (e.g., timer to reduce run-time). Three factors typically indicate a "Low Complexity" system, as follows. 1) New devices maintain output (hp, Btu/hr, lux, etc.) of the old devices within a roughly 10% range. 2) New devices are installed in the same location as the old devices. 3) The retrofit does not require substantive changes to electrical, mechanical, plumbing, or structural systems. "Low Complexity" practice scenarios include but are not limited to: lamp or fixture upgrades; attic insulation; fans; or washer-extractors. Each "Design" indicates that new devices or components are closely related to other devices or components even if numerous scenarios are contracted. If more than five practices are contracted, then, at a minimum, "6+ Designs" shall be contracted for the Ag Energy DIA. If at least 1 scenario is more complex than indicated herein, use an alternate scenario for contracting. The Ag Energy DIA includes reviewing, and, when needed, revising alternatives to address energy concerns. The Ag Energy DIA documents: a) the client's final decisions related to the associated energy practice scenarios, b) estimated energy and greenhouse gas; and c) design deliverables described in the associated NRCS Conservation Practice Statements of Work. Natural Resource Concern: Energy Efficiency of Equipment and Facilities.

Before Situation:

Producer wants to transition their agricultural operation to become more energy efficient. Producer intends to work with a certified TSP to develop designs to implement one or more practice scenarios to address Energy Efficiency resource concerns using the Ag Energy DIA. The DIA 120 criteria incorporates recommended measures to increase energy conservation and efficiency. Associated Practices: 374 Farmstead Energy Improvement, 670 Energy Efficient Lighting System, 672 Energy Efficient Building Envelope, 533 Pumping Plant, or other applicable practices in the NRCS Field Office Technical Guide.

After Situation:

The producer has obtained services from a certified TSP to develop practice scenario designs using the Ag Energy DIA. The DIA 120 criteria include tasks needed to document the client's decision, energy savings and design of conservation practices which address energy efficiency. The Ag Energy DIA meets the quality criteria for the DIA 120 activity as cited in the NRCS Field Office Technical Guide.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $8,008.45

Scenario Cost/Unit: $8,008.45

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	54	$6,035.58
CAP Labor, Manager	1603	Conservation Activity Plan labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$48.55	13	$631.15
CAP Labor, Administrative Assistant	1739	Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers.	Hours	$32.23	4	$128.92
CAP Labor, Energy Auditor	1740	Conservation Activity Plan labor involving analyzing energy efficient measures and conducting energy audits of industrial areas and facilities.	Hours	$60.64	20	$1,212.80

Practice: 120 - Agricultural Energy Design

Scenario #52 - High Complexity, 4-5 Designs

Scenario Description:

An agricultural producer wishes to conserve energy through an EQIP contract with multiple energy practice scenarios. Associated scenario(s) provide for retrofits that impose several variables in the design process. The scenarios may involve a change in service levels that cannot be evaluated or designed through use of simple tools or manual calculations. Four factors typically indicate a “High Complexity” system, as follows. 1) Client objectives require a change of output (hp, Btu/hr, lux, etc.) that varies more than about 30% from old devices. 2) System constraints prevent new devices from being installed in the same location as the old devices. 3) The retrofit requires substantive changes to two or more of the electrical, mechanical, plumbing, or structural systems. 4) Complex analysis to evaluate alternatives is required to confirm level of service and appropriate device output, placement, etc. (For example, a detailed simulation is required to determine systems sizing and layout.) “High Complexity” practice scenarios include but are not limited to: comprehensive lighting system redesign; radiant heating systems; convert to tunnel ventilation; or convert to bench heating. Each “Design” indicates that new devices or components are closely related to other devices or components even if numerous scenarios are contracted. If more than three practices are contracted, then, at a minimum, “4-5 Designs” shall be contracted for the Ag Energy DIA. Use this scenario if at least one design is deemed high complexity. The Ag Energy DIA includes reviewing, and, when needed, revising alternatives to address energy concerns. The Ag Energy DIA documents: a) the client’s final decisions related to the associated energy practice scenarios, b) estimated energy and greenhouse gas benefits; and c) design deliverables described in the associated NRCS Conservation Practice Statements of Work. Natural Resource Concern: Energy Efficiency of Equipment and Facilities.

Before Situation:

Producer wants to transition their agricultural operation to become more energy efficient. Producer intends to work with a certified TSP to develop designs to implement one or more practice scenarios to address Energy Efficiency resource concerns using the Ag Energy DIA. The DIA 120 criteria incorporates recommended measures to increase energy conservation and efficiency. Associated Practices: 374 Farmstead Energy Improvement, 670 Energy Efficient Lighting System, 672 Energy Efficient Building Envelope, 533 Pumping Plant, or other applicable practices in the NRCS Field Office Technical Guide.

After Situation:

The producer has obtained services from a certified TSP to develop practice scenario designs using the Ag Energy DIA. The DIA 120 criteria include tasks needed to document the client’s decision, energy savings and design of conservation practices which address energy efficiency. The Ag Energy DIA meets the quality criteria for the DIA 120 activity as cited in the NRCS Field Office Technical Guide.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $9,430.47

Scenario Cost/Unit: $9,430.47

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	66	$7,376.82
CAP Labor, Manager	1603	Conservation Activity Plan labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$48.55	14	$679.70
CAP Labor, Administrative Assistant	1739	Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers.	Hours	$32.23	5	$161.15
CAP Labor, Energy Auditor	1740	Conservation Activity Plan labor involving analyzing energy efficient measures and conducting energy audits of industrial areas and facilities.	Hours	$60.64	20	$1,212.80

Practice: 120 - Agricultural Energy Design

Scenario #68 - Medium Complexity, 4-5 Designs

Scenario Description:

An agricultural producer wishes to conserve energy through an EQIP contract with multiple energy practice scenarios. Associated scenario(s) provide for retrofits that impose some variables in the design process. The scenarios may involve a change in service levels that can be evaluated or designed through use of simple tools or manual calculations. Four factors typically indicate a “Medium Complexity” system, as follows. 1) Client objectives require a change of output (hp, Btu/hr, lux, etc.) that varies more than about 10% from old devices. 2) System constraints prevent new devices from being installed in the same location as the old devices. 3) The retrofit requires substantive changes to either electrical, mechanical, plumbing, or structural systems. 4) Analysis beyond the scope of NRCS methodology to evaluate alternatives is required to confirm level of service and appropriate device output, placement, etc. (For example, a simplified heat transfer model to determine heating, ventilation, and cooling loads may be required if existing device capacity cannot be estimated.) “Medium Complexity” practice scenarios include but are not limited to: change of lighting fixture counts or layout; wall insulation; grain dryers; add reverse osmosis to syrup production; or add evaporative cooling systems (cooling cells). Each “Design” indicates that new devices or components are closely related to other devices or components even if numerous scenarios are contracted. If more than three practices are contracted, then, at a minimum, “4-5 Designs” shall be contracted for the Ag Energy DIA. If at least 1 scenario is more complex than indicated herein, use an alternate scenario for contracting. The Ag Energy DIA includes reviewing, and, when needed, revising alternatives to address energy concerns. The Ag Energy DIA documents: a) the client’s final decisions related to the associated energy practice scenarios, b) estimated energy and greenhouse gas benefits; and c) design deliverables described in the associated NRCS Conservation Practice Statements of Work. Natural Resource Concern: Energy Efficiency of Equipment and Facilities.

Before Situation:

Producer wants to transition their agricultural operation to become more energy efficient. Producer intends to work with a certified TSP to develop designs to implement one or more practice scenarios to address Energy Efficiency resource concerns using the Ag Energy DIA. The DIA 120 criteria incorporates recommended measures to increase energy conservation and efficiency. Associated Practices: 374 Farmstead Energy Improvement, 670 Energy Efficient Lighting System, 672 Energy Efficient Building Envelope, 533 Pumping Plant, or other applicable practices in the NRCS Field Office Technical Guide.

After Situation:

The producer has obtained services from a certified TSP to develop practice scenario designs using the Ag Energy DIA. The DIA 120 criteria include tasks needed to document the client’s decision, energy savings and design of conservation practices which address energy efficiency. The Ag Energy DIA meets the quality criteria for the DIA 120 activity as cited in the NRCS Field Office Technical Guide.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $7,887.17

Scenario Cost/Unit: $7,887.17

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	54	$6,035.58
CAP Labor, Manager	1603	Conservation Activity Plan labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$48.55	13	$631.15
CAP Labor, Administrative Assistant	1739	Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers.	Hours	$32.23	4	$128.92
CAP Labor, Energy Auditor	1740	Conservation Activity Plan labor involving analyzing energy efficient measures and conducting energy audits of industrial areas and facilities.	Hours	$60.64	18	$1,091.52

Practice: 120 - Agricultural Energy Design

Scenario #84 - Low Complexity, 4-5 Designs

Scenario Description:

An agricultural producer wishes to conserve energy through an EQIP contract with multiple energy practice scenarios. Associated scenario(s) provide for one-to-one device retrofits. The scenario(s) may provide for a new component to modify the operation of an existing device (e.g., timer to reduce run-time). Three factors typically indicate a "Low Complexity" system, as follows. 1) New devices maintain output (hp, Btu/hr, lux, etc.) of the old devices within a roughly 10% range. 2) New devices are installed in the same location as the old devices. 3) The retrofit does not require substantive changes to electrical, mechanical, plumbing, or structural systems. "Low Complexity" practice scenarios include but are not limited to: lamp or fixture upgrades; attic insulation; fans; or washer-extractors. Each "Design" indicates that new devices or components are closely related to other devices or components even if numerous scenarios are contracted. If more than three practices are contracted, then, at a minimum, "4-5 Designs" shall be contracted for the Ag Energy DIA. If at least 1 scenario is more complex than indicated herein, use an alternate scenario for contracting. The Ag Energy DIA includes reviewing, and, when needed, revising alternatives to address energy concerns. The Ag Energy DIA documents: a) the client's final decisions related to the associated energy practice scenarios, b) estimated energy and greenhouse gas benefits; and c) design deliverables described in the associated NRCS Conservation Practice Statements of Work. Natural Resource Concern: Energy Efficiency of Equipment and Facilities.

Before Situation:

Producer wants to transition their agricultural operation to become more energy efficient. Producer intends to work with a certified TSP to develop designs to implement one or more practice scenarios to address Energy Efficiency resource concerns using the Ag Energy DIA. The DIA 120 criteria incorporates recommended measures to increase energy conservation and efficiency. Associated Practices: 374 Farmstead Energy Improvement, 670 Energy Efficient Lighting System, 672 Energy Efficient Building Envelope, 533 Pumping Plant, or other applicable practices in the NRCS Field Office Technical Guide.

After Situation:

The producer has obtained services from a certified TSP to develop practice scenario designs using the Ag Energy DIA. The DIA 120 criteria include tasks needed to document the client's decision, energy savings and design of conservation practices which address energy efficiency. The Ag Energy DIA meets the quality criteria for the DIA 120 activity as cited in the NRCS Field Office Technical Guide.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $6,343.87

Scenario Cost/Unit: $6,343.87

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	42	$4,694.34
CAP Labor, Manager	1603	Conservation Activity Plan labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$48.55	12	$582.60
CAP Labor, Administrative Assistant	1739	Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers.	Hours	$32.23	3	$96.69
CAP Labor, Energy Auditor	1740	Conservation Activity Plan labor involving analyzing energy efficient measures and conducting energy audits of industrial areas and facilities.	Hours	$60.64	16	$970.24

Practice: 120 - Agricultural Energy Design

Scenario #100 - High Complexity, 2-3 Designs

Scenario Description:

An agricultural producer wishes to conserve energy through an EQIP contract with multiple energy practice scenarios. Associated scenario(s) provide for retrofits that impose several variables in the design process. The scenarios may involve a change in service levels that cannot be evaluated or designed through use of simple tools or manual calculations. Four factors typically indicate a “High Complexity” system, as follows. 1) Client objectives require a change of output (hp, Btu/hr, lux, etc.) that varies more than about 30% from old devices. 2) System constraints prevent new devices from being installed in the same location as the old devices. 3) The retrofit requires substantive changes to two or more of the electrical, mechanical, plumbing, or structural systems. 4) Complex analysis to evaluate alternatives is required to confirm level of service and appropriate device output, placement, etc. (For example, a detailed simulation is required to determine systems sizing and layout.) “High Complexity” practice scenarios include but are not limited to: comprehensive lighting system redesign; radiant heating systems; convert to tunnel ventilation; or convert to bench heating. Each “Design” indicates that new devices or components are closely related to other devices or components even if numerous scenarios are contracted. If more than one practice is contracted, then, at a minimum, “2-3 Designs” shall be contracted for the Ag Energy DIA. Use this scenario if at least one design is deemed high complexity. The Ag Energy DIA includes reviewing, and, when needed, revising alternatives to address energy concerns. The Ag Energy DIA documents: a) the client’s final decisions related to the associated energy practice scenarios, b) estimated energy and greenhouse gas; and c) design deliverables described in the associated NRCS Conservation Practice Statements of Work. Natural Resource Concern: Energy Efficiency of Equipment and Facilities.

Before Situation:

Producer wants to transition their agricultural operation to become more energy efficient. Producer intends to work with a certified TSP to develop designs to implement one or more practice scenarios to address Energy Efficiency resource concerns using the Ag Energy DIA. The DIA 120 criteria incorporates recommended measures to increase energy conservation and efficiency. Associated Practices: 374 Farmstead Energy Improvement, 670 Energy Efficient Lighting System, 672 Energy Efficient Building Envelope, 533 Pumping Plant, or other applicable practices in the NRCS Field Office Technical Guide.

After Situation:

The producer has obtained services from a certified TSP to develop practice scenario designs using the Ag Energy DIA. The DIA 120 criteria include tasks needed to document the client’s decision, energy savings and design of conservation practices which address energy efficiency. The Ag Energy DIA meets the quality criteria for the DIA 120 activity as cited in the NRCS Field Office Technical Guide.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $7,765.89

Scenario Cost/Unit: $7,765.89

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	54	$6,035.58
CAP Labor, Manager	1603	Conservation Activity Plan labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$48.55	13	$631.15
CAP Labor, Administrative Assistant	1739	Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers.	Hours	$32.23	4	$128.92
CAP Labor, Energy Auditor	1740	Conservation Activity Plan labor involving analyzing energy efficient measures and conducting energy audits of industrial areas and facilities.	Hours	$60.64	16	$970.24

Practice: 120 - Agricultural Energy Design

Scenario #116 - Medium Complexity, 2-3 Designs

Scenario Description:

An agricultural producer wishes to conserve energy through an EQIP contract with multiple energy practice scenarios. Associated scenario(s) provide for retrofits that impose some variables in the design process. The scenarios may involve a change in service levels that can be evaluated or designed through use of simple tools or manual calculations. Four factors typically indicate a “Medium Complexity” system, as follows. 1) Client objectives require a change of output (hp, Btu/hr, lux, etc.) that varies more than about 10% from old devices. 2) System constraints prevent new devices from being installed in the same location as the old devices. 3) The retrofit requires substantive changes to either electrical, mechanical, plumbing, or structural systems. 4) Analysis beyond the scope of NRCS methodology to evaluate alternatives is required to confirm level of service and appropriate device output, placement, etc. (For example, a simplified heat transfer model to determine heating, ventilation, and cooling loads may be required if existing device capacity cannot be estimated.) “Medium Complexity” practice scenarios include but are not limited to: change of lighting fixture counts or layout; wall insulation; grain dryers; add reverse osmosis to syrup production; or add evaporative cooling systems (cooling cells). Each “Design” indicates that new devices or components are closely related to other devices or components even if numerous scenarios are contracted. If more than one practice is contracted, then, at a minimum, “2-3 Designs” shall be contracted for theAg Energy DIA. If at least 1 scenario is more complex than indicated herein, use an alternate scenario for contracting. The Ag Energy DIA includes reviewing, and, when needed, revising alternatives to address energy concerns. The Ag Energy DIA documents: a) the client’s final decisions related to the associated energy practice scenarios, b) estimated energy and greenhouse gas benefits; and c) design deliverables described in the associated NRCS Conservation Practice Statements of Work. Natural Resource Concern: Energy Efficiency of Equipment and Facilities.

Before Situation:

Producer wants to transition their agricultural operation to become more energy efficient. Producer intends to work with a certified TSP to develop designs to implement one or more practice scenarios to address Energy Efficiency resource concerns using the Ag Energy DIA. The DIA 120 criteria incorporates recommended measures to increase energy conservation and efficiency. Associated Practices: 374 Farmstead Energy Improvement, 670 Energy Efficient Lighting System, 672 Energy Efficient Building Envelope, 533 Pumping Plant, or other applicable practices in the NRCS Field Office Technical Guide.

After Situation:

The producer has obtained services from a certified TSP to develop practice scenario designs using the Ag Energy DIA. The DIA 120 criteria include tasks needed to document the client’s decision, energy savings and design of conservation practices which address energy efficiency. The Ag Energy DIA meets the quality criteria for the DIA 120 activity as cited in the NRCS Field Office Technical Guide.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $6,222.59

Scenario Cost/Unit: $6,222.59

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	42	$4,694.34
CAP Labor, Manager	1603	Conservation Activity Plan labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$48.55	12	$582.60
CAP Labor, Administrative Assistant	1739	Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers.	Hours	$32.23	3	$96.69
CAP Labor, Energy Auditor	1740	Conservation Activity Plan labor involving analyzing energy efficient measures and conducting energy audits of industrial areas and facilities.	Hours	$60.64	14	$848.96

Practice: 120 - Agricultural Energy Design

Scenario #132 - Low Complexity, 2-3 Designs

Scenario Description:

An agricultural producer wishes to conserve energy through an EQIP contract with multiple energy practice scenarios. Associated scenario(s) provide for one-to-one device retrofits. The scenario(s) may provide for a new component to modify the operation of an existing device (e.g., timer to reduce run-time). Three factors typically indicate a "Low Complexity" system, as follows. 1) New devices maintain output (hp, Btu/hr, lux, etc.) of the old devices within a roughly 10% range. 2) New devices are installed in the same location as the old devices. 3) The retrofit does not require substantive changes to electrical, mechanical, plumbing, or structural systems. "Low Complexity" practice scenarios include but are not limited to: lamp or fixture upgrades; attic insulation; fans; or washer-extractors. Each "Design" indicates that new devices or components are closely related to other devices or components even if numerous scenarios are contracted. If more than one practice is contracted, then, at a minimum, "2-3 Designs" shall be contracted for the Ag Energy DIA. If at least 1 scenario is more complex than indicated herein, use an alternate scenario for contracting. The Ag Energy DIA includes reviewing, and, when needed, revising alternatives to address energy concerns. The Ag Energy DIA documents: a) the client's final decisions related to the associated energy practice scenarios, b) estimated energy and greenhouse gas benefits; and c) design deliverables described in the associated NRCS Conservation Practice Statements of Work. Natural Resource Concern: Energy Efficiency of Equipment and Facilities.

Before Situation:

Producer wants to transition their agricultural operation to become more energy efficient. Producer intends to work with a certified TSP to develop designs to implement one or more practice scenarios to address Energy Efficiency resource concerns using the Ag Energy DIA. The DIA 120 criteria incorporates recommended measures to increase energy conservation and efficiency. Associated Practices: 374 Farmstead Energy Improvement, 670 Energy Efficient Lighting System, 672 Energy Efficient Building Envelope, 533 Pumping Plant, or other applicable practices in the NRCS Field Office Technical Guide.

After Situation:

The producer has obtained services from a certified TSP to develop practice scenario designs using the Ag Energy DIA. The DIA 120 criteria include tasks needed to document the client's decision, energy savings and design of conservation practices which address energy efficiency. The Ag Energy DIA meets the quality criteria for the DIA 120 activity as cited in the NRCS Field Office Technical Guide.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $4,679.29

Scenario Cost/Unit: $4,679.29

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	30	$3,353.10
CAP Labor, Manager	1603	Conservation Activity Plan labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$48.55	11	$534.05
CAP Labor, Administrative Assistant	1739	Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers.	Hours	$32.23	2	$64.46
CAP Labor, Energy Auditor	1740	Conservation Activity Plan labor involving analyzing energy efficient measures and conducting energy audits of industrial areas and facilities.	Hours	$60.64	12	$727.68

Practice: 120 - Agricultural Energy Design

Scenario #148 - High Complexity, 1 Design

Scenario Description:

An agricultural producer wishes to conserve energy through an EQIP contract with at least one (1) energy practice scenario. Associated scenario(s) provide for retrofits that impose several variables in the design process. The scenarios may involve a change in service levels that cannot be evaluated or designed through use of simple tools or manual calculations. Four factors typically indicate a “High Complexity” system, as follows. 1) Client objectives require a change of output (hp, Btu/hr, lux, etc.) that varies more than about 30% from old devices. 2) System constraints prevent new devices from being installed in the same location as the old devices. 3) The retrofit requires substantive changes to two or more of the electrical, mechanical, plumbing, or structural systems. 4) Complex analysis to evaluate alternatives is required to confirm level of service and appropriate device output, placement, etc. (For example, a detailed simulation is required to determine systems sizing and layout.) “High Complexity” practice scenarios include but are not limited to: comprehensive lighting system redesign; radiant heating systems; convert to tunnel ventilation; or convert to bench heating. “One Design” indicates that each new device or component is closely related to other devices or components even if numerous scenarios are contracted. The Ag Energy DIA includes reviewing, and, when needed, revising alternatives to address energy concerns. The Ag Energy DIA documents: a) the client’s final decisions related to the associated energy practice scenarios, b) estimated energy and greenhouse gas benefits; and c) design deliverables described in the associated NRCS Conservation Practice Statements of Work. Natural Resource Concern: Energy Efficiency of Equipment and Facilities.

Before Situation:

Producer wants to transition their agricultural operation to become more energy efficient. Producer intends to work with a certified TSP to develop designs to implement one or more practice scenarios to address Energy Efficiency resource concerns using the Ag Energy DIA. The DIA 120 criteria incorporates recommended measures to increase energy conservation and efficiency. Associated Practices: 374 Farmstead Energy Improvement, 670 Energy Efficient Lighting System, 672 Energy Efficient Building Envelope, 533 Pumping Plant, or other applicable practices in the NRCS Field Office Technical Guide.

After Situation:

The producer has obtained services from a certified TSP to develop practice scenario designs using the Ag Energy DIA. The DIA 120 criteria include tasks needed to document the client’s decision, energy savings and design of conservation practices which address energy efficiency. The Ag Energy DIA meets the quality criteria for the DIA 120 activity as cited in the NRCS Field Office Technical Guide.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $6,101.31

Scenario Cost/Unit: $6,101.31

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	42	$4,694.34
CAP Labor, Manager	1603	Conservation Activity Plan labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$48.55	12	$582.60
CAP Labor, Administrative Assistant	1739	Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers.	Hours	$32.23	3	$96.69
CAP Labor, Energy Auditor	1740	Conservation Activity Plan labor involving analyzing energy efficient measures and conducting energy audits of industrial areas and facilities.	Hours	$60.64	12	$727.68

Practice: 120 - Agricultural Energy Design

Scenario #164 - Medium Complexity, 1 Design

Scenario Description:

An agricultural producer wishes to conserve energy through an EQIP contract with at least one (1) energy practice scenario. Associated scenario(s) provide for retrofits that impose some variables in the design process. The scenarios may involve a change in service levels that can be evaluated or designed through use of simple tools or manual calculations. Four factors typically indicate a “Medium Complexity” system, as follows. 1) Client objectives require a change of output (hp, Btu/hr, lux, etc.) that varies more than about 10% from old devices. 2) System constraints prevent new devices from being installed in the same location as the old devices. 3) The retrofit requires substantive changes to either electrical, mechanical, plumbing, or structural systems. 4) Analysis beyond the scope of NRCS methodology to evaluate alternatives is required to confirm level of service and appropriate device output, placement, etc. (For example, a simplified heat transfer model to determine heating, ventilation, and cooling loads may be required if existing device capacity cannot be estimated.) “Medium Complexity” practice scenarios include but are not limited to: change of lighting fixture counts or layout; wall insulation; grain dryers; add reverse osmosis to syrup production; or add evaporative cooling systems (cooling cells). “One Design” indicates that each new device or component is closely related to other devices or components even if numerous scenarios are contracted. The Ag Energy DIA includes reviewing, and, when needed, revising alternatives to address energy concerns. The Ag Energy DIA documents: a) the client’s final decisions related to the associated energy practice scenarios, b) estimated energy and greenhouse gas benefits; and c) design deliverables described in the associated NRCS Conservation Practice Statements of Work. Natural Resource Concern: Energy Efficiency of Equipment and Facilities.

Before Situation:

Producer wants to transition their agricultural operation to become more energy efficient. Producer intends to work with a certified TSP to develop designs to implement one or more practice scenarios to address Energy Efficiency resource concerns using the Ag Energy DIA. The DIA 120 criteria incorporates recommended measures to increase energy conservation and efficiency. Associated Practices: 374 Farmstead Energy Improvement, 670 Energy Efficient Lighting System, 672 Energy Efficient Building Envelope, 533 Pumping Plant, or other applicable practices in the NRCS Field Office Technical Guide.

After Situation:

The producer has obtained services from a certified TSP to develop practice scenario designs using the Ag Energy DIA. The DIA 120 criteria include tasks needed to document the client’s decision, energy savings and design of conservation practices which address energy efficiency. The Ag Energy DIA meets the quality criteria for the DIA 120 activity as cited in the NRCS Field Office Technical Guide.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $4,558.01

Scenario Cost/Unit: $4,558.01

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	30	$3,353.10
CAP Labor, Manager	1603	Conservation Activity Plan labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$48.55	11	$534.05
CAP Labor, Administrative Assistant	1739	Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers.	Hours	$32.23	2	$64.46
CAP Labor, Energy Auditor	1740	Conservation Activity Plan labor involving analyzing energy efficient measures and conducting energy audits of industrial areas and facilities.	Hours	$60.64	10	$606.40

Practice: 120 - Agricultural Energy Design

Scenario #180 - Low Complexity, 1 Design

Scenario Description:

An agricultural producer wishes to conserve energy through an EQIP contract with at least one (1) energy practice scenario. Associated scenario(s) provide for one-to-one device retrofits. The scenario(s) may provide for a new component to modify the operation of an existing device (e.g., timer to reduce run-time). Three factors typically indicate a “Low Complexity” system, as follows. 1) New devices maintain output (hp, Btu/hr, lux, etc.) of the old devices within a roughly 10% range. 2) New devices are installed in the same location as the old devices. 3) The retrofit does not require substantive changes to electrical, mechanical, plumbing, or structural systems. “Low Complexity” practice scenarios include but are not limited to: lamp or fixture upgrades; attic insulation; fans; or washer-extractors. “One Design” indicates that each new device or component is closely related to other devices or components even if numerous scenarios are contracted. The Ag Energy DIA includes reviewing, and, when needed, revising alternatives to address energy concerns. The Ag Energy DIA documents: a) the client’s final decisions related to the associated energy practice scenarios, b) estimated energy and greenhouse gas benefits; and c) design deliverables described in the associated NRCS Conservation Practice Statements of Work. Natural Resource Concern: Energy Efficiency of Equipment and Facilities.

Before Situation:

Producer wants to transition their agricultural operation to become more energy efficient. Producer intends to work with a certified TSP to develop designs to implement one or more practice scenarios to address Energy Efficiency resource concerns using the Ag Energy DIA. The DIA 120 criteria incorporates recommended measures to increase energy conservation and efficiency. Associated Practices: 374 Farmstead Energy Improvement, 670 Energy Efficient Lighting System, 672 Energy Efficient Building Envelope, 533 Pumping Plant, or other applicable practices in the NRCS Field Office Technical Guide.

After Situation:

The producer has obtained services from a certified TSP to develop practice scenario designs using the Ag Energy DIA. The DIA 120 criteria include tasks needed to document the client’s decision, energy savings and design of conservation practices which address energy efficiency. The Ag Energy DIA meets the quality criteria for the DIA 120 activity as cited in the NRCS Field Office Technical Guide.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $3,014.71

Scenario Cost/Unit: $3,014.71

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	18	$2,011.86
CAP Labor, Manager	1603	Conservation Activity Plan labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$48.55	10	$485.50
CAP Labor, Administrative Assistant	1739	Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers.	Hours	$32.23	1	$32.23
CAP Labor, Energy Auditor	1740	Conservation Activity Plan labor involving analyzing energy efficient measures and conducting energy audits of industrial areas and facilities.	Hours	$60.64	8	$485.12

Practice: 138 - Conservation Plan Supporting Organic Transition

Scenario #12 - Conservation Plan Supporting Organic Transition CAP Crops and Livestock

Scenario Description:

Agricultural operation where producer will transition from conventional to organic to meet USDA National Organic Program (NOP) requirements. Natural Resource Concern: Soil Erosion, Water Quality, Plant Condition, and other identified natural resource concerns.

Before Situation:

Agricultural operation currently managed using traditional and conventional methods for farming and/or ranching mixed operation of crops and livestock. The producer currently manages the operation based upon personal knowledge, or other local criteria. The producer is interested in transitioning part or all of the management unit to meet national USDA requirements for a certified operation. The producer is willing to collaborate with a certified TSP to develop a plan and collect/coordinate data recording to monitor per requirements of plan. Associated Practices: Refer to the NRCS Plan Criteria for conservation practices associated with operations transitioning to organic certification and typically needed to address identified natural resource concerns.

After Situation:

After EQIP contract approval, participant has obtained services from a certified TSP to develop the Conservation Plan Supporting Organic Transition Conservation Activity Plan (CAP) The CAP criteria requires the plan to meet quality criteria for applicable resource concerns and provides for opportunities to implement a system of conservation practices which assist the producer to transition from conventional farming or ranching to an organic production system with crops and livestock. The CAP plan will include conservation practices which address related resource concerns. The CAP meets the basic quality criteria for the 138 plan as cited in the NRCS Field Office Technical Guide.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $6,250.50

Scenario Cost/Unit: $6,250.50

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Cap Labor, conservation scientist	1300	Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering.	Hours	$83.34	75	$6,250.50

Practice: 138 - Conservation Plan Supporting Organic Transition

Scenario #13 - Conservation Plan Supporting Organic Transition CAP Crops or Livestock

Scenario Description:

Agricultural operation where producer will transition from conventional to organic to meet USDA National Organic Program (NOP) requirements. Natural Resource Concern: Soil Erosion, Water Quality, Plant Condition, and other identified natural resource concerns.

Before Situation:

Agricultural operation currently managed using traditional and conventional methods for farming with only crops. The producer currently manages the operation based upon personal knowledge, or other local criteria. The producer is interested in transitioning part or all of the management unit to meet national USDA requirements for certified operation. The producer is willing to collaborate with a certified TSP to develop a plan and collect/coordinate data recording to monitor per requirements of plan. Associated Practices: Refer to the NRCS Plan Criteria for conservation practices associated with operations transitioning to organic certification and typically needed to address identified natural resource concerns.

After Situation:

After EQIP contract approval, participant has obtained services from a certified TSP to develop the Conservation Plan Supporting Organic Transition Conservation Activity Plan (CAP) The CAP criteria requires the plan to meet quality criteria for applicable resource concerns and provides for opportunities to implement a system of conservation practices which assist the producer to transition from conventional farming or ranching to an organic production system with crops and livestock. The CAP plan will include conservation practices which address related resource concerns. The CAP meets the basic quality criteria for the 138 plan as cited in the NRCS Field Office Technical Guide.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $5,333.76

Scenario Cost/Unit: $5,333.76

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Cap Labor, conservation scientist	1300	Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering.	Hours	$83.34	64	$5,333.76

Practice: 138 - Conservation Plan Supporting Organic Transition

Scenario #36 - Transition to Organic- Crop, Low Complexity

Scenario Description:

A site specific conservation plan that contains planned conservation treatment activities for resource concerns resulting from the transition of conventional to organic production systems. At a minimum two alternatives will be developed. The first will be a no-action alternative in which current management activities are assumed to continue. The second will be an action alternative identifying a conservation practice or a system of conservation practices and management activities to address CPA identified resource concern(s). Additional action alternatives may be developed to identify different ways of achieving client objectives.

Before Situation:

Current crops and rotation, farming practices (tillage, nutrient application methods, timing, source, and rate), soils, and equipment and technology utilized are not considered as Organic. The producer objectives are to become organic. The effect of changes to the current cropping system are not known and new resource concerns may emerge.

After Situation:

When evaluating conservation practice effects, the short term and long term effect on natural resources and the applicability and effect on special environmental concerns identified in Step-3 (Resource Inventory) must be documented. Include recommendations that will avoid or mitigate any adverse effects on soil, water, air, plants, animals (including livestock, fish, and wildlife), energy, or human concerns; as well as on special environmental concerns. The Organic System Plan Template supplements are completed as part of NRCS Conservation Planning Activity (CPA) 138 that helps farmers who are interested in transitioning from conventional farming practices to organic production by addressing the natural resource concerns on their operation.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $5,417.10

Scenario Cost/Unit: $5,417.10

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Cap Labor, conservation scientist	1300	Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering.	Hours	$83.34	65	$5,417.10

Practice: 138 - Conservation Plan Supporting Organic Transition

Scenario #52 - Transition to Organic- Crop, High Complexity

Scenario Description:

A site specific conservation plan that contains planned conservation treatment activities for resource concerns resulting from the transition of conventional to organic production systems. Crop production system is more complex based on site features, large acreage, specialty crops, irrigation, orchard and vineyards. At a minimum two alternatives will be developed. The first will be a no-action alternative in which current management activities are assumed to continue. The second will be an action alternative identifying a conservation practice or a system of conservation practices and management activities to address CPA identified resource concern(s). Additional action alternatives may be developed to identify different ways of achieving client objectives.

Before Situation:

Current crops and rotation, farming practices (tillage, nutrient application methods, timing, source, and rate), soils, and equipment and technology utilized are not considered as Organic. The producer objectives are to become organic. The effect of changes to the current cropping system are not known and new resource concerns may emerge.

After Situation:

When evaluating conservation practice effects, the short term and long term effect on natural resources and the applicability and effect on special environmental concerns identified in Step-3 (Resource Inventory) must be documented. Include recommendations that will avoid or mitigate any adverse effects on soil, water, air, plants, animals (including livestock, fish, and wildlife), energy, or human concerns; as well as on special environmental concerns. The Organic System Plan Template supplements are completed as part of NRCS Conservation Planning Activity (CPA) 138 that helps farmers who are interested in transitioning from conventional farming practices to organic production by addressing the natural resource concerns on their operation.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $6,250.50

Scenario Cost/Unit: $6,250.50

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Cap Labor, conservation scientist	1300	Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering.	Hours	$83.34	75	$6,250.50

Practice: 138 - Conservation Plan Supporting Organic Transition

Scenario #68 - Transition to Organic-Livestock, Low Complexity

Scenario Description:

A site specific conservation plan that contains planned conservation treatment activities for resource concerns resulting from the transition of conventional to organic livestock systems. At a minimum two alternatives will be developed. The first will be a no-action alternative in which current management activities are assumed to continue. The second will be an action alternative identifying a conservation practice or a system of conservation practices and management activities to address CPA identified resource concern(s). Additional action alternatives may be developed to identify different ways of achieving client objectives.

Before Situation:

Current livestock production, housing, feed, equipment and technology utilized are not considered as Organic. The producer objectives are to become organic. The effect of changes to the current system are not known and new resource concerns may emerge.

After Situation:

When evaluating conservation practice effects, the short term and long term effect on natural resources and the applicability and effect on special environmental concerns identified in Step-3 (Resource Inventory) must be documented. Include recommendations that will avoid or mitigate any adverse effects on soil, water, air, plants, animals (including livestock, fish, and wildlife), energy, or human concerns; as well as on special environmental concerns. The Organic System Plan Template supplements are completed as part of NRCS Conservation Planning Activity (CPA) 138 that helps farmers who are interested in transitioning from conventional farming practices to organic production by addressing the natural resource concerns on their operation.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $5,833.80

Scenario Cost/Unit: $5,833.80

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Cap Labor, conservation scientist	1300	Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering.	Hours	$83.34	70	$5,833.80

Practice: 138 - Conservation Plan Supporting Organic Transition

Scenario #84 - Transition to Organic-Livestock, High Complexity

Scenario Description:

A site specific conservation plan that contains planned conservation treatment activities for resource concerns resulting from the transition of conventional to organic livestock systems. System is high complexity based on conditions such as large Animal Units, multiple production locations, age segregation and similar management. At a minimum two alternatives will be developed. The first will be a no-action alternative in which current management activities are assumed to continue. The second will be an action alternative identifying a conservation practice or a system of conservation practices and management activities to address CPA identified resource concern(s). Additional action alternatives may be developed to identify different ways of achieving client objectives.

Before Situation:

Current livestock production, housing, feed, equipment and technology utilized are not considered as Organic. The producer objectives are to become organic. The effect of changes to the current system are not known and new resource concerns may emerge.

After Situation:

When evaluating conservation practice effects, the short term and long term effect on natural resources and the applicability and effect on special environmental concerns identified in Step-3 (Resource Inventory) must be documented. Include recommendations that will avoid or mitigate any adverse effects on soil, water, air, plants, animals (including livestock, fish, and wildlife), energy, or human concerns; as well as on special environmental concerns. The Organic System Plan Template supplements are completed as part of NRCS Conservation Planning Activity (CPA) 138 that helps farmers who are interested in transitioning from conventional farming practices to organic production by addressing the natural resource concerns on their operation.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $8,902.60

Scenario Cost/Unit: $8,902.60

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	20	$2,235.40
Cap Labor, conservation scientist	1300	Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering.	Hours	$83.34	80	$6,667.20

Practice: 138 - Conservation Plan Supporting Organic Transition

Scenario #100 - Transition to Organic- Crop and Livestock, Low Complexity

Scenario Description:

A site specific conservation plan that contains planned conservation treatment activities for resource concerns resulting from the transition of conventional to organic crop and livestock production systems. At a minimum two alternatives will be developed. The first will be a no-action alternative in which current management activities are assumed to continue. The second will be an action alternative identifying a conservation practice or a system of conservation practices and management activities to address CPA identified resource concern(s). Additional action alternatives may be developed to identify different ways of achieving client objectives.

Before Situation:

Current crops and rotation, livestock management and feeding, farming practices (tillage, nutrient application methods, timing, source, and rate), soils, and equipment and technology utilized are not considered as Organic. The producer objectives are to become organic. The effect of changes to the current cropping system are not known and new resource concerns may emerge.

After Situation:

When evaluating conservation practice effects, the short term and long term effect on natural resources and the applicability and effect on special environmental concerns identified in Step-3 (Resource Inventory) must be documented. Include recommendations that will avoid or mitigate any adverse effects on soil, water, air, plants, animals (including livestock, fish, and wildlife), energy, or human concerns; as well as on special environmental concerns. The Organic System Plan Template supplements are completed as part of NRCS Conservation Planning Activity (CPA) 138 that helps farmers who are interested in transitioning from conventional farming practices to organic production by addressing the natural resource concerns on their operation.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $6,250.50

Scenario Cost/Unit: $6,250.50

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Cap Labor, conservation scientist	1300	Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering.	Hours	$83.34	75	$6,250.50

Practice: 138 - Conservation Plan Supporting Organic Transition

Scenario #116 - Transition to Organic- Crop and Livestock, High Complexity

Scenario Description:

A site specific conservation plan that contains planned conservation treatment activities for resource concerns resulting from the transition of conventional to organic crop and livestock production systems. Increased crop acreage, irrigation, specialty crops, orchards and vineyards, large AUs, age segregation management add complexity to the system. At a minimum two alternatives will be developed. The first will be a no-action alternative in which current management activities are assumed to continue. The second will be an action alternative identifying a conservation practice or a system of conservation practices and management activities to address CPA identified resource concern(s). Additional action alternatives may be developed to identify different ways of achieving client objectives.

Before Situation:

Current crops and rotation, livestock management and feeding, farming practices (tillage, nutrient application methods, timing, source, and rate), soils, and equipment and technology utilized are not considered as Organic. The producer objectives are to become organic. The effect of changes to the current cropping system are not known and new resource concerns may emerge.

After Situation:

When evaluating conservation practice effects, the short term and long term effect on natural resources and the applicability and effect on special environmental concerns identified in Step-3 (Resource Inventory) must be documented. Include recommendations that will avoid or mitigate any adverse effects on soil, water, air, plants, animals (including livestock, fish, and wildlife), energy, or human concerns; as well as on special environmental concerns. The Organic System Plan Template supplements are completed as part of NRCS Conservation Planning Activity (CPA) 138 that helps farmers who are interested in transitioning from conventional farming practices to organic production by addressing the natural resource concerns on their operation.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $9,319.30

Scenario Cost/Unit: $9,319.30

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	20	$2,235.40
Cap Labor, conservation scientist	1300	Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering.	Hours	$83.34	85	$7,083.90

Practice: 140 - Transition to Organic Design and Implementation Activity

Scenario #4 - Low Complexity 1-4 CPS

Scenario Description:

Agricultural operation where producer will transition from conventional production to organic production. They will meet the USDA National Organic Program (NOP) requirements. All Natural resources will be addressed: Soil, Water, Air, Plants and Animals. Will address resource concerns with 1 - 4, low complexity conservation practices.

Before Situation:

Agricultural operation currently managed using conventional agricultural production methods. Producer will transition all or part of the farm operation to meet national USDA NOP requirements for organic certification. The producer will collaborate with a certified TSP to develop implementation requirements and/or designs and specifications for all conservation practices required to meet organic certification requirements. Low complexity conservation practices may include: cover crop, crop rotation, reduced tillage, conservation plantings and minor structural practices for erosion control such as grass waterways and diversions.

After Situation:

After NRCS program contract is approved, participant will obtain services from a certified TSP to develop the required implementation requirements and/or designs and specifications for all conservation practices required to meet organic certification requirements. All practices installed according to field office technical guide requirements. Implementation requirements, designs and specifications all complete.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $4,880.69

Scenario Cost/Unit: $4,880.69

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, agronomist	1295	Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner.	Hours	$103.89	16	$1,662.24
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	16	$1,788.32
Cap Labor, conservation scientist	1300	Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering.	Hours	$83.34	16	$1,333.44
CAP Labor, Administrative Assistant	1739	Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers.	Hours	$32.23	3	$96.69

Practice: 140 - Transition to Organic Design and Implementation Activity

Scenario #20 - Low Complexity, 5+ CPS

Scenario Description:

Agricultural operation where producer will transition from conventional production to organic production. They will meet the USDA National Organic Program (NOP) requirements. All Natural resources will be addressed: Soil, Water, Air, Plants and Animals. Will address resources concerns with 5 or more conservation practices with low complexity.

Before Situation:

Agricultural operation currently managed using conventional agricultural production methods. Producer will transition all or part of the farm operation to meet national USDA NOP requirements for organic certification. The producer will collaborate with a certified TSP to develop implementation requirements and/or designs and specifications for all conservation practices required to meet organic certification requirements. Low complexity conservation practices may include: cover crop, crop rotation, reduced tillage, conservation plantings and minor structural practices for erosion control such as grass waterways and diversions.

After Situation:

After NRCS program contract is approved, participant will obtain services from a certified TSP to develop the required implementation requirements and/or designs and specifications for all conservation practices required to meet organic certification requirements. All practices installed according to field office technical guide requirements. Implementation requirements, designs and specifications all complete.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $9,696.92

Scenario Cost/Unit: $9,696.92

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, agronomist	1295	Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner.	Hours	$103.89	32	$3,324.48
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	32	$3,576.64
Cap Labor, conservation scientist	1300	Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering.	Hours	$83.34	32	$2,666.88
CAP Labor, Administrative Assistant	1739	Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers.	Hours	$32.23	4	$128.92

Practice: 140 - Transition to Organic Design and Implementation Activity

Scenario #36 - High Complexity, 1 -4 CPS

Scenario Description:

Agricultural operation where producer will transition from conventional production to organic production. They will meet the USDA National Organic Program (NOP) requirements. All Natural resources will be addressed: Soil, Water, Air, Plants, and Animals. Will address resource concerns with 1 - 4, high complexity conservation practices.

Before Situation:

Agricultural operation currently managed using conventional agricultural production methods. Producer will transition all or part of the farm operation to meet national USDA NOP requirements for organic certification. The producer will collaborate with a certified TSP to develop implementation requirements and/or designs and specifications for all conservation practices required to meet organic certification requirements. High complexity conservation practices may include: management practices for nutrients, pests, grazing, irrigation etc. and structural practices such as waste storage facility and wetland practices.

After Situation:

After NRCS program contract is approved, participant will obtain services from a certified TSP to develop the required implementation requirements and/or designs and specifications for all conservation practices required to meet organic certification requirements. All practices installed according to field office technical guide requirements. Implementation requirements, designs and specifications all complete.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $12,545.33

Scenario Cost/Unit: $12,545.33

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, agronomist	1295	Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner.	Hours	$103.89	40	$4,155.60
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	40	$4,470.80
Cap Labor, conservation scientist	1300	Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering.	Hours	$83.34	40	$3,333.60
Cap Labor, Survey and Mapping Technician	1591	Conservation Activity Plan labor to perform surveying and mapping duties, usually under the direction of an engineer, surveyor, cartographer, or photogrammetrist to obtain data used for construction, mapmaking, boundary location, mining, or other purposes. May calculate mapmaking information and create maps from source data, such as surveying notes, aerial photography, satellite data, or other maps to show topographical features, political boundaries, and other features. May verify accuracy and completeness of maps.	Hours	$61.08	8	$488.64
CAP Labor, Administrative Assistant	1739	Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers.	Hours	$32.23	3	$96.69

Practice: 140 - Transition to Organic Design and Implementation Activity

Scenario #52 - High Complexity, 5+ CPS

Scenario Description:

Agricultural operation where producer will transition from conventional production to organic production. They will meet the USDA National Organic Program (NOP) requirements. All Natural resources will be addressed: Soil, Water, Air, Plants and Animals. Will address resource concerns with 5 or more, high complexity conservation practices.

Before Situation:

Agricultural operation currently managed using conventional agricultural production methods. Producer will transition all or part of the farm operation to meet national USDA NOP requirements for organic certification. The producer will collaborate with a certified TSP to develop implementation requirements and/or designs and specifications for all conservation practices required to meet organic certification requirements. High complexity conservation practices may include: management practices for nutrients, pests, grazing, irrigation etc. and structural practices such as waste storage facility and wetland practices.

After Situation:

After NRCS program contract is approved, participant will obtain services from a certified TSP to develop the required implementation requirements and/or designs and specifications for all conservation practices required to meet organic certification requirements. All practices installed according to field office technical guide requirements. Implementation requirements, designs and specifications all complete.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $16,061.88

Scenario Cost/Unit: $16,061.88

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, agronomist	1295	Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner.	Hours	$103.89	56	$5,817.84
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	40	$4,470.80
Cap Labor, conservation scientist	1300	Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering.	Hours	$83.34	56	$4,667.04
Cap Labor, Survey and Mapping Technician	1591	Conservation Activity Plan labor to perform surveying and mapping duties, usually under the direction of an engineer, surveyor, cartographer, or photogrammetrist to obtain data used for construction, mapmaking, boundary location, mining, or other purposes. May calculate mapmaking information and create maps from source data, such as surveying notes, aerial photography, satellite data, or other maps to show topographical features, political boundaries, and other features. May verify accuracy and completeness of maps.	Hours	$61.08	16	$977.28
CAP Labor, Administrative Assistant	1739	Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers.	Hours	$32.23	4	$128.92

Practice: 144 - Fish and Wildlife Habitat Design and Implementation Activity

Scenario #4 - Fish & Wildlife Habitat DIA

Scenario Description:

Various on-farm land uses. Natural Resource Concerns: Terrestrial Habitat and/or Aquatic Habitat on an agricultural operation. The Fish and Wildlife Habitat Design and Implementation Activity (DIA) addresses fish and wildlife habitat management relative to only one land use on the agricultural operation.

Before Situation:

Producer has no plan or knowledge of development or management of fish and/or wildlife habitat. The producer does not currently manage or enhance habitat to promote opportunities for fish and/or wildlife habitat. Within existing land uses, the producer is interested in management of land or water features for establishment of new habitat for benefit of appropriate fish or wildlife species. Associated Practices: Applicable conservation practices cited in the DIA criteria and NRCS Field Office Technical Guide.

After Situation:

After EQIP contract approval, the participant has obtained services from a certified TSP for development of the Fish and Wildlife Habitat DIA. The DIA criteria require the plan to meet quality criteria for the primary fish/wildlife habitat resource concern and provides for opportunities to improve, restore, or enhance habitat that supports native and/or managed species. The DIA may include recommendations for associated conservation practices which address other related resource concerns. The DIA meets the basic quality criteria for the 144 plan as cited in the NRCS Field Office Technical Guide.

Feature Measure: Design & Implementation Plan

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $3,125.88

Scenario Cost/Unit: $3,125.88

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, biologist	1298	Conservation Activity Plan labor to study the origins, behavior, diseases, genetics, and life processes of animals and wildlife. May specialize in wildlife research and management. May collect and analyze biological data to determine the environmental effects of present and potential use of land and water habitats. Cost associated with this component includes overhead and benefits (market price).	Hours	$86.83	36	$3,125.88

Practice: 144 - Fish and Wildlife Habitat Design and Implementation Activity

Scenario #20 - Fish & Wildlife Habitat DIA (2 Land Uses)

Scenario Description:

Various on-farm land uses. Natural Resource Concerns: Terrestrial Habitat and/or Aquatic Habitat on an agricultural operation. The Fish and Wildlife Habitat Design and Implementation Activity (DIA) addresses fish and wildlife habitat management relative to two land uses on the agricultural operation of which each land use is at least 20 acres in size.

Before Situation:

Producer has no plan or knowledge of development or management of fish and/or wildlife habitat. The producer does not currently manage or enhance habitat to promote opportunities for fish and/or wildlife habitat. Within existing land uses, the producer is interested in management of land or water features for establishment of new habitat for benefit of appropriate fish or wildlife species. Associated Practices: Applicable conservation practices cited in the DIA criteria and NRCS Field Office Technical Guide.

After Situation:

After EQIP contract approval, the participant has obtained services from a certified TSP for development of the Fish and Wildlife Habitat DIA. The DIA criteria require the plan to meet quality criteria for the primary fish/wildlife habitat resource concern and provides for opportunities to improve, restore, or enhance habitat that supports native and/or managed species. The DIA may include recommendations for associated conservation practices which address other related resource concerns. The DIA meets the basic quality criteria for the 144 plan as cited in the NRCS Field Office Technical Guide.

Feature Measure: Fish and Wildlife Habitat DIA

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $3,820.52

Scenario Cost/Unit: $3,820.52

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, biologist	1298	Conservation Activity Plan labor to study the origins, behavior, diseases, genetics, and life processes of animals and wildlife. May specialize in wildlife research and management. May collect and analyze biological data to determine the environmental effects of present and potential use of land and water habitats. Cost associated with this component includes overhead and benefits (market price).	Hours	$86.83	44	$3,820.52

Practice: 144 - Fish and Wildlife Habitat Design and Implementation Activity

Scenario #36 - Fish & Wildlife Habitat DIA (3 or More Land Uses)

Scenario Description:

Various on-farm land uses. Natural Resource Concerns: Terrestrial Habitat and/or Aquatic Habitat on an agricultural operation. The Fish and Wildlife Habitat Design and Implementation Activity (DIA) addresses fish and wildlife habitat management relative to three or more land uses on the agricultural operation of which at least three of the land uses are at least 20 acres in size.

Before Situation:

Producer has no plan or knowledge of development or management of fish and/or wildlife habitat. The producer does not currently manage or enhance habitat to promote opportunities for fish and/or wildlife habitat. Within existing land uses, the producer is interested in management of land or water features for establishment of new habitat for benefit of appropriate fish or wildlife species. Associated Practices: Applicable conservation practices cited in the DIA criteria and NRCS Field Office Technical Guide.

After Situation:

After EQIP contract approval, the participant has obtained services from a certified TSP for development of the Fish and Wildlife Habitat DIA. The DIA criteria require the plan to meet quality criteria for the primary fish/wildlife habitat resource concern and provides for opportunities to improve, restore, or enhance habitat that supports native and/or managed species. The DIA may include recommendations for associated conservation practices which address other related resource concerns. The DIA meets the basic quality criteria for the 144 plan as cited in the NRCS Field Office Technical Guide.

Feature Measure: Fish and Wildlife Habitat DIA

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $4,515.16

Scenario Cost/Unit: $4,515.16

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, biologist	1298	Conservation Activity Plan labor to study the origins, behavior, diseases, genetics, and life processes of animals and wildlife. May specialize in wildlife research and management. May collect and analyze biological data to determine the environmental effects of present and potential use of land and water habitats. Cost associated with this component includes overhead and benefits (market price).	Hours	$86.83	52	$4,515.16

Practice: 148 - Pollinator Habitat Design and Implementation Activity

Scenario #4 - Pollinator Habitat Enhancement Plan CAP - No Local TSP

Scenario Description:

Various on-farm land uses, No qualified TSP within 300 miles. Natural Resource Concern: Fish and Wildlife, Plant Condition, Soil Erosion, Water Quality on an agricultural operation.

Before Situation:

Agricultural producer currently has no plan or knowledge of development or management of pollinator habitat. The producer does not currently manage or enhance habitat to promote opportunities for pollinator habitat. Within existing land uses, the producer may be interested in management of land or for establishment of new habitat for benefit of appropriate pollinator species. Associated Practices: 311, 327, 328, 656, 332, 340, 342, 647, 386, 393, 412, 422, 603, 379, 512, 595, 338, 528, 550, 329, 643, 391, 390, 381, 395, 580, 585, 612, 645, 601, 659, 657, 644, 380, 650.

After Situation:

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Pollinator Habitat Enhancement Conservation Activity Plan (CAP). The CAP criteria requires the plan to meet quality criteria for applicable resource concerns and provides for opportunities to improve, restore, or enhance flower-rich habitat that supports native and/or managed pollinator species. The CAP plan may include recommendations for associated conservation practices which address other related resource concerns. The CAP meets the basic quality criteria for the 146 plan as cited in the NRCS Field Office Technical Guide.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $5,296.63

Scenario Cost/Unit: $5,296.63

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, biologist	1298	Conservation Activity Plan labor to study the origins, behavior, diseases, genetics, and life processes of animals and wildlife. May specialize in wildlife research and management. May collect and analyze biological data to determine the environmental effects of present and potential use of land and water habitats. Cost associated with this component includes overhead and benefits (market price).	Hours	$86.83	61	$5,296.63

Practice: 148 - Pollinator Habitat Design and Implementation Activity

Scenario #20 - Pollinator Habitat Enhancement Plan CAP

Scenario Description:

Various on-farm land uses. Natural Resource Concern: Fish and Wildlife, Plant Condition, Soil Erosion, Water Quality on an agricultural operation.

Before Situation:

Agricultural producer currently has no plan or knowledge of development or management of pollinator habitat. The producer does not currently manage or enhance habitat to promote opportunities for pollinator habitat. Within existing land uses, the producer may be interested in management of land or for establishment of new habitat for benefit of appropriate pollinator species. Associated Practices: 311, 327, 328, 656, 332, 340, 342, 647, 386, 393, 412, 422, 603, 379, 512, 595, 338, 528, 550, 329, 643, 391, 390, 381, 395, 580, 585, 612, 645, 601, 659, 657, 644, 380, 650.

After Situation:

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Pollinator Habitat Enhancement Conservation Activity Plan (CAP). The CAP criteria requires the plan to meet quality criteria for applicable resource concerns and provides for opportunities to improve, restore, or enhance flower-rich habitat that supports native and/or managed pollinator species. The CAP plan may include recommendations for associated conservation practices which address other related resource concerns. The CAP meets the basic quality criteria for the 146 plan as cited in the NRCS Field Office Technical Guide.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $3,646.86

Scenario Cost/Unit: $3,646.86

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, biologist	1298	Conservation Activity Plan labor to study the origins, behavior, diseases, genetics, and life processes of animals and wildlife. May specialize in wildlife research and management. May collect and analyze biological data to determine the environmental effects of present and potential use of land and water habitats. Cost associated with this component includes overhead and benefits (market price).	Hours	$86.83	42	$3,646.86

Practice: 157 - Nutrient Management Design and Implementation Activity

Scenario #4 - Design Nutrient Management for greater than 101 Acres and less than or equal to 300 Acres Fertilizer and Manure

Scenario Description:

Various on-farm land uses where natural or artificial amendments are applied. Natural Resource Concern: Water Quality, Soil Erosion, Water Quantity, and other associated resource concerns. Manure may be imported.

Before Situation:

Agricultural producer has no plan or minimal knowledge for the application and management of nutrients. The producer currently manages nutrient application based upon personal knowledge, or other local criteria. Producer is interested in management of nutrients to maximize yields, improve profit margins, reduce costs, and for environmental benefit. Producer is willing to collaborate with a certified TSP to develop a plan.

After Situation:

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Nutrient Management conservation activity plan consistent with the criteria in DIA 157 and 590 Nutrient Management. The DIA criteria requires the plan to meet quality criteria for Soils, Water Quality and Air Quality resource concerns and other applicable resource concerns and provides for opportunities to manage nutrients for plant production and address offsite movement of nutrients. The design may include recommendations for associated conservation practices which address other related resource concerns. Meets the basic quality criteria for the DIA 157 as cited in the NRCS Field Office Technical Guide and CPS 590 Nutrient Management.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $7,272.30

Scenario Cost/Unit: $7,272.30

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, agronomist	1295	Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner.	Hours	$103.89	70	$7,272.30

Practice: 157 - Nutrient Management Design and Implementation Activity

Scenario #20 - Design Nutrient Management for 101 to less than 300 Acres and No Manure

Scenario Description:

Various on-farm land uses where natural or artificial amendments are applied. Natural Resource Concern: Water Quality, Soil Erosion, Water Quantity, and other associated resource concerns.

Before Situation:

Agricultural producer has no plan or minimal knowledge for the application and management of nutrients. The producer currently manages nutrient application based upon personal knowledge, or other local criteria. Producer is interested in management of nutrients to maximize yields, improve profit margins, reduce costs, and for environmental benefit. Producer is willing to collaborate with a certified TSP to develop a plan.

After Situation:

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Nutrient Management conservation activity plan consistent with the criteria in DIA 157 and 590 Nutrient Management. The DIA criteria requires the plan to meet quality criteria for Soils, Water Quality and Air Quality resource concerns and other applicable resource concerns and provides for opportunities to manage nutrients for plant production and address offsite movement of nutrients. The design may include recommendations for associated conservation practices which address other related resource concerns. Meets the basic quality criteria for the DIA 157 as cited in the NRCS Field Office Technical Guide and CPS 590 Nutrient Management.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $4,155.60

Scenario Cost/Unit: $4,155.60

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, agronomist	1295	Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner.	Hours	$103.89	40	$4,155.60

Practice: 157 - Nutrient Management Design and Implementation Activity

Scenario #36 - Design Nutrient Management for greater than 300 Acres and No Manure

Scenario Description:

Various on-farm land uses where natural or artificial amendments are applied. Natural Resource Concern: Water Quality, Soil Erosion, Water Quantity, and other associated resource concerns.

Before Situation:

Agricultural producer has no plan or minimal knowledge for the application and management of nutrients. The producer currently manages nutrient application based upon personal knowledge, or other local criteria. Producer is interested in management of nutrients to maximize yields, improve profit margins, reduce costs, and for environmental benefit. Producer is willing to collaborate with a certified TSP to develop a plan.

After Situation:

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Nutrient Management conservation activity plan consistent with the criteria in DIA 157 and 590 Nutrient Management. The DIA criteria requires the plan to meet quality criteria for Soils, Water Quality and Air Quality resource concerns and other applicable resource concerns and provides for opportunities to manage nutrients for plant production and address offsite movement of nutrients. The design may include recommendations for associated conservation practices which address other related resource concerns. Meets the basic quality criteria for the DIA 157 as cited in the NRCS Field Office Technical Guide and CPS 590 Nutrient Management.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $5,194.50

Scenario Cost/Unit: $5,194.50

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, agronomist	1295	Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner.	Hours	$103.89	50	$5,194.50

Practice: 157 - Nutrient Management Design and Implementation Activity

Scenario #52 - Design Nutrient Management for less than or equal to 100 Acres Fertilizer and Manure

Scenario Description:

Various on-farm land uses where natural or artificial amendments are applied. Natural Resource Concern: Water Quality, Soil Erosion, Water Quantity, and other associated resource concerns. Manure may be imported.

Before Situation:

Agricultural producer has no plan or minimal knowledge for the application and management of nutrients. The producer currently manages nutrient application based upon personal knowledge, or other local criteria. Producer is interested in management of nutrients to maximize yields, improve profit margins, reduce costs, and for environmental benefit. Producer is willing to collaborate with a certified TSP to develop a plan.

After Situation:

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Nutrient Management conservation activity plan consistent with the criteria in DIA 157 and 590 Nutrient Management. The DIA criteria requires the plan to meet quality criteria for Soils, Water Quality and Air Quality resource concerns and other applicable resource concerns and provides for opportunities to manage nutrients for plant production and address offsite movement of nutrients. The design may include recommendations for associated conservation practices which address other related resource concerns. Meets the basic quality criteria for the DIA 157 as cited in the NRCS Field Office Technical Guide and CPS 590 Nutrient Management.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $5,194.50

Scenario Cost/Unit: $5,194.50

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, agronomist	1295	Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner.	Hours	$103.89	50	$5,194.50

Practice: 157 - Nutrient Management Design and Implementation Activity

Scenario #68 - Design Nutrient Management for less than or equal to 100 Acres and No Manure

Scenario Description:

Various on-farm land uses where natural or artificial amendments are applied. Natural Resource Concern: Water Quality, Soil Erosion, Water Quantity, and other associated resource concerns.

Before Situation:

Agricultural producer has no plan or minimal knowledge for the application and management of nutrients. The producer currently manages nutrient application based upon personal knowledge, or other local criteria. Producer is interested in management of nutrients to maximize yields, improve profit margins, reduce costs, and for environmental benefit. Producer is willing to collaborate with a certified TSP to develop a plan.

After Situation:

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Nutrient Management conservation activity plan consistent with the criteria in DIA 157 and 590 Nutrient Management. The DIA criteria requires the plan to meet quality criteria for Soils, Water Quality and Air Quality resource concerns and other applicable resource concerns and provides for opportunities to manage nutrients for plant production and address offsite movement of nutrients. The design may include recommendations for associated conservation practices which address other related resource concerns. Meets the basic quality criteria for the DIA 157 as cited in the NRCS Field Office Technical Guide and CPS 590 Nutrient Management.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $3,116.70

Scenario Cost/Unit: $3,116.70

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, agronomist	1295	Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner.	Hours	$103.89	30	$3,116.70

Practice: 157 - Nutrient Management Design and Implementation Activity

Scenario #84 - Design Nutrient Management for greater than 300 Acres Fertilizer and Manure

Scenario Description:

Various on-farm land uses where natural or artificial amendments are applied. Natural Resource Concern: Water Quality, Soil Erosion, Water Quantity, and other associated resource concerns. Manure may be imported.

Before Situation:

Agricultural producer has no plan or minimal knowledge for the application and management of nutrients. The producer currently manages nutrient application based upon personal knowledge, or other local criteria. Producer is interested in management of nutrients to maximize yields, improve profit margins, reduce costs, and for environmental benefit. Producer is willing to collaborate with a certified TSP to develop a plan.

After Situation:

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Nutrient Management conservation activity plan consistent with the criteria in DIA 157 and 590 Nutrient Management. The DIA criteria requires the plan to meet quality criteria for Soils, Water Quality and Air Quality resource concerns and other applicable resource concerns and provides for opportunities to manage nutrients for plant production and address offsite movement of nutrients. The design may include recommendations for associated conservation practices which address other related resource concerns. Meets the basic quality criteria for the DIA 157 as cited in the NRCS Field Office Technical Guide and CPS 590 Nutrient Management.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $8,830.65

Scenario Cost/Unit: $8,830.65

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, agronomist	1295	Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner.	Hours	$103.89	85	$8,830.65

Practice: 158 - Feed Management Design and Implementation Activity

Scenario #4 - Feed Management Plan

Scenario Description:

The owner/operator of an Animal Feeding Operation (AFO) has not received a written Feed Management Plan that addresses all resource concerns present on the facility. Various levels of management and conservation implementation has occurred in the operation. Little documentation of the methods of feed management used and practices installed exists, and the producer is not likely to developed a complete forage inventory or nutrient analysis. The producer may or may not have a conservation plan or a nutrient management plan. Nutrient management related resource concerns on the operation remain to be addressed through the development of a complete activity plan including management and conservation practices for proper quantity and quality of available nutrients, feedstuffs, and/or additives fed to livestock or poultry that may be present on the operation. Present operation and feed methodology poses risk of feeding excessive amounts of nutrients in animal manure which result in negative impacts to water quality and odor resource concerns. Negative water and air quality impacts as well as farmstead safety and security issues may remain on the AFO, and inadequate record-keeping nutrient, inspection and monitoring of the existing operation may need further improvement.

Before Situation:

Producer does not have a plan or has limited knowledge of management of feed, nutrients, feedstuffs, or nutritional additives provided to domestic livestock and poultry. The producer currently manages feed without a plan which would address livestock production limitations and water and air quality resource concern impacts. Producer currently lacks plan to provide proper balance of forage, grains or other feeds and supplements to assure domestic animal nutritional needs are met without negatively impacting water and air quality. Producer is interested in management of feed for domestic animals to maximize profit margin, reduce costs, improve or address livestock production opportunities, and for other environmental benefits. Producer is willing to collaborate with a certified Technical Service Provider (TSP) to develop a plan, and to collect/coordinate data and records to determine current nutritional needs. Associated Practice(s): 590-Nutrient Management

After Situation:

Participant has obtained services from a certified TSP for development of the Feed Management plan (CAP). The criteria requires the plan to meet quality criteria for applicable natural resource concerns and provides for opportunities to identify and implement conservation practices related to management of feed, forages, or delivery of supplements to maximize efficient feeding operations and livestock growth. The plan may serve as the basis for implementation of the primary conservation practice 592 - Feed Management. If applicable, the plan may also be developed to complement Comprehensive Nutrient Management Plans (CNMP) or to help meet requirements of NRCS practice standard 590 - Nutrient Management. The plan may include recommendations for addressing associated natural resource concerns with other conservation practices.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $4,155.60

Scenario Cost/Unit: $4,155.60

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, agronomist	1295	Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner.	Hours	$103.89	40	$4,155.60

Practice: 159 - Grazing Management Design and Implementation Activity

Scenario #4 - Grazing Management, Small Operation, greater than 10,000 acres

Scenario Description:

Small agricultural operation with greater than 10,000 acres grazed land. Natural Resource Concern: Soil erosion, water quality, fish and wildlife, plant condition, and all other appropriate resource concerns.

Before Situation:

Producer has no plan or limited knowledge of management of livestock or other animals on grazed land resources. The producer currently manages animals without a plan to address identified natural resource concerns. Producer is interested in management of animals to maximize profit margins, reduce costs, improve or address wildlife opportunities, and for other environmental benefit. Producer is willing to collaborate with a certified TSP to develop a plan and collect/coordinate data recording to monitor per requirements of plan. Associated Practices: In addition to the essential practices listed previously, addition practices to consider include: Channel Bank Vegetation, Prescribed Burning, Critical Area Planting, Pond, Windbreak/Shelterbelt Establishment, Silvopasture Establishment, Riparian Herbaceous Cover, Stream Habitat Improvement and Management, Pipeline, Heavy Use Area Protection, Spring Development, and Animal Trails and Walkways.

After Situation:

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Grazing Management Plan-DIA. The DIA criteria requires the plan to meet quality criteria for applicable resource concerns and provide for opportunities to implement essential conservation practices: Brush Management, Fencing, Firebreak, Forage Harvest Management, Grazing Land Mechanical Treatment, Herbaceous Weed Treatment, Nutrient Management, Forage and Biomass Planting, Prescribed Grazing, Range Planting, Access Control, and Watering Facilities. As addressed in the DIA criteria, the plan may include recommendations for associated conservation practices which address other related resource concerns. The DIA meets the basic quality criteria for the 159 plan as cited in the NRCS Field Office Technical Guide.

Feature Measure: 1

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $9,089.10

Scenario Cost/Unit: $9,089.10

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, range conservation	1299	Conservation Activity Plan labor to study, plan the use and management of rangelands to maximize their use in a sustainable manner. Range managers may inventory soils, plants, and animals; develop resource management plans; identify monitoring methods and collect data using those methods to determine if resource management objectives are being met or if adjustments to management activities are needed. For example, they may help ranchers attain optimum livestock production by determining the number and kind of animals to graze, the grazing system to use, and the best season for grazing. Cost associated with this component includes overhead and benefits (market price).	Hours	$100.99	90	$9,089.10

Practice: 159 - Grazing Management Design and Implementation Activity

Scenario #20 - Grazing Management, Small Operation, 5,001-10,000 acres

Scenario Description:

Small agricultural operation with 5,001 to 10,000 acres grazed land. Natural Resource Concern: Soil erosion, water quality, fish and wildlife, plant condition, and all other appropriate resource concerns.

Before Situation:

Producer has no plan or limited knowledge of management of livestock or other animals on grazed land resources. The producer currently manages animals without a plan to address identified natural resource concerns. Producer is interested in management of animals to maximize profit margins, reduce costs, improve or address wildlife opportunities, and for other environmental benefit. Producer is willing to collaborate with a certified TSP to develop a plan and collect/coordinate data recording to monitor per requirements of plan. Associated Practices: In addition to the essential practices listed previously, addition practices to consider include: Channel Bank Vegetation, Prescribed Burning, Critical Area Planting, Pond, Windbreak/Shelterbelt Establishment, Silvopasture Establishment, Riparian Herbaceous Cover, Stream Habitat Improvement and Management, Pipeline, Heavy Use Area Protection, Spring Development, and Animal Trails and Walkways.

After Situation:

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Grazing Management Plan-DIA. The DIA criteria requires the plan to meet quality criteria for applicable resource concerns and provide for opportunities to implement essential conservation practices: Brush Management, Fencing, Firebreak, Forage Harvest Management, Grazing Land Mechanical Treatment, Herbaceous Weed Treatment, Nutrient Management, Forage and Biomass Planting, Prescribed Grazing, Range Planting, Access Control, and Watering Facilities. As addressed in the DIA criteria, the plan may include recommendations for associated conservation practices which address other related resource concerns. The DIA meets the basic quality criteria for the 159 plan as cited in the NRCS Field Office Technical Guide.

Feature Measure: 1

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $8,079.20

Scenario Cost/Unit: $8,079.20

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, range conservation	1299	Conservation Activity Plan labor to study, plan the use and management of rangelands to maximize their use in a sustainable manner. Range managers may inventory soils, plants, and animals; develop resource management plans; identify monitoring methods and collect data using those methods to determine if resource management objectives are being met or if adjustments to management activities are needed. For example, they may help ranchers attain optimum livestock production by determining the number and kind of animals to graze, the grazing system to use, and the best season for grazing. Cost associated with this component includes overhead and benefits (market price).	Hours	$100.99	80	$8,079.20

Practice: 159 - Grazing Management Design and Implementation Activity

Scenario #36 - Grazing Management, Small Operation, 501-1,500 acres

Scenario Description:

Small agricultural operation with 501 to 1,500 acres grazed land. Natural Resource Concern: Soil erosion, water quality, fish and wildlife, plant condition, and all other appropriate resource concerns.

Before Situation:

Producer has no plan or limited knowledge of management of livestock or other animals on grazed land resources. The producer currently manages animals without a plan to address identified natural resource concerns. Producer is interested in management of animals to maximize profit margins, reduce costs, improve or address wildlife opportunities, and for other environmental benefit. Producer is willing to collaborate with a certified TSP to develop a plan and collect/coordinate data recording to monitor per requirements of plan. Associated Practices: In addition to the essential practices listed previously, addition practices to consider include: Channel Bank Vegetation, Prescribed Burning, Critical Area Planting, Pond, Windbreak/Shelterbelt Establishment, Silvopasture Establishment, Riparian Herbaceous Cover, Stream Habitat Improvement and Management, Pipeline, Heavy Use Area Protection, Spring Development, and Animal Trails and Walkways.

After Situation:

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Grazing Management Plan-DIA. The DIA criteria requires the plan to meet quality criteria for applicable resource concerns and provide for opportunities to implement essential conservation practices: Brush Management, Fencing, Firebreak, Forage Harvest Management, Grazing Land Mechanical Treatment, Herbaceous Weed Treatment, Nutrient Management, Forage and Biomass Planting, Prescribed Grazing, Range Planting, Access Control, and Watering Facilities. As addressed in the DIA criteria, the plan may include recommendations for associated conservation practices which address other related resource concerns. The DIA meets the basic quality criteria for the 159 plan as cited in the NRCS Field Office Technical Guide.

Feature Measure: 1

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $6,059.40

Scenario Cost/Unit: $6,059.40

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, range conservation	1299	Conservation Activity Plan labor to study, plan the use and management of rangelands to maximize their use in a sustainable manner. Range managers may inventory soils, plants, and animals; develop resource management plans; identify monitoring methods and collect data using those methods to determine if resource management objectives are being met or if adjustments to management activities are needed. For example, they may help ranchers attain optimum livestock production by determining the number and kind of animals to graze, the grazing system to use, and the best season for grazing. Cost associated with this component includes overhead and benefits (market price).	Hours	$100.99	60	$6,059.40

Practice: 159 - Grazing Management Design and Implementation Activity

Scenario #52 - Grazing Management, Small Operation, 101-500 acres

Scenario Description:

Small agricultural operation with 101 to 500 acres grazed land. Natural Resource Concern: Soil erosion, water quality, fish and wildlife, plant condition, and all other appropriate resource concerns.

Before Situation:

Producer has no plan or limited knowledge of management of livestock or other animals on grazed land resources. The producer currently manages animals without a plan to address identified natural resource concerns. Producer is interested in management of animals to maximize profit margins, reduce costs, improve or address wildlife opportunities, and for other environmental benefit. Producer is willing to collaborate with a certified TSP to develop a plan and collect/coordinate data recording to monitor per requirements of plan. Associated Practices: In addition to the essential practices listed previously, addition practices to consider include: Channel Bank Vegetation, Prescribed Burning, Critical Area Planting, Pond, Windbreak/Shelterbelt Establishment, Silvopasture Establishment, Riparian Herbaceous Cover, Stream Habitat Improvement and Management, Pipeline, Heavy Use Area Protection, Spring Development, and Animal Trails and Walkways.

After Situation:

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Grazing Management Plan-DIA. The DIA criteria requires the plan to meet quality criteria for applicable resource concerns and provide for opportunities to implement essential conservation practices: Brush Management, Fencing, Firebreak, Forage Harvest Management, Grazing Land Mechanical Treatment, Herbaceous Weed Treatment, Nutrient Management, Forage and Biomass Planting, Prescribed Grazing, Range Planting, Access Control, and Watering Facilities. As addressed in the DIA criteria, the plan may include recommendations for associated conservation practices which address other related resource concerns. The DIA meets the basic quality criteria for the 159 plan as cited in the NRCS Field Office Technical Guide.

Feature Measure: 1

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $5,049.50

Scenario Cost/Unit: $5,049.50

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, range conservation	1299	Conservation Activity Plan labor to study, plan the use and management of rangelands to maximize their use in a sustainable manner. Range managers may inventory soils, plants, and animals; develop resource management plans; identify monitoring methods and collect data using those methods to determine if resource management objectives are being met or if adjustments to management activities are needed. For example, they may help ranchers attain optimum livestock production by determining the number and kind of animals to graze, the grazing system to use, and the best season for grazing. Cost associated with this component includes overhead and benefits (market price).	Hours	$100.99	50	$5,049.50

Practice: 159 - Grazing Management Design and Implementation Activity

Scenario #68 - Grazing Management, Small Operation, less than 100 acres

Scenario Description:

Small agricultural operation with less than 100 acres grazed land. Natural Resource Concern: Soil erosion, water quality, fish and wildlife, plant condition, and all other appropriate resource concerns.

Before Situation:

Producer has no plan or limited knowledge of management of livestock or other animals on grazed land resources. The producer currently manages animals without a plan to address identified natural resource concerns. Producer is interested in management of animals to maximize profit margins, reduce costs, improve or address wildlife opportunities, and for other environmental benefit. Producer is willing to collaborate with a certified TSP to develop a plan and collect/coordinate data recording to monitor per requirements of plan. Associated Practices: In addition to the essential practices listed previously, addition practices to consider include: Channel Bank Vegetation, Prescribed Burning, Critical Area Planting, Pond, Windbreak/Shelterbelt Establishment, Silvopasture Establishment, Riparian Herbaceous Cover, Stream Habitat Improvement and Management, Pipeline, Heavy Use Area Protection, Spring Development, and Animal Trails and Walkways.

After Situation:

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Grazing Management Plan-DIA. The DIA criteria requires the plan to meet quality criteria for applicable resource concerns and provide for opportunities to implement essential conservation practices: Brush Management, Fencing, Firebreak, Forage Harvest Management, Grazing Land Mechanical Treatment, Herbaceous Weed Treatment, Nutrient Management, Forage and Biomass Planting, Prescribed Grazing, Range Planting, Access Control, and Watering Facilities. As addressed in the DIA criteria, the plan may include recommendations for associated conservation practices which address other related resource concerns. The DIA meets the basic quality criteria for the 159 plan as cited in the NRCS Field Office Technical Guide.

Feature Measure: 1

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $4,039.60

Scenario Cost/Unit: $4,039.60

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, range conservation	1299	Conservation Activity Plan labor to study, plan the use and management of rangelands to maximize their use in a sustainable manner. Range managers may inventory soils, plants, and animals; develop resource management plans; identify monitoring methods and collect data using those methods to determine if resource management objectives are being met or if adjustments to management activities are needed. For example, they may help ranchers attain optimum livestock production by determining the number and kind of animals to graze, the grazing system to use, and the best season for grazing. Cost associated with this component includes overhead and benefits (market price).	Hours	$100.99	40	$4,039.60

Practice: 159 - Grazing Management Design and Implementation Activity

Scenario #84 - Grazing Management, Small Operation, 1,501-5,000 acres

Scenario Description:

Small agricultural operation with 1,501 to 5,000 acres grazed land. Natural Resource Concern: Soil erosion, water quality, fish and wildlife, plant condition, and all other appropriate resource concerns.

Before Situation:

Producer has no plan or limited knowledge of management of livestock or other animals on grazed land resources. The producer currently manages animals without a plan to address identified natural resource concerns. Producer is interested in management of animals to maximize profit margins, reduce costs, improve or address wildlife opportunities, and for other environmental benefit. Producer is willing to collaborate with a certified TSP to develop a plan and collect/coordinate data recording to monitor per requirements of plan. Associated Practices: In addition to the essential practices listed previously, addition practices to consider include: Channel Bank Vegetation, Prescribed Burning, Critical Area Planting, Pond, Windbreak/Shelterbelt Establishment, Silvopasture Establishment, Riparian Herbaceous Cover, Stream Habitat Improvement and Management, Pipeline, Heavy Use Area Protection, Spring Development, and Animal Trails and Walkways.

After Situation:

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Grazing Management Plan-DIA. The DIA criteria requires the plan to meet quality criteria for applicable resource concerns and provide for opportunities to implement essential conservation practices: Brush Management, Fencing, Firebreak, Forage Harvest Management, Grazing Land Mechanical Treatment, Herbaceous Weed Treatment, Nutrient Management, Forage and Biomass Planting, Prescribed Grazing, Range Planting, Access Control, and Watering Facilities. As addressed in the DIA criteria, the plan may include recommendations for associated conservation practices which address other related resource concerns. The DIA meets the basic quality criteria for the 159 plan as cited in the NRCS Field Office Technical Guide.

Feature Measure: 1

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $7,069.30

Scenario Cost/Unit: $7,069.30

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, range conservation	1299	Conservation Activity Plan labor to study, plan the use and management of rangelands to maximize their use in a sustainable manner. Range managers may inventory soils, plants, and animals; develop resource management plans; identify monitoring methods and collect data using those methods to determine if resource management objectives are being met or if adjustments to management activities are needed. For example, they may help ranchers attain optimum livestock production by determining the number and kind of animals to graze, the grazing system to use, and the best season for grazing. Cost associated with this component includes overhead and benefits (market price).	Hours	$100.99	70	$7,069.30

Practice: 160 - Prescribed Burning Design and Implementation Activity

Scenario #4 - Prescribed Burning Plan DIA less than or equal to 20 acres

Scenario Description:

Non Industrial Private Forest Land, Pasture or Range Land typically less than or equal to 20 acres in size and is dominated by fire tolerant species that are competing with undesirable vegetation and accumulating fuel load. Natural Resource Concern: Fish and Wildlife; Soil Erosion; Soil Condition; Water Quality; Plant Condition.

Before Situation:

Producer has no existing plan or an obsolete plan that is insufficient for current stand condition. A Prescribed Burning Plan or DIA is needed to enable the producer to apply for financial assistance through EQIP or other financial assistance programs in order to implement needed conservation practices. Associated Practices: 394, 383, 384, 528, 314, 315, 550, 644, 645, 659, 342, 647, 460, 643, 666, 595

After Situation:

After EQIP contract approval, participant has obtained services from a certified Technical Service Provider (TSP) for development of the Prescribed Burning DIA. The DIA criteria require the plan to identify approved Field Office Technical Guide conservation practices where needed to address identified resource concerns. The Prescribed Burning Plan DIA is not considered a Forest Management Plan, a Reforestation Plan, a Forest Harvest Plan, or a Prescribed Grazing Plan, but should complement the needs of those plans if they exist and if desired by the decision maker. The DIA plan will fully describe all aspects of the prescribed burn including, but not limited to objectives of the burn (i.e., site preparation, wildlife habitat, etc.), site conditions (i.e., fuel load, fuel type, etc.), implementation strategies (i.e., method of ignition, number of persons required, equipment needs, etc.), tolerable weather parameters (i.e., wind direction, relative humidity, mixing height, etc.) and identification of Smoke Sensitive Areas. Additional DIA plan criteria are detailed in the Field Office Technical Guide and potentially state developed technical criteria.

Feature Measure: 1

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $1,217.55

Scenario Cost/Unit: $1,217.55

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, forester	1302	Conservation Activity Plan labor to manage nonindustrial private forest lands for conservation, economic, and recreational purposes. Will inventory the type, amount, and location of standing timber and appraise the timber's condition. Will determine how to conserve wildlife habitats, improve water quality and soil stability, and how best to comply with environmental regulations. May devise plans for planting and growing new trees, monitoring trees for healthy growth, determining optimal thinning schedules, and increasing carbon capture and storage.	Hours	$81.17	15	$1,217.55

Practice: 160 - Prescribed Burning Design and Implementation Activity

Scenario #20 - Prescribed Burning Plan (DIA) greater than 1,000 acres

Scenario Description:

Non Industrial Private Forest Land, Pasture or Range Land typically greater than 1,000 acres in size and is dominated by fire tolerant species that are competing with undesirable vegetation and accumulating fuel load. Natural Resource Concern: Fish and Wildlife; Soil Erosion; Soil Condition; Water Quality; Plant Condition.

Before Situation:

Producer has no existing plan or an obsolete plan that is insufficient for current stand condition. A Prescribed Burning Plan or DIA is needed to enable the producer to apply for financial assistance through EQIP or other financial assistance programs in order to implement needed conservation practices. Associated Practices: 394, 383, 384, 528, 314, 315, 550, 644, 645, 659, 342, 647, 460, 643, 666, 595

After Situation:

After EQIP contract approval, participant has obtained services from a certified Technical Service Provider (TSP) for development of the Prescribed Burning Plan (DIA). The DIA criteria require the plan to identify approved Field Office Technical Guide conservation practices where needed to address identified resource concerns. The Prescribed Burning Plan DIA is not considered a Forest Management Plan, a Reforestation Plan, a Forest Harvest Plan, or a Prescribed Grazing Plan, but should complement the needs of those plans if they exist and if desired by the decision maker. The DIA plan will fully describe all aspects of the prescribed burn including, but not limited to objectives of the burn (i.e., site preparation, wildlife habitat, etc.), site conditions (i.e., fuel load, fuel type, etc.), implementation strategies (i.e., method of ignition, number of persons required, equipment needs, etc.), tolerable weather parameters (i.e., wind direction, relative humidity, mixing height, etc.) and identification of Smoke Sensitive Areas. Additional DIA plan criteria are detailed in the Field Office Technical Guide and potentially state developed technical criteria.

Feature Measure: 1

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $4,870.20

Scenario Cost/Unit: $4,870.20

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, forester	1302	Conservation Activity Plan labor to manage nonindustrial private forest lands for conservation, economic, and recreational purposes. Will inventory the type, amount, and location of standing timber and appraise the timber's condition. Will determine how to conserve wildlife habitats, improve water quality and soil stability, and how best to comply with environmental regulations. May devise plans for planting and growing new trees, monitoring trees for healthy growth, determining optimal thinning schedules, and increasing carbon capture and storage.	Hours	$81.17	60	$4,870.20

Practice: 160 - Prescribed Burning Design and Implementation Activity

Scenario #36 - Prescribed Burning Plan-DIA greater than 501 acres and less than 1,000 acres

Scenario Description:

Non Industrial Private Forest Land, Pasture or Range Land typically greater than 501 acres and less than 1,000 acres in size and is dominated by fire tolerant species that are competing with undesirable vegetation and accumulating fuel load. Natural Resource Concern: Fish and Wildlife; Soil Erosion; Soil Condition; Water Quality; Plant Condition.

Before Situation:

Producer has no existing plan or an obsolete plan that is insufficient for current stand condition. A Prescribed Burning Plan or DIA is needed to enable the producer to apply for financial assistance through EQIP or other financial assistance programs in order to implement needed conservation practices. Associated Practices: 394, 383, 384, 528, 314, 315, 550, 644, 645, 659, 342, 647, 460, 643, 666, 595

After Situation:

After EQIP contract approval, participant has obtained services from a certified Technical Service Provider (TSP) for development of the Prescribed Burning Plan DIA. The DIA criteria require the plan to identify approved Field Office Technical Guide conservation practices where needed to address identified resource concerns. The Prescribed Burning Plan DIA is not considered a Forest Management Plan, a Reforestation Plan, a Forest Harvest Plan, or a Prescribed Grazing Plan, but should complement the needs of those plans if they exist and if desired by the decision maker. The DIA plan will fully describe all aspects of the prescribed burn including, but not limited to objectives of the burn (i.e., site preparation, wildlife habitat, etc.), site conditions (i.e., fuel load, fuel type, etc.), implementation strategies (i.e., method of ignition, number of persons required, equipment needs, etc.), tolerable weather parameters (i.e., wind direction, relative humidity, mixing height, etc.) and identification of Smoke Sensitive Areas. Additional DIA plan criteria are detailed in the Field Office Technical Guide and potentially state developed technical criteria.

Feature Measure: 1

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $3,246.80

Scenario Cost/Unit: $3,246.80

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, forester	1302	Conservation Activity Plan labor to manage nonindustrial private forest lands for conservation, economic, and recreational purposes. Will inventory the type, amount, and location of standing timber and appraise the timber's condition. Will determine how to conserve wildlife habitats, improve water quality and soil stability, and how best to comply with environmental regulations. May devise plans for planting and growing new trees, monitoring trees for healthy growth, determining optimal thinning schedules, and increasing carbon capture and storage.	Hours	$81.17	40	$3,246.80

Practice: 160 - Prescribed Burning Design and Implementation Activity

Scenario #52 - Prescribed Burning Plan -DIA greater than 251 acres and less than 500 acres

Scenario Description:

Non Industrial Private Forest Land, Pasture or Range Land typically greater than 251 acres and less than 500 acres in size and is dominated by fire tolerant species that are competing with undesirable vegetation and accumulating fuel load. Natural Resource Concern: Fish and Wildlife; Soil Erosion; Soil Condition; Water Quality; Plant Condition.

Before Situation:

Producer has no existing plan or an obsolete plan that is insufficient for current stand condition. A Prescribed Burning Plan or DIA is needed to enable the producer to apply for financial assistance through EQIP or other financial assistance programs in order to implement needed conservation practices. Associated Practices: 394, 383, 384, 528, 314, 315, 550, 644, 645, 659, 342, 647, 460, 643, 666, 595

After Situation:

After EQIP contract approval, participant has obtained services from a certified Technical Service Provider (TSP) for development of the Prescribed Burning Plan or DIA. The DIA criteria require the plan to identify approved Field Office Technical Guide conservation practices where needed to address identified resource concerns. The Prescribed Burning Plan DIA is not considered a Forest Management Plan, a Reforestation Plan, a Forest Harvest Plan, or a Prescribed Grazing Plan, but should complement the needs of those plans if they exist and if desired by the decision maker. The DIA plan will fully describe all aspects of the prescribed burn including, but not limited to objectives of the burn (i.e., site preparation, wildlife habitat, etc.), site conditions (i.e., fuel load, fuel type, etc.), implementation strategies (i.e., method of ignition, number of persons required, equipment needs, etc.), tolerable weather parameters (i.e., wind direction, relative humidity, mixing height, etc.) and identification of Smoke Sensitive Areas. Additional DIA plan criteria are detailed in the Field Office Technical Guide and potentially state developed technical criteria.

Feature Measure: 1

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $2,435.10

Scenario Cost/Unit: $2,435.10

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, forester	1302	Conservation Activity Plan labor to manage nonindustrial private forest lands for conservation, economic, and recreational purposes. Will inventory the type, amount, and location of standing timber and appraise the timber's condition. Will determine how to conserve wildlife habitats, improve water quality and soil stability, and how best to comply with environmental regulations. May devise plans for planting and growing new trees, monitoring trees for healthy growth, determining optimal thinning schedules, and increasing carbon capture and storage.	Hours	$81.17	30	$2,435.10

Practice: 160 - Prescribed Burning Design and Implementation Activity

Scenario #68 - Prescribed Burning Plan (DIA) greater than 101 acres and less than 250 acres

Scenario Description:

Non Industrial Private Forest Land, Pasture or Range Land typically greater that 101 acres in size and less than 250 acres and is dominated by fire tolerant species that are competing with undesirable vegetation and accumulating fuel load. Natural Resource Concern: Fish and Wildlife; Soil Erosion; Soil Condition; Water Quality; Plant Condition.

Before Situation:

Producer has no existing plan or an obsolete plan that is insufficient for current stand condition. A Prescribed Burning Plan or DIA is needed to enable the producer to apply for financial assistance through EQIP or other financial assistance programs in order to implement needed conservation practices. Associated Practices: 394, 383, 384, 528, 314, 315, 550, 644, 645, 659, 342, 647, 460, 643, 666, 595

After Situation:

After EQIP contract approval, participant has obtained services from a certified Technical Service Provider (TSP) for development of the Prescribed Burning Plan DIA. The DIA criteria require the plan to identify approved Field Office Technical Guide conservation practices where needed to address identified resource concerns. The Prescribed Burning Plan DIA is not considered a Forest Management Plan, a Reforestation Plan, a Forest Harvest Plan, or a Prescribed Grazing Plan, but should complement the needs of those plans if they exist and if desired by the decision maker. The DIA plan will fully describe all aspects of the prescribed burn including, but not limited to objectives of the burn (i.e., site preparation, wildlife habitat, etc.), site conditions (i.e., fuel load, fuel type, etc.), implementation strategies (i.e., method of ignition, number of persons required, equipment needs, etc.), tolerable weather parameters (i.e., wind direction, relative humidity, mixing height, etc.) and identification of Smoke Sensitive Areas. Additional DIA plan criteria are detailed in the Field Office Technical Guide and potentially state developed technical criteria.

Feature Measure: 1

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $2,029.25

Scenario Cost/Unit: $2,029.25

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, forester	1302	Conservation Activity Plan labor to manage nonindustrial private forest lands for conservation, economic, and recreational purposes. Will inventory the type, amount, and location of standing timber and appraise the timber's condition. Will determine how to conserve wildlife habitats, improve water quality and soil stability, and how best to comply with environmental regulations. May devise plans for planting and growing new trees, monitoring trees for healthy growth, determining optimal thinning schedules, and increasing carbon capture and storage.	Hours	$81.17	25	$2,029.25

Practice: 160 - Prescribed Burning Design and Implementation Activity

Scenario #84 - Prescribed Burning Plan (DIA) greater than 21 acres and less than 100 acres

Scenario Description:

Non Industrial Private Forest Land, Pasture or Range Land typically greater than 21 acres and less than 100 acres in size and is dominated by fire tolerant species that are competing with undesirable vegetation and accumulating fuel load. Natural Resource Concern: Fish and Wildlife; Soil Erosion; Soil Condition; Water Quality; Plant Condition.

Before Situation:

Producer has no existing plan or an obsolete plan that is insufficient for current stand condition. A Prescribed Burning Plan or DIA is needed to enable the producer to apply for financial assistance through EQIP or other financial assistance programs in order to implement needed conservation practices. Associated Practices: 394, 383, 384, 528, 314, 315, 550, 644, 645, 659, 342, 647, 460, 643, 666, 595

After Situation:

After EQIP contract approval, participant has obtained services from a certified Technical Service Provider (TSP) for development of the Prescribed Burning Plan or DIA. The DIA criteria require the plan to identify approved Field Office Technical Guide conservation practices where needed to address identified resource concerns. The Prescribed Burning Plan DIA is not considered a Forest Management Plan, a Reforestation Plan, a Forest Harvest Plan, or a Prescribed Grazing Plan, but should complement the needs of those plans if they exist and if desired by the decision maker. The DIA plan will fully describe all aspects of the prescribed burn including, but not limited to objectives of the burn (i.e., site preparation, wildlife habitat, etc.), site conditions (i.e., fuel load, fuel type, etc.), implementation strategies (i.e., method of ignition, number of persons required, equipment needs, etc.), tolerable weather parameters (i.e., wind direction, relative humidity, mixing height, etc.) and identification of Smoke Sensitive Areas. Additional DIA plan criteria are detailed in the Field Office Technical Guide and potentially state developed technical criteria.

Feature Measure: 1

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $1,623.40

Scenario Cost/Unit: $1,623.40

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, forester	1302	Conservation Activity Plan labor to manage nonindustrial private forest lands for conservation, economic, and recreational purposes. Will inventory the type, amount, and location of standing timber and appraise the timber's condition. Will determine how to conserve wildlife habitats, improve water quality and soil stability, and how best to comply with environmental regulations. May devise plans for planting and growing new trees, monitoring trees for healthy growth, determining optimal thinning schedules, and increasing carbon capture and storage.	Hours	$81.17	20	$1,623.40

Practice: 161 - Pest Management Conservation System Design and Implementation Activity

Scenario #4 - High Complexity, 5+ CPS

Scenario Description:

Agricultural operation where producer will implement high complexity conservation practices and PAMS activities as part of an overall Pest Management Conservation System. Natural resources relating to CPS 595 Pest Management Conservation System will be addressed. Will address resource concerns with 5 or more, high complexity conservation practices and/or PAMS activities.

Before Situation:

Agricultural operation currently managed using few pest management strategies. The producer will collaborate with a certified TSP to develop implementation requirements and/or designs and specifications for all conservation practices and PAMS activities to address resource concerns. High complexity conservation practices may include: prescribed grazing, irrigation water management, diverse conservation plantings and complex practices for such as Agrichemical Handling Facility and Vegetated Treatment Area . High Complexity PAMS activities include: field sanitation , intensive scouting etc.

After Situation:

After NRCS program contract is approved, participant will obtain services from a certified TSP to develop the required implementation requirements and/or designs and specifications for all conservation practices required to address resource concerns. All practices installed according to field office technical guide requirements. PAMS activities according to IPM plan and Land Grant University guidelines. Implementation requirements, designs and specifications all complete.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $8,106.76

Scenario Cost/Unit: $8,106.76

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, agronomist	1295	Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner.	Hours	$103.89	40	$4,155.60
Cap Labor, conservation scientist	1300	Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering.	Hours	$83.34	40	$3,333.60
Cap Labor, Survey and Mapping Technician	1591	Conservation Activity Plan labor to perform surveying and mapping duties, usually under the direction of an engineer, surveyor, cartographer, or photogrammetrist to obtain data used for construction, mapmaking, boundary location, mining, or other purposes. May calculate mapmaking information and create maps from source data, such as surveying notes, aerial photography, satellite data, or other maps to show topographical features, political boundaries, and other features. May verify accuracy and completeness of maps.	Hours	$61.08	8	$488.64
CAP Labor, Administrative Assistant	1739	Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers.	Hours	$32.23	4	$128.92

Practice: 161 - Pest Management Conservation System Design and Implementation Activity

Scenario #20 - High Complexity, 1 -4 CPS

Scenario Description:

Agricultural operation where producer will implement high complexity conservation practices and PAMS activities as part of an overall Pest Management Conservation System. Natural resources relating to CPS 595 Pest Management Conservation System will be addressed. Will address resource concerns with 1 - 4, high complexity conservation practices and/or PAMS activities.

Before Situation:

Agricultural operation currently managed using few pest management strategies. The producer will collaborate with a certified TSP to develop implementation requirements and/or designs and specifications for all conservation practices and PAMS activities to address resource concerns. High complexity conservation practices may include: prescribed grazing, irrigation water management, diverse conservation plantings and complex practices for such as Agrichemical Handling Facility and Vegetated Treatment Area . High Complexity PAMS activities include: field sanitation , intensive scouting etc.

After Situation:

After NRCS program contract is approved, participant will obtain services from a certified TSP to develop the required implementation requirements and/or designs and specifications for all conservation practices required to address resource concerns. All practices installed according to field office technical guide requirements. PAMS activities according to IPM plan and Land Grant University guidelines. Implementation requirements, designs and specifications all complete.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $6,576.69

Scenario Cost/Unit: $6,576.69

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, agronomist	1295	Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner.	Hours	$103.89	32	$3,324.48
Cap Labor, conservation scientist	1300	Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering.	Hours	$83.34	32	$2,666.88
Cap Labor, Survey and Mapping Technician	1591	Conservation Activity Plan labor to perform surveying and mapping duties, usually under the direction of an engineer, surveyor, cartographer, or photogrammetrist to obtain data used for construction, mapmaking, boundary location, mining, or other purposes. May calculate mapmaking information and create maps from source data, such as surveying notes, aerial photography, satellite data, or other maps to show topographical features, political boundaries, and other features. May verify accuracy and completeness of maps.	Hours	$61.08	8	$488.64
CAP Labor, Administrative Assistant	1739	Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers.	Hours	$32.23	3	$96.69

Practice: 161 - Pest Management Conservation System Design and Implementation Activity

Scenario #36 - Low Complexity, 5+ CPS

Scenario Description:

Agricultural operation where producer will implement low complexity conservation practices and PAMS activities as part of an overall Pest Management Conservation System. Natural resources relating to CPS 595 Pest Management Conservation System will be addressed. Will address resource concerns with 5 or more, low complexity conservation practices.

Before Situation:

Agricultural operation currently managed using few pest management strategies. The producer will collaborate with a certified TSP to develop implementation requirements and/or designs and specifications for all conservation practices and PAMS activities to address resource concerns. Low complexity conservation practices may include: cover crop, crop rotation, reduced tillage, conservation plantings and minor structural practices for erosion control such as grass waterways and diversions. Low Complexity PAMS activities include: using pest resistant varieties, trap crops, scouting etc.

After Situation:

After NRCS program contract is approved, participant will obtain services from a certified TSP to develop the required implementation requirements and/or designs and specifications for all conservation practices required to address resource concerns. All practices installed according to field office technical guide requirements. PAMS activities according to IPM plan and Land Grant University guidelines. Implementation requirements, designs and specifications all complete.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $4,622.44

Scenario Cost/Unit: $4,622.44

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, agronomist	1295	Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner.	Hours	$103.89	24	$2,493.36
Cap Labor, conservation scientist	1300	Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering.	Hours	$83.34	24	$2,000.16
CAP Labor, Administrative Assistant	1739	Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers.	Hours	$32.23	4	$128.92

Practice: 161 - Pest Management Conservation System Design and Implementation Activity

Scenario #52 - Low Complexity 1-4 CPS

Scenario Description:

Agricultural operation where producer will implement low complexity conservation practices and PAMS activities as part of an overall Pest Management Conservation System. Natural resources relating to CPS 595 Pest Management Conservation System will be addressed. Will address resource concerns with 1 - 4, low complexity conservation practices.

Before Situation:

Agricultural operation currently managed using few pest management strategies. The producer will collaborate with a certified TSP to develop implementation requirements and/or designs and specifications for all conservation practices and PAMS activities to address resource concerns. Low complexity conservation practices may include: cover crop, crop rotation, reduced tillage, conservation plantings and minor structural practices for erosion control such as grass waterways and diversions. Low Complexity PAMS activities include: using pest resistant varieties, trap crops, scouting etc.

After Situation:

After NRCS program contract is approved, participant will obtain services from a certified TSP to develop the required implementation requirements and/or designs and specifications for all conservation practices required to address resource concerns. All practices installed according to field office technical guide requirements. PAMS activities according to IPM plan and Land Grant University guidelines. Implementation requirements, designs and specifications all complete.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $3,092.37

Scenario Cost/Unit: $3,092.37

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, agronomist	1295	Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner.	Hours	$103.89	16	$1,662.24
Cap Labor, conservation scientist	1300	Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering.	Hours	$83.34	16	$1,333.44
CAP Labor, Administrative Assistant	1739	Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers.	Hours	$32.23	3	$96.69

Practice: 162 - Soil Health Management Design and Implementation Activity

Scenario #4 - SHMP - Organic Crops + Livestock, <5 SHMU

Scenario Description:

Evaluate soil health concerns and develop a transitional cropping management plan to improve overall soil health and address all 4 soil health principles. The plan includes management activities or land management practices associated with crop and forage production. The soil health management plan ensures that the purposes of crop and forage production and preservation of natural resources related to soil health are compatible. May simultaneously implement 216 Soil Health Testing CEMA to evaluate baseline soil health and inventory basic or additional soil health indicators. The plan is developed for up to 5 Soil Health Management Units (SHMU) for organic crops and livestock. A SHMU is 1 or more planning land units with similar soil type, land use, and management. A SHMU and can vary in size or acreage depending on soil texture, topography, and cropping system.

Before Situation:

Agricultural producer has been farming a system that has not addressed all 4 of the soil health principles. Producer has noticed yield declines, soil degradation, or is simply interested in learning more about soil health management. Producer has collaborated with a certified TSP to develop a written Soil Health Management Plan (116).

After Situation:

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Soil Health Management Plan consistent with the criteria in DIA 162. The DIA criteria requires the plan address all 4 soil health principles. Meets the planning criteria for DIA 162 and facilitating soil health practices as referenced in FOTG.

Feature Measure: each

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $6,648.96

Scenario Cost/Unit: $6,648.96

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, agronomist	1295	Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner.	Hours	$103.89	64	$6,648.96

Practice: 162 - Soil Health Management Design and Implementation Activity

Scenario #20 - SHMP- Crops, >5

Scenario Description:

Evaluate soil health concerns and develop a transitional cropping management plan to improve overall soil health and address all 4 soil health principles. The plan includes management activities or land management practices associated with crop and forage production. The soil health management plan ensures that the purposes of crop and forage production and preservation of natural resources related to soil health are compatible. May simultaneously implement 216 Soil Health Testing CEMA to evaluate baseline soil health and inventory basic or additional soil health indicators. The plan is developed for more than 5 Soil Health Management Units (SHMU) for crops. A SHMU is 1 or more planning land units with similar soil type, land use, and management. A SHMU can vary in size or acreage depending on soil texture, topography, and cropping system.

Before Situation:

Agricultural producer has been farming a system that has not addressed all 4 of the soil health principles. Producer has noticed yield declines, soil degradation, or is simply interested in learning more about soil health management. Producer has a written conservation plan including core soil health practices or has collaborated with a certified TSP to develop a written Soil Health Management Plan (CPA 116).

After Situation:

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Soil Health Management Plan consistent with the criteria in DIA 162. The DIA criteria requires the plan address all 4 soil health principles. Meets the planning criteria for DIA 162 and facilitating soil health practices as referenced in FOTG.

Feature Measure: each

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $4,778.94

Scenario Cost/Unit: $4,778.94

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, agronomist	1295	Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner.	Hours	$103.89	46	$4,778.94

Practice: 162 - Soil Health Management Design and Implementation Activity

Scenario #36 - SHMP - Crops + Livestock, >5 SHMU

Scenario Description:

Evaluate soil health concerns and develop a transitional cropping management plan to improve overall soil health and address all 4 soil health principles. The plan includes management activities or land management practices associated with crop and forage production. The soil health management plan ensures that the purposes of crop and forage production and preservation of natural resources related to soil health are compatible. May simultaneously implement 216 Soil Health Testing CEMA to evaluate baseline soil health and inventory basic or additional soil health indicators. The plan is developed for 5 or more Soil Health Management Units (SHMU) for crops and livestock. A SHMU is 1 or more planning land units with similar soil type, land use, and management. A SHMU can vary in size or acreage depending on soil texture, topography, and cropping system.

Before Situation:

Agricultural producer has been farming a system that has not addressed all 4 of the soil health principles. Producer has noticed yield declines, soil degradation, or is simply interested in learning more about soil health management. Producer has a written conservation plan including core soil health practices or has collaborated with a certified TSP to develop a written Soil Health Management Plan (CPA 116).

After Situation:

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Soil Health Management Plan consistent with the criteria in DIA 162. The DIA criteria requires the plan address all 4 soil health principles. Meets the planning criteria for DIA 162 and facilitating soil health practices as referenced in FOTG.

Feature Measure: each

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $5,194.50

Scenario Cost/Unit: $5,194.50

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, agronomist	1295	Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner.	Hours	$103.89	50	$5,194.50

Practice: 162 - Soil Health Management Design and Implementation Activity

Scenario #52 - Small Farm

Scenario Description:

Evaluate soil health concerns and develop a transitional cropping management plan to improve overall soil health and address all 4 soil health principles. The plan includes management activities or land management practices associated with crop and forage production. The soil health management plan ensures that the purposes of crop and forage production and preservation of natural resources related to soil health are compatible. May simultaneously implement 216 Soil Health Testing CEMA to evaluate baseline soil health and inventory basic or additional soil health indicators. The plan is developed for a small farm operation of less than 10 acres.

Before Situation:

Agricultural producer has been farming a system that has not addressed all 4 of the soil health principles. Producer has noticed yield declines, soil degradation, or is simply interested in learning more about soil health management. Producer has collaborated with a certified TSP to develop a written Soil Health Management Plan (116).

After Situation:

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Soil Health Management Plan consistent with the criteria in DIA 162. The DIA criteria requires the plan address all 4 soil health principles. Meets the planning criteria for DIA 162 and facilitating soil health practices as referenced in FOTG.

Feature Measure: each

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $3,116.70

Scenario Cost/Unit: $3,116.70

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, agronomist	1295	Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner.	Hours	$103.89	30	$3,116.70

Practice: 162 - Soil Health Management Design and Implementation Activity

Scenario #68 - SHMP - Crops, <5 SHMUs

Scenario Description:

Evaluate soil health concerns and develop a transitional cropping management plan to improve overall soil health and address all 4 soil health principles. The plan includes management activities or land management practices associated with crop and forage production. The soil health management plan ensures that the purposes of crop and forage production and preservation of natural resources related to soil health are compatible. May simultaneously implement 216 Soil Health Testing CEMA to evaluate baseline soil health and inventory basic or additional soil health indicators. The plan is developed for fewer than 5 Soil Health Management Units (SHMU) for crops. A SHMU is 1 or more planning land units with similar soil type, land use, and management. A SHMU and can vary in size or acreage depending on soil texture, topography, and cropping system.

Before Situation:

Agricultural producer has been farming a system that has not addressed all 4 of the soil health principles. Producer has noticed yield declines, soil degradation, or is simply interested in learning more about soil health management. Producer has collaborated with a certified TSP to develop a written Soil Health Management Plan (116).

After Situation:

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Soil Health Management Plan consistent with the criteria in DIA 162. The DIA criteria requires the plan address all 4 soil health principles. Meets the planning criteria for DIA 162 and facilitating soil health practices as referenced in FOTG.

Feature Measure: each

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $3,947.82

Scenario Cost/Unit: $3,947.82

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, agronomist	1295	Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner.	Hours	$103.89	38	$3,947.82

Practice: 162 - Soil Health Management Design and Implementation Activity

Scenario #84 - SHMP - Organic Crops, <5

Scenario Description:

Evaluate soil health concerns and develop a transitional cropping management plan to improve overall soil health and address all 4 soil health principles. The plan includes management activities or land management practices associated with crop and forage production. The soil health management plan ensures that the purposes of crop and forage production and preservation of natural resources related to soil health are compatible. May simultaneously implement 216 Soil Health Testing CEMA to evaluate baseline soil health and inventory basic or additional soil health indicators. The plan is developed for fewer than 5 Soil Health Management Units (SHMU) for organic crops. A SHMU is 1 or more planning land units with similar soil type, land use, and management. A SHMU and can vary in size or acreage depending on soil texture, topography, and cropping system.

Before Situation:

Agricultural producer has been farming a system that has not addressed all 4 of the soil health principles. Producer has noticed yield declines, soil degradation, or is simply interested in learning more about soil health management. Producer has collaborated with a certified TSP to develop a written Soil Health Management Plan (CPA 116).

After Situation:

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Soil Health Management Plan consistent with the criteria in DIA 162. The DIA criteria requires the plan address all 4 soil health principles. Meets the planning criteria for DIA 162 and facilitating soil health practices as referenced in FOTG.

Feature Measure: each

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $4,571.16

Scenario Cost/Unit: $4,571.16

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, agronomist	1295	Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner.	Hours	$103.89	44	$4,571.16

Practice: 162 - Soil Health Management Design and Implementation Activity

Scenario #100 - SHMP - Crop+Livestock, <5 SHMU

Scenario Description:

Evaluate soil health concerns and develop a transitional cropping management plan to improve overall soil health and address all 4 soil health principles. The plan includes management activities or land management practices associated with crop and forage production. The soil health management plan ensures that the purposes of crop and forage production and preservation of natural resources related to soil health are compatible. May simultaneously implement 216 Soil Health Testing CEMA to evaluate baseline soil health and inventory basic or additional soil health indicators. The plan is developed for fewer than 5 Soil Health Management Units (SHMU) for crops and livestock. A SHMU is 1 or more planning land units with similar soil type, land use, and management. A SHMU can vary in size or acreage depending on soil texture, topography, and cropping system.

Before Situation:

Agricultural producer has been farming a system that has not addressed all 4 of the soil health principles. Producer has noticed yield declines, soil degradation, or is simply interested in learning more about soil health management. Producer has a written conservation plan including core soil health practices or has collaborated with a certified TSP to develop a written Soil Health Management Plan (CPA 116).

After Situation:

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Soil Health Management Plan consistent with the criteria in DIA 162. The DIA criteria requires the plan address all 4 soil health principles. Meets the planning criteria for DIA 162 and facilitating soil health practices as referenced in FOTG.

Feature Measure: each

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $4,155.60

Scenario Cost/Unit: $4,155.60

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, agronomist	1295	Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner.	Hours	$103.89	40	$4,155.60

Practice: 162 - Soil Health Management Design and Implementation Activity

Scenario #116 - SHMP - Organic Crops, >5 SHMU

Scenario Description:

Evaluate soil health concerns and develop a transitional cropping management plan to improve overall soil health and address all 4 soil health principles. The plan includes management activities or land management practices associated with crop and forage production. The soil health management plan ensures that the purposes of crop and forage production and preservation of natural resources related to soil health are compatible. May simultaneously implement 216 Soil Health Testing CEMA to evaluate baseline soil health and inventory basic or additional soil health indicators. The plan is developed for more than 5 Soil Health Management Units (SHMU) for organic crops. A SHMU is 1 or more planning land units with similar soil type, land use, and management. A SHMU can vary in size or acreage depending on soil texture, topography, and cropping system.

Before Situation:

Agricultural producer has been farming a system that has not addressed all 4 of the soil health principles. Producer has noticed yield declines, soil degradation, or is simply interested in learning more about soil health management. Producer has a written conservation plan including core soil health practices or has collaborated with a certified TSP to develop a written Soil Health Management Plan (CPA 116).

After Situation:

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Soil Health Management Plan consistent with the criteria in DIA 162. The DIA criteria requires the plan address all 4 soil health principles. Meets the planning criteria for DIA 162 and facilitating soil health practices as referenced in FOTG.

Feature Measure: each

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $6,233.40

Scenario Cost/Unit: $6,233.40

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, agronomist	1295	Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner.	Hours	$103.89	60	$6,233.40

Practice: 162 - Soil Health Management Design and Implementation Activity

Scenario #132 - SHMP - Organic Crops + Livestock, >5 SHMU

Scenario Description:

Evaluate soil health concerns and develop a transitional cropping management plan to improve overall soil health and address all 4 soil health principles. The plan includes management activities or land management practices associated with crop and forage production. The soil health management plan ensures that the purposes of crop and forage production and preservation of natural resources related to soil health are compatible. May simultaneously implement 216 Soil Health Testing CEMA to evaluate baseline soil health and inventory basic or additional soil health indicators. The plan is developed for more than 5 Soil Health Management Units (SHMU) for organic crops and livestock. A SHMU is 1 or more planning land units with similar soil type, land use, and management. A SHMU can vary in size or acreage depending on soil texture, topography, and cropping system.

Before Situation:

Agricultural producer has been farming a system that has not addressed all 4 of the soil health principles. Producer has noticed yield declines, soil degradation, or is simply interested in learning more about soil health management. Producer has a written conservation plan including core soil health practices or has collaborated with a certified TSP to develop a written Soil Health Management Plan (CPA 116).

After Situation:

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Soil Health Management Plan consistent with the criteria in DIA 162. The DIA criteria requires the plan address all 4 soil health principles. Meets the planning criteria for DIA 162 and facilitating soil health practices as referenced in FOTG.

Feature Measure: each

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $8,311.20

Scenario Cost/Unit: $8,311.20

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, agronomist	1295	Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner.	Hours	$103.89	80	$8,311.20

Practice: 163 - Irrigation Water Management Design

Scenario #4 - 1-2 Designs - Without Pump Test

Scenario Description:

An agricultural producer wishes to address irrigation water use inefficiency and all other appropriate resource concerns through an EQIP contract with at least one (1) irrigation practice scenario. The pump for the irrigation system is of known performance and less then 3 years old. Each "Design" indicates that new devices or components is closely related to other devices or components of the irrigation water management system even if numerous practices are contracted. The Irrigation Water Management DIA includes reviewing, and when needed, revising alternatives to address the identified concern(s). The Irrigation Water Management DIA documents: a) the client's final decisions related to the associated irrigation practice scenarios; and b) design deliverables described in the associated NRCS Conservation Practice Statements of Work. Natural Resource Concern(s): Insufficient Water - Inefficient Irrigation Water Use; Water Quality Degradation - Excessive sediment in surface waters, Nutrients transported to surface and groundwater, pesticides transported to surface and groundwater, pathogens and chemicals from manure, and biosolids or compost applications transported to surface and groundwater, excess salts in surface and groundwater; Degraded Plant Condition - Undesirable plant productivity and health; Inefficient Energy Use - Equipment and facilities.

Before Situation:

Producer wants to improve irrigation water management on their agricultural operation to address insufficient water, water quality degradation, degraded plant condition, or inefficient energy use concerns. Producer intends to work with a certified TSP to develop designs to implement one or more practice scenarios to address identified resource concerns using the Irrigation Water Management DIA. The DIA 163 criteria incorporates recommended measures to address insufficient water, water quality degradation, degraded plant condition, or inefficient energy use concerns. Associated Practices: Code 449-Irrigation Water Management, Code 441-Irrigation System, Microirrigation, Code 442-Sprinkler System, Code 443-Irrigation System, Surface and Subsurface, Code 430-Irrigation Pipeline, Code 428-Irrigation Ditch Lining, Code 388-Irrigation Field Ditch, Code 320-Irrigation Canal or Lateral, Code 587-Structure for Water Control, Code 436-Irrigation Reservoir, Code 447-Irrigation and Drainage Tailwater Recovery, Code 533-Pumping Plant, Code 464-Irrigation Land Leveling, Code 450-Anionic Polyacrylamide (PAM) Application, Code 610-Saline and Sodic Soil Management, or other applicable practices in the NRCS Field Office Technical Guide.

After Situation:

The producer has obtained services from a certified TSP to develop practice scenario designs using the Irrigation Water Management DIA. The DIA 163 criteria include tasks needed to document the client's decisions and design of conservation practices which address insufficient water, water quality degradation, degraded plant condition, or inefficient energy use. The Irrigation Water Management DIA meets the quality criteria for the DIA 164 activity as cited in the NRCS Field Office Technical Guide.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $7,144.62

Scenario Cost/Unit: $7,144.62

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, small surveying crew	1296	Conservation Activity Plan labor to perform surveying and mapping duties, usually under the direction of an engineer, surveyor, cartographer, or photogrammetrist to obtain data used for construction, mapmaking, boundary location, mining, or other purposes. May calculate mapmaking information and create maps from source data, such as surveying notes, aerial photography, satellite data, or other maps to show topographical features, political boundaries, and other features. Cost associated with this component includes two man field crew, equipment, vehicle, overhead, and miscellaneous supplies.	Hours	$120.67	8	$965.36
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	40	$4,470.80
Cap Labor, conservation scientist	1300	Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering.	Hours	$83.34	8	$666.72

Cap Labor, Survey and Mapping Technician	1591	Conservation Activity Plan labor to perform surveying and mapping duties, usually under the direction of an engineer, surveyor, cartographer, or photogrammetrist to obtain data used for construction, mapmaking, boundary location, mining, or other purposes. May calculate mapmaking information and create maps from source data, such as surveying notes, aerial photography, satellite data, or other maps to show topographical features, political boundaries, and other features. May verify accuracy and completeness of maps.	Hours	$61.08	16	$977.28
CAP Labor, Administrative Assistant	1739	Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers.	Hours	$32.23	2	$64.46

Practice: 163 - Irrigation Water Management Design

Scenario #20 - 3 or More Designs - Without Pump Test

Scenario Description:

An agricultural producer wishes to address irrigation water use inefficiency and all other appropriat resource concerns through an EQIP contract with multiple irrigation practice scenario. The pump for the irrigation system is of known performance and less then 3 years old. Each "Design" indicates that new devices or components is closely related to other decives or components of the irrigation water management system even if numerous practices are contracted. The Irrigation Water Management DIA includes reviewing, and, when needed, revising alternatives to address the identified concern(s). The Irrigation Water Management DIA documents: a) the client's final decisions related to the associated irrigation practice scenarios; and b) design deliverables described in the associated NRCS Conservation Practice Statements of Work. Natural Resource Concern(s): Insufficient Water - Inefficient Irrigation Water Use; Water Quality Degradation - Excessive sediment in surface waters, Nutrients transported to surface and groundwater, pesticides transported to surface and groundwater, pathogens and chemicals from manure, and biosolids or compost applications transported to surface and groundwater, excess salts in surface and groundwater; Degraded Plant Condition - Undesirable plant productivity and health; Inefficient Energy Use - Equipment and facilities.

Before Situation:

Producer wants to improve irrigation water management on their agricultural operation to address insufficient water, water quality degradation, degraded plant condition, or inefficient energy use concerns. Producer intends to work with a certified TSP to develop designs to implement one or more practice scenarios to address identified resource concerns using the Irrigation Water Management DIA. The DIA 163 criteria incorporates recommended measures to address insufficient water, water quality degradation, degraded plant condition, or inefficient energy use concerns. Associated Practices: Associated Practices: Code 449-Irrigation Water Management, Code 441-Irrigation System, Microirrigation, Code 442-Sprinkler System, Code 443-Irrigation System, Surface and Subsurface, Code 430-Irrigation Pipeline, Code 428-Irrigation Ditch Lining, Code 388-Irrigation Field Ditch, Code 320-Irrigation Canal or Lateral, Code 587-Structure for Water Control, Code 436-Irrigation Reservoir, Code 447-Irrigation and Drainage Tailwater Recovery, Code 533-Pumping Plant, Code 464-Irrigation Land Leveling, Code 450-Anionic Polyacrylamide (PAM) Application, Code 610-Saline and Sodic Soil Management, or other applicable practices in the NRCS Field Office Technical Guide.

After Situation:

The producer has obtained services from a certified TSP to develop practice scenario designs using the Drainage Water Management DIA. The DIA 164 criteria include tasks needed to document the client's decisions and design of conservation practices which address water quality, plant condition, or soil health. The Drainage Water Management DIA meets the quality criteria for the DIA 164 activity as cited in the NRCS Field Office Technical Guide.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $11,574.53

Scenario Cost/Unit: $11,574.53

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, small surveying crew	1296	Conservation Activity Plan labor to perform surveying and mapping duties, usually under the direction of an engineer, surveyor, cartographer, or photogrammetrist to obtain data used for construction, mapmaking, boundary location, mining, or other purposes. May calculate mapmaking information and create maps from source data, such as surveying notes, aerial photography, satellite data, or other maps to show topographical features, political boundaries, and other features. Cost associated with this component includes two man field crew, equipment, vehicle, overhead, and miscellaneous supplies.	Hours	$120.67	16	$1,930.72
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	56	$6,259.12
Cap Labor, conservation scientist	1300	Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering.	Hours	$83.34	16	$1,333.44

Cap Labor, Survey and Mapping Technician	1591	Conservation Activity Plan labor to perform surveying and mapping duties, usually under the direction of an engineer, surveyor, cartographer, or photogrammetrist to obtain data used for construction, mapmaking, boundary location, mining, or other purposes. May calculate mapmaking information and create maps from source data, such as surveying notes, aerial photography, satellite data, or other maps to show topographical features, political boundaries, and other features. May verify accuracy and completeness of maps.	Hours	$61.08	32	$1,954.56
CAP Labor, Administrative Assistant	1739	Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers.	Hours	$32.23	3	$96.69

Practice: 163 - Irrigation Water Management Design

Scenario #36 - 1-2 Designs - With Pump Test

Scenario Description:

An agricultural producer wishes to address irrigation water use inefficiency and all other appropriat resource concerns through an EQIP contract with multiple irrigation practice scenario through an EQIP contract with at least one (1) irrigation practice scenario. The pump for the irrigation system is of unknown performance and older than 3 years. Each "Design" indicates that new devices or components is closely related to other devices or components of the irrigation water managment system even if numerous practices are contracted. The Irrigation Water Management DIA includes reviewing, and, when needed, revising alternatives to address the identified concern(s). The Irrigation Water Management DIA documents: a) the client's final decisions related to the associated irrigation practice scenarios; and b) design deliverables described in the associated NRCS Conservation Practice Statements of Work. Natural Resource Concern(s): Insufficient Water - Inefficient Irrigation Water Use; Water Quality Degradation - Excessive sediment in surface waters, Nutrients transported to surface and groundwater, pesticides transported to surface and groundwater, pathogens and chemicals from manure, and biosolids or compost applications transported to surface and groundwater, excess salts in surface and groundwater; Degraded Plant Condition - Undesirable plant productivity and health; Inefficient Energy Use - Equipment and facilities.

Before Situation:

Producer wants to improve irrigation water management on their agricultural operation to address insufficient water, water quality degradation, degraded plant condition, or inefficient energy use concerns. The pump for the irrigation system is of unknown performance and older than 3 years. Producer intends to work with a certified TSP to develop designs to implement one or more practice scenarios to address identified resource concerns using the Irrigation Water Management DIA. The DIA 163 criteria incorporates recommended measures to address insufficient water, water quality degradation, degraded plant condition, or inefficient energy use concerns. Associated Practices: Code 449-Irrigation Water Management, Code 441-Irrigation System, Microirrigation, Code 442-Sprinkler System, Code 443-Irrigation System, Surface and Subsurface, Code 430-Irrigation Pipeline, Code 428-Irrigation Ditch Lining, Code 388-Irrigation Field Ditch, Code 320-Irrigation Canal or Lateral, Code 587-Structure for Water Control, Code 436-Irrigation Reservoir, Code 447-Irrigation and Drainage Tailwater Recovery, Code 533-Pumping Plant, Code 464-Irrigation Land Leveling, Code 450-Anionic Polyacrylamide (PAM) Application, Code 610-Saline and Sodic Soil Management, or other applicable practices in the NRCS Field Office Technical Guide.

After Situation:

The producer has obtained services from a certified TSP to develop practice scenario designs using the Irrigation Water Management DIA. The DIA 163 criteria include tasks needed to document the client's decisions and design of conservation practices which address address insufficient water, water quality degradation, degraded plant condition, or inefficient energy use. The Irrigation Water Management DIA meets the quality criteria for the DIA 163 activity as cited in the NRCS Field Office Technical Guide.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $8,480.02

Scenario Cost/Unit: $8,480.02

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, small surveying crew	1296	Conservation Activity Plan labor to perform surveying and mapping duties, usually under the direction of an engineer, surveyor, cartographer, or photogrammetrist to obtain data used for construction, mapmaking, boundary location, mining, or other purposes. May calculate mapmaking information and create maps from source data, such as surveying notes, aerial photography, satellite data, or other maps to show topographical features, political boundaries, and other features. Cost associated with this component includes two man field crew, equipment, vehicle, overhead, and miscellaneous supplies.	Hours	$120.67	8	$965.36
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	48	$5,364.96
Cap Labor, conservation scientist	1300	Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering.	Hours	$83.34	8	$666.72

Cap Labor, Survey and Mapping Technician	1591	Conservation Activity Plan labor to perform surveying and mapping duties, usually under the direction of an engineer, surveyor, cartographer, or photogrammetrist to obtain data used for construction, mapmaking, boundary location, mining, or other purposes. May calculate mapmaking information and create maps from source data, such as surveying notes, aerial photography, satellite data, or other maps to show topographical features, political boundaries, and other features. May verify accuracy and completeness of maps.	Hours	$61.08	16	$977.28
CAP Labor, Skilled	1604	Conservation Activity Plan labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$36.77	12	$441.24
CAP Labor, Administrative Assistant	1739	Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers.	Hours	$32.23	2	$64.46

Practice: 163 - Irrigation Water Management Design

Scenario #52 - 3 or More Designs - With Pump Test

Scenario Description:

An agricultural producer wishes to address irrigation water use inefficiency and all other appropriat resource concerns through an EQIP contract with multiple irrigation practice scenario through an EQIP contract with at least one (1) irrigation practice scenario. The pump for the irrigation system is of unknown performance and older than 3 years. Each "Design" indicates that new devices or components is closely related to other devices or components of the irrigation water management system even if numerous practices are contracted. The Irrigation Water Management DIA includes reviewing, and, when needed, revising alternatives to address the identified concern(s). The Irrigation Water Management DIA documents: a) the client's final decisions related to the associated irrigation practice scenarios; and b) design deliverables described in the associated NRCS Conservation Practice Statements of Work. Natural Resource Concern(s): Insufficient Water - Inefficient Irrigation Water Use; Water Quality Degradation - Excessive sediment in surface waters, Nutrients transported to surface and groundwater, pesticides transported to surface and groundwater, pathogens and chemicals from manure, and biosolids or compost applications transported to surface and groundwater, excess salts in surface and groundwater; Degraded Plant Condition - Undesirable plant productivity and health; Inefficient Energy Use - Equipment and facilities.

Before Situation:

Producer wants to improve irrigation water management on their agricultureal operation to address insufficient water, water quality degradation, degraded plant condition, or inefficient energy use concerns. The pump for the irrigation system is of unknown performance and older than 3 years. Producer intends to work with a certified TSP to develop designs to implement one or more practice scenarios to address identified resource concerns using the Irrigation Water Management DIA. The DIA 163 criteria incorporates recommended measures toaddress insufficient water, water quality degradation, degraded plant condition, or inefficient energy use concerns. Associated Practices: Code 449-Irrigation Water Management, Code 441-Irrigation System, Microirrigation, Code 442-Sprinkler System, Code 443-Irrigation System, Surface and Subsurface, Code 430-Irrigation Pipeline, Code 428-Irrigation Ditch Lining, Code 388-Irrigation Field Ditch, Code 320-Irrigation Canal or Lateral, Code 587-Structure for Water Control, Code 436-Irrigation Reservoir, Code 447-Irrigation and Drainage Tailwater Recovery, Code 533-Pumping Plant, Code 464-Irrigation Land Leveling, Code 450-Anionic Polyacrylamide (PAM) Application, Code 610-Saline and Sodic Soil Management, or other applicable practices in the NRCS Field Office Technical Guide.

After Situation:

The producer has obtained services from a certified TSP to develop practice scenario designs using the Irrigation Water Management DIA. The DIA 163 criteria include tasks needed to document the client's decisions and design of conservation practices which address insufficient water, water quality degradation, degraded plant condition, or inefficient energy use. The Irrigation Water Management DIA meets the quality criteria for the DIA 163 activity as cited in the NRCS Field Office Technical Guide.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $13,351.17

Scenario Cost/Unit: $13,351.17

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, small surveying crew	1296	Conservation Activity Plan labor to perform surveying and mapping duties, usually under the direction of an engineer, surveyor, cartographer, or photogrammetrist to obtain data used for construction, mapmaking, boundary location, mining, or other purposes. May calculate mapmaking information and create maps from source data, such as surveying notes, aerial photography, satellite data, or other maps to show topographical features, political boundaries, and other features. Cost associated with this component includes two man field crew, equipment, vehicle, overhead, and miscellaneous supplies.	Hours	$120.67	16	$1,930.72
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	64	$7,153.28
Cap Labor, conservation scientist	1300	Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering.	Hours	$83.34	16	$1,333.44

Cap Labor, Survey and Mapping Technician	1591	Conservation Activity Plan labor to perform surveying and mapping duties, usually under the direction of an engineer, surveyor, cartographer, or photogrammetrist to obtain data used for construction, mapmaking, boundary location, mining, or other purposes. May calculate mapmaking information and create maps from source data, such as surveying notes, aerial photography, satellite data, or other maps to show topographical features, political boundaries, and other features. May verify accuracy and completeness of maps.	Hours	$61.08	32	$1,954.56
CAP Labor, Skilled	1604	Conservation Activity Plan labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$36.77	24	$882.48
CAP Labor, Administrative Assistant	1739	Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers.	Hours	$32.23	3	$96.69

Practice: 164 - Drainage Water Management Design

Scenario #4 - 1-2 Designs - Tile Map Available

Scenario Description:

An agricultural producer wishes to address water quality degradation, poor plant productivity and health, and/or oxidation of organic matter in soils on a relatively flat crop field with a patterned drainage system through an EQIP contract with at least one (1) drainage practice scenario. A map of the tile system is available. Each "Design" indicates that each new device or component is closely related to other devices or components of the drainage water management system even if numerous practices are contracted. The Drainage Water Management DIA includes reviewing, and when needed, revising alternatives to address the identified concern(s). The Drainage Water Management DIA documents: a) the client's final decisions related to the associated drainage practice scenarios; and b) design deliverables described in the associated NRCS Conservation Practice Statements of Work. Natural Resource Concern(s): Water Quality - Excess nutrients in surface and groundwaters, Plant Condition - Plant Productivity and Health, and Soil Health - Subsidence.

Before Situation:

Producer wants to improve drainage water management on their agricultural operation to address water quality, plant condition, or soil health concerns. Producer intends to work with a certified TSP to develop designs to implement one or more practice scenarios to address identified resource concerns using the Drainage Water Management DIA. The DIA 164 criteria incorporates recommended measures to increase water quality, plant condition, or soil health. Associated Practices: 554-Drainage Water Management, 604-Saturated Buffer, 605-Denitrifying Bioreactor, 606-Subsurface Drain, 607-Surface Drain, Field Ditch, 608-Surface Drain, Main or Lateral, 587-Structure for Water Control, 590-Nutrient Management, 340-Cover Crop, or other applicable practices in the NRCS Field Office Technical Guide.

After Situation:

The producer has obtained services from a certified TSP to develop practice scenario designs using the Drainage Water Management DIA. The DIA 164 criteria include tasks needed to document the client's decisions and design of conservation practices which address water quality, plant condition, or soil health. The Drainage Water Management DIA meets the quality criteria for the DIA 164 activity as cited in the NRCS Field Office Technical Guide.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $6,917.18

Scenario Cost/Unit: $6,917.18

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, small surveying crew	1296	Conservation Activity Plan labor to perform surveying and mapping duties, usually under the direction of an engineer, surveyor, cartographer, or photogrammetrist to obtain data used for construction, mapmaking, boundary location, mining, or other purposes. May calculate mapmaking information and create maps from source data, such as surveying notes, aerial photography, satellite data, or other maps to show topographical features, political boundaries, and other features. Cost associated with this component includes two man field crew, equipment, vehicle, overhead, and miscellaneous supplies.	Hours	$120.67	8	$965.36
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	32	$3,576.64
Cap Labor, conservation scientist	1300	Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering.	Hours	$83.34	16	$1,333.44
Cap Labor, Survey and Mapping Technician	1591	Conservation Activity Plan labor to perform surveying and mapping duties, usually under the direction of an engineer, surveyor, cartographer, or photogrammetrist to obtain data used for construction, mapmaking, boundary location, mining, or other purposes. May calculate mapmaking information and create maps from source data, such as surveying notes, aerial photography, satellite data, or other maps to show topographical features, political boundaries, and other features. May verify accuracy and completeness of maps.	Hours	$61.08	16	$977.28

CAP Labor, Administrative Assistant	1739	Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers.	Hours	$32.23	2	$64.46

Practice: 164 - Drainage Water Management Design

Scenario #20 - 3 or More Designs - Tile Map Available

Scenario Description:

An agricultural producer wishes to address water quality degradation, poor plant productivity and health, and/or oxidation of organic matter in soils on a relatively flat crop field with a patterned drainage system through an EQIP contract with multiple drainage practice scenario. A map of the tile system is available. Each "Design" indicates that each new device or component is closely related to other devices or components of the drainage water management system even if numerous practices are contracted. The Drainage Water Management DIA includes reviewing, and when needed, revising alternatives to address the identified concern(s). The Drainage Water Management DIA documents: a) the client's final decisions related to the associated drainage practice scenarios; and b) design deliverables described in the associated NRCS Conservation Practice Statements of Work. Natural Resource Concern(s): Water Quality - Excess nutrients in surface and groundwaters, Plant Condition - Plant Productivity and Health, and Soil Health - Subsidence.

Before Situation:

Producer wants to improve drainage water management on their agricultural operation to address water quality, plant condition, or soil health concerns. Producer intends to work with a certified TSP to develop designs to implement one or more practice scenarios to address identified resource concerns using the Drainage Water Management DIA. The DIA 164 criteria incorporates recommended measures to increase water quality, plant condition, or soil health. Associated Practices: 554-Drainage Water Management, 604-Saturated Buffer, 605-Denitrifying Bioreactor, 606-Subsurface Drain, 607-Surface Drain, Field Ditch, 608-Surface Drain, Main or Lateral, 587-Structure for Water Control, 590-Nutrient Management, 340-Cover Crop, or other applicable practices in the NRCS Field Office Technical Guide.

After Situation:

The producer has obtained services from a certified TSP to develop practice scenario designs using the Drainage Water Management DIA. The DIA 164 criteria include tasks needed to document the client's decisions and design of conservation practices which address water quality, plant condition, or soil health. The Drainage Water Management DIA meets the quality criteria for the DIA 164 activity as cited in the NRCS Field Office Technical Guide.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $10,858.45

Scenario Cost/Unit: $10,858.45

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, small surveying crew	1296	Conservation Activity Plan labor to perform surveying and mapping duties, usually under the direction of an engineer, surveyor, cartographer, or photogrammetrist to obtain data used for construction, mapmaking, boundary location, mining, or other purposes. May calculate mapmaking information and create maps from source data, such as surveying notes, aerial photography, satellite data, or other maps to show topographical features, political boundaries, and other features. Cost associated with this component includes two man field crew, equipment, vehicle, overhead, and miscellaneous supplies.	Hours	$120.67	16	$1,930.72
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	48	$5,364.96
Cap Labor, conservation scientist	1300	Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering.	Hours	$83.34	24	$2,000.16
Cap Labor, Survey and Mapping Technician	1591	Conservation Activity Plan labor to perform surveying and mapping duties, usually under the direction of an engineer, surveyor, cartographer, or photogrammetrist to obtain data used for construction, mapmaking, boundary location, mining, or other purposes. May calculate mapmaking information and create maps from source data, such as surveying notes, aerial photography, satellite data, or other maps to show topographical features, political boundaries, and other features. May verify accuracy and completeness of maps.	Hours	$61.08	24	$1,465.92

CAP Labor, Administrative Assistant	1739	Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers.	Hours	$32.23	3	$96.69

Practice: 164 - Drainage Water Management Design

Scenario #36 - 1-2 Designs - No Tile Map Available

Scenario Description:

An agricultural producer wishes to address water quality degradation, poor plant productivity and health, and/or oxidation of organic matter in soils on a relatively flat crop field with a patterned drainage system through an EQIP contract with at least one (1) drainage practice scenario. A map of the tile system is not available. Each "Design" indicates that each new device or component is closely related to other devices or components of the drainage water management system even if numerous practices are contracted. The Drainage Water Management DIA includes reviewing, and when needed, revising alternatives to address the identified concern(s). The Drainage Water Management DIA documents: a) the client's final decisions related to the associated drainage practice scenarios; and b) design deliverables described in the associated NRCS Conservation Practice Statements of Work. Natural Resource Concern(s): Water Quality - Excess nutrients in surface and groundwaters, Plant Condition - Plant Productivity and Health, and Soil Health - Subsidence.

Before Situation:

Producer wants to improve drainage water management on their agricultural operation to address water quality, plant condition, or soil health concerns. Producer intends to work with a certified TSP to develop designs to implement one or more practice scenarios to address identified resource concerns using the Drainage Water Management DIA. The DIA 164 criteria incorporates recommended measures to increase water quality, plant condition, or soil health. Associated Practices: 554-Drainage Water Management, 604-Saturated Buffer, 605-Denitrifying Bioreactor, 606-Subsurface Drain, 607-Surface Drain, Field Ditch, 608-Surface Drain, Main or Lateral, 587-Structure for Water Control, 590-Nutrient Management, 340-Cover Crop, or other applicable practices in the NRCS Field Office Technical Guide.

After Situation:

The producer has obtained services from a certified TSP to develop practice scenario designs using the Drainage Water Management DIA. The DIA 164 criteria include tasks needed to document the client's decisions and design of conservation practices which address water quality, plant condition, or soil health. The Drainage Water Management DIA meets the quality criteria for the DIA 164 activity as cited in the NRCS Field Office Technical Guide.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $9,365.02

Scenario Cost/Unit: $9,365.02

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, small surveying crew	1296	Conservation Activity Plan labor to perform surveying and mapping duties, usually under the direction of an engineer, surveyor, cartographer, or photogrammetrist to obtain data used for construction, mapmaking, boundary location, mining, or other purposes. May calculate mapmaking information and create maps from source data, such as surveying notes, aerial photography, satellite data, or other maps to show topographical features, political boundaries, and other features. Cost associated with this component includes two man field crew, equipment, vehicle, overhead, and miscellaneous supplies.	Hours	$120.67	16	$1,930.72
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	40	$4,470.80
Cap Labor, conservation scientist	1300	Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering.	Hours	$83.34	16	$1,333.44
Cap Labor, Survey and Mapping Technician	1591	Conservation Activity Plan labor to perform surveying and mapping duties, usually under the direction of an engineer, surveyor, cartographer, or photogrammetrist to obtain data used for construction, mapmaking, boundary location, mining, or other purposes. May calculate mapmaking information and create maps from source data, such as surveying notes, aerial photography, satellite data, or other maps to show topographical features, political boundaries, and other features. May verify accuracy and completeness of maps.	Hours	$61.08	16	$977.28

CAP Labor, Skilled	1604	Conservation Activity Plan labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$36.77	16	$588.32
CAP Labor, Administrative Assistant	1739	Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers.	Hours	$32.23	2	$64.46

Practice: 164 - Drainage Water Management Design

Scenario #52 - 3 or More Designs - No Tile Map Available

Scenario Description:

An agricultural producer wishes to address water quality degradation, poor plant productivity and health, and/or oxidation of organic matter in soils on a relatively flat crop field with a patterned drainage system through an EQIP contract with multiple drainage practice scenario. A map of the tile system is not available. Each "Design" indicates that new devices or components are closely related to other devices or components of the drainage water management system even if numerous designs are contracted. If more than one practice is contracted, then "2-5 Designs" shall be contracted for the Drainage Water Management DIA. The Drainage Water Management DIA includes reviewing, and, when needed, revising alternatives to address the identified concern(s). The Drainage Water Management DIA documents: a) the client's final decisions related to the associated drainage practice scenarios; and b) design deliverables described in the associated NRCS Conservation Practice Statements of Work. Natural Resource Concern(s): Water Quality - Excess nutrients in surface and groundwaters, Plant Condition - Plant Productivity and Health, and Soil Health - Subsidence.

Before Situation:

Producer wants to improve drainage water management on their agricultural operation to address water quality, plant condition, or soil health concerns. Producer intends to work with a certified TSP to develop designs to implement one or more practice scenarios to address identified resource concerns using the Drainage Water Management DIA. The DIA 164 criteria incorporates recommended measures to increase water quality, plant condition, or soil health. Associated Practices: 554-Drainage Water Management, 604-Saturated Buffer, 605-Denitrifying Bioreactor, 606-Subsurface Drain, 607-Surface Drain, Field Ditch, 608-Surface Drain, Main or Lateral, 587-Structure for Water Control, 590-Nutrient Management, 340-Cover Crop, or other applicable practices in the NRCS Field Office Technical Guide.

After Situation:

The producer has obtained services from a certified TSP to develop practice scenario designs using the Drainage Water Management DIA. The DIA 164 criteria include tasks needed to document the client's decisions and design of conservation practices which address water quality, plant condition, or soil health. The Drainage Water Management DIA meets the quality criteria for the DIA 164 activity as cited in the NRCS Field Office Technical Guide.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $11,740.93

Scenario Cost/Unit: $11,740.93

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, small surveying crew	1296	Conservation Activity Plan labor to perform surveying and mapping duties, usually under the direction of an engineer, surveyor, cartographer, or photogrammetrist to obtain data used for construction, mapmaking, boundary location, mining, or other purposes. May calculate mapmaking information and create maps from source data, such as surveying notes, aerial photography, satellite data, or other maps to show topographical features, political boundaries, and other features. Cost associated with this component includes two man field crew, equipment, vehicle, overhead, and miscellaneous supplies.	Hours	$120.67	16	$1,930.72
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	48	$5,364.96
Cap Labor, conservation scientist	1300	Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering.	Hours	$83.34	24	$2,000.16
Cap Labor, Survey and Mapping Technician	1591	Conservation Activity Plan labor to perform surveying and mapping duties, usually under the direction of an engineer, surveyor, cartographer, or photogrammetrist to obtain data used for construction, mapmaking, boundary location, mining, or other purposes. May calculate mapmaking information and create maps from source data, such as surveying notes, aerial photography, satellite data, or other maps to show topographical features, political boundaries, and other features. May verify accuracy and completeness of maps.	Hours	$61.08	24	$1,465.92

CAP Labor, Skilled	1604	Conservation Activity Plan labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$36.77	24	$882.48
CAP Labor, Administrative Assistant	1739	Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers.	Hours	$32.23	3	$96.69

Practice: 165 - Forest Management Design and Implementation Activity

Scenario #4 - DIA Less Than or Equal to 20 acres

Scenario Description:

Nonindustrial Private Forest Land with a forest management plan. Typical site is approximately 1 to 20 acres in size and consists of existing uneven-aged mixed species stands of harvestable trees. Natural Resource Concern: Fish and Wildlife; Soil Erosion; Soil Condition; Water Quality; Plant Condition; on Forest Land.

Before Situation:

The producer currently manages forested lands with an existing forest management plan. Resource concerns exist which are not addressed by a management plan. A Design and Implementation Activities is needed to allow the producer to apply for financial assistance through EQIP or other programs to develop implementation requirements for conservation practices. Associated Practices: 472, 666, 654, 655,384, 394, 383, 379, 338, 381, 391, 791, 490, 612, 660, 311, 380, 314, 315.

After Situation:

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Forest Management Design and Implementation Activities (DIA). The DIA criteria requires the design of site-specific forestry activities as a component of a forest management plan to address identified resource concerns. Additional DIA criteria are detailed in the Field Office Technical Guide.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $811.70

Scenario Cost/Unit: $811.70

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, forester	1302	Conservation Activity Plan labor to manage nonindustrial private forest lands for conservation, economic, and recreational purposes. Will inventory the type, amount, and location of standing timber and appraise the timber's condition. Will determine how to conserve wildlife habitats, improve water quality and soil stability, and how best to comply with environmental regulations. May devise plans for planting and growing new trees, monitoring trees for healthy growth, determining optimal thinning schedules, and increasing carbon capture and storage.	Hours	$81.17	10	$811.70

Practice: 165 - Forest Management Design and Implementation Activity

Scenario #20 - DIA 501 to 1000 acres

Scenario Description:

Nonindustrial Private Forest Land with a forest management plan. Typical site is approximately 501 to 1000 acres in size and consists of existing uneven-aged mixed species stands of harvestable trees. Natural Resource Concern: Fish and Wildlife; Soil Erosion; Soil Condition; Water Quality; Plant Condition; on Forest Land.

Before Situation:

The producer currently manages forested lands with an existing forest management plan. Resource concerns exist which are not addressed by a management plan. A Design and Implementation Activities is needed to allow the producer to apply for financial assistance through EQIP or other programs to develop implementation requirements for conservation practices. Associated Practices: 472, 666, 654, 655,384, 394, 383, 379, 338, 381, 391, 791, 490, 612, 660, 311, 380, 314, 315.

After Situation:

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Forest Management Design and Implementation Activities (DIA). The DIA criteria requires the design of site-specific forestry activities as a component of a forest management plan to address identified resource concerns. Additional DIA criteria are detailed in the Field Office Technical Guide.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $3,977.33

Scenario Cost/Unit: $3,977.33

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, forester	1302	Conservation Activity Plan labor to manage nonindustrial private forest lands for conservation, economic, and recreational purposes. Will inventory the type, amount, and location of standing timber and appraise the timber's condition. Will determine how to conserve wildlife habitats, improve water quality and soil stability, and how best to comply with environmental regulations. May devise plans for planting and growing new trees, monitoring trees for healthy growth, determining optimal thinning schedules, and increasing carbon capture and storage.	Hours	$81.17	49	$3,977.33

Practice: 165 - Forest Management Design and Implementation Activity

Scenario #36 - DIA 101 to 250 acres

Scenario Description:

Nonindustrial Private Forest Land with a forest management plan. Typical site is approximately 101 to 250 acres in size and consists of existing uneven-aged mixed species stands of harvestable trees. Natural Resource Concern: Fish and Wildlife; Soil Erosion; Soil Condition; Water Quality; Plant Condition; on Forest Land.

Before Situation:

The producer currently manages forested lands with an existing forest management plan. Resource concerns exist which are not addressed by a management plan. A Design and Implementation Activities is needed to allow the producer to apply for financial assistance through EQIP or other programs to develop implementation requirements for conservation practices. Associated Practices: 472, 666, 654, 655,384, 394, 383, 379, 338, 381, 391, 791, 490, 612, 660, 311, 380, 314, 315.

After Situation:

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Forest Management Design and Implementation Activities (DIA). The DIA criteria requires the design of site-specific forestry activities as a component of a forest management plan to address identified resource concerns. Additional DIA criteria are detailed in the Field Office Technical Guide.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $2,191.59

Scenario Cost/Unit: $2,191.59

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, forester	1302	Conservation Activity Plan labor to manage nonindustrial private forest lands for conservation, economic, and recreational purposes. Will inventory the type, amount, and location of standing timber and appraise the timber's condition. Will determine how to conserve wildlife habitats, improve water quality and soil stability, and how best to comply with environmental regulations. May devise plans for planting and growing new trees, monitoring trees for healthy growth, determining optimal thinning schedules, and increasing carbon capture and storage.	Hours	$81.17	27	$2,191.59

Practice: 165 - Forest Management Design and Implementation Activity

Scenario #52 - DIA Greater Than 1000 acres

Scenario Description:

Nonindustrial Private Forest Land with a forest management plan. Typical site is approximately 1001 acres or greater in size and consists of existing uneven-aged mixed species stands of harvestable trees. Natural Resource Concern: Fish and Wildlife; Soil Erosion; Soil Condition; Water Quality; Plant Condition; on Forest Land.

Before Situation:

The producer currently manages forested lands with an existing forest management plan. Resource concerns exist which are not addressed by a management plan. A Design and Implementation Activities is needed to allow the producer to apply for financial assistance through EQIP or other programs to develop implementation requirements for conservation practices. Associated Practices: 472, 666, 654, 655,384, 394, 383, 379, 338, 381, 391, 791, 490, 612, 660, 311, 380, 314, 315.

After Situation:

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Forest Management Design and Implementation Activities (DIA). The DIA criteria requires the design of site-specific forestry activities as a component of a forest management plan to address identified resource concerns. Additional DIA criteria are detailed in the Field Office Technical Guide.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $4,789.03

Scenario Cost/Unit: $4,789.03

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, forester	1302	Conservation Activity Plan labor to manage nonindustrial private forest lands for conservation, economic, and recreational purposes. Will inventory the type, amount, and location of standing timber and appraise the timber's condition. Will determine how to conserve wildlife habitats, improve water quality and soil stability, and how best to comply with environmental regulations. May devise plans for planting and growing new trees, monitoring trees for healthy growth, determining optimal thinning schedules, and increasing carbon capture and storage.	Hours	$81.17	59	$4,789.03

Practice: 165 - Forest Management Design and Implementation Activity

Scenario #68 - DIA 251 to 500 acres

Scenario Description:

Nonindustrial Private Forest Land with a forest management plan. Typical site is approximately 251 to 500 acres in size and consists of existing uneven-aged mixed species stands of harvestable trees. Natural Resource Concern: Fish and Wildlife; Soil Erosion; Soil Condition; Water Quality; Plant Condition; on Forest Land.

Before Situation:

The producer currently manages forested lands with an existing forest management plan. Resource concerns exist which are not addressed by a management plan. A Design and Implementation Activities is needed to allow the producer to apply for financial assistance through EQIP or other programs to develop implementation requirements for conservation practices. Associated Practices: 472, 666, 654, 655,384, 394, 383, 379, 338, 381, 391, 791, 490, 612, 660, 311, 380, 314, 315.

After Situation:

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Forest Management Design and Implementation Activities (DIA). The DIA criteria requires the design of site-specific forestry activities as a component of a forest management plan to address identified resource concerns. Additional DIA criteria are detailed in the Field Office Technical Guide.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $3,327.97

Scenario Cost/Unit: $3,327.97

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, forester	1302	Conservation Activity Plan labor to manage nonindustrial private forest lands for conservation, economic, and recreational purposes. Will inventory the type, amount, and location of standing timber and appraise the timber's condition. Will determine how to conserve wildlife habitats, improve water quality and soil stability, and how best to comply with environmental regulations. May devise plans for planting and growing new trees, monitoring trees for healthy growth, determining optimal thinning schedules, and increasing carbon capture and storage.	Hours	$81.17	41	$3,327.97

Practice: 165 - Forest Management Design and Implementation Activity

Scenario #84 - DIA 21 to 100 acres

Scenario Description:

Nonindustrial Private Forest Land with a forest management plan. Typical site is approximately 21 to 100 acres in size and consists of existing uneven-aged mixed species stands of harvestable trees. Natural Resource Concern: Fish and Wildlife; Soil Erosion; Soil Condition; Water Quality; Plant Condition; on Forest Land.

Before Situation:

The producer currently manages forested lands with an existing forest management plan. Resource concerns exist which are not addressed by a management plan. A Design and Implementation Activities is needed to allow the producer to apply for financial assistance through EQIP or other programs to develop implementation requirements for conservation practices. Associated Practices: 472, 666, 654, 655,384, 394, 383, 379, 338, 381, 391, 791, 490, 612, 660, 311, 380, 314, 315.

After Situation:

After EQIP contract approval, participant has obtained services from a certified TSP for development of the Forest Management Design and Implementation Activities (DIA). The DIA criteria requires the design of site-specific forestry activities as a component of a forest management plan to address identified resource concerns. Additional DIA criteria are detailed in the Field Office Technical Guide.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $1,379.89

Scenario Cost/Unit: $1,379.89

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, forester	1302	Conservation Activity Plan labor to manage nonindustrial private forest lands for conservation, economic, and recreational purposes. Will inventory the type, amount, and location of standing timber and appraise the timber's condition. Will determine how to conserve wildlife habitats, improve water quality and soil stability, and how best to comply with environmental regulations. May devise plans for planting and growing new trees, monitoring trees for healthy growth, determining optimal thinning schedules, and increasing carbon capture and storage.	Hours	$81.17	17	$1,379.89

Practice: 199 - Conservation Plan

Scenario #4 - Urban Farm – 0.5 acres or less

Scenario Description:

Conservation plan developed by a Technical Service Provider (TSP) for a participant enrolled in a Farm Bill program contract. The TSP completes NRCS conservation planning process, steps 1 through 7 as described in NRCS National Planning Procedures Handbook. The steps identify problems and opportunities (step 1), determine objectives (step 2), include inventory and analyze resources (steps 3 and 4), formulate and evaluate alternatives (steps 5 and 6) and document client's preferred alternative(s) (step 7). The urban farm planning scenario involves combinations of various specialty crops, small fruits, tree and vine crops, and small livestock enterprises on 1/2 acre or less within a landscape predominated by residential, commercial, industrial, and transportation uses.

Before Situation:

Client and NRCS have identified a need to develop a conservation plan to address resource concern(s) using a Technical Service Provider.

After Situation:

TSP has met with client and visited the planning area, in order to develop at least one conservation system alternative for each planning land unit that meet the producer's objectives; and obtain the client's decision for a schedule of practices to implement. TSP provides deliverables that meet the requirements of the CPA 199, or (if applicable to the enterprise) the requirements of conservation activities CPA 102 CNMP or CPA 106 Forestry Plan.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $2,611.64

Scenario Cost/Unit: $2,611.64

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, agronomist	1295	Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner.	Hours	$103.89	8	$831.12
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	4	$447.08
Cap Labor, conservation scientist	1300	Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering.	Hours	$83.34	16	$1,333.44

Practice: 199 - Conservation Plan

Scenario #20 - Small Farm – less than or equal to 10 acres

Scenario Description:

Conservation plan developed by a Technical Service Provider (TSP) for a participant enrolled in a Farm Bill program contract. The TSP completes NRCS conservation planning process, steps 1 through 7 as described in NRCS National Planning Procedures Handbook. The steps identify problems and opportunities (step 1), determine objectives (step 2), include inventory and analyze resources (steps 3 and 4), formulate and evaluate alternatives (steps 5 and 6) and document client's preferred alternative(s) (step 7). The small farm planning scenario involves combinations of various specialty crops, small fruits, tree and vine crops, and small livestock enterprises on less than or equal to 10 acres.

Before Situation:

Client and NRCS have identified a need to develop a conservation plan to address resource concern(s) using a Technical Service Provider.

After Situation:

TSP has met with client and visited the planning area, in order to develop at least one conservation system alternative for each planning land unit that meet the producer's objectives; and obtain the client's decision for a schedule of practices to implement. TSP provides deliverables that meet the requirements of the CPA 199, or (if applicable to the enterprise) the requirements of conservation activities CPA 102 CNMP or CPA 106 Forestry Plan.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $3,266.50

Scenario Cost/Unit: $3,266.50

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, agronomist	1295	Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner.	Hours	$103.89	10	$1,038.90
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	8	$894.16
Cap Labor, conservation scientist	1300	Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering.	Hours	$83.34	16	$1,333.44

Practice: 199 - Conservation Plan

Scenario #36 - Low Complexity Plan, <200 acres

Scenario Description:

Conservation plan developed by a Technical Service Provider (TSP) for a participant enrolled in a Farm Bill program contract. The TSP completes NRCS conservation planning process, steps 1 through 7 as described in NRCS National Planning Procedures Handbook. The steps identify problems and opportunities (step 1), determine objectives (step 2), include inventory and analyze resources (steps 3 and 4), formulate and evaluate alternatives (steps 5 and 6) and document client's preferred alternative(s) (step 7). The Planning Land Unit involves one land use and one agricultural enterprise covering up to less than 200 acres.

Before Situation:

Client and NRCS have identified a need to develop a conservation plan to address resource concern(s) using a Technical Service Provider.

After Situation:

TSP has met with client and visited the planning area, in order to develop at least one conservation system alternative for each planning land unit that meet the producer's objectives; and obtain the client's decision for a schedule of practices to implement. TSP provides deliverables that meet the requirements of the CPA 199, or (if applicable to the enterprise) the requirements of conservation activities CPA 102 CNMP or CPA 106 Forestry Plan.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $4,172.52

Scenario Cost/Unit: $4,172.52

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, agronomist	1295	Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner.	Hours	$103.89	8	$831.12
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	12	$1,341.24
Cap Labor, conservation scientist	1300	Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering.	Hours	$83.34	24	$2,000.16

Practice: 199 - Conservation Plan

Scenario #52 - Low Complexity Plan, 200-1,000 acres

Scenario Description:

Conservation plan developed by a Technical Service Provider (TSP) for a participant enrolled in a Farm Bill program contract. The TSP completes NRCS conservation planning process, steps 1 through 7 as described in NRCS National Planning Procedures Handbook. The steps identify problems and opportunities (step 1), determine objectives (step 2), include inventory and analyze resources (steps 3 and 4), formulate and evaluate alternatives (steps 5 and 6) and document client's preferred alternative(s) (step 7). The Planning Land Unit involves one land use and one agricultural enterprise covering 200-1,000 acres.

Before Situation:

Client and NRCS have identified a need to develop a conservation plan to address resource concern(s) using a Technical Service Provider.

After Situation:

TSP has met with client and visited the planning area, in order to develop at least one conservation system alternative for each planning land unit that meet the producer's objectives; and obtain the client's decision for a schedule of practices to implement. TSP provides deliverables that meet the requirements of the CPA 199, or (if applicable to the enterprise) the requirements of conservation activities CPA 102 CNMP or CPA 106 Forestry Plan.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $6,117.44

Scenario Cost/Unit: $6,117.44

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, agronomist	1295	Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner.	Hours	$103.89	16	$1,662.24
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	16	$1,788.32
Cap Labor, conservation scientist	1300	Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering.	Hours	$83.34	32	$2,666.88

Practice: 199 - Conservation Plan

Scenario #68 - Low Complexity Plan, >1,000 acres

Scenario Description:

Conservation plan developed by a Technical Service Provider (TSP) for a participant enrolled in a Farm Bill program contract. The TSP completes NRCS conservation planning process, steps 1 through 7 as described in NRCS National Planning Procedures Handbook. The steps identify problems and opportunities (step 1), determine objectives (step 2), include inventory and analyze resources (steps 3 and 4), formulate and evaluate alternatives (steps 5 and 6) and document client's preferred alternative(s) (step 7). The Planning Land Unit involves one land use and one agricultural enterprise covering more than 1,000 acres.

Before Situation:

Client and NRCS have identified a need to develop a conservation plan to address resource concern(s) using a Technical Service Provider.

After Situation:

TSP has met with client and visited the planning area, in order to develop at least one conservation system alternative for each planning land unit that meet the producer's objectives; and obtain the client's decision for a schedule of practices to implement. TSP provides deliverables that meet the requirements of the CPA 199, or (if applicable to the enterprise) the requirements of conservation activities CPA 102 CNMP or CPA 106 Forestry Plan.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $8,117.60

Scenario Cost/Unit: $8,117.60

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, agronomist	1295	Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner.	Hours	$103.89	16	$1,662.24
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	16	$1,788.32
Cap Labor, conservation scientist	1300	Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering.	Hours	$83.34	56	$4,667.04

Practice: 199 - Conservation Plan

Scenario #84 - Medium Complexity Plan, <200 acres

Scenario Description:

Conservation plan developed by a Technical Service Provider (TSP) for a participant enrolled in a Farm Bill program contract. The TSP completes NRCS conservation planning process, steps 1 through 7 as described in NRCS National Planning Procedures Handbook. The steps identify problems and opportunities (step 1), determine objectives (step 2), include inventory and analyze resources (steps 3 and 4), formulate and evaluate alternatives (steps 5 and 6) and document client's preferred alternative(s) (step 7). The Planning Land Unit involves one land use with two agricultural enterprises, or two land uses with one agricultural enterprise (ex. farmstead and cropland used for a dairy enterprise) covering less than 200 acres.

Before Situation:

Client and NRCS have identified a need to develop a conservation plan to address resource concern(s) using a Technical Service Provider.

After Situation:

TSP has met with client and visited the planning area, in order to develop at least one conservation system alternative for each planning land unit that meet the producer's objectives; and obtain the client's decision for a schedule of practices to implement. TSP provides deliverables that meet the requirements of the CPA 199, and/or (if applicable to the enterprises) the requirements of conservation activities CPA 102 CNMP or CPA 106 Forestry Plan.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $6,117.44

Scenario Cost/Unit: $6,117.44

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, agronomist	1295	Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner.	Hours	$103.89	16	$1,662.24
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	16	$1,788.32
Cap Labor, conservation scientist	1300	Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering.	Hours	$83.34	32	$2,666.88

Practice: 199 - Conservation Plan

Scenario #100 - Medium Complexity Plan, 200-1,000 acres

Scenario Description:

Conservation plan developed by a Technical Service Provider (TSP) for a participant enrolled in a Farm Bill program contract. The TSP completes NRCS conservation planning process, steps 1 through 7 as described in NRCS National Planning Procedures Handbook. The steps identify problems and opportunities (step 1), determine objectives (step 2), include inventory and analyze resources (steps 3 and 4), formulate and evaluate alternatives (steps 5 and 6) and document client's preferred alternative(s) (step 7). The Planning Land Unit involves one land use with two agricultural enterprises, or two land uses with one agricultural enterprise (ex. farmstead and cropland used for a dairy enterprise) covering 200-1000 acres.

Before Situation:

Client and NRCS have identified a need to develop a conservation plan to address resource concern(s) using a Technical Service Provider.

After Situation:

TSP has met with client and visited the planning area, in order to develop at least one conservation system alternative for each planning land unit that meet the producer's objectives; and obtain the client's decision for a schedule of practices to implement. TSP provides deliverables that meet the requirements of the CPA 199, and/or (if applicable to the enterprises) the requirements of conservation activities CPA 102 CNMP or CPA 106 Forestry Plan.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $8,117.60

Scenario Cost/Unit: $8,117.60

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, agronomist	1295	Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner.	Hours	$103.89	16	$1,662.24
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	16	$1,788.32
Cap Labor, conservation scientist	1300	Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering.	Hours	$83.34	56	$4,667.04

Practice: 199 - Conservation Plan

Scenario #116 - Medium Complexity Plan, >1,000 acres

Scenario Description:

Conservation plan developed by a Technical Service Provider (TSP) for a participant enrolled in a Farm Bill program contract. The TSP completes NRCS conservation planning process, steps 1 through 7 as described in NRCS National Planning Procedures Handbook. The steps identify problems and opportunities (step 1), determine objectives (step 2), include inventory and analyze resources (steps 3 and 4), formulate and evaluate alternatives (steps 5 and 6) and document client's preferred alternative(s) (step 7). The Planning Land Unit involves one land use with two agricultural enterprises, or two land uses with one agricultural enterprise (ex. farmstead and cropland used for a dairy enterprise) covering more than 1,000 acres.

Before Situation:

Client and NRCS have identified a need to develop a conservation plan to address resource concern(s) using a Technical Service Provider.

After Situation:

TSP has met with client and visited the planning area, in order to develop at least one conservation system alternative for each planning land unit that meet the producer's objectives; and obtain the client's decision for a schedule of practices to implement. TSP provides deliverables that meet the requirements of the CPA 199, and/or (if applicable to the enterprises) the requirements of conservation activities CPA 102 CNMP or CPA 106 Forestry Plan.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $9,882.36

Scenario Cost/Unit: $9,882.36

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, agronomist	1295	Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner.	Hours	$103.89	18	$1,870.02
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	18	$2,011.86
Cap Labor, conservation scientist	1300	Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering.	Hours	$83.34	72	$6,000.48

Practice: 199 - Conservation Plan

Scenario #132 - High Complexity Plan, <200 acres

Scenario Description:

Conservation plan developed by a Technical Service Provider (TSP) for a participant enrolled in a Farm Bill program contract. The TSP completes NRCS conservation planning process, steps 1 through 7 as described in NRCS National Planning Procedures Handbook. The steps identify problems and opportunities (step 1), determine objectives (step 2), include inventory and analyze resources (steps 3 and 4), formulate and evaluate alternatives (steps 5 and 6) and document client's preferred alternative(s) (step 7). The Planning Land Unit involves one land use supporting three or more agricultural enterprises, two land uses supporting two or more agricultural enterprises, or three or more land uses and any number of enterprises on up to less than 200 acres.

Before Situation:

Client and NRCS have identified a need to develop a conservation plan to address resource concern(s) using a Technical Service Provider.

After Situation:

TSP has met with client and visited the planning area, in order to develop at least one conservation system alternative for each planning land unit that meet the producer's objectives; and obtain the client's decision for a schedule of practices to implement. TSP provides deliverables that meet the requirements of the CPA 199, and/or (if applicable to the enterprises) the requirements of conservation activities CPA 102 CNMP or CPA 106 Forestry Plan.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $8,117.60

Scenario Cost/Unit: $8,117.60

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, agronomist	1295	Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner.	Hours	$103.89	16	$1,662.24
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	16	$1,788.32
Cap Labor, conservation scientist	1300	Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering.	Hours	$83.34	56	$4,667.04

Practice: 199 - Conservation Plan

Scenario #148 - High Complexity Plan, 200-1,000 acres

Scenario Description:

Conservation plan developed by a Technical Service Provider (TSP) for a participant enrolled in a Farm Bill program contract. The TSP completes NRCS conservation planning process, steps 1 through 7 as described in NRCS National Planning Procedures Handbook. The steps identify problems and opportunities (step 1), determine objectives (step 2), include inventory and analyze resources (steps 3 and 4), formulate and evaluate alternatives (steps 5 and 6) and document client's preferred alternative(s) (step 7). The Planning Land Unit involves three or more agricultural enterprises, two land uses supporting two or more agricultural enterprises, or three or more land uses and any number of enterprises on 200-1000 acres.

Before Situation:

Client and NRCS have identified a need to develop a conservation plan to address resource concern(s) using a Technical Service Provider.

After Situation:

TSP has met with client and visited the planning area, in order to develop at least one conservation system alternative for each planning land unit that meet the producer's objectives; and obtain the client's decision for a schedule of practices to implement. TSP provides deliverables that meet the requirements of the CPA 199, and/or (if applicable to the enterprises) the requirements of conservation activities CPA 102 CNMP or CPA 106 Forestry Plan.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $9,882.36

Scenario Cost/Unit: $9,882.36

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, agronomist	1295	Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner.	Hours	$103.89	18	$1,870.02
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	18	$2,011.86
Cap Labor, conservation scientist	1300	Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering.	Hours	$83.34	72	$6,000.48

Practice: 199 - Conservation Plan

Scenario #164 - High Complexity Plan, >1,000 acres

Scenario Description:

Conservation plan developed by a Technical Service Provider (TSP) for a participant enrolled in a Farm Bill program contract. The TSP completes NRCS conservation planning process, steps 1 through 7 as described in NRCS National Planning Procedures Handbook. The steps identify problems and opportunities (step 1), determine objectives (step 2), include inventory and analyze resources (steps 3 and 4), formulate and evaluate alternatives (steps 5 and 6) and document client's preferred alternative(s) (step 7). The Planning Land Unit involves one land use supporting three or more agricultural enterprises, two land uses supporting two or more agricultural enterprises, or three or more land uses and any number of enterprises on more than 1,000 acres.

Before Situation:

Client and NRCS have identified a need to develop a conservation plan to address resource concern(s) using a Technical Service Provider.

After Situation:

TSP has met with client and visited the planning area, in order to develop at least one conservation system alternative for each planning land unit that meet the producer's objectives; and obtain the client's decision for a schedule of practices to implement. TSP provides deliverables that meet the requirements of the CPA 199, and/or (if applicable to the enterprises) the requirements of conservation activities CPA 102 CNMP or CPA 106 Forestry Plan.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $11,411.72

Scenario Cost/Unit: $11,411.72

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, agronomist	1295	Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner.	Hours	$103.89	22	$2,285.58
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	22	$2,458.94
Cap Labor, conservation scientist	1300	Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering.	Hours	$83.34	80	$6,667.20

Practice: 201 - Edge-of-Field Water Quality Monitoring-Data Collection and Evaluation

Scenario #33 - Data Collect Surface Last Year with two treatment sites

Scenario Description:

This practice scenario provides for the use of an edge-of-field WQ monitoring station(s) for surface run-off for one control and two treatment sites with an average of 20 samples per year per station. The scenario requires the collection and analysis of edge-of-field water quality data along with a comprehensive report to statistically prove relationship between select conservation practices and water quality. The data will be transferred through semi-annual submittal and annual report and a comprehensive report of practice effectiveness. This scenario will be used in the last year of monitoring. THIS IS PLACED IN A PAIRED SITUATION IF THE CONTROL AND TREATMENT ARE ON DIFFERENT LANDOWNERS FIELDS THEN A JOINT CONTRACT WILL BE NECESSARY.

Before Situation:

The agricultural operation prior to installing this practice will have an existing system for collecting water quality data but not have been operating with a long enough time frame to measure practice effectiveness.

After Situation:

This practice scenario after installation of the WQ monitoring stations, provides for the data collection, analysis, semiannual submittal, and annual report for one control and two treatment sites. The operator will be able to collect field level water quality data of sufficient quality to measure loss of nutrients as listed in 201 to provide a comprehensive report of statistical testing of data collected during to complete monitoring period.

Feature Measure: Measuring site

Scenario Unit: Each

Scenario Typical Size: 1.0

Scenario Total Cost: $33,046.26

Scenario Cost/Unit: $33,046.26

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, agronomist	1295	Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner.	Hours	$103.89	150	$15,583.50
CAP Labor, Skilled	1604	Conservation Activity Plan labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$36.77	156	$5,736.12
Materials						
Testing, Blanks Samples	2612	Blanks or Duplicate Samples; Includes materials only.	Each	$32.04	6	$192.24
Testing, Water Quality	2613	Ammonium, Nitrite plus Nitrate, Total Kjeldahl Nitrogen, Soluble Reactive P (Orthophosphate), Total Phosphorus, Suspended Sediment Concentration – Preferred, or Total Suspended Solids. Includes materials only.	Each	$32.04	60	$1,922.40
Testing, Water Quality	2613	Ammonium, Nitrite plus Nitrate, Total Kjeldahl Nitrogen, Soluble Reactive P (Orthophosphate), Total Phosphorus, Suspended Sediment Concentration – Preferred, or Total Suspended Solids. Includes materials only.	Each	$32.04	60	$1,922.40
Testing, Water Quality	2613	Ammonium, Nitrite plus Nitrate, Total Kjeldahl Nitrogen, Soluble Reactive P (Orthophosphate), Total Phosphorus, Suspended Sediment Concentration – Preferred, or Total Suspended Solids. Includes materials only.	Each	$32.04	30	$961.20
Testing, Water Quality	2613	Ammonium, Nitrite plus Nitrate, Total Kjeldahl Nitrogen, Soluble Reactive P (Orthophosphate), Total Phosphorus, Suspended Sediment Concentration – Preferred, or Total Suspended Solids. Includes materials only.	Each	$32.04	30	$961.20
Testing, Water Quality	2613	Ammonium, Nitrite plus Nitrate, Total Kjeldahl Nitrogen, Soluble Reactive P (Orthophosphate), Total Phosphorus, Suspended Sediment Concentration – Preferred, or Total Suspended Solids. Includes materials only.	Each	$32.04	60	$1,922.40

Testing, Water Quality	2613	Ammonium, Nitrite plus Nitrate, Total Kjeldahl Nitrogen, Soluble Reactive P (Orthophosphate), Total Phosphorus, Suspended Sediment Concentration – Preferred, or Total Suspended Solids. Includes materials only.	Each	$32.04	60	$1,922.40
Testing, Water Quality	2613	Ammonium, Nitrite plus Nitrate, Total Kjeldahl Nitrogen, Soluble Reactive P (Orthophosphate), Total Phosphorus, Suspended Sediment Concentration – Preferred, or Total Suspended Solids. Includes materials only.	Each	$32.04	60	$1,922.40

Practice: 201 - Edge-of-Field Water Quality Monitoring-Data Collection and Evaluation

Scenario #34 - Data Collect Surface Year 1-QAPP

Scenario Description:

This practice scenario provides for the design and use of an edge-of-field WQ monitoring station(s) for surface run-off for one control and one treatment site with an average of 20 samples per year per station, with each sample analyzed for 6 separate parameters (2 sites x 20 samples x 6 parameters = 240 total water quality tests). The scenario requires the creation of a survey to site a monitoring station, preparation of monitoring plan and a quality assurance project plan to detail how data will be collected, handled and analyzed, provides for the data collection, analysis, semiannual report, and annual report. This scenario will normally be used in year 1 of the contract when a monitoring plan and QAPP need to be prepared prior to installation under Edge-of-Field Water Quality Monitoring - System Installation (202). THIS IS PLACED IN A PAIRED SITUATION IF THE CONTROL AND TREATMENT ARE ON DIFFERENT LANDOWNERS FIELDS THEN A JOINT CONTRACT WILL BE NECESSARY.

Before Situation:

The agricultural operation prior to installing this practice will not have a plan or quality assurance project plan prepared for installing equipment nor collecting data for sediment and nutrients leaving the edge of field.

After Situation:

This practice scenario after installation of the WQ monitoring stations, provides for the data collection, analysis, semiannual report, and annual report for one control and one treatment site. This scenario will normally be used in year 1 of the contract when a monitoring plan and QAPP have been prepared prior to installation under Edge-of-Field Water Quality Monitoring - System Installation (202). The operator will be able to collect field level water quality data of sufficient quality to measure loss of nutrients as listed in 201.

Feature Measure: Measuring Sites

Scenario Unit: Each

Scenario Typical Size: 1.0

Scenario Total Cost: $24,377.70

Scenario Cost/Unit: $24,377.70

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	130	$3,906.50
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	136	$12,653.44
Materials						
Testing, Blanks Samples	2612	Blanks or Duplicate Samples; Includes materials only.	Each	$32.04	4	$128.16
Testing, Water Quality	2613	Ammonium, Nitrite plus Nitrate, Total Kjeldahl Nitrogen, Soluble Reactive P (Orthophosphate), Total Phosphorus, Suspended Sediment Concentration – Preferred, or Total Suspended Solids. Includes materials only.	Each	$32.04	240	$7,689.60

Practice: 201 - Edge-of-Field Water Quality Monitoring-Data Collection and Evaluation

Scenario #35 - Data Collect Surface Year 1 plus - NO QAPP

Scenario Description:

This practice scenario provides for the use of an edge-of-field WQ monitoring station(s) for surface run-off for one control and one treatment site. The scenario requires the collection and analysis of edge-of-field water quality data with an average sample collection of 20 per year per station, with each sample analyzed for 6 separate parameters (2 sites x 20 samples x 6 parameters = 240 total water quality tests). The data will be transferred through semi-annual submittal and annual report which include some preliminary annual analysis. This scenario will normally be used in year 1 to next to the last year of monitoring of the contract when a monitoring plan and QAPP will be not prepared as this is for an existing monitoring system that has been accepted as meeting both Activity 201 and 202. THIS IS PLACED IN A PAIRED SITUATION IF THE CONTROL AND TREATMENT ARE ON DIFFERENT LANDOWNERS FIELDS THEN A JOINT CONTRACT WILL BE NECESSARY.

Before Situation:

The agricultural operation prior to installing this practice will have an existing system for collecting water quality data but not have been operating with a long enough time frame to measure practice effectiveness.

After Situation:

This practice scenario after installation of the WQ monitoring stations, provides for the data collection, analysis, semiannual submittal, and annual report for one control and one treatment site. This scenario will normally be used in year 1 of the contract when a monitoring plan and QAPP have been prepared as part of an existing monitoring system installation where the QAPP and monitoring plan meets Activity 201 requirements and no major changes are needed to meet Activity 202 requirements. The operator will be able to collect field level water quality data of sufficient quality to measure loss of nutrients as listed in 201.

Feature Measure: Measuring Site

Scenario Unit: Each

Scenario Typical Size: 1.0

Scenario Total Cost: $17,306.66

Scenario Cost/Unit: $17,306.66

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	130	$3,906.50
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	60	$5,582.40
Materials						
Testing, Blanks Samples	2612	Blanks or Duplicate Samples; Includes materials only.	Each	$32.04	4	$128.16
Testing, Water Quality	2613	Ammonium, Nitrite plus Nitrate, Total Kjeldahl Nitrogen, Soluble Reactive P (Orthophosphate), Total Phosphorus, Suspended Sediment Concentration – Preferred, or Total Suspended Solids. Includes materials only.	Each	$32.04	240	$7,689.60

Practice: 201 - Edge-of-Field Water Quality Monitoring-Data Collection and Evaluation

Scenario #37 - Data Collect Surface Last Year

Scenario Description:

This practice scenario provides for the use of an edge-of-field WQ monitoring station(s) for surface run-off for one control and one treatment site with an average of 20 samples per year per station, with each sample analyzed for 6 separate parameters (2 sites x 20 samples x 6 parameters = 240 total water quality tests). The scenario requires the collection and analysis of edge-of-field water quality data along with a comprehensive report to statistically prove relationship between select conservation practices and water quality. The data will be transferred through semi-annual submittal and annual report and a comprehensive report of practice effectiveness. This scenario will be used in the last year of monitoring. THIS IS PLACED IN A PAIRED SITUATION IF THE CONTROL AND TREATMENT ARE ON DIFFERENT LANDOWNERS FIELDS THEN A JOINT CONTRACT WILL BE NECESSARY.

Before Situation:

The agricultural operation prior to installing this practice will have an existing system for collecting water quality data but not have been operating with a long enough time frame to measure practice effectiveness.

After Situation:

This practice scenario after installation of the WQ monitoring stations, provides for the data collection, analysis, semiannual submittal, and annual report for one control and one treatment site. The operator will be able to collect field level water quality data of sufficient quality to measure loss of nutrients as listed in 201 to provide a comprehensive report of statistical testing of data collected to complete monitoring period.

Feature Measure: Measuring Site

Scenario Unit: Each

Scenario Typical Size: 1.0

Scenario Total Cost: $21,028.26

Scenario Cost/Unit: $21,028.26

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	130	$3,906.50
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	100	$9,304.00
Materials						
Testing, Blanks Samples	2612	Blanks or Duplicate Samples; Includes materials only.	Each	$32.04	4	$128.16
Testing, Water Quality	2613	Ammonium, Nitrite plus Nitrate, Total Kjeldahl Nitrogen, Soluble Reactive P (Orthophosphate), Total Phosphorus, Suspended Sediment Concentration – Preferred, or Total Suspended Solids. Includes materials only.	Each	$32.04	240	$7,689.60

Practice: 201 - Edge-of-Field Water Quality Monitoring-Data Collection and Evaluation

Scenario #38 - Data Collect Tile Year 1-QAPP

Scenario Description:

This practice scenario provides for the design and use of an edge-of-field WQ monitoring station(s) for tile and subsurface drainage run-off for one control and one treatment site with an average of 40 samples per year per station, with each sample analyzed for 6 separate parameters (2 sites x 40 samples x 6 parameters = 480 total water quality tests). A subsurface system also requires the addition of a surface sampling system at the same outlet to capture overland flow with 20 samples per year, with each sample analyzed for 6 separate parameters (2 sites x 20 samples x 6 parameters = 240 total water quality tests). Without the surface system then not all runoff is captured for calculating a true event mean concentration as per the 201 Standard. The scenario requires the creation of a survey to site a monitoring station, preparation of monitoring plan and a quality assurance project plan to detail how data will be collected, handled and analyzed, provides for the data collection, analysis, semiannual report, and annual report. This scenario will normally be used in year 1 of the contract when a monitoring plan and QAPP need to be prepared prior to installation under Edge-of-Field Water Quality Monitoring - System Installation (202). THIS IS PLACED IN A PAIRED SITUATION IF THE CONTROL AND TREATMENT ARE ON DIFFERENT LANDOWNERS FIELDS THEN A JOINT CONTRACT WILL BE NECESSARY.

Before Situation:

The agricultural operation prior to installing this practice will not have a plan or quality assurance project plan prepared for installing equipment nor collecting data for sediment and nutrients leaving the edge of field.

After Situation:

This practice scenario after installation of the WQ monitoring stations, provides for the data collection, analysis, semiannual report, and annual report for one control and one treatment site. This scenario will normally be used in year 1 of the contract when a monitoring plan and QAPP have been prepared prior to installation under Edge-of-Field Water Quality Monitoring - System Installation (202). The operator will be able to collect field level water quality data of sufficient quality to measure loss of nutrients as listed in 201.

Feature Measure: Measuring Site

Scenario Unit: Each

Scenario Typical Size: 1.0

Scenario Total Cost: $48,273.52

Scenario Cost/Unit: $48,273.52

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	312	$9,375.60
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	166	$15,444.64
Materials						
Testing, Blanks Samples	2612	Blanks or Duplicate Samples; Includes materials only.	Each	$32.04	12	$384.48
Testing, Water Quality	2613	Ammonium, Nitrite plus Nitrate, Total Kjeldahl Nitrogen, Soluble Reactive P (Orthophosphate), Total Phosphorus, Suspended Sediment Concentration – Preferred, or Total Suspended Solids. Includes materials only.	Each	$32.04	720	$23,068.80

Practice: 201 - Edge-of-Field Water Quality Monitoring-Data Collection and Evaluation

Scenario #39 - Data Collect Tile Year 1 plus - NO QAPP

Scenario Description:

This practice scenario provides for the design and use of an edge-of-field WQ monitoring station(s) for tile and subsurface drainage run-off for one control and one treatment site with an average of 40 samples per year per station, with each sample analyzed for 6 separate parameters (2 sites x 40 samples x 6 parameters = 480 total water quality tests). A subsurface system also requires the addition of a surface sampling system at the same outlet to capture overland flow with 20 samples per year, with each sample analyzed for 6 separate parameters (2 sites x 20 samples x 6 parameters = 240 total water quality tests). Without the surface system then not all runoff is captured for calculating a true event mean concentration as per the 201 Standard. The data will be transferred through semi-annual submittal and annual reports, which include some preliminary annual analysis. This scenario will normally be used in year 1 to next to the last year of monitoring of the contract when a monitoring plan and QAPP will be not prepared as this is for an existing monitoring system be accepted as meeting both Activity 201 and 202. THIS IS PLACED IN A PAIRED SITUATION IF THE CONTROL AND TREATMENT ARE ON DIFFERENT LANDOWNERS FIELDS THEN A JOINT CONTRACT WILL BE NECESSARY.

Before Situation:

The agricultural operation prior to installing this practice will have an existing system for collecting water quality data but not have been operating with a long enough time frame to measure practice effectiveness.

After Situation:

This practice scenario after installation of the WQ monitoring stations, provides for the data collection, analysis, semiannual submittal, and annual report for one control and one treatment site. This scenario will normally be used in year 1 of the contract when a monitoring plan and QAPP have been prepared as part of an existing monitoring system installation where the QAPP and monitoring plan meets Activity 201 requirements and no major changes are needed to meet Activity 202 requirements. The operator will be able to collect field level water quality data of sufficient quality to measure loss of nutrients as listed in 201.

Feature Measure: Measuring Site

Scenario Unit: Each

Scenario Typical Size: 1.0

Scenario Total Cost: $41,202.48

Scenario Cost/Unit: $41,202.48

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	312	$9,375.60
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	90	$8,373.60
Materials						
Testing, Blanks Samples	2612	Blanks or Duplicate Samples; Includes materials only.	Each	$32.04	12	$384.48
Testing, Water Quality	2613	Ammonium, Nitrite plus Nitrate, Total Kjeldahl Nitrogen, Soluble Reactive P (Orthophosphate), Total Phosphorus, Suspended Sediment Concentration – Preferred, or Total Suspended Solids. Includes materials only.	Each	$32.04	720	$23,068.80

Practice: 201 - Edge-of-Field Water Quality Monitoring-Data Collection and Evaluation

Scenario #41 - Data Collect Tile Last Year

Scenario Description:

This practice scenario provides for the design and use of an edge-of-field WQ monitoring station(s) for tile and subsurface drainage run-off for one control and one treatment site with an average of 40 samples per year per station, with each sample analyzed for 6 separate parameters (2 sites x 40 samples x 6 parameters = 480 total water quality tests). A subsurface system also requires the addition of a surface sampling system at the same outlet to capture overland flow with 20 samples per year, with each sample analyzed for 6 separate parameters (2 sites x 20 samples x 6 parameters = 240 total water quality tests). Without the surface system then not all runoff is captured for calculating a true event mean concentration as per the 201 Standard. The scenario requires the collection and analysis of edge-of-field water quality data along with a comprehensive report to statistically prove relationship between select conservation practices and water quality. The data will be transferred through semi-annual submittal and annual report and a comprehensive report of practice effectiveness. This scenario will be used in the last year of monitoring. THIS IS PLACED IN A PAIRED SITUATION IF THE CONTROL AND TREATMENT ARE ON DIFFERENT LANDOWNERS FIELDS THEN A JOINT CONTRACT WILL BE NECESSARY.

Before Situation:

The agricultural operation prior to installing this practice will have an existing system for collecting water quality data but not have been operating with a long enough time frame to measure practice effectiveness.

After Situation:

This practice scenario after installation of the WQ monitoring stations, provides for the data collection, analysis, semiannual submittal, and annual report for one control and one treatment site. The operator will be able to collect field level water quality data of sufficient quality to measure loss of nutrients as listed in 201 to provide a comprehensive report of statistical testing of data collected during to complete monitoring period.

Feature Measure: Measuring site

Scenario Unit: Each

Scenario Typical Size: 1.0

Scenario Total Cost: $44,924.08

Scenario Cost/Unit: $44,924.08

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	312	$9,375.60
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	130	$12,095.20
Materials						
Testing, Blanks Samples	2612	Blanks or Duplicate Samples; Includes materials only.	Each	$32.04	12	$384.48
Testing, Water Quality	2613	Ammonium, Nitrite plus Nitrate, Total Kjeldahl Nitrogen, Soluble Reactive P (Orthophosphate), Total Phosphorus, Suspended Sediment Concentration – Preferred, or Total Suspended Solids. Includes materials only.	Each	$32.04	720	$23,068.80

Practice: 201 - Edge-of-Field Water Quality Monitoring-Data Collection and Evaluation

Scenario #42 - Data Collect Surface Year 1-QAPP with two treatment Sites

Scenario Description:

This practice scenario provides for the design and use of an edge-of-field WQ monitoring station(s) for surface run-off for one control and two treatment sites with an average of 20 samples per year per station, with each sample analyzed for 6 separate parameters (3 sites x 20 samples x 6 parameters = 360 total water quality tests). The scenario requires the creation of a survey to site a monitoring station, preparation of monitoring plan and a quality assurance project plan to detail how data will be collected, handled and analyzed, provides for the data collection, analysis, semiannual report, and annual report. This scenario will normally be used in year 1 of the contract when a monitoring plan and QAPP need to be prepared prior to installation under Edge-of-Field Water Quality Monitoring - System Installation (202). THIS IS PLACED IN A PAIRED SITUATION IF THE CONTROL AND TREATMENT ARE ON DIFFERENT LANDOWNERS FIELDS THEN A JOINT CONTRACT WILL BE NECESSARY.

Before Situation:

The agricultural operation prior to installing this practice will not have a plan or quality assurance project plan prepared for installing equipment nor collecting data for sediment and nutrients leaving the edge of field.

After Situation:

This practice scenario after installation of the WQ monitoring stations, provides for the data collection, analysis, semiannual report, and annual report for one control and one treatment site. This scenario will normally be used in year 1 of the contract when a monitoring plan and QAPP have been prepared prior to installation under Edge-of-Field Water Quality Monitoring - System Installation (202). The operator will be able to collect field level water quality data of sufficient quality to measure loss of nutrients as listed in 201.

Feature Measure: Measuring Sites

Scenario Unit: Each

Scenario Typical Size: 1.0

Scenario Total Cost: $33,533.80

Scenario Cost/Unit: $33,533.80

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	156	$4,687.80
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	184	$17,119.36
Materials						
Testing, Blanks Samples	2612	Blanks or Duplicate Samples; Includes materials only.	Each	$32.04	6	$192.24
Testing, Water Quality	2613	Ammonium, Nitrite plus Nitrate, Total Kjeldahl Nitrogen, Soluble Reactive P (Orthophosphate), Total Phosphorus, Suspended Sediment Concentration – Preferred, or Total Suspended Solids. Includes materials only.	Each	$32.04	360	$11,534.40

Practice: 201 - Edge-of-Field Water Quality Monitoring-Data Collection and Evaluation

Scenario #43 - Data Collect Surface Year 1+ less QAPP (pre-install information) with two treatment sites

Scenario Description:

This practice scenario provides for the use of an edge-of-field WQ monitoring station(s) for surface run-off for one control and two treatment sites. The scenario requires the collection and analysis of edge-of-field water quality data with an average sample collection of 20 per year for each surface system, with each sample analyzed for 6 separate parameters (3 sites x 20 samples x 6 parameters = 360 total water quality tests). The data will be transferred through semi-annual submittal and annual report, which include some preliminary annual analysis. This scenario will normally be used in year 1 of the contract when a monitoring plan and QAPP will not be prepared as this is for an existing monitoring system be accepted as meeting both Activity 201 and 202. THIS IS PLACED IN A PAIRED SITUATION IF THE CONTROL AND TREATMENT ARE ON DIFFERENT LANDOWNERS FIELDS THEN A JOINT CONTRACT WILL BE NECESSARY.

Before Situation:

The agricultural operation prior to installing this practice will have an existing system for collecting water quality data but not have been operating with a long enough time frame to measure practice effectiveness.

After Situation:

This practice scenario after installation of the WQ monitoring stations, provides for the data collection, analysis, semi-annual submittal, and annual report for one control and two treatment sites. This scenario will normally be used in year 1 of the contract when a monitoring plan and QAPP have been prepared as part of an existing monitoring system installation where the QAPP and monitoring plan meets Activity 201 requirements and no major changes are needed to meet Activity 202 requirements. The operator will be able to collect field level water quality data of sufficient quality to measure loss of nutrients as listed in 201.

Feature Measure: Measuring site

Scenario Unit: Each

Scenario Typical Size: 1.0

Scenario Total Cost: $24,788.04

Scenario Cost/Unit: $24,788.04

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	156	$4,687.80
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	90	$8,373.60
Materials						
Testing, Blanks Samples	2612	Blanks or Duplicate Samples; Includes materials only.	Each	$32.04	6	$192.24
Testing, Water Quality	2613	Ammonium, Nitrite plus Nitrate, Total Kjeldahl Nitrogen, Soluble Reactive P (Orthophosphate), Total Phosphorus, Suspended Sediment Concentration – Preferred, or Total Suspended Solids. Includes materials only.	Each	$32.04	360	$11,534.40

Practice: 201 - Edge-of-Field Water Quality Monitoring-Data Collection and Evaluation

Scenario #47 - Data Collect Tile Year 1+ less QAPP (pre-install information) with two treatment sites

Scenario Description:

This practice scenario provides for the design and use of an edge-of-field WQ monitoring station(s) for tile and subsurface drainage run-off for one control and two treatment sites with an average of 40 samples per year per station, with each sample analyzed for 6 separate parameters (3 sites x 40 samples x 6 parameters = 720 total water quality tests). A subsurface system also requires the addition of a surface sampling system at the same outlet to capture overland flow with 20 samples per year, with each sample analyzed for 6 separate parameters (3 sites x 20 samples x 6 parameters = 360 total water quality tests). Without the surface system then not all runoff is captured for calculating a true event mean concentration as per the 201 Standard. The data will be transferred through semi-annual submittal and annual reports, which include some preliminary annual analysis. This scenario will normally be used in year 1 of the contract when a monitoring plan and QAPP will not be prepared as this is for an existing monitoring system be accepted as meeting both Activity 201 and 202. THIS IS PLACED IN A PAIRED SITUATION IF THE CONTROL AND TREATMENT ARE ON DIFFERENT LANDOWNERS FIELDS THEN A JOINT CONTRACT WILL BE NECESSARY.

Before Situation:

The agricultural operation prior to installing this practice will have an existing system for collecting water quality data but not have been operating with a long enough time frame to measure practice effectiveness.

After Situation:

This practice scenario after installation of the WQ monitoring stations, provides for the data collection, analysis, semiannual submittal, and annual report for one control and two treatment sites. This scenario will normally be used in year 1 of the contract when a monitoring plan and QAPP have been prepared as part of an existing monitoring system installation where the QAPP and monitoring plan meets Activity 201 requirements and no major changes are needed to meet Activity 202 requirements. The operator will be able to collect field level water quality data of sufficient quality to measure loss of nutrients as listed in 201.

Feature Measure: Measuring site

Scenario Unit: Each

Scenario Typical Size: 1.0

Scenario Total Cost: $58,678.52

Scenario Cost/Unit: $58,678.52

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	364	$10,938.20
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	135	$12,560.40
Materials						
Testing, Blanks Samples	2612	Blanks or Duplicate Samples; Includes materials only.	Each	$32.04	18	$576.72
Testing, Water Quality	2613	Ammonium, Nitrite plus Nitrate, Total Kjeldahl Nitrogen, Soluble Reactive P (Orthophosphate), Total Phosphorus, Suspended Sediment Concentration – Preferred, or Total Suspended Solids. Includes materials only.	Each	$32.04	1080	$34,603.20

Practice: 201 - Edge-of-Field Water Quality Monitoring-Data Collection and Evaluation

Scenario #48 - Data Collect Tile Last Year with two treatment sites

Scenario Description:

This practice scenario provides for the design and use of an edge-of-field WQ monitoring station(s) for tile and subsurface drainage run-off for one control and two treatment sites with an average of 40 samples per year per station with each sample analyzed for 6 separate parameters (3 sites x 40 samples x 6 parameters = 720 total water quality tests). A subsurface system also requires the addition of a surface sampling system at the same outlet to capture overland flow with 20 samples per year with each sample analyzed for 6 separate parameters (3 sites x 20 samples x 6 parameters = 360 total water quality tests). Without the surface system then not all runoff is captured for calculating a true event mean concentration as per the 201 Standard. The scenario requires the collection and analysis of edge-of-field water quality data along with a comprehensive report to statistically prove relationship between select conservation practices and water quality. The data will be transferred through semi-annual submittal and annual report and a comprehensive report of practice effectiveness. This scenario will be used in the last year of monitoring. THIS IS PLACED IN A PAIRED SITUATION IF THE CONTROL AND TREATMENT ARE ON DIFFERENT LANDOWNERS FIELDS THEN A JOINT CONTRACT WILL BE NECESSARY.

Before Situation:

The agricultural operation prior to installing this practice will have an existing system for collecting water quality data but not have been operating with a long enough time frame to measure practice effectiveness.

After Situation:

This practice scenario after installation of the WQ monitoring stations, provides for the data collection, analysis, semiannual submittal, and annual report for one control and two treatment sites. The operator will be able to collect field level water quality data of sufficient quality to measure loss of nutrients as listed in 201 to provide a comprehensive report of statistical testing of data collected during to complete monitoring period.

Feature Measure: Measuring site

Scenario Unit: Each

Scenario Typical Size: 1.0

Scenario Total Cost: $64,260.92

Scenario Cost/Unit: $64,260.92

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	364	$10,938.20
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	195	$18,142.80
Materials						
Testing, Blanks Samples	2612	Blanks or Duplicate Samples; Includes materials only.	Each	$32.04	18	$576.72
Testing, Water Quality	2613	Ammonium, Nitrite plus Nitrate, Total Kjeldahl Nitrogen, Soluble Reactive P (Orthophosphate), Total Phosphorus, Suspended Sediment Concentration – Preferred, or Total Suspended Solids. Includes materials only.	Each	$32.04	1080	$34,603.20

Practice: 202 - Edge-of-Field Water Quality Monitoring-System Installation

Scenario #24 - System Installation-Surface

Scenario Description:

This edge-of-field water quality monitoring system is applicable to a single control or treatment site that has a field defined with surface runoff that can be captured and sampled at the edge of a field before entering a ditch or receiving water body or water course. The component monitoring equipment are associated with a typical system for southern latitudes where winter time heating is not required for sampling. It will allow for installation of automated sampling data collection system with protective housing to reduce potential for vandalism, battery backup for operation during periods when electricity is down or solar panels are not creating an electrical current, and a berm or other directional flow structure to guide the runoff to a sampling flume.

Before Situation:

The agricultural operation prior to installing the monitoring equipment is guessing about the effects of the conservation system with regards to meeting practice intent of avoid, controlling, or trapping sediment and nutrients.

After Situation:

The agricultural operation after installing the monitoring equipment will be receiving feedback in the form of edge-of-field runoff water quality samples. The samples will allow the operator to understand the relationship between rain/irrigation, practice choice, and nutrient inputs effecting nutrient and sediment loss for the field. Thus, providing an opportunity to make adaptive management changes to the agricultural operation to reduce sediment and nutrient loss and/or profitability.

Feature Measure: System installed

Scenario Unit: Each

Scenario Typical Size: 1.0

Scenario Total Cost: $20,107.68

Scenario Cost/Unit: $20,107.68

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	60	$1,803.00
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	5	$465.20
Materials						
Solar Panels, fixed cost portion	1031	Fixed cost portion of the Solar Panels. This portion is a base cost for all Solar Panels and is not dependant on KiloWatt. The total cost of any Solar Panels will include this fixed cost plus a variable cost portion. The completed Solar Panels will include all materials (electrical, controllers, service drops and etc). This cost will include material, labor and equipment.	Each	$261.66	1	$261.66
Solar Panels, variable cost portion	1135	Variable cost portion of the Solar Panels. This portion IS dependent on the total Kilowatt for the Solar Panels. The total cost of any Solar Panels will include this variable cost plus the fixed cost portion. The completed Solar Panels will include all materials (electrical, controllers, and service drop, etc). This cost will include material, labor and equipment.	Kilowatt	$2,731.32	0.12	$327.76
Weather Station, Advanced	2550	Advance Weather Station which collects and records recording rainfall, humidity, barometric pressure, wind speed, temperature, and solar radiation from a solar powered self-standing tripod to an advance weather recording console. Used for both 449 advance irrigation water management and for Activity 202 water quality monitoring .	Each	$843.52	1	$843.52
Automated sampler with bottles and tubing	2606	Equipment used to collect the water samples on a flow weighted interval of 1.27 mm of runoff (volumetric depth) during a storm event.	Each	$2,277.28	1	$2,277.28
Connectors, cables, platform materials	2607	Miscellaneous (connectors, cables, berm, platform materials); Includes materials only.	Each	$6,006.45	1	$6,006.45
Depth (stage) sensor	2608	Device used to relay information to the Data logger about incremental increases in runoff. ISCO 730 Module with 1/8-in x 25-ft vinyl bubble line. Includes equipment only. Used for A202 water quality monitering	Each	$2,834.86	1	$2,834.86
Equipment shelter	2609	Building designed to house and reduce the risk of equipment damage from weather, animals, and vandalism.	Each	$1,282.26	1	$1,282.26
Pre-calibrated flow control structure-surface	2610	Pre-calibrated flow control structure-surface. Used for A202 water quality monitering	Each	$1,677.73	1	$1,677.73
Device, communications	2616	Piece of equipment or hardware designed to transmit real time data or information collected prior to site visits. Includes equipment only.	Each	$2,327.96	1	$2,327.96

Practice: 202 - Edge-of-Field Water Quality Monitoring-System Installation

Scenario #25 - System Installation-Surface Cold Climate

Scenario Description:

This edge-of-field water quality monitoring system is applicable to a single control or treatment site that has a field defined with surface runoff that can be captured and sampled at the edge of a field before entering a ditch or receiving water body or water course. The component monitoring equipment are associated with a typical system for northern latitudes where winter time heating is required for sampling. It will allow for installation of automated sampling data collection system with protective housing to reduce potential for vandalism, battery backup for operation during periods when electricity is down or solar panels are not creating an electrical current, a calf hut or other structure with heat is required over the flume to allow sampling under northern latitude winter conditions, and a berm or other directional flow structure to guide the runoff to a sampling flume.

Before Situation:

The agricultural operation prior to installing the monitoring equipment is guessing about the effects of the conservation system with regards to meeting practice intent of avoid, controlling, or trapping sediment and nutrients. Nothing is known about the volume or mass of sediment and nutrients leaving the edge of field through the tile or other subsurface drainage system.

After Situation:

The agricultural operation after installing the monitoring equipment will be receiving feedback in the form of edge-of-field runoff water quality samples. The samples will allow the operator to understand the relationship between rain/irrigation, practice choice, and nutrient inputs effecting nutrient and sediment loss for the field. Thus, providing an opportunity to make adaptive management changes to the agricultural operation to reduce sediment and nutrient loss and/or profitability.

Feature Measure: System installed

Scenario Unit: Each

Scenario Typical Size: 1.0

Scenario Total Cost: $20,613.02

Scenario Cost/Unit: $20,613.02

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	60	$1,803.00
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	5	$465.20
Materials						
Solar Panels, fixed cost portion	1031	Fixed cost portion of the Solar Panels. This portion is a base cost for all Solar Panels and is not dependant on KiloWatt. The total cost of any Solar Panels will include this fixed cost plus a variable cost portion. The completed Solar Panels will include all materials (electrical, controllers, service drops and etc). This cost will include material, labor and equipment.	Each	$261.66	1	$261.66
Solar Panels, variable cost portion	1135	Variable cost portion of the Solar Panels. This portion IS dependent on the total Kilowatt for the Solar Panels. The total cost of any Solar Panels will include this variable cost plus the fixed cost portion. The completed Solar Panels will include all materials (electrical, controllers, and service drop, etc). This cost will include material, labor and equipment.	Kilowatt	$2,731.32	0.12	$327.76
Heater, high efficiency	1165	Natural gas, propane, or fuel oil unit heater or boiler and venting materials. Based on input kBTU/hour. Includes materials and shipping only.	1,000 BTU/Hour	$16.52	1	$16.52
Weather Station, Advanced	2550	Advance Weather Station which collects and records recording rainfall, humidity, barometric pressure, wind speed, temperature, and solar radiation from a solar powered self-standing tripod to an advance weather recording console. Used for both 449 advance irrigation water management and for Activity 202 water quality monitoring .	Each	$843.52	1	$843.52
Automated sampler with bottles and tubing	2606	Equipment used to collect the water samples on a flow weighted interval of 1.27 mm of runoff (volumetric depth) during a storm event.	Each	$2,277.28	1	$2,277.28
Connectors, cables, platform materials	2607	Miscellaneous (connectors, cables, berm, platform materials); Includes materials only.	Each	$6,006.45	1	$6,006.45
Depth (stage) sensor	2608	Device used to relay information to the Data logger about incremental increases in runoff. ISCO 730 Module with 1/8-in x 25-ft vinyl bubble line. Includes equipment only. Used for A202 water quality monitering	Each	$2,834.86	1	$2,834.86
Equipment shelter	2609	Building designed to house and reduce the risk of equipment damage from weather, animals, and vandalism.	Each	$1,282.26	1	$1,282.26

Pre-calibrated flow control structure-surface	2610	Pre-calibrated flow control structure-surface. Used for A202 water quality monitering	Each	$1,677.73	1	$1,677.73
Device, communications	2616	Piece of equipment or hardware designed to transmit real time data or information collected prior to site visits. Includes equipment only.	Each	$2,327.96	1	$2,327.96
Equipment Shed	2617	Equipment shed (10 x 10 foot) made of steel applied over the sampling flume to allow collection of water samples during the winter in colder climates.	Each	$488.82	1	$488.82

Practice: 202 - Edge-of-Field Water Quality Monitoring-System Installation

Scenario #26 - System Installation-Tile

Scenario Description:

This edge-of-field water quality monitoring system is applicable to a single control or treatment site that has a field defined with tile or other subsurface drainage runoff that can be captured and sampled at the edge of a field before entering a ditch or receiving water body or water course. The component monitoring equipment are associated with a typical system for southern latitudes where winter time heating is not required for sampling. It will allow for installation of automated sampling data collection system for a subsurface collection and separate surface automated sample collection system with protective housing to reduce potential for vandalism, battery backup for operation during periods when electricity is down or solar panels are not creating an electrical current, an area velocity sensor for pipe flow and estimation of submerged flow, and a berm or other directional flow structure to guide the runoff to a sampling flume.

Before Situation:

The agricultural operation prior to installing the monitoring equipment is guessing about the effects of the conservation system with regards to meeting practice intent of avoid, controlling, or trapping sediment and nutrients. Nothing is known about the volume or mass of sediment and nutrients leaving the edge of field through the tile or other subsurface drainage system.

After Situation:

The agricultural operation after installing the monitoring equipment will be receiving feedback in the form of edge-of-field runoff water quality samples. The samples will allow the operator to understand the relationship between rain/irrigation, practice choice, and nutrient inputs effecting nutrient and sediment loss for the field. Thus, providing an opportunity to make adaptive management changes to the agricultural operation to reduce sediment and nutrient loss and/or profitability.

Feature Measure: System installed

Scenario Unit: Each

Scenario Typical Size: 1.0

Scenario Total Cost: $29,069.83

Scenario Cost/Unit: $29,069.83

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	100	$3,005.00
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	6	$558.24
Materials						
Solar Panels, fixed cost portion	1031	Fixed cost portion of the Solar Panels. This portion is a base cost for all Solar Panels and is not dependant on KiloWatt. The total cost of any Solar Panels will include this fixed cost plus a variable cost portion. The completed Solar Panels will include all materials (electrical, controllers, service drops and etc). This cost will include material, labor and equipment.	Each	$261.66	1	$261.66
Solar Panels, variable cost portion	1135	Variable cost portion of the Solar Panels. This portion IS dependent on the total Kilowatt for the Solar Panels. The total cost of any Solar Panels will include this variable cost plus the fixed cost portion. The completed Solar Panels will include all materials (electrical, controllers, and service drop, etc). This cost will include material, labor and equipment.	Kilowatt	$2,731.32	0.12	$327.76
Heater, high efficiency	1165	Natural gas, propane, or fuel oil unit heater or boiler and venting materials. Based on input kBTU/hour. Includes materials and shipping only.	1,000 BTU/Hour	$16.52	1	$16.52
Weather Station, Advanced	2550	Advance Weather Station which collects and records recording rainfall, humidity, barometric pressure, wind speed, temperature, and solar radiation from a solar powered self-standing tripod to an advance weather recording console. Used for both 449 advance irrigation water management and for Activity 202 water quality monitoring .	Each	$843.52	1	$843.52
Automated sampler with bottles and tubing	2606	Equipment used to collect the water samples on a flow weighted interval of 1.27 mm of runoff (volumetric depth) during a storm event.	Each	$2,277.28	2	$4,554.56
Connectors, cables, platform materials	2607	Miscellaneous (connectors, cables, berm, platform materials); Includes materials only.	Each	$6,006.45	1	$6,006.45
Depth (stage) sensor	2608	Device used to relay information to the Data logger about incremental increases in runoff. ISCO 730 Module with 1/8-in x 25-ft vinyl bubble line. Includes equipment only. Used for A202 water quality monitering	Each	$2,834.86	2	$5,669.72
Equipment shelter	2609	Building designed to house and reduce the risk of equipment damage from weather, animals, and vandalism.	Each	$1,282.26	2	$2,564.52

Pre-calibrated flow control structure-surface	2610	Pre-calibrated flow control structure-surface. Used for A202 water quality monitering	Each	$1,677.73	1	$1,677.73
Pre-calibrated flow control structure-subsurface (pipe flow)	2615	Equipment used to collect runoff for ease in measure of flow, sample collection and to reduce time in constructing and calibrating of a flow structure.	Each	$767.37	1	$767.37
Device, communications	2616	Piece of equipment or hardware designed to transmit real time data or information collected prior to site visits. Includes equipment only.	Each	$2,327.96	1	$2,327.96
Equipment Shed	2617	Equipment shed (10 x 10 foot) made of steel applied over the sampling flume to allow collection of water samples during the winter in colder climates.	Each	$488.82	1	$488.82

Practice: 202 - Edge-of-Field Water Quality Monitoring-System Installation

Scenario #27 - System Installation-Tile Cold Climate

Scenario Description:

This edge-of-field water quality monitoring system is applicable to a single control or treatment site that has a field defined with tile or other subsurface drainage runoff that can be captured and sampled at the edge of a field before entering a ditch or receiving water body or water course. The component monitoring equipment are associated with a typical system for northern latitudes where winter time heating is required for sampling. It will allow for installation of automated sampling data collection system for a subsurface collection and separate surface automated sample collection system with protective housing to reduce potential for vandalism, battery backup for operation during periods when electricity is down or solar panels are not creating an electrical current, an area velocity sensor for pipe flow and estimation of submerged flow, a calf hut or other structure with heat is required over the flume to allow sampling under northern latitude winter conditions and a berm or other directional flow structure to guide the runoff to a sampling flume.

Before Situation:

The agricultural operation prior to installing the monitoring equipment is guessing about the effects of the conservation system with regards to meeting practice intent of avoid, controlling, or trapping sediment and nutrients. Nothing is known about the volume or mass of sediment and nutrients leaving the edge of field through the tile or other subsurface drainage system.

After Situation:

The agricultural operation after installing the monitoring equipment will be receiving feedback in the form of edge-of-field runoff water quality samples. The samples will allow the operator to understand the relationship between rain/irrigation, practice choice, and nutrient inputs effecting nutrient and sediment loss for the field. Thus, providing an opportunity to make adaptive management changes to the agricultural operation to reduce sediment and nutrient loss and/or profitability.

Feature Measure: System installed

Scenario Unit: Each

Scenario Typical Size: 1.0

Scenario Total Cost: $29,069.83

Scenario Cost/Unit: $29,069.83

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	100	$3,005.00
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	6	$558.24
Materials						
Solar Panels, fixed cost portion	1031	Fixed cost portion of the Solar Panels. This portion is a base cost for all Solar Panels and is not dependant on KiloWatt. The total cost of any Solar Panels will include this fixed cost plus a variable cost portion. The completed Solar Panels will include all materials (electrical, controllers, service drops and etc). This cost will include material, labor and equipment.	Each	$261.66	1	$261.66
Solar Panels, variable cost portion	1135	Variable cost portion of the Solar Panels. This portion IS dependent on the total Kilowatt for the Solar Panels. The total cost of any Solar Panels will include this variable cost plus the fixed cost portion. The completed Solar Panels will include all materials (electrical, controllers, and service drop, etc). This cost will include material, labor and equipment.	Kilowatt	$2,731.32	0.12	$327.76
Heater, high efficiency	1165	Natural gas, propane, or fuel oil unit heater or boiler and venting materials. Based on input kBTU/hour. Includes materials and shipping only.	1,000 BTU/Hour	$16.52	1	$16.52
Weather Station, Advanced	2550	Advance Weather Station which collects and records recording rainfall, humidity, barometric pressure, wind speed, temperature, and solar radiation from a solar powered self-standing tripod to an advance weather recording console. Used for both 449 advance irrigation water management and for Activity 202 water quality monitoring .	Each	$843.52	1	$843.52
Automated sampler with bottles and tubing	2606	Equipment used to collect the water samples on a flow weighted interval of 1.27 mm of runoff (volumetric depth) during a storm event.	Each	$2,277.28	2	$4,554.56
Connectors, cables, platform materials	2607	Miscellaneous (connectors, cables, berm, platform materials); Includes materials only.	Each	$6,006.45	1	$6,006.45
Depth (stage) sensor	2608	Device used to relay information to the Data logger about incremental increases in runoff. ISCO 730 Module with 1/8-in x 25-ft vinyl bubble line. Includes equipment only. Used for A202 water quality monitering	Each	$2,834.86	2	$5,669.72
Equipment shelter	2609	Building designed to house and reduce the risk of equipment damage from weather, animals, and vandalism.	Each	$1,282.26	2	$2,564.52

Pre-calibrated flow control structure-surface	2610	Pre-calibrated flow control structure-surface. Used for A202 water quality monitering	Each	$1,677.73	1	$1,677.73
Pre-calibrated flow control structure-subsurface (pipe flow)	2615	Equipment used to collect runoff for ease in measure of flow, sample collection and to reduce time in constructing and calibrating of a flow structure.	Each	$767.37	1	$767.37
Device, communications	2616	Piece of equipment or hardware designed to transmit real time data or information collected prior to site visits. Includes equipment only.	Each	$2,327.96	1	$2,327.96
Equipment Shed	2617	Equipment shed (10 x 10 foot) made of steel applied over the sampling flume to allow collection of water samples during the winter in colder climates.	Each	$488.82	1	$488.82

Practice: 202 - Edge-of-Field Water Quality Monitoring-System Installation

Scenario #28 - System Installation-Above And Below

Scenario Description:

This edge-of-field water quality monitoring system is applicable where a conservation practice has a pre- and post treatment area in the same field drainage with surface or subsurface drainage runoff that can be captured and sampled at the edge of a field before entering a ditch or receiving water body or water course. The component monitoring equipment are associated with a typical system for southern latitudes where winter time heating is not required for sampling. It will allow for installation of automated sampling data collection system with protective housing to reduce potential for vandalism, battery backup for operation during periods when electricity is down or solar panels are not creating an electrical current, and a berm or other directional flow structure to guide the runoff to a sampling flume. The actual installation will different on the subsurface flow by allowing a smaller precalibrated flume with the addition of a velocity sensor meter as in the tile alternative.

Before Situation:

The agricultural operation prior to installing the monitoring equipment is guessing about the effects of the conservation system with regards to meeting practice intent of avoid, controlling, or trapping sediment and nutrients.

After Situation:

The agricultural operation after installing the monitoring equipment will be receiving feedback in the form of edge-of-field runoff water quality samples. The samples will allow the operator to understand the relationship between rain/irrigation, practice choice, and nutrient inputs effecting nutrient and sediment loss for the field. Thus, providing an opportunity to make adaptive management changes to the agricultural operation to reduce sediment and nutrient loss and/or profitability.

Feature Measure: System installed

Scenario Unit: Each

Scenario Typical Size: 1.0

Scenario Total Cost: $28,272.85

Scenario Cost/Unit: $28,272.85

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	60	$1,803.00
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	6	$558.24
Materials						
Solar Panels, fixed cost portion	1031	Fixed cost portion of the Solar Panels. This portion is a base cost for all Solar Panels and is not dependant on KiloWatt. The total cost of any Solar Panels will include this fixed cost plus a variable cost portion. The completed Solar Panels will include all materials (electrical, controllers, service drops and etc). This cost will include material, labor and equipment.	Each	$261.66	1	$261.66
Solar Panels, variable cost portion	1135	Variable cost portion of the Solar Panels. This portion IS dependent on the total Kilowatt for the Solar Panels. The total cost of any Solar Panels will include this variable cost plus the fixed cost portion. The completed Solar Panels will include all materials (electrical, controllers, and service drop, etc). This cost will include material, labor and equipment.	Kilowatt	$2,731.32	0.12	$327.76
Weather Station, Advanced	2550	Advance Weather Station which collects and records recording rainfall, humidity, barometric pressure, wind speed, temperature, and solar radiation from a solar powered self-standing tripod to an advance weather recording console. Used for both 449 advance irrigation water management and for Activity 202 water quality monitoring .	Each	$843.52	1	$843.52
Automated sampler with bottles and tubing	2606	Equipment used to collect the water samples on a flow weighted interval of 1.27 mm of runoff (volumetric depth) during a storm event.	Each	$2,277.28	2	$4,554.56
Connectors, cables, platform materials	2607	Miscellaneous (connectors, cables, berm, platform materials); Includes materials only.	Each	$6,006.45	1	$6,006.45
Depth (stage) sensor	2608	Device used to relay information to the Data logger about incremental increases in runoff. ISCO 730 Module with 1/8-in x 25-ft vinyl bubble line. Includes equipment only. Used for A202 water quality monitering	Each	$2,834.86	2	$5,669.72
Equipment shelter	2609	Building designed to house and reduce the risk of equipment damage from weather, animals, and vandalism.	Each	$1,282.26	2	$2,564.52
Pre-calibrated flow control structure-surface	2610	Pre-calibrated flow control structure-surface. Used for A202 water quality monitering	Each	$1,677.73	2	$3,355.46
Device, communications	2616	Piece of equipment or hardware designed to transmit real time data or information collected prior to site visits. Includes equipment only.	Each	$2,327.96	1	$2,327.96

Practice: 202 - Edge-of-Field Water Quality Monitoring-System Installation

Scenario #29 - System Installation-Above And Below cold climate

Scenario Description:

This edge-of-field water quality monitoring system is applicable where a conservation practice has a pre- and post treatment area in the same field drainage with surface or subsurface drainage runoff that can be captured and sampled at the edge of a field before entering a ditch or receiving water body or water course. The component monitoring equipment are associated with a typical system for northern latitudes where winter time heating is required for sampling. It will allow for installation of automated sampling data collection system with protective housing to reduce potential for vandalism, battery backup for operation during periods when electricity is down or solar panels are not creating an electrical current, a calf hut or other structure with heat is required over the flume to allow sampling under northern latitude winter conditions, and a berm or other directional flow structure to guide the runoff to a sampling flume. The actual installation will different on the subsurface flow by allowing a smaller pre-calibrated flume with the addition of a velocity sensor meter as in the tile alternative.

Before Situation:

The agricultural operation prior to installing the monitoring equipment is guessing about the effects of the conservation system with regards to meeting practice intent of avoid, controlling, or trapping sediment and nutrients. Nothing is known about the volume or mass of sediment and nutrients leaving the edge of field through the tile or other subsurface drainage system.

After Situation:

The agricultural operation after installing the monitoring equipment will be receiving feedback in the form of edge-of-field runoff water quality samples. The samples will allow the operator to understand the relationship between rain/irrigation, practice choice, and nutrient inputs effecting nutrient and sediment loss for the field. Thus, providing an opportunity to make adaptive management changes to the agricultural operation to reduce sediment and nutrient loss and/or profitability.

Feature Measure: System installed

Scenario Unit: Each

Scenario Typical Size: 1.0

Scenario Total Cost: $31,611.49

Scenario Cost/Unit: $31,611.49

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	60	$1,803.00
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	6	$558.24
Materials						
Solar Panels, fixed cost portion	1031	Fixed cost portion of the Solar Panels. This portion is a base cost for all Solar Panels and is not dependant on KiloWatt. The total cost of any Solar Panels will include this fixed cost plus a variable cost portion. The completed Solar Panels will include all materials (electrical, controllers, service drops and etc). This cost will include material, labor and equipment.	Each	$261.66	1	$261.66
Solar Panels, variable cost portion	1135	Variable cost portion of the Solar Panels. This portion IS dependent on the total Kilowatt for the Solar Panels. The total cost of any Solar Panels will include this variable cost plus the fixed cost portion. The completed Solar Panels will include all materials (electrical, controllers, and service drop, etc). This cost will include material, labor and equipment.	Kilowatt	$2,731.32	0.12	$327.76
Heater, high efficiency	1165	Natural gas, propane, or fuel oil unit heater or boiler and venting materials. Based on input kBTU/hour. Includes materials and shipping only.	1,000 BTU/Hour	$16.52	2	$33.04
Weather Station, Advanced	2550	Advance Weather Station which collects and records recording rainfall, humidity, barometric pressure, wind speed, temperature, and solar radiation from a solar powered self-standing tripod to an advance weather recording console. Used for both 449 advance irrigation water management and for Activity 202 water quality monitoring .	Each	$843.52	1	$843.52
Automated sampler with bottles and tubing	2606	Equipment used to collect the water samples on a flow weighted interval of 1.27 mm of runoff (volumetric depth) during a storm event.	Each	$2,277.28	2	$4,554.56
Connectors, cables, platform materials	2607	Miscellaneous (connectors, cables, berm, platform materials); Includes materials only.	Each	$6,006.45	1	$6,006.45
Depth (stage) sensor	2608	Device used to relay information to the Data logger about incremental increases in runoff. ISCO 730 Module with 1/8-in x 25-ft vinyl bubble line. Includes equipment only. Used for A202 water quality monitering	Each	$2,834.86	2	$5,669.72
Equipment shelter	2609	Building designed to house and reduce the risk of equipment damage from weather, animals, and vandalism.	Each	$1,282.26	2	$2,564.52

Pre-calibrated flow control structure-surface	2610	Pre-calibrated flow control structure-surface. Used for A202 water quality monitering	Each	$1,677.73	2	$3,355.46
Device, communications	2616	Piece of equipment or hardware designed to transmit real time data or information collected prior to site visits. Includes equipment only.	Each	$2,327.96	2	$4,655.92
Equipment Shed	2617	Equipment shed (10 x 10 foot) made of steel applied over the sampling flume to allow collection of water samples during the winter in colder climates.	Each	$488.82	2	$977.64

Practice: 202 - Edge-of-Field Water Quality Monitoring-System Installation

Scenario #30 - System Installation-Retrofit 1

Scenario Description:

This edge-of-field water quality monitoring system is to retrofit an existing system that is being used in associated with the 799 interim practice or comparable system. The retrofit is applicable to a single control or treatment site that has a field defined with surface or subsurface drainage runoff that can be captured and sampled at the edge of a field before entering a ditch or receiving water body or water course. The data represents the installation of an automated and manual backup rain gauge and back-up/solar power supply be added to existing system.

Before Situation:

The agricultural operation prior to retrofit has an edge-of-field data collection system but it does not meet the present standards for accuracy or reliability as detailed in either or both of Activity 201 and Activity 202.

After Situation:

The agricultural operation after installing the monitoring equipment will be receiving feedback in the form of edge-of-field runoff water quality samples. The samples will allow the operator to understand the relationship between rain/irrigation, practice choice, and nutrient inputs effecting nutrient and sediment loss for the field. Thus, providing an opportunity to make adaptive management changes to the agricultural operation to reduce sediment and nutrient loss and/or profitability.

Feature Measure: System installed

Scenario Unit: Each

Scenario Typical Size: 1.0

Scenario Total Cost: $2,378.94

Scenario Cost/Unit: $2,378.94

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	16	$480.80
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	5	$465.20
Materials						
Solar Panels, fixed cost portion	1031	Fixed cost portion of the Solar Panels. This portion is a base cost for all Solar Panels and is not dependant on KiloWatt. The total cost of any Solar Panels will include this fixed cost plus a variable cost portion. The completed Solar Panels will include all materials (electrical, controllers, service drops and etc). This cost will include material, labor and equipment.	Each	$261.66	1	$261.66
Solar Panels, variable cost portion	1135	Variable cost portion of the Solar Panels. This portion IS dependent on the total Kilowatt for the Solar Panels. The total cost of any Solar Panels will include this variable cost plus the fixed cost portion. The completed Solar Panels will include all materials (electrical, controllers, and service drop, etc). This cost will include material, labor and equipment.	Kilowatt	$2,731.32	0.12	$327.76
Weather Station, Advanced	2550	Advance Weather Station which collects and records recording rainfall, humidity, barometric pressure, wind speed, temperature, and solar radiation from a solar powered self-standing tripod to an advance weather recording console. Used for both 449 advance irrigation water management and for Activity 202 water quality monitoring .	Each	$843.52	1	$843.52

Practice: 202 - Edge-of-Field Water Quality Monitoring-System Installation

Scenario #31 - System Installation-Retrofit 2

Scenario Description:

This edge-of-field water quality monitoring system is to retrofit an existing system that is being used in associated with the 799 interim practice or comparable system. The retrofit is applicable to a single control or treatment site that has a field defined with surface or subsurface drainage runoff that can be captured and sampled at the edge of a field before entering a ditch or receiving water body or water course. The data represents the installation of an automated and manual backup rain gauge, back-up/solar power supply, communications device, and depth (stage) sensor to be added to existing system.

Before Situation:

The agricultural operation prior to retrofit has an edge-of-field data collection system but it does not meet the present standards for accuracy or reliability as detailed in either or both of Activity 201 and Activity 202.

After Situation:

The agricultural operation after installing the monitoring equipment will be receiving feedback in the form of edge-of-field runoff water quality samples. The samples will allow the operator to understand the relationship between rain/irrigation, practice choice, and nutrient inputs effecting nutrient and sediment loss for the field. Thus, providing an opportunity to make adaptive management changes to the agricultural operation to reduce sediment and nutrient loss and/or profitability.

Feature Measure: System installed

Scenario Unit: Each

Scenario Typical Size: 1.0

Scenario Total Cost: $7,661.96

Scenario Cost/Unit: $7,661.96

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	20	$601.00
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	5	$465.20
Materials						
Solar Panels, fixed cost portion	1031	Fixed cost portion of the Solar Panels. This portion is a base cost for all Solar Panels and is not dependant on KiloWatt. The total cost of any Solar Panels will include this fixed cost plus a variable cost portion. The completed Solar Panels will include all materials (electrical, controllers, service drops and etc). This cost will include material, labor and equipment.	Each	$261.66	1	$261.66
Solar Panels, variable cost portion	1135	Variable cost portion of the Solar Panels. This portion IS dependent on the total Kilowatt for the Solar Panels. The total cost of any Solar Panels will include this variable cost plus the fixed cost portion. The completed Solar Panels will include all materials (electrical, controllers, and service drop, etc). This cost will include material, labor and equipment.	Kilowatt	$2,731.32	0.12	$327.76
Weather Station, Advanced	2550	Advance Weather Station which collects and records recording rainfall, humidity, barometric pressure, wind speed, temperature, and solar radiation from a solar powered self-standing tripod to an advance weather recording console. Used for both 449 advance irrigation water management and for Activity 202 water quality monitoring .	Each	$843.52	1	$843.52
Depth (stage) sensor	2608	Device used to relay information to the Data logger about incremental increases in runoff. ISCO 730 Module with 1/8-in x 25-ft vinyl bubble line. Includes equipment only. Used for A202 water quality monitering	Each	$2,834.86	1	$2,834.86
Device, communications	2616	Piece of equipment or hardware designed to transmit real time data or information collected prior to site visits. Includes equipment only.	Each	$2,327.96	1	$2,327.96

Practice: 202 - Edge-of-Field Water Quality Monitoring-System Installation

Scenario #32 - System Installation-Retrofit 3

Scenario Description:

This edge-of-field water quality monitoring system is to retrofit an existing system that is being used in associated with the 799 interim practice or comparable system. The retrofit is applicable to a single control or treatment site that has a field defined with surface or subsurface drainage runoff that can be captured and sampled at the edge of a field before entering a ditch or receiving water body or water course. The data represents the installation of an automated and manual backup rain gauge, back-up/solar power supply, communications device, pre-calibrated flow control structure, and depth (stage) sensor to be added to existing system.

Before Situation:

The agricultural operation prior to retrofit has an edge-of-field data collection system but it does not meet the present standards for accuracy or reliability as detailed in either or both of Activity 201 and Activity 202.

After Situation:

The agricultural operation after installing the monitoring equipment will be receiving feedback in the form of edge-of-field runoff water quality samples. The samples will allow the operator to understand the relationship between rain/irrigation, practice choice, and nutrient inputs effecting nutrient and sediment loss for the field. Thus, providing an opportunity to make adaptive management changes to the agricultural operation to reduce sediment and nutrient loss and/or profitability.

Feature Measure: System installed

Scenario Unit: Each

Scenario Typical Size: 1.0

Scenario Total Cost: $9,700.29

Scenario Cost/Unit: $9,700.29

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	32	$961.60
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	5	$465.20
Materials						
Solar Panels, fixed cost portion	1031	Fixed cost portion of the Solar Panels. This portion is a base cost for all Solar Panels and is not dependant on KiloWatt. The total cost of any Solar Panels will include this fixed cost plus a variable cost portion. The completed Solar Panels will include all materials (electrical, controllers, service drops and etc). This cost will include material, labor and equipment.	Each	$261.66	1	$261.66
Solar Panels, variable cost portion	1135	Variable cost portion of the Solar Panels. This portion IS dependent on the total Kilowatt for the Solar Panels. The total cost of any Solar Panels will include this variable cost plus the fixed cost portion. The completed Solar Panels will include all materials (electrical, controllers, and service drop, etc). This cost will include material, labor and equipment.	Kilowatt	$2,731.32	0.12	$327.76
Weather Station, Advanced	2550	Advance Weather Station which collects and records recording rainfall, humidity, barometric pressure, wind speed, temperature, and solar radiation from a solar powered self-standing tripod to an advance weather recording console. Used for both 449 advance irrigation water management and for Activity 202 water quality monitoring .	Each	$843.52	1	$843.52
Depth (stage) sensor	2608	Device used to relay information to the Data logger about incremental increases in runoff. ISCO 730 Module with 1/8-in x 25-ft vinyl bubble line. Includes equipment only. Used for A202 water quality monitering	Each	$2,834.86	1	$2,834.86
Pre-calibrated flow control structure-surface	2610	Pre-calibrated flow control structure-surface. Used for A202 water quality monitering	Each	$1,677.73	1	$1,677.73
Device, communications	2616	Piece of equipment or hardware designed to transmit real time data or information collected prior to site visits. Includes equipment only.	Each	$2,327.96	1	$2,327.96

Practice: 202 - Edge-of-Field Water Quality Monitoring-System Installation

Scenario #33 - System Installation-Retrofit Above and Below 1

Scenario Description:

This edge-of-field water quality monitoring system is to retrofit an existing above and below monitoring designed system that is being used in associated with the 799 interim practice or comparable system. The retrofit is applicable to an above and below system that has a field defined with surface or subsurface drainage runoff that can be captured and sampled at the edge of a field before entering a ditch or receiving water body or water course. The data represents the installation of an automated and manual backup rain gauge and two back-up/solar power supply be added to existing paired system.

Before Situation:

The agricultural operation prior to retrofit has an edge-of-field data collection system but it does not meet the present standards for accuracy or reliability as detailed in either or both of Activity 201 and Activity 202.

After Situation:

The agricultural operation after installing the monitoring equipment will be receiving feedback in the form of edge-of-field runoff water quality samples. The samples will allow the operator to understand the relationship between rain/irrigation, practice choice, and nutrient inputs effecting nutrient and sediment loss for the field. Thus, providing an opportunity to make adaptive management changes to the agricultural operation to reduce sediment and nutrient loss and/or profitability.

Feature Measure: System installed

Scenario Unit: Each

Scenario Typical Size: 1.0

Scenario Total Cost: $3,187.50

Scenario Cost/Unit: $3,187.50

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	32	$961.60
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	5	$465.20
Materials						
Solar Panels, fixed cost portion	1031	Fixed cost portion of the Solar Panels. This portion is a base cost for all Solar Panels and is not dependant on KiloWatt. The total cost of any Solar Panels will include this fixed cost plus a variable cost portion. The completed Solar Panels will include all materials (electrical, controllers, service drops and etc). This cost will include material, labor and equipment.	Each	$261.66	1	$261.66
Solar Panels, variable cost portion	1135	Variable cost portion of the Solar Panels. This portion IS dependent on the total Kilowatt for the Solar Panels. The total cost of any Solar Panels will include this variable cost plus the fixed cost portion. The completed Solar Panels will include all materials (electrical, controllers, and service drop, etc). This cost will include material, labor and equipment.	Kilowatt	$2,731.32	0.24	$655.52
Weather Station, Advanced	2550	Advance Weather Station which collects and records recording rainfall, humidity, barometric pressure, wind speed, temperature, and solar radiation from a solar powered self-standing tripod to an advance weather recording console. Used for both 449 advance irrigation water management and for Activity 202 water quality monitoring .	Each	$843.52	1	$843.52

Practice: 202 - Edge-of-Field Water Quality Monitoring-System Installation

Scenario #34 - System Installation-Retrofit Above 2

Scenario Description:

This edge-of-field water quality monitoring system is to retrofit an existing above and below monitoring designed system that is being used in associated with the 799 interim practice or comparable system. The retrofit is applicable to an above and below system that has a field defined with surface or subsurface drainage runoff that can be captured and sampled at the edge of a field before entering a ditch or receiving water body or water course. The data represents the installation of an automated and manual backup rain gauge, two back-up/solar power supplies, two communications devices, and two depth (stage) sensors to be added to existing paired system.

Before Situation:

The agricultural operation prior to retrofit has an edge-of-field data collection system but it does not meet the present standards for accuracy or reliability as detailed in either or both of Activity 201 and Activity 202.

After Situation:

The agricultural operation after installing the monitoring equipment will be receiving feedback in the form of edge-of-field runoff water quality samples. The samples will allow the operator to understand the relationship between rain/irrigation, practice choice, and nutrient inputs effecting nutrient and sediment loss for the field. Thus, providing an opportunity to make adaptive management changes to the agricultural operation to reduce sediment and nutrient loss and/or profitability.

Feature Measure: System installed

Scenario Unit: Each

Scenario Typical Size: 1.0

Scenario Total Cost: $13,606.18

Scenario Cost/Unit: $13,606.18

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	32	$961.60
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	6	$558.24
Materials						
Solar Panels, fixed cost portion	1031	Fixed cost portion of the Solar Panels. This portion is a base cost for all Solar Panels and is not dependant on KiloWatt. The total cost of any Solar Panels will include this fixed cost plus a variable cost portion. The completed Solar Panels will include all materials (electrical, controllers, service drops and etc). This cost will include material, labor and equipment.	Each	$261.66	1	$261.66
Solar Panels, variable cost portion	1135	Variable cost portion of the Solar Panels. This portion IS dependent on the total Kilowatt for the Solar Panels. The total cost of any Solar Panels will include this variable cost plus the fixed cost portion. The completed Solar Panels will include all materials (electrical, controllers, and service drop, etc). This cost will include material, labor and equipment.	Kilowatt	$2,731.32	0.24	$655.52
Weather Station, Advanced	2550	Advance Weather Station which collects and records recording rainfall, humidity, barometric pressure, wind speed, temperature, and solar radiation from a solar powered self-standing tripod to an advance weather recording console. Used for both 449 advance irrigation water management and for Activity 202 water quality monitoring .	Each	$843.52	1	$843.52
Depth (stage) sensor	2608	Device used to relay information to the Data logger about incremental increases in runoff. ISCO 730 Module with 1/8-in x 25-ft vinyl bubble line. Includes equipment only. Used for A202 water quality monitering	Each	$2,834.86	2	$5,669.72
Device, communications	2616	Piece of equipment or hardware designed to transmit real time data or information collected prior to site visits. Includes equipment only.	Each	$2,327.96	2	$4,655.92

Practice: 202 - Edge-of-Field Water Quality Monitoring-System Installation

Scenario #35 - System Installation-Retrofit Above 3

Scenario Description:

This edge-of-field water quality monitoring system is to retrofit an existing above and below monitoring designed system that is being used in associated with the 799 interim practice or comparable system. The retrofit is applicable to an above and below system that has a field defined with surface or subsurface drainage runoff that can be captured and sampled at the edge of a field before entering a ditch or receiving water body or water course. The data represents the installation of an automated and manual backup rain gauge, two back-up/solar power supplies, two communications devices, two pre-calibrated flumes, and two depth (stage) sensors to be added to existing paired system.

Before Situation:

The agricultural operation prior to retrofit has an edge-of-field data collection system but it does not meet the present standards for accuracy or reliability as detailed in either or both of Activity 201 and Activity 202.

After Situation:

The agricultural operation after installing the monitoring equipment will be receiving feedback in the form of edge-of-field runoff water quality samples. The samples will allow the operator to understand the relationship between rain/irrigation, practice choice, and nutrient inputs effecting nutrient and sediment loss for the field. Thus, providing an opportunity to make adaptive management changes to the agricultural operation to reduce sediment and nutrient loss and/or profitability.

Feature Measure: System installed

Scenario Unit: Each

Scenario Typical Size: 1.0

Scenario Total Cost: $17,202.04

Scenario Cost/Unit: $17,202.04

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	40	$1,202.00
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	6	$558.24
Materials						
Solar Panels, fixed cost portion	1031	Fixed cost portion of the Solar Panels. This portion is a base cost for all Solar Panels and is not dependant on KiloWatt. The total cost of any Solar Panels will include this fixed cost plus a variable cost portion. The completed Solar Panels will include all materials (electrical, controllers, service drops and etc). This cost will include material, labor and equipment.	Each	$261.66	1	$261.66
Solar Panels, variable cost portion	1135	Variable cost portion of the Solar Panels. This portion IS dependent on the total Kilowatt for the Solar Panels. The total cost of any Solar Panels will include this variable cost plus the fixed cost portion. The completed Solar Panels will include all materials (electrical, controllers, and service drop, etc). This cost will include material, labor and equipment.	Kilowatt	$2,731.32	0.24	$655.52
Weather Station, Advanced	2550	Advance Weather Station which collects and records recording rainfall, humidity, barometric pressure, wind speed, temperature, and solar radiation from a solar powered self-standing tripod to an advance weather recording console. Used for both 449 advance irrigation water management and for Activity 202 water quality monitoring .	Each	$843.52	1	$843.52
Depth (stage) sensor	2608	Device used to relay information to the Data logger about incremental increases in runoff. ISCO 730 Module with 1/8-in x 25-ft vinyl bubble line. Includes equipment only. Used for A202 water quality monitering	Each	$2,834.86	2	$5,669.72
Pre-calibrated flow control structure-surface	2610	Pre-calibrated flow control structure-surface. Used for A202 water quality monitering	Each	$1,677.73	2	$3,355.46
Device, communications	2616	Piece of equipment or hardware designed to transmit real time data or information collected prior to site visits. Includes equipment only.	Each	$2,327.96	2	$4,655.92

Practice: 207 - Site Assessment and Soil Testing for Contaminants Activity

Scenario #4 - Site Evaluation for Potential Contaminants

Scenario Description:

This practice applies to urban sites where the desired land use is cropland. Sites may have been residential, industrial or commercial land use in the past and the risk for soil contaminants is unknown.

Before Situation:

Soil suitability for agricultural production is unknown with potential risk of contamination from prior land use activities.

After Situation:

Site history has been researched and findings indicate a potential for the presence of contaminants. Final report provides the landowner with the level of risk and recommendation for further testing. Reports may be used in the conservation planning process to explore non-remedial conservation practices to reduce risk of contaminants entering the food products.

Feature Measure: Each Site

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $3,721.60

Scenario Cost/Unit: $3,721.60

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	40	$3,721.60

Practice: 207 - Site Assessment and Soil Testing for Contaminants Activity

Scenario #20 - Site Evaluation and Soil Testing for Contaminants

Scenario Description:

This practice applies to urban sites where the desired land use is cropland. Sites may have been residential, industrial or commercial land use in the past and the risk for soil contaminants is unknown.

Before Situation:

Soil suitability for agricultural production is unknown with potential risk of contamination from prior land use activities.

After Situation:

Site history has been researched and findings indicate a potential for the presence of contaminants. The soil has been collected and tested for heavy metals, VOCs and PAHs. Final reports provide the landowner with the level of risk. Reports may be used in the conservation planning process to explore non-remedial conservation practices to reduce risk of contaminants entering the food products.

Feature Measure: Each Site

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $11,164.80

Scenario Cost/Unit: $11,164.80

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	120	$11,164.80

Practice: 207 - Site Assessment and Soil Testing for Contaminants Activity

Scenario #36 - Soil Testing and Subsurface Investigation

Scenario Description:

This practice applies to urban sites where the desired land use is cropland. Sites may have been residential, industrial or commercial land use in the past and the risk for soil contaminants is unknown. The landowner has a prior Environmental Site Assessment completed by an Environmental Professional. The ESA report recommends further subsurface investigation. OR Landowner has NRCS report from portable Xray Flouresence screening that detected soil contaminants.

Before Situation:

Soil suitability for agricultural production is unknown with potential risk of contamination from prior land use activities.

After Situation:

Site history has been researched and findings indicate a potential for the presence of contaminants. The soil has been collected and tested for heavy metals, VOCs and PAHs. Final reports provide the landowner with the level of risk. Reports may be used in the conservation planning process to explore non-remedial conservation practices to reduce risk of contaminants entering the food products.

Feature Measure: Each Site

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $7,443.20

Scenario Cost/Unit: $7,443.20

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	80	$7,443.20

Practice: 207 - Site Assessment and Soil Testing for Contaminants Activity

Scenario #52 - Soil Testing for Contaminants on Low Risk Sites

Scenario Description:

This practice applies to urban sites where the desired land use is cropland. Sites may have been residential, industrial or commercial land use in the past and the risk for soil contaminants is unknown. The landowner has a prior Environmental Site Assessment completed by an Environmental Professional. The ESA report does not require further investigation. OR Landowner has NRCS report from portable Xray Flouresence screening that detected soil contaminants. Screening detection levels are below the State Environmental Protection Agency or equivalent agency published safety thresholds for bare soil residential use.

Before Situation:

Soil suitability for agricultural production is unknown with potential risk of contamination from prior land use activities.

After Situation:

Site history has been researched and findings indicate a potential for the presence of contaminants. The soil has been collected and tested for heavy metals only. Soil test reports provide the landowner with the level of risk. Reports may be used in the conservation planning process to explore non-remedial conservation practices to reduce risk of contaminants entering the food products.

Feature Measure: Area of Soil Tested

Scenario Unit: 1,000 Square Foot

Scenario Typical Size: 4.0

Scenario Total Cost: $626.56

Scenario Cost/Unit: $156.64

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	10	$231.80
Materials						
Test, Soil Test, Heavy Metals	2735	Microwave assisted acid digestion of soil for arsenic, cadmium, chromium, copper, lead, molybdenum, nickel, selenium, and zinc using EPA Method 3051A	Number	$98.69	4	$394.76

Practice: 216 - Soil Health Testing

Scenario #151 - Basic Soil Health Suite + Chemical

Scenario Description:

Soil is collected and analyzed in a lab to assess soil health and fertility. A laboratory soil health assessment is conducted using recommended methods in technical note 450-03 to evaluate and/or monitor conservation practices. Laboratory tests must include "basic package" indicators: soil organic carbon, aggregation, bioavailable nitrogen, respiration, and active carbon. This scenario also includes a comprehensive chemical soil test (macronutrients + micronutrients). Sample collection is completed by an agricultural service provider, soil scientist, or other agriculture professional and includes time for soil sampling and submission.

Before Situation:

Agricultural producer has been farming a system that has not addressed all 4 of the soil health principles. Producer has noticed yield declines, soil degradation, or is simply interested in learning more about soil health management.

After Situation:

A laboratory soil health test and nutrient analysis were completed and the results were interpreted (scored) and explained to the producer and used to establish benchmark conditions for soil health management practices or evaluate the effectiveness of a conservation practice.

Feature Measure: polygon

Scenario Unit: Number

Scenario Typical Size: 5.0

Scenario Total Cost: $926.78

Scenario Cost/Unit: $185.36

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	2.5	$75.13
Materials						
Test, Soil Test, Comprehensive	2384	Comprehensive Soil Testing for pH, EC, nitrates, ammonium, phosphorus, potassium, organic matter and other micro-nutrients. Includes materials and shipping only.	Each	$51.39	5	$256.95
Test, Soil Health, Basic Package	2734	Basic soil health laboratory assessment for soil organic carbon, aggregation, bioavailable nitrogen, respiration, and active carbon according to technical note 450-03. Includes shipping and handling.	Number	$118.94	5	$594.70

Practice: 216 - Soil Health Testing

Scenario #167 - Basic Soil Health Suite

Scenario Description:

A soil sample is collected and laboratory soil health assessment is conducted using recommended methods in technical note 450-03 to evaluate and/or monitor conservation practices. Laboratory tests must include "basic package" indicators: soil organic carbon, aggregation, bioavailable nitrogen, respiration, and active carbon. This scenario assumes that a comprehensive chemical soil test (macronutrients + micronutrients) has been completed on the same management unit in the last 2 years. Sample collection is completed by an agricultural service provider, soil scientist, or other agriculture professional and includes time for soil sampling and submission.

Before Situation:

Agricultural producer has been farming a system that has not addressed all 4 of the soil health principles. Producer has noticed yield declines, soil degradation, or is simply interested in learning more about soil health management.

After Situation:

A laboratory soil health test was completed and the results were interpreted (scored), explained to the producer, and used to establish benchmark conditions for soil health management practices or to evaluate the effectiveness of a conservation practice.

Feature Measure: polygon

Scenario Unit: Number

Scenario Typical Size: 5.0

Scenario Total Cost: $669.83

Scenario Cost/Unit: $133.97

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	2.5	$75.13
Materials						
Test, Soil Health, Basic Package	2734	Basic soil health laboratory assessment for soil organic carbon, aggregation, bioavailable nitrogen, respiration, and active carbon according to technical note 450-03. Includes shipping and handling.	Number	$118.94	5	$594.70

Practice: 216 - Soil Health Testing

Scenario #183 - Basic Soil Health Suite - Single Indicator

Scenario Description:

A laboratory soil health assessment for a single indictor is conducted using recommended methods in technical note 450-03 to evaluate and/or monitor conservation practices. Laboratory tests for the single indicator may include: soil organic carbon, aggregation, bioavailable nitrogen, respiration, active carbon, microbial community structure, or enzyme activity. Sample collection is completed by an agricultural service provider, soil scientist, or other agriculture professional and includes time for soil sampling and submission.

Before Situation:

Agricultural producer has been farming a system that has not addressed all 4 of the soil health principles. Producer has noticed yield declines, soil degradation, or is simply interested in learning more about soil health management.

After Situation:

A laboratory soil health test of was completed for a single indicator and the results were interpreted (scored) and explained to the producer and used to establish benchmark conditions for soil health management practices or evaluate the effectiveness of a conservation practice.

Feature Measure: polygon

Scenario Unit: Number

Scenario Typical Size: 5.0

Scenario Total Cost: $194.07

Scenario Cost/Unit: $38.81

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	2.5	$75.13
Materials						
Test, Soil Health, Basic Package	2734	Basic soil health laboratory assessment for soil organic carbon, aggregation, bioavailable nitrogen, respiration, and active carbon according to technical note 450-03. Includes shipping and handling.	Number	$118.94	1	$118.94

Practice: 217 - Soil and Source Testing for Nutrient Management

Scenario #4 - Soil Test Only

Scenario Description:

A qualified individual will develop a nutrient testing strategy, collect soil samples and prepare for laboratory analysis; and interpret soil nutrient needs. Typical management unit is 100 acres.

Before Situation:

Producer does not have soil test laboratory analysis documenting the level of nitrogen, phosphorus, potassium or pH for each field or management unit in crop production. Nutrients are applied without knowledge of soil test levels.

After Situation:

Soil samples have been collected and analyzed. The strategy for sampling is described and a map if sampling points is provided. Qualified individual concludes nutrients are needed or not based on soil test results. Follow up by developing a nutrient management plan with DIA 157 Nutrient Management Design and Implementation Activity or implement Nutrient Management 590.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $2,164.70

Scenario Cost/Unit: $2,164.70

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	8	$240.40
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	20	$1,860.80
Materials						
Test, Soil Test, Standard	299	Includes materials, shiping, labor, and equipment costs.	Each	$12.70	5	$63.50

Practice: 217 - Soil and Source Testing for Nutrient Management

Scenario #20 - Soil and Source Material Test

Scenario Description:

A qualified individual will develop a nutrient testing strategy, collect soil samples and prepare for laboratory analysis; and interpret soil nutrient needs. Typical whole field soil sampling plus collection of samples for nutrient sources needing to be tested.

Before Situation:

Producer does not have soil test laboratory analysis documenting the level of nitrogen, phosphorus, potassium or pH for each field or management unit in crop production. Nutrients are applied without knowledge of soil test levels.

After Situation:

Soil samples have been collected and analyzed. The strategy for sampling is described and a map if sampling points is provided. Qualified individual concludes nutrients are needed or not based on soil test results. Follow up by developing a nutrient management plan with DIA 157 Nutrient Management Design and Implementation Activity or implement Nutrient Management 590.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $2,983.11

Scenario Cost/Unit: $2,983.11

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	8	$240.40
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	25	$2,326.00
Materials						
Test, Soil Test, Standard	299	Includes materials, shiping, labor, and equipment costs.	Each	$12.70	20	$254.00
Test, Manure Analysis	306	Moisture, Total N, P, K. Includes materials and shipping only.	Each	$41.26	1.3	$53.64
Test, Compost Analysis	307	Moisture, Total N, P, K. Includes materials and shipping only.	Each	$51.86	1.3	$67.42
Testing, Water Quality	2613	Ammonium, Nitrite plus Nitrate, Total Kjeldahl Nitrogen, Soluble Reactive P (Orthophosphate), Total Phosphorus, Suspended Sediment Concentration – Preferred, or Total Suspended Solids. Includes materials only.	Each	$32.04	1.3	$41.65

Practice: 217 - Soil and Source Testing for Nutrient Management

Scenario #36 - Zone or Grid Soil Test

Scenario Description:

A qualified individual will develop a nutrient testing strategy, collect soil samples and prepare for laboratory analysis; and interpret soil nutrient needs. Typical management unit is 100 acres.

Before Situation:

Producer does not have soil test laboratory analysis documenting the level of nitrogen, phosphorus, potassium or pH for each field or management unit in crop production. Nutrients are applied without knowledge of soil test levels.

After Situation:

Soil samples have been collected and analyzed. The strategy for sampling is described and a map if sampling points is provided. Qualified individual concludes nutrients are needed or not based on soil test results. Follow up by developing a nutrient management plan with DIA 157 Nutrient Management Design and Implementation Activity or implement Nutrient Management 590.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $3,074.40

Scenario Cost/Unit: $3,074.40

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	8	$240.40
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	25	$2,326.00
Materials						
Test, Soil Test, Standard	299	Includes materials, shiping, labor, and equipment costs.	Each	$12.70	40	$508.00

Practice: 217 - Soil and Source Testing for Nutrient Management

Scenario #52 - Manure or Compost Only

Scenario Description:

A qualified individual will develop a nutrient testing strategy, collect soil samples and prepare for laboratory analysis; and interpret soil nutrient needs. Sampling protocol for liquid manure includes agitation per LGU guidelines. Dry manure and compost sampling protocol per LGU guidelines.

Before Situation:

Producer does not have soil test laboratory analysis documenting the level of nitrogen, phosphorus, potassium or pH for each field or management unit in crop production. Nutrients are applied without knowledge of soil test levels.

After Situation:

Soil samples have been collected and analyzed. The strategy for sampling is described and a map if sampling points is provided. Qualified individual concludes nutrients are needed or not based on soil test results. Follow up by developing a nutrient management plan with DIA 157 Nutrient Management Design and Implementation Activity or implement Nutrient Management 590.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $2,308.64

Scenario Cost/Unit: $2,308.64

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	8	$240.40
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	20	$1,860.80
Materials						
Test, Compost Analysis	307	Moisture, Total N, P, K. Includes materials and shipping only.	Each	$51.86	4	$207.44

Practice: 217 - Soil and Source Testing for Nutrient Management

Scenario #68 - Source Water Nutrient Test

Scenario Description:

A qualified individual will develop a nutrient testing strategy, collect soil samples and prepare for laboratory analysis; and interpret soil nutrient needs. Typical irrigation water sampling for nutrients, may include drainage water sampling for monitoring nutrient loss or if drainage water is being reused.

Before Situation:

Producer does not have soil test laboratory analysis documenting the level of nitrogen, phosphorus, potassium or pH for each field or management unit in crop production. Nutrients are applied without knowledge of soil test levels.

After Situation:

Soil samples have been collected and analyzed. The strategy for sampling is described and a map if sampling points is provided. Qualified individual concludes nutrients are needed or not based on soil test results. Follow up by developing a nutrient management plan with DIA 157 Nutrient Management Design and Implementation Activity or implement Nutrient Management 590.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $2,229.36

Scenario Cost/Unit: $2,229.36

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	8	$240.40
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	20	$1,860.80
Materials						
Testing, Water Quality	2613	Ammonium, Nitrite plus Nitrate, Total Kjeldahl Nitrogen, Soluble Reactive P (Orthophosphate), Total Phosphorus, Suspended Sediment Concentration – Preferred, or Total Suspended Solids. Includes materials only.	Each	$32.04	4	$128.16

Practice: 218 - Carbon Sequestration and Greenhouse Gas Mitigation Assessment

Scenario #4 - Low Complexity

Scenario Description:

An evaluation of the quantifiable carbon sequestration and greenhouse gas mitigation effects using the COMET-Farm tool. The information on the type of operation, land use, and management history is collected initially as part of the planning process for a conservation plan focused on carbon sequestration and greenhouse gas mitigation. The carbon sequestration and greenhouse gas mitigation CEMA includes a complete COMET-Farm project designed to evaluate the current conservation plan and the baseline and historic management impacts on carbon sequestration and greenhouse gas mitigation. The COMET-Farm evaluation can occur concurrently or following a conservation plan. Low complexity would include simple systems of a single enterprise, low number of management units, detailed available history.

Before Situation:

The producer's objectives are to improve soil carbon sequestration and greenhouse gas mitigation and to quantify the effects of a conservation plan. The quantifiable effects on soil carbon sequestration and greenhouse gas mitigation of the current and historic management practices are not known.

After Situation:

Producer receives a detailed report from COMET-Farm that quantifies the soil carbon sequestration and greenhouse gas mitigation effects of historic, baseline, and (scenario management) proposed conservation plan.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $744.32

Scenario Cost/Unit: $744.32

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	8	$744.32

Practice: 218 - Carbon Sequestration and Greenhouse Gas Mitigation Assessment

Scenario #20 - Medium Complexity

Scenario Description:

An evaluation of the quantifiable carbon sequestration and greenhouse gas mitigation effects using the COMET-Farm tool. The information on the type of operation, land use, and management history is collected initially as part of the planning process for a conservation plan focused on carbon sequestration and greenhouse gas mitigation. The carbon sequestration and greenhouse gas mitigation CEMA includes a complete COMET-Farm project designed to evaluate the current conservation plan and the baseline and historic management impacts on carbon sequestration and greenhouse gas mitigation. The COMET-Farm evaluation can occur concurrently or following a conservation plan. Medium complexity would include systems with more than one enterprises, a moderate number of management units, complex or difficult to define history.

Before Situation:

The producer objectives are to improve soil carbon sequestration and greenhouse gas mitigation and quantify the effects of a conservation plan. The quantifiable effects on soil carbon sequestration and greenhouse gas mitigation of the current and historic management practices are not known.

After Situation:

Producer receives a detailed COMET-Farm report that quantifies the soil carbon sequestration and greenhouse gas mitigation effects of historic, baseline, and (scenario management) proposed conservation plan.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $1,116.48

Scenario Cost/Unit: $1,116.48

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	12	$1,116.48

Practice: 218 - Carbon Sequestration and Greenhouse Gas Mitigation Assessment

Scenario #36 - High Complexity

Scenario Description:

An evaluation of the quantifiable carbon sequestration and greenhouse gas mitigation effects using the COMET-Farm tool. The information on the type of operation, land use, and management history is collected initially as part of the planning process for a conservation plan focused on carbon sequestration and greenhouse gas mitigation. The carbon sequestration and greenhouse gas mitigation CEMA includes a complete COMET-Farm project designed to evaluate the current conservation plan and the baseline and historic management impacts on carbon sequestration and greenhouse gas mitigation. The COMET-Farm evaluation can occur concurrently or following a conservation plan. High complexity would include systems with multiple enterprises, high number of management units, and complex or incomplete management history.

Before Situation:

The producer objectives are to improve soil carbon sequestration and greenhouse gas mitigation and quantify the effects of a conservation plan. The quantifiable effects on soil carbon sequestration and greenhouse gas mitigation of the current and historic management practices are not known.

After Situation:

Producer receives a detailed report from COMET-Farm that quantifies the soil carbon sequestration and greenhouse gas mitigation effects of historic, baseline, and (scenario management) proposed conservation plan .

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $1,488.64

Scenario Cost/Unit: $1,488.64

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	16	$1,488.64

Practice: 228 - Agricultural Energy Assessment

Scenario #4 - Large size, 3 Enterprises

Scenario Description:

An agricultural producer wishes to obtain an energy assessment of their agricultural operation. The operation has 3 enterprises where at least I consists of > 2500 acres of crops, > 1000 animal units, more than 6 irrigation pumps, or > 40,000 sq. ft. of heated greenhouse. An enterprise is defined in the ASABE S612 Performing On-farm Energy Audits Standard. Large operations are described above. The Ag Energy CEMA is an assessment of the energy consuming activities and components of an agricultural operation and includes the requirements of a Type 2 energy audit as described in the ASABE S612 standard. An Ag Energy CEMA includes a baseline assessment of the of systems, equipment, and facilities using a typical year of energy use and recommended measures to prioritize on-farm opportunities to increase energy efficiency and reduce energy use. A Certified TSP will accomplish all work in accordance with the requirements of the CEMA 228 Agricultural Energy Assessment Activity. Natural Resource Concern: Energy Efficiency of Equipment and Facilities.

Before Situation:

Producer currently has minimal knowledge of and no plan for energy conservation. The producer currently manages an operation as described above. Producer intends to collaborate with a certified TSP to develop an energy use assessment of their entire operation. The CEMA 228 incorporates recommended measures to maximize energy conservation and efficiency. Associated Practices: 374 Farmstead Energy Improvement, 670 Energy Efficient Lighting System, 672 Energy Efficient Building Envelope, 533 Pumping Plant, or other applicable practices in the NRCS Field Office Technical Guide.

After Situation:

The producer has obtained services from a certified TSP to develop an energy assessment. The CEMA 228 criteria include a baseline assessment using a typical year of energy use, energy savings of recommended improvement measures, and information useful for prioritizing implementation of the measures. The documentation may include recommendations for associated conservation practices which address energy efficiency. The Ag Energy CEMA meets the basic quality criteria for the CEMA 228 activity as cited in the NRCS Field Office Technical Guide.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $7,972.79

Scenario Cost/Unit: $7,972.79

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	34	$3,800.18
CAP Labor, Manager	1603	Conservation Activity Plan labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$48.55	24	$1,165.20
CAP Labor, Administrative Assistant	1739	Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers.	Hours	$32.23	3	$96.69
CAP Labor, Energy Auditor	1740	Conservation Activity Plan labor involving analyzing energy efficient measures and conducting energy audits of industrial areas and facilities.	Hours	$60.64	48	$2,910.72

Practice: 228 - Agricultural Energy Assessment

Scenario #20 - Large size, 4+ Enterprises

Scenario Description:

An agricultural producer wishes to obtain an energy assessment of their agricultural operation. The operation has 4 or more enterprises where at least I consists of > 2500 acres of crops, > 1000 animal units, more than 6 irrigation pumps, or > 40,000 sq. ft. of heated greenhouse. An enterprise is defined in the ASABE S612 Performing On-farm Energy Audits Standard. Large operations are described above. The Ag Energy CEMA is an assessment of the energy consuming activities and components of an agricultural operation and includes the requirements of a Type 2 energy audit as described in the ASABE S612 standard. An Ag Energy CEMA includes a baseline assessment of the of systems, equipment, and facilities using a typical year of energy use and recommended measures to prioritize on-farm opportunities to increase energy efficiency and reduce energy use. A Certified TSP will accomplish all work in accordance with the requirements of the CEMA 228 Agricultural Energy Assessment Activity. Natural Resource Concern: Energy Efficiency of Equipment and Facilities.

Before Situation:

Producer currently has minimal knowledge of and no plan for energy conservation. The producer currently manages an operation as described above. Producer intends to collaborate with a certified TSP to develop an energy use assessment of their entire operation. The CEMA 228 incorporates recommended measures to maximize energy conservation and efficiency. Associated Practices: 374 Farmstead Energy Improvement, 670 Energy Efficient Lighting System, 672 Energy Efficient Building Envelope, 533 Pumping Plant, or other applicable practices in the NRCS Field Office Technical Guide.

After Situation:

The producer has obtained services from a certified TSP to develop an energy assessment. The CEMA 228 criteria include a baseline assessment using a typical year of energy use, energy savings of recommended improvement measures, and information useful for prioritizing implementation of the measures. The documentation may include recommendations for associated conservation practices which address energy efficiency. The Ag Energy CEMA meets the basic quality criteria for the CEMA 228 activity as cited in the NRCS Field Office Technical Guide.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $9,578.50

Scenario Cost/Unit: $9,578.50

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	42	$4,694.34
CAP Labor, Manager	1603	Conservation Activity Plan labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$48.55	28	$1,359.40
CAP Labor, Administrative Assistant	1739	Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers.	Hours	$32.23	4	$128.92
CAP Labor, Energy Auditor	1740	Conservation Activity Plan labor involving analyzing energy efficient measures and conducting energy audits of industrial areas and facilities.	Hours	$60.64	56	$3,395.84

Practice: 228 - Agricultural Energy Assessment

Scenario #36 - Large size, 2 Enterprises

Scenario Description:

An agricultural producer wishes to obtain an energy assessment of their agricultural operation. The operation has 2 enterprises where at least I consists of > 2500 acres of crops, > 1000 animal units, more than 6 irrigation pumps, or > 40,000 sq. ft. of heated greenhouse. An enterprise is defined in the ASABE S612 Performing On-farm Energy Audits Standard. Large operations are described above. The Ag Energy CEMA is an assessment of the energy consuming activities and components of an agricultural operation and includes the requirements of a Type 2 energy audit as described in the ASABE S612 standard. An Ag Energy CEMA includes a baseline assessment of the of systems, equipment, and facilities using a typical year of energy use and recommended measures to prioritize on-farm opportunities to increase energy efficiency and reduce energy use. A Certified TSP will accomplish all work in accordance with the requirements of the CEMA 228 Agricultural Energy Assessment Activity. Natural Resource Concern: Energy Efficiency of Equipment and Facilities.

Before Situation:

Producer currently has minimal knowledge of and no plan for energy conservation. The producer currently manages an operation as described above. Producer intends to collaborate with a certified TSP to develop an energy use assessment of their entire operation. The CEMA 228 incorporates recommended measures to maximize energy conservation and efficiency. Associated Practices: 374 Farmstead Energy Improvement, 670 Energy Efficient Lighting System, 672 Energy Efficient Building Envelope, 533 Pumping Plant, or other applicable practices in the NRCS Field Office Technical Guide.

After Situation:

The producer has obtained services from a certified TSP to develop an energy assessment. The CEMA 228 criteria include a baseline assessment using a typical year of energy use, energy savings of recommended improvement measures, and information useful for prioritizing implementation of the measures. The documentation may include recommendations for associated conservation practices which address energy efficiency. The Ag Energy CEMA meets the basic quality criteria for the CEMA 228 activity as cited in the NRCS Field Office Technical Guide.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $6,367.08

Scenario Cost/Unit: $6,367.08

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	26	$2,906.02
CAP Labor, Manager	1603	Conservation Activity Plan labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$48.55	20	$971.00
CAP Labor, Administrative Assistant	1739	Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers.	Hours	$32.23	2	$64.46
CAP Labor, Energy Auditor	1740	Conservation Activity Plan labor involving analyzing energy efficient measures and conducting energy audits of industrial areas and facilities.	Hours	$60.64	40	$2,425.60

Practice: 228 - Agricultural Energy Assessment

Scenario #52 - Medium size, 4+ Enterprises

Scenario Description:

An agricultural producer wishes to obtain an energy assessment of their agricultural operation. The operation has 4 or more enterprises where at least I consists of 301 to 2500 acres of crops, < 301 to 1000 animal units, 3 - 6 irrigation pumps, or 20,001 to 40,000 sq. ft. of heated greenhouse. An enterprise is defined in the ASABE S612 Performing On-farm Energy Audits Standard. Medium operations are described above. The Ag Energy CEMA is an assessment of the energy consuming activities and components of an agricultural operation and includes the requirements of a Type 2 energy audit as described in the ASABE S612 standard. An Ag Energy CEMA includes a baseline assessment of the of systems, equipment, and facilities using a typical year of energy use and recommended measures to prioritize on-farm opportunities to increase energy efficiency and reduce energy use. A Certified TSP will accomplish all work in accordance with the requirements of the CEMA 228 Agricultural Energy Assessment Activity. Natural Resource Concern: Energy Efficiency of Equipment and Facilities.

Before Situation:

Producer currently has minimal knowledge of and no plan for energy conservation. The producer currently manages an operation as described above. Producer intends to collaborate with a certified TSP to develop an energy use assessment of their entire operation. The CEMA 228 incorporates recommended measures to maximize energy conservation and efficiency. Associated Practices: 374 Farmstead Energy Improvement, 670 Energy Efficient Lighting System, 672 Energy Efficient Building Envelope, 533 Pumping Plant, or other applicable practices in the NRCS Field Office Technical Guide.

After Situation:

The producer has obtained services from a certified TSP to develop an energy assessment. The CEMA 228 criteria include a baseline assessment using a typical year of energy use, energy savings of recommended improvement measures, and information useful for prioritizing implementation of the measures. The documentation may include recommendations for associated conservation practices which address energy efficiency. The Ag Energy CEMA meets the basic quality criteria for the CEMA 228 activity as cited in the NRCS Field Office Technical Guide.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $8,422.76

Scenario Cost/Unit: $8,422.76

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	36	$4,023.72
CAP Labor, Manager	1603	Conservation Activity Plan labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$48.55	28	$1,359.40
CAP Labor, Administrative Assistant	1739	Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers.	Hours	$32.23	4	$128.92
CAP Labor, Energy Auditor	1740	Conservation Activity Plan labor involving analyzing energy efficient measures and conducting energy audits of industrial areas and facilities.	Hours	$60.64	48	$2,910.72

Practice: 228 - Agricultural Energy Assessment

Scenario #68 - Small size, 4+ Enterprises

Scenario Description:

An agricultural producer wishes to obtain an energy assessment of their agricultural operation. The operation has 4 or more enterprises where 1 is not larger than < 300 acres of crops, < 300 animal units, 1 - 2 irrigation pumps, < 20,000 sq. ft. of heated greenhouse, or maple syrup processing. An enterprise is defined in the ASABE S612 Performing On-farm Energy Audits Standard. Small operations are described above. The Ag Energy CEMA is an assessment of the energy consuming activities and components of an agricultural operation and includes the requirements of a Type 2 energy audit as described in the ASABE S612 standard. An Ag Energy CEMA includes a baseline assessment of the of systems, equipment, and facilities using a typical year of energy use and recommended measures to prioritize on-farm opportunities to increase energy efficiency and reduce energy use. A Certified TSP will accomplish all work in accordance with the requirements of the CEMA 228 Agricultural Energy Assessment Activity. Natural Resource Concern: Energy Efficiency of Equipment and Facilities.

Before Situation:

Producer currently has minimal knowledge of and no plan for energy conservation. The producer currently manages an operation as described above. Producer intends to collaborate with a certified TSP to develop an energy use assessment of their entire operation. The CEMA 228 incorporates recommended measures to maximize energy conservation and efficiency. Associated Practices: 374 Farmstead Energy Improvement, 670 Energy Efficient Lighting System, 672 Energy Efficient Building Envelope, 533 Pumping Plant, or other applicable practices in the NRCS Field Office Technical Guide.

After Situation:

The producer has obtained services from a certified TSP to develop an energy assessment. The CEMA 228 criteria include a baseline assessment using a typical year of energy use, energy savings of recommended improvement measures, and information useful for prioritizing implementation of the measures. The documentation may include recommendations for associated conservation practices which address energy efficiency. The Ag Energy CEMA meets the basic quality criteria for the CEMA 228 activity as cited in the NRCS Field Office Technical Guide.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $7,490.56

Scenario Cost/Unit: $7,490.56

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	32	$3,576.64
CAP Labor, Manager	1603	Conservation Activity Plan labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$48.55	28	$1,359.40
CAP Labor, Administrative Assistant	1739	Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers.	Hours	$32.23	4	$128.92
CAP Labor, Energy Auditor	1740	Conservation Activity Plan labor involving analyzing energy efficient measures and conducting energy audits of industrial areas and facilities.	Hours	$60.64	40	$2,425.60

Practice: 228 - Agricultural Energy Assessment

Scenario #84 - Medium size, 3 Enterprises

Scenario Description:

An agricultural producer wishes to obtain an energy assessment of their agricultural operation. The operation has 3 enterprises where at least I consists of 301 to 2500 acres of crops, < 301 to 1000 animal units, 3 - 6 irrigation pumps, or 20,001 to 40,000 sq. ft. of heated greenhouse. An enterprise is defined in the ASABE S612 Performing On-farm Energy Audits Standard. Medium operations are described above. The Ag Energy CEMA is an assessment of the energy consuming activities and components of an agricultural operation and includes the requirements of a Type 2 energy audit as described in the ASABE S612 standard. An Ag Energy CEMA includes a baseline assessment of the of systems, equipment, and facilities using a typical year of energy use and recommended measures to prioritize on-farm opportunities to increase energy efficiency and reduce energy use. A Certified TSP will accomplish all work in accordance with the requirements of the CEMA 228 Agricultural Energy Assessment Activity. Natural Resource Concern: Energy Efficiency of Equipment and Facilities.

Before Situation:

Producer currently has minimal knowledge of and no plan for energy conservation. The producer currently manages an operation as described above. Producer intends to collaborate with a certified TSP to develop an energy use assessment of their entire operation. The CEMA 228 incorporates recommended measures to maximize energy conservation and efficiency. Associated Practices: 374 Farmstead Energy Improvement, 670 Energy Efficient Lighting System, 672 Energy Efficient Building Envelope, 533 Pumping Plant, or other applicable practices in the NRCS Field Office Technical Guide.

After Situation:

The producer has obtained services from a certified TSP to develop an energy assessment. The CEMA 228 criteria include a baseline assessment using a typical year of energy use, energy savings of recommended improvement measures, and information useful for prioritizing implementation of the measures. The documentation may include recommendations for associated conservation practices which address energy efficiency. The Ag Energy CEMA meets the basic quality criteria for the CEMA 228 activity as cited in the NRCS Field Office Technical Guide.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $6,817.05

Scenario Cost/Unit: $6,817.05

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	28	$3,129.56
CAP Labor, Manager	1603	Conservation Activity Plan labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$48.55	24	$1,165.20
CAP Labor, Administrative Assistant	1739	Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers.	Hours	$32.23	3	$96.69
CAP Labor, Energy Auditor	1740	Conservation Activity Plan labor involving analyzing energy efficient measures and conducting energy audits of industrial areas and facilities.	Hours	$60.64	40	$2,425.60

Practice: 228 - Agricultural Energy Assessment

Scenario #100 - Small size, 3 Enterprises

Scenario Description:

An agricultural producer wishes to obtain an energy assessment of their agricultural operation. The operation has 3 enterprises where 1 is not larger than < 300 acres of crops, < 300 animal units, 1 - 2 irrigation pumps, < 20,000 sq. ft. of heated greenhouse, or maple syrup processing. An enterprise is defined in the ASABE S612 Performing On-farm Energy Audits Standard. Small operations are described above. The Ag Energy CEMA is an assessment of the energy consuming activities and components of an agricultural operation and includes the requirements of a Type 2 energy audit as described in the ASABE S612 standard. An Ag Energy CEMA includes a baseline assessment of the of systems, equipment, and facilities using a typical year of energy use and recommended measures to prioritize on-farm opportunities to increase energy efficiency and reduce energy use. A Certified TSP will accomplish all work in accordance with the requirements of the CEMA 228 Agricultural Energy Assessment Activity. Natural Resource Concern: Energy Efficiency of Equipment and Facilities.

Before Situation:

Producer currently has minimal knowledge of and no plan for energy conservation. The producer currently manages an operation as described above. Producer intends to collaborate with a certified TSP to develop an energy use assessment of their entire operation. The CEMA 228 incorporates recommended measures to maximize energy conservation and efficiency. Associated Practices: 374 Farmstead Energy Improvement, 670 Energy Efficient Lighting System, 672 Energy Efficient Building Envelope, 533 Pumping Plant, or other applicable practices in the NRCS Field Office Technical Guide.

After Situation:

The producer has obtained services from a certified TSP to develop an energy assessment. The CEMA 228 criteria include a baseline assessment using a typical year of energy use, energy savings of recommended improvement measures, and information useful for prioritizing implementation of the measures. The documentation may include recommendations for associated conservation practices which address energy efficiency. The Ag Energy CEMA meets the basic quality criteria for the CEMA 228 activity as cited in the NRCS Field Office Technical Guide.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $5,884.85

Scenario Cost/Unit: $5,884.85

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	24	$2,682.48
CAP Labor, Manager	1603	Conservation Activity Plan labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$48.55	24	$1,165.20
CAP Labor, Administrative Assistant	1739	Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers.	Hours	$32.23	3	$96.69
CAP Labor, Energy Auditor	1740	Conservation Activity Plan labor involving analyzing energy efficient measures and conducting energy audits of industrial areas and facilities.	Hours	$60.64	32	$1,940.48

Practice: 228 - Agricultural Energy Assessment

Scenario #116 - Medium size, 2 Enterprises

Scenario Description:

An agricultural producer wishes to obtain an energy assessment of their agricultural operation. The operation has 2 enterprises where at least I consists of 301 to 2500 acres of crops, < 301 to 1000 animal units, 3 - 6 irrigation pumps, or 20,001 to 40,000 sq. ft. of heated greenhouse. An enterprise is defined in the ASABE S612 Performing On-farm Energy Audits Standard. Medium operations are described above. The Ag Energy CEMA is an assessment of the energy consuming activities and components of an agricultural operation and includes the requirements of a Type 2 energy audit as described in the ASABE S612 standard. An Ag Energy CEMA includes a baseline assessment of the of systems, equipment, and facilities using a typical year of energy use and recommended measures to prioritize on-farm opportunities to increase energy efficiency and reduce energy use. A Certified TSP will accomplish all work in accordance with the requirements of the CEMA 228 Agricultural Energy Assessment Activity. Natural Resource Concern: Energy Efficiency of Equipment and Facilities.

Before Situation:

Producer currently has minimal knowledge of and no plan for energy conservation. The producer currently manages an operation as described above. Producer intends to collaborate with a certified TSP to develop an energy use assessment of their entire operation. The CEMA 228 incorporates recommended measures to maximize energy conservation and efficiency. Associated Practices: 374 Farmstead Energy Improvement, 670 Energy Efficient Lighting System, 672 Energy Efficient Building Envelope, 533 Pumping Plant, or other applicable practices in the NRCS Field Office Technical Guide.

After Situation:

The producer has obtained services from a certified TSP to develop an energy assessment. The CEMA 228 criteria include a baseline assessment using a typical year of energy use, energy savings of recommended improvement measures, and information useful for prioritizing implementation of the measures. The documentation may include recommendations for associated conservation practices which address energy efficiency. The Ag Energy CEMA meets the basic quality criteria for the CEMA 228 activity as cited in the NRCS Field Office Technical Guide.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $5,211.34

Scenario Cost/Unit: $5,211.34

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	20	$2,235.40
CAP Labor, Manager	1603	Conservation Activity Plan labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$48.55	20	$971.00
CAP Labor, Administrative Assistant	1739	Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers.	Hours	$32.23	2	$64.46
CAP Labor, Energy Auditor	1740	Conservation Activity Plan labor involving analyzing energy efficient measures and conducting energy audits of industrial areas and facilities.	Hours	$60.64	32	$1,940.48

Practice: 228 - Agricultural Energy Assessment

Scenario #132 - Small size, 2 Enterprises

Scenario Description:

An agricultural producer wishes to obtain an energy assessment of their agricultural operation. The operation has 2 enterprises where 1 is not larger than < 300 acres of crops, < 300 animal units, 1 - 2 irrigation pumps, < 20,000 sq. ft. of heated greenhouse, or maple syrup processing. An enterprise is defined in the ASABE S612 Performing On-farm Energy Audits Standard. Small operations are described above. The Ag Energy CEMA is an assessment of the energy consuming activities and components of an agricultural operation and includes the requirements of a Type 2 energy audit as described in the ASABE S612 standard. An Ag Energy CEMA includes a baseline assessment of the of systems, equipment, and facilities using a typical year of energy use and recommended measures to prioritize on-farm opportunities to increase energy efficiency and reduce energy use. A Certified TSP will accomplish all work in accordance with the requirements of the CEMA 228 Agricultural Energy Assessment Activity. Natural Resource Concern: Energy Efficiency of Equipment and Facilities.

Before Situation:

Producer currently has minimal knowledge of and no plan for energy conservation. The producer currently manages an operation as described above. Producer intends to collaborate with a certified TSP to develop an energy use assessment of their entire operation. The CEMA 228 incorporates recommended measures to maximize energy conservation and efficiency. Associated Practices: 374 Farmstead Energy Improvement, 670 Energy Efficient Lighting System, 672 Energy Efficient Building Envelope, 533 Pumping Plant, or other applicable practices in the NRCS Field Office Technical Guide.

After Situation:

The producer has obtained services from a certified TSP to develop an energy assessment. The CEMA 228 criteria include a baseline assessment using a typical year of energy use, energy savings of recommended improvement measures, and information useful for prioritizing implementation of the measures. The documentation may include recommendations for associated conservation practices which address energy efficiency. The Ag Energy CEMA meets the basic quality criteria for the CEMA 228 activity as cited in the NRCS Field Office Technical Guide.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $4,279.14

Scenario Cost/Unit: $4,279.14

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	16	$1,788.32
CAP Labor, Manager	1603	Conservation Activity Plan labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$48.55	20	$971.00
CAP Labor, Administrative Assistant	1739	Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers.	Hours	$32.23	2	$64.46
CAP Labor, Energy Auditor	1740	Conservation Activity Plan labor involving analyzing energy efficient measures and conducting energy audits of industrial areas and facilities.	Hours	$60.64	24	$1,455.36

Practice: 228 - Agricultural Energy Assessment

Scenario #148 - Large size, 1 Enterprise

Scenario Description:

An agricultural producer wishes to obtain an energy assessment of their agricultural operation. The operation has either > 2500 acres of crops, > 1000 animal units, more than 6 irrigation pumps, or > 40,000 sq. ft. of heated greenhouse. An enterprise is defined in the ASABE S612 Performing On-farm Energy Audits Standard. A large operation is described above. The Ag Energy CEMA is an assessment of the energy consuming activities and components of an agricultural operation and includes the requirements of a Type 2 energy audit as described in the ASABE S612 standard. An Ag Energy CEMA includes a baseline assessment of the of systems, equipment, and facilities using a typical year of energy use and recommended measures to prioritize on-farm opportunities to increase energy efficiency and reduce energy use. A Certified TSP will accomplish all work in accordance with the requirements of the CEMA 228 Agricultural Energy Assessment Activity. Natural Resource Concern: Energy Efficiency of Equipment and Facilities.

Before Situation:

Producer currently has minimal knowledge of and no plan for energy conservation. The producer currently manages an operation as described above. Producer intends to collaborate with a certified TSP to develop an energy use assessment of their entire operation. The CEMA 228 incorporates recommended measures to maximize energy conservation and efficiency. Associated Practices: 374 Farmstead Energy Improvement, 670 Energy Efficient Lighting System, 672 Energy Efficient Building Envelope, 533 Pumping Plant, or other applicable practices in the NRCS Field Office Technical Guide.

After Situation:

The producer has obtained services from a certified TSP to develop an energy assessment. The CEMA 228 criteria include a baseline assessment using a typical year of energy use, energy savings of recommended improvement measures, and information useful for prioritizing implementation of the measures. The documentation may include recommendations for associated conservation practices which address energy efficiency. The Ag Energy CEMA meets the basic quality criteria for the CEMA 228 activity as cited in the NRCS Field Office Technical Guide.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $4,761.37

Scenario Cost/Unit: $4,761.37

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	18	$2,011.86
CAP Labor, Manager	1603	Conservation Activity Plan labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$48.55	16	$776.80
CAP Labor, Administrative Assistant	1739	Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers.	Hours	$32.23	1	$32.23
CAP Labor, Energy Auditor	1740	Conservation Activity Plan labor involving analyzing energy efficient measures and conducting energy audits of industrial areas and facilities.	Hours	$60.64	32	$1,940.48

Practice: 228 - Agricultural Energy Assessment

Scenario #164 - Medium size, 1 Enterprise

Scenario Description:

An agricultural producer wishes to obtain an energy assessment of their agricultural operation. The operation has either 301 to 2500 acres of crops, < 301 to 1000 animal units, 3 - 6 irrigation pumps, or 20,001 to 40,000 sq. ft. of heated greenhouse. An enterprise is defined in the ASABE S612 Performing On-farm Energy Audits Standard. A medium operation is described above. The Ag Energy CEMA is an assessment of the energy consuming activities and components of an agricultural operation and includes the requirements of a Type 2 energy audit as described in the ASABE S612 standard. An Ag Energy CEMA includes a baseline assessment of the of systems, equipment, and facilities using a typical year of energy use and recommended measures to prioritize on-farm opportunities to increase energy efficiency and reduce energy use. A Certified TSP will accomplish all work in accordance with the requirements of the CEMA 228 Agricultural Energy Assessment Activity. Natural Resource Concern: Energy Efficiency of Equipment and Facilities.

Before Situation:

Producer currently has minimal knowledge of and no plan for energy conservation. The producer currently manages an operation as described above. Producer intends to collaborate with a certified TSP to develop an energy use assessment of their entire operation. The CEMA 228 incorporates recommended measures to maximize energy conservation and efficiency. Associated Practices: 374 Farmstead Energy Improvement, 670 Energy Efficient Lighting System, 672 Energy Efficient Building Envelope, 533 Pumping Plant, or other applicable practices in the NRCS Field Office Technical Guide.

After Situation:

The producer has obtained services from a certified TSP to develop an energy assessment. The CEMA 228 criteria include a baseline assessment using a typical year of energy use, energy savings of recommended improvement measures, and information useful for prioritizing implementation of the measures. The documentation may include recommendations for associated conservation practices which address energy efficiency. The Ag Energy CEMA meets the basic quality criteria for the CEMA 228 activity as cited in the NRCS Field Office Technical Guide.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $3,605.63

Scenario Cost/Unit: $3,605.63

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	12	$1,341.24
CAP Labor, Manager	1603	Conservation Activity Plan labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$48.55	16	$776.80
CAP Labor, Administrative Assistant	1739	Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers.	Hours	$32.23	1	$32.23
CAP Labor, Energy Auditor	1740	Conservation Activity Plan labor involving analyzing energy efficient measures and conducting energy audits of industrial areas and facilities.	Hours	$60.64	24	$1,455.36

Practice: 228 - Agricultural Energy Assessment

Scenario #180 - Small size, 1 Enterprise

Scenario Description:

An agricultural producer wishes to obtain an energy assessment of their agricultural operation. The operation has either < 300 acres of crops, < 300 animal units, 1 - 2 irrigation pumps, < 20,000 sq. ft. of heated greenhouse, or maple syrup processing. An enterprise is defined in the ASABE S612 Performing On-farm Energy Audits Standard. A small operation is described above. The Ag Energy CEMA is an assessment of the energy consuming activities and components of an agricultural operation and includes the requirements of a Type 2 energy audit as described in the ASABE S612 standard. An Ag Energy CEMA includes a baseline assessment of the of systems, equipment, and facilities using a typical year of energy use and recommended measures to prioritize on-farm opportunities to increase energy efficiency and reduce energy use. A Certified TSP will accomplish all work in accordance with the requirements of the CEMA 228 Agricultural Energy Assessment Activity. Natural Resource Concern: Energy Efficiency of Equipment and Facilities.

Before Situation:

Producer currently has minimal knowledge of and no plan for energy conservation. The producer currently manages an operation as described above. Producer intends to collaborate with a certified TSP to develop an energy use assessment of their entire operation. The CEMA 228 incorporates recommended measures to maximize energy conservation and efficiency. Associated Practices: 374 Farmstead Energy Improvement, 670 Energy Efficient Lighting System, 672 Energy Efficient Building Envelope, 533 Pumping Plant, or other applicable practices in the NRCS Field Office Technical Guide.

After Situation:

The producer has obtained services from a certified TSP to develop an energy assessment. The CEMA 228 criteria include a baseline assessment using a typical year of energy use, energy savings of recommended improvement measures, and information useful for prioritizing implementation of the measures. The documentation may include recommendations for associated conservation practices which address energy efficiency. The Ag Energy CEMA meets the basic quality criteria for the CEMA 228 activity as cited in the NRCS Field Office Technical Guide.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $2,673.43

Scenario Cost/Unit: $2,673.43

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	8	$894.16
CAP Labor, Manager	1603	Conservation Activity Plan labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$48.55	16	$776.80
CAP Labor, Administrative Assistant	1739	Conservation Activity Plan labor involving routine clerical and administrative functions such as drafting correspondence, scheduling appointments, organizing and maintaining paper and electronic files, or providing information to callers.	Hours	$32.23	1	$32.23
CAP Labor, Energy Auditor	1740	Conservation Activity Plan labor involving analyzing energy efficient measures and conducting energy audits of industrial areas and facilities.	Hours	$60.64	16	$970.24

Practice: 297 - Feral Swine Management Conservation Activity - Interim

Scenario #11 - Assessment

Scenario Description:

200 acre tract (all land uses) on which feral swine have negatively impacted water quality (and associated aquatic organisms), soil health and vegetative conditions onsite. Wildlife habitat has been diminished due to feral swine out-competing native species for the same resources (hard and soft mast, tubers, invertebrates), as well as negatively affecting plant regeneration and production. Some species of native wildlife onsite are at risk from predation by feral swine as well as from diseases carried and transmitted either directly or indirectly by feral swine.

Before Situation:

Agricultural producer currently has no plan or knowledge of how resource concerns are caused or exacerbated by the presence of feral swine. Within existing land uses, the producer is interested in management of land to reduce impacts caused by feral swine and improve condition of natural resources.

After Situation:

As a result of feral swine surveillance (coupled with resource and inventory of baseline conditions), the nature and extent of natural resource concerns caused or exacerbated by the presence of feral swine are understood through resource assessments sufficient to inform development of a plan of action to meet quality criteria for all identified resource concerns.

Feature Measure: Managment Site

Scenario Unit: Each

Scenario Typical Size: 1.0

Scenario Total Cost: $862.41

Scenario Cost/Unit: $862.41

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	18	$540.90
Materials						
Camera, Monitoring, Stationary	2638	Motion activated, 8 megapixel, weather proof, stationary camera with infrared capability for night operation. Trigger speed of 1 second or less with SD card storage up to 32 GB (not included in the price). Includes materials and shipping only.	Each	$107.17	3	$321.51

Practice: 297 - Feral Swine Management Conservation Activity - Interim

Scenario #12 - Evaluation

Scenario Description:

200 acre tract (all land uses) on which feral swine have negatively impacted water quality (and associated aquatic organisms), soil health and vegetative conditions onsite. Wildlife habitat has been diminished due to feral swine out-competing native species for the same resources (hard and soft mast, tubers, invertebrates), as well as negatively affecting plant regeneration and production. Some species of native wildlife onsite are at risk from predation by feral swine as well as from diseases carried and transmitted either directly or indirectly by feral swine.

Before Situation:

Agricultural producer is currently or soon will be implementing feral swine component of a conservation plan but the effectiveness of those activities in improving resource conditions is unknown.

After Situation:

Sufficient data and information have been collected to evaluate resource condition relative to baseline conditions and the effectiveness of the feral swine management actions. Necessary adaptive management actions are identified and implemented. (Note: All management activities directly involving feral swine, such as trapping, euthanasia and disposal of carcasses will be the responsibility of the landowner, APHIS, or other partners. NRCS will have no role in these activities.)

Feature Measure: Management Site

Scenario Unit: Each

Scenario Typical Size: 1.0

Scenario Total Cost: $1,202.00

Scenario Cost/Unit: $1,202.00

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	40	$1,202.00

Practice: 309 - Agrichemical Handling Facility

Scenario #5 - Agrichemical Handling Pad for mixing and loading

Scenario Description:

This practice scenario is an agrichemical handling facility for mixing and loading operations. This practice addresses water quality degradation and due to mis-handling, and mixing of agrichemicals where nutrients and/or chemicals are running off into surface waters or leaching into ground water. Associated practices: Heavy Use Area Protection (561), Diversion (362), Access Road (560), Pipeline (516), Pumping Plant for Water Control (533), Nutrient Management (590), Pest Management (595)

Before Situation:

Agrichemicals are improperly stored on the ground or next to a well. Operator mixes the agrichemicals and fills the sprayer tank next to a hydrant. Spills or overflows of agrichemicals contaminate the soil, runoff to surface waters and leaching to ground water.

After Situation:

This scenario is an agrichemical handling facility pad for mixing and loading operations. The average size of the agrichemical handling pad for mixing and loading is 16' x 40' with an application equipment length of 36 ft. The handling pad for mixing and loading operations is sized to contain the length of the agrichemical spray tank and its volume. Install a curbed reinforced concrete handling pad for mixing and loading. The concrete is sealed and sloped to a collection sump, containment of the pad is surrounded by sloped and ramped reinforced concrete. This practice will contain agrichemicals and prevent contamination of surface and ground water resources.

Feature Measure: Total Containment Area

Scenario Unit: Square Feet

Scenario Typical Size: 640.0

Scenario Total Cost: $5,628.40

Scenario Cost/Unit: $8.79

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Concrete, CIP, slab on grade, reinforced	37	Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yards	$315.01	12	$3,780.12
Dozer, 80 HP	929	Track mounted Dozer with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$54.51	4	$218.04
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	4	$92.72
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	4	$107.60
Materials						
Aggregate, Sand, Graded, Washed	45	Sand, typical ASTM C33 gradation, includes materials, equipment and labor to transport and place	Cubic Yards	$38.81	10	$388.10
Painting, porous surface, impermeable	1497	Painting of concrete, foam or other porous surfaces with an impermeable coating. Includes materials and application.	Square Feet	$0.91	640	$582.40
Pump, Sump, less than 1/4 HP	2582	Utility pump, corrosion-resistant, compact and portable, self-priming at 8 ft. or more, 300 GPH at 10 ft., electric, manually operated. Includes materials and shipping (pump and motor).	Each	$135.42	1	$135.42
Mobilization						
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	$70.11	1	$70.11
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 313 - Waste Storage Facility

Scenario #1 - Earthen Storage Facility less than 50K ft3 Storage

Scenario Description:

An earthen waste impoundment constructed to store wastes such as manure, wastewater, and contaminated runoff as part of an agricultural waste management system. This scenario has a design storage volume of less than 50,000 ft3. This practice will address soil and water quality by reducing the pollution potential for surface water and groundwater quality degradation. Earthen storage liners are addressed with another standard. Vehicular and equipment access is addressed in Heavy Use Area Protection (561). Adequately protect liner at agitation and access points. Potential Associated Practices: Pond Sealing or Lining, Bentonite Sealant (521C), Pond Sealing or Lining, Compacted Clay Treatment (521D), Pond Sealing or Lining, Flexible Membrane (521A), Pond Sealing or Lining, Soil Dispersant (521B), Fence (382), Critical Area Planting (342), Nutrient Management (590), Waste Transfer (634), Heavy Use Area Protection (561), Roofs and Covers (367), and Solid/Liquid Waste Separation Facility (632), Waste Treatment (629) .

Before Situation:

Operator presently has a confined animal feeding operation without a waste management system adequate to handle the waste stream leaving the animal production facilities. Manure and other agricultural waste by-products are not being utilized or controlled in an environmentally safe manner. The wastes are either accumulating at the source, or are being transported but not properly utilized or disposed of. This situation poses an environmentally threat of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources.

After Situation:

An earthen storage structure constructed from on-site material provides an environmentally safe facility for storing manure and other agricultural waste by-products. This facility provides the landowner a means of storing waste until it can be utilized in a proper manner in accordance with a nutrient management plan. Typical design size : design storage volume 25,000 ft3; 87'X87' (top); 3:1 inside and outside side slopes; cut/fill ratio = 1.25; total depth = 9.5' (design depth = 8'); (not inclued in volume - 1' freeboard and 0.5' sludge accumulation).

Feature Measure: Design Storage Volume

Scenario Unit: Cubic Feet

Scenario Typical Size: 25,000.0

Scenario Total Cost: $8,867.56

Scenario Cost/Unit: $0.35

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Earthfill, Roller Compacted	49	Earthfill, roller or machine compacted, includes equipment and labor	Cubic Yards	$4.42	806	$3,562.52
Earthfill, Dumped and Spread	51	Earthfill, dumped and spread without compaction effort, includes equipment and labor	Cubic Yards	$3.61	578	$2,086.58
Stripping and stockpiling, topsoil	1199	Stripping and stockpiling of topsoil adjacent to stripping area. Includes equipment and labor.	Cubic Yards	$0.92	224	$206.08
Excavation, common earth, large equipment, 150 ft	1223	Bulk excavation of common earth including sand and gravel with dozer >100 HP with average push distance of 150 feet. Includes equipment and labor.	Cubic Yards	$3.85	582	$2,240.70
Materials						
Structural steel tubing, 2 in. diameter	1120	Structural steel tubing, 2 inch diameter, 1/8 inch wall thickness, materials only	Feet	$4.13	8	$33.04
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$484.75	1	$484.75

Practice: 313 - Waste Storage Facility

Scenario #2 - Earthen Storage Facility greater than 50K ft3 Storage

Scenario Description:

An earthen waste impoundment constructed to store wastes such as manure, wastewater, and contaminated runoff as part of an agricultural waste management system. This scenario has a design storage volume of more than 50,000 ft3. This practice will address soil and water quality by reducing the pollution potential for surface water and groundwater quality degradation. Earthen storage liners are addressed with another standard. Vehicular and equipment access is addressed in Heavy Use Area Protection (561). Adequately protect liner at agitation and access points. Potential Associated Practices: Pond Sealing or Lining, Bentonite Sealant (521C), Pond Sealing or Lining, Compacted Clay Treatment (521D), Pond Sealing or Lining, Flexible Membrane (521A), Pond Sealing or Lining, Soil Dispersant (521B), Fence (382), Critical Area Planting (342), Nutrient Management (590), Waste Transfer (634), Heavy Use Area Protection (561), Roofs and Covers (367), and Solid/Liquid Waste Separation Facility (632), Waste Treatment (629).

Before Situation:

Operator presently has a confined animal feeding operation without a waste management system adequate to handle the waste stream leaving the animal production facilities. Manure and other agricultural waste by-products are not being utilized or controlled in an environmentally safe manner. The wastes are either accumulating at the source, or are being transported but not properly utilized or disposed of. This situation poses an environmentally threat of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources.

After Situation:

An earthen storage structure constructed from on-site material provides an environmentally safe facility for storing manure and other agricultural waste by-products. This facility provides the landowner a means of storing waste until it can be utilized in a proper manner in accordance with a nutrient management plan. Typical design size: design storage volume 168,000 ft3; 157'X162' (top); 3:1 inside and outside side slopes; cut/fill ratio = 1.25; total depth = 13' 8" (design depth = 12'); (not inclued in volume - 1' freeboard and 8" sludge accumulation).

Feature Measure: Design Storage Volume

Scenario Unit: Cubic Feet

Scenario Typical Size: 168,000.0

Scenario Total Cost: $46,637.04

Scenario Cost/Unit: $0.28

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Earthfill, Roller Compacted	49	Earthfill, roller or machine compacted, includes equipment and labor	Cubic Yards	$4.42	4375	$19,337.50
Earthfill, Dumped and Spread	51	Earthfill, dumped and spread without compaction effort, includes equipment and labor	Cubic Yards	$3.61	3284	$11,855.24
Stripping and stockpiling, topsoil	1199	Stripping and stockpiling of topsoil adjacent to stripping area. Includes equipment and labor.	Cubic Yards	$0.92	741	$681.72
Excavation, common earth, large equipment, 150 ft	1223	Bulk excavation of common earth including sand and gravel with dozer >100 HP with average push distance of 150 feet. Includes equipment and labor.	Cubic Yards	$3.85	3634	$13,990.90
Materials						
Structural steel tubing, 2 in. diameter	1120	Structural steel tubing, 2 inch diameter, 1/8 inch wall thickness, materials only	Feet	$4.13	8	$33.04
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$484.75	1	$484.75

Practice: 313 - Waste Storage Facility

Scenario #9 - Dry stack, earthen floor, wood or concrete wall

Scenario Description:

This scenario consists of a dry stack facility with compacted earthen floor with wooden walls, posts and a concrete curb. This scenario is intended for dryer material such as poultry litter. The purpose of this practice is to properly store manure and other agricultural by-products until they can be hauled away from the site for proper disposal or utilization on land at agronomical rates. This scenario is applicable when geological, soil, and climate conditions are appropriate for earth floors and are allowed by state and local regulations.This practice will address soil and water quality by reducing the pollution potential to soil, surface water and ground water. Potential Associated practices: 342-Critical Area Planting, 362-Diversion, 561-Heavy Use Area Protection, 367-Roofs and Covers, 558-Roof Runoff Structure, 317-Composting Facility, 633-Waste Recycling, 634-Waste Transfer, 635-Vegetated Treatment AreaT

Before Situation:

Manure and other agricultural by-products are not being utilized or controlled in an environmentally safe manner. The wastes are either accumulating at the source, or other location, or are being transported but not properly utilized or disposed of. This situation poses an environmentally threat of excessive nutrients, organics, and pathogens being transported into surface and groundwaters, in addition to the use of excessive amounts of fertilizers.

After Situation:

Manure and other agricultural by-products are being controlled, by the collection at the source, and stored temporarily, at an environmentally suitable location, until such time that they are disposed of or utilized in a proper manner, typically in accordance with a nutrient management plan. The typical is 4,000 SqFt (40' x 100'). The earthen floor will be prepared by stripping the top 1' of soil and roller compacting it back into floor. Walls are 5' pressure treated wood (2" x 8" boards), 6" x 6" x 8' posts set 4' c-c with 6" concrete curbing. Walls allow for greater storage volume. (Wood walls are 4.5' with 0.5' high concrete curbing.) Walls are along three sides of the facility (both short dimensions and one long dimension). Site preparation includes excavation and compaction of top 1' of material, setting posts, and installing curbing and wooden walls.

Feature Measure: Square Foot Floor Area

Scenario Unit: Square Feet

Scenario Typical Size: 4,000.0

Scenario Total Cost: $14,523.88

Scenario Cost/Unit: $3.63

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Concrete, CIP, formless, non reinforced	36	Non reinforced concrete cast-in-placed without forms by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yards	$157.03	5.5	$863.67
Concrete, CIP, formed reinforced	38	Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yards	$415.80	2	$831.60
Earthfill, Roller Compacted	49	Earthfill, roller or machine compacted, includes equipment and labor	Cubic Yards	$4.42	148	$654.16
Skidsteer, 80 HP	933	Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$59.94	12	$719.28
Auger, Post driver attachment	934	Auger or post driver attachment to a tractor or skidsteer. Does not include power unit. Labor not included.	Hours	$12.82	12	$153.84
Excavation, common earth, large equipment, 150 ft	1223	Bulk excavation of common earth including sand and gravel with dozer >100 HP with average push distance of 150 feet. Includes equipment and labor.	Cubic Yards	$3.85	148	$569.80
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	90	$2,086.20
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	12	$303.72
Materials						
Dimension Lumber, Treated	1044	Treated dimension lumber with nominal thickness equal or less than 2 inches. Includes lumber and fasteners	Board Feet	$2.00	1620	$3,240.00
Lumber, planks, posts and timbers, treated	1609	Treated dimension lumber with nominal thickness greater than 2 inches. Includes lumber and fasteners. Does not include labor.	Board Feet	$3.37	1104	$3,720.48
Mobilization						
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	$70.11	1	$70.11
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	2	$341.52

Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$484.75	2	$969.50

Practice: 313 - Waste Storage Facility

Scenario #11 - Dry Stack, concrete floor, wood wall or concrete wall

Scenario Description:

This scenario consists of a dry stack facility with reinforced concrete Floor with pressure treated wood walls. This scenario is intended for situations where consistency of manure or geographical conditions prohibit earthen floors. The purpose of this practice is to temporarily, properly store manure and other agricultural by-products until they can be hauled away from the site for proper disposal or utilization on land at agronomical rates. This practice will address soil and water quality by reducing the pollution potential to soil, surface water and ground water. Potential Associated practices: 342-Critical Area Planting, 362-Diversion, 561-Heavy Use Area Protection, 367-Roofs and Covers, 558-Roof Runoff Structure, 317-Composting Facility, 633-Waste Recycling, 634-Waste Transfer, 635-Vegetated Treatment Area

Before Situation:

Manure and other agricultural by-products are not being utilized or controlled in an environmentally safe manner. The wastes are either accumulating at the source, or other location, or are being transported but not properly utilized or disposed of. This situation poses an environmentally threat of excessive nutrients, organics, and pathogens being transported into surface and groundwaters, in addition to the use of excessive amounts of fertilizers.

After Situation:

The typical is 4,000 SqFt (40' x 100'). The facility floor is 5" reinforced concrete with 5' pressure treated wood (2" x 8" boards) walls, 6" x 6" x 8' posts set 4' c-c with 6" concrete curbing. Walls allow for greater storage volume. Manure and other agricultural by-products are being controlled, by the collection at the source, and stored temporarily, at an environmentally suitable location, until such time that they are disposed of or utilized in a proper manner, typically in accordance with a nutrient management plan.

Feature Measure: Square Foot Floor Area

Scenario Unit: Square Feet

Scenario Typical Size: 4,000.0

Scenario Total Cost: $34,578.02

Scenario Cost/Unit: $8.64

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Concrete, CIP, formless, non reinforced	36	Non reinforced concrete cast-in-placed without forms by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yards	$157.03	5.5	$863.67
Concrete, CIP, slab on grade, reinforced	37	Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yards	$315.01	62	$19,530.62
Concrete, CIP, formed reinforced	38	Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yards	$415.80	2	$831.60
Skidsteer, 80 HP	933	Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$59.94	12	$719.28
Auger, Post driver attachment	934	Auger or post driver attachment to a tractor or skidsteer. Does not include power unit. Labor not included.	Hours	$12.82	12	$153.84
Excavation, common earth, large equipment, 150 ft	1223	Bulk excavation of common earth including sand and gravel with dozer >100 HP with average push distance of 150 feet. Includes equipment and labor.	Cubic Yards	$3.85	74	$284.90
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	90	$2,086.20
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	12	$303.72
Materials						
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic Yards	$39.34	49.5	$1,947.33
Dimension Lumber, Treated	1044	Treated dimension lumber with nominal thickness equal or less than 2 inches. Includes lumber and fasteners	Board Feet	$2.00	1620	$3,240.00
Lumber, planks, posts and timbers, treated	1609	Treated dimension lumber with nominal thickness greater than 2 inches. Includes lumber and fasteners. Does not include labor.	Board Feet	$3.37	1104	$3,720.48
Mobilization						
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	$70.11	1	$70.11

Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	2	$341.52
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$484.75	1	$484.75

Practice: 313 - Waste Storage Facility

Scenario #12 - Concrete Tank, buried less than 5K

Scenario Description:

This scenario consists of installing a small concrete tank with a design storage volume of less than 5,000 CF that is totally or partially buried and has solid lid with several openings for direct loading from heavyuse area, gutter cleaner or gravity pipe. Manure is held for 3 to 14 day on smaller operations or transfered to larger storage facility or direct land applied. Design volume does not include freeboard. This practice will address soil and water quality by reducing the pollution potential to soil, surface water and ground water. Potential Associated Practices: Fence (382), Critical Area Planting (342), Nutrient Management (590), Access Road (560), Waste Transfer (634), Heavy Use Area Protection (561), Roof and Covers (367), Solid/Liquid Waste Separation Facility (632), Diversion (362), Subsurface Drain (606), Pumping Plant (533),and Underground Outlet (620).

Before Situation:

Manure and other agricultural by-products are not being utilized or controlled in an environmentally safe manner. The wastes are either accumulating at the source, or other location, or are being transported but not properly utilized or disposed of. This situation poses an environmentally threat of excessive nutrients, organics, and pathogens being transported into surface and groundwaters, in addition to the use of excessive amounts of fertilizers.

After Situation:

Manure and other agricultural by-products are being controlled, by the collection at the source, and stored temporarily, at an environmentally suitable location, until such time that they are disposed of or utilized in a proper manner, typically in accordance with a nutrient management plan. Tank typically 8' deep x 12' wide x 40' long, with a design storage volume of 3,600 cubic feet plus 6" freeboard. Sizing based on manure, other wastes, rainfall, lot runoff, etc. Volume does not include 6" of freeboard. Tanks associated with open lots sized to handle design storm in tank or in combination with lot as per state regulations.

Feature Measure: Design Storage Volume

Scenario Unit: Cubic Feet

Scenario Typical Size: 3,600.0

Scenario Total Cost: $23,710.94

Scenario Cost/Unit: $6.59

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Concrete, CIP, slab on grade, reinforced	37	Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yards	$315.01	8	$2,520.08
Concrete, CIP, formed reinforced	38	Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yards	$415.80	36	$14,968.80
Earthfill, Manually Compacted	50	Earthfill, manually compacted, includes equipment and labor	Cubic Yards	$5.73	213	$1,220.49
Earthfill, Dumped and Spread	51	Earthfill, dumped and spread without compaction effort, includes equipment and labor	Cubic Yards	$3.61	163	$588.43
Hydraulic Excavator, 1 CY	931	Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included.	Hours	$111.83	19	$2,124.77
Labor						
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	19	$511.10
Materials						
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic Yards	$39.34	9	$354.06
Waterstop, PVC, ribbed, 3/16 in x 6 in	1614	Waterstop, PVC, ribbed, 3/16 inch thick by 6 inches wide. Includes materials, equipment and labor.	Feet	$4.56	104	$474.24
Mobilization						
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	$70.11	3	$210.33
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$484.75	1	$484.75

Practice: 314 - Brush Management

Scenario #3 - Chemical, Ground Applied, Light

Scenario Description:

Apply brush management on 40 acres of pasture thru the use of broadcast application of material using low cost chemical(s) to reduce or remove undesirable deciduous species (brush) in uplands and other areas not in or directly adjacent to streams, ponds, or wetlands. Light competition is defined as woody brush stocking less than 100 stems per acre or height less than 12 inches. .

Before Situation:

Plant, animal, or wildlife resource concerns associated with uplands and other areas not in or adjacent to stream, ponds, or wetland on pasture which are adversely affected by brush.

After Situation:

A 40 acre unit of pasture where reduction or removal of undesirable deciduous species have been accomplished by broadcast or spot treatment chemical application to address plant, animal, and wildlife resource concerns.

Feature Measure: Acres planned

Scenario Unit: Acres

Scenario Typical Size: 40.0

Scenario Total Cost: $892.17

Scenario Cost/Unit: $22.30

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	2	$47.48
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$6.00	40	$240.00
Materials						
Herbicide, 2,4-D	330	Broadleaf herbicide labeled for cropland and pasture. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$6.96	40	$278.40
Herbicide, Surfactant	1095	Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$1.81	40	$72.40
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 314 - Brush Management

Scenario #4 - Chemical, Ground Applied, Medium

Scenario Description:

Apply brush management on 40 acres of pasture thru the use of broadcast application of material using medium cost chemical(s) to reduce or remove undesirable deciduous species (brush) in uplands and other areas not in or directly adjacent to streams, ponds, or wetlands. Medium competition is defined as woody brush stocking between 100 to 300 per acre or height less than 36 inches.

Before Situation:

Plant, animal, or wildlife resource concerns associated with uplands and other areas not in or adjacent to stream, ponds, or wetland on pasture which are adversely affected by brush.

After Situation:

A 40 acre unit of pasture where reduction or removal of undesirable deciduous species have been accomplished by broadcast or spot treatment chemical application to address plant, animal, and wildlife resource concerns.

Feature Measure: Acres planned

Scenario Unit: Acres

Scenario Typical Size: 40.0

Scenario Total Cost: $1,652.57

Scenario Cost/Unit: $41.31

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	2	$47.48
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$6.00	40	$240.00
Materials						
Herbicide, 2,4-D	330	Broadleaf herbicide labeled for cropland and pasture. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$6.96	40	$278.40
Herbicide, Picloram	337	Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$19.01	40	$760.40
Herbicide, Surfactant	1095	Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$1.81	40	$72.40
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 314 - Brush Management

Scenario #5 - Chemical, Ground Applied, Heavy

Scenario Description:

Apply brush management on 40 acres of pasture thru the use of broadcast application of material using high cost chemical(s) to reduce or remove undesirable deciduous species (brush) in uplands and other areas not in or directly adjacent to streams, ponds, or wetlands. Heavy competition is defined as woody brush stocking more than 300 stems per acre or height greater than 48 inches.

Before Situation:

Plant, animal, or wildlife resource concerns associated with uplands and other areas not in or adjacent to stream, ponds, or wetland on pasture which are adversely affected by brush.

After Situation:

A 40 acre unit of pasture where reduction or removal of undesirable deciduous species have been accomplished by broadcast or spot treatment chemical application to address plant, animal, and wildlife resource concerns.

Feature Measure: Acres planned

Scenario Unit: Acres

Scenario Typical Size: 40.0

Scenario Total Cost: $2,490.97

Scenario Cost/Unit: $62.27

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	2	$47.48
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$6.00	40	$240.00
Materials						
Herbicide, 2,4-D	330	Broadleaf herbicide labeled for cropland and pasture. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$6.96	40	$278.40
Herbicide, Imazapyr	336	Pre and post-emergent, non-selective herbicide for control of undesirable vegetation in non-crop areas. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$39.97	40	$1,598.80
Herbicide, Surfactant	1095	Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$1.81	40	$72.40
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 315 - Herbaceous Weed Treatment

Scenario #3 - Chemical, Ground Light

Scenario Description:

Land unit on which weed control would be beneficial in order to set back the plant community succession, improve the ecological condition, and improve forage conditions for domestic livestock or wildlife. The practice entails the eradication of (herbaceous weeds) vegetation by use of weed treatment using ground equipment to apply low cost chemicals, in order to eliminate noxious weeds, promote forage productivity, and improve ecological condition.

Before Situation:

Area consist of excessive stands of herbaceous weeds degrading health and vigor of native herbaceous species promoting noxious and invasive species and degrading wildlife habitat.

After Situation:

Herbaceous weeds are removed to achieve the desirable plant community based on species composition, structure, density, and canopy cover or height. Ecological site condition is progressing in an upward trend, hydrology and plant health and vigor is returning to near normal levels, and improved wildlife habitat.

Feature Measure: Acres treated

Scenario Unit: Acres

Scenario Typical Size: 20.0

Scenario Total Cost: $513.64

Scenario Cost/Unit: $25.68

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	2	$47.48
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$6.00	20	$120.00
Materials						
Herbicide, 2,4-D	330	Broadleaf herbicide labeled for cropland and pasture. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$6.96	20	$139.20
Herbicide, Surfactant	1095	Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$1.81	20	$36.20
Mobilization						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	1	$170.76

Practice: 315 - Herbaceous Weed Treatment

Scenario #4 - Chemical, Ground Medium

Scenario Description:

Land unit on which weed control would be beneficial in order to set back the plant community succession, improve the ecological condition, and improve forage conditions for domestic livestock or wildlife. The practice entails the eradication of (herbaceous weeds) vegetation by use of weed treatment using ground equipment to apply medium cost chemicals, in order to eliminate noxious weeds, promote forage productivity, and improve ecological condition.

Before Situation:

Area consist of excessive stands of herbaceous weeds degrading health and vigor of native herbaceous species promoting noxious and invasive species and degrading wildlife habitat.

After Situation:

Herbaceous weeds are removed to achieve the desirable plant community based on species composition, structure, density, and canopy cover or height. Ecological site condition is progressing in an upward trend, hydrology and plant health and vigor is returning to near normal levels, and improved wildlife habitat.

Feature Measure: Acres treated

Scenario Unit: Acres

Scenario Typical Size: 20.0

Scenario Total Cost: $893.84

Scenario Cost/Unit: $44.69

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	2	$47.48
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$6.00	20	$120.00
Materials						
Herbicide, 2,4-D	330	Broadleaf herbicide labeled for cropland and pasture. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$6.96	20	$139.20
Herbicide, Picloram	337	Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$19.01	20	$380.20
Herbicide, Surfactant	1095	Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$1.81	20	$36.20
Mobilization						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	1	$170.76

Practice: 316 - Animal Mortality Facility

Scenario #1 - Incineration less than 350 pound per day Chamber

Scenario Description:

This scenario consists of installing a manufactured Type IV incinerator designed to handle 350 lbs of average daily mortality for the species and size of the operation. System shall use high temperature (>1,300 degrees F) incineration with a secondary combustion or afterburner chamber prior to flue discharge. After determining average daily mortality in lbs, select smallest incinerator that meets capacity. Payment made per unit of actual chamber size obtained from manufacturers' product literature. This option is not typically least-cost. In most states a roofed static compost pile with concrete floor and bins would be considered least cost. Therefore consider reducing payment rate as per State Conservationist discretion. The purpose of the practice is to address resource concerns related to water quality degradation due to excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Air quality impacts due to odors will also be addressed, however, in non-attainment areas, certain states may require a higher level of processing such as gasification or other approved methods. Potential Associated Practices: Heavy Use Area Protection (561), Fence (382), Critical Area Planting (342), Access Road (560), Waste Storage Facility (313), Nutrient Management (590), Roofs and Covers (367), Critical Area Planting (342).

Before Situation:

Animal mortality is done in a manner that results in non-point source pollution of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Improper operation results in odors and spread of pathogens from incomplete composting, incineration, or interaction with predators. No plan was formulated for both normal and catastrophic mortality events.

After Situation:

Animal mortality is being done in a manner that prevents non-point source pollution of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Proper operation results in little to no odors, complete incineration, and protection from predators to minimize pathogen survival or spreading. An overall plan covers normal and catastrophic mortality events. Selected method for carcass treatment and disposal meet or are permitted by federal, state, and local laws, rules, regulation. Incinerator installed to handle 350 lbs per day average mortality for a small poultry operation. Included is a concrete slab to set the incinerator on. Ash materials to be stored in suitable containers until land disposal as per the nutrient management plan or landfilled.

Feature Measure: Mortality in pounds per day

Scenario Unit: Pound

Scenario Typical Size: 350.0

Scenario Total Cost: $12,839.88

Scenario Cost/Unit: $36.69

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Concrete, CIP, slab on grade, reinforced	37	Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yards	$315.01	4	$1,260.04
Excavation, Common Earth, side cast, small equipment	48	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic Yards	$2.24	8	$17.92
Hydraulic Excavator, 1 CY	931	Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included.	Hours	$111.83	1	$111.83
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	1	$23.18
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	1	$25.31
Materials						
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic Yards	$39.34	4	$157.36
Fuel Tank, Anchored	1033	Fuel tank for operating incinerators and/or gasifiers. Materials only.	Gallons	$4.67	285	$1,330.95
Incinerator, 200 lbs/day	1624	Poultry and livestock incinerator with an approximate chamber capacity of 200 pounds per day. Includes equipment and after burner only.	Each	$9,659.40	1	$9,659.40
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 316 - Animal Mortality Facility

Scenario #2 - Incineration 350 to 850 pound per day chamber

Scenario Description:

This scenario consists of installing a manufactured Type IV incinerator designed to handle 350 to 850 lbs of average daily mortality for the species and size of the operation. Typically very large poultry or medium sized swine operations (700 lbs used) . System shall use high temperature (>1,300 degrees F) incineration with a secondary combustion or afterburner chamber prior to flue discharge. After determining average daily mortality in lbs, select smallest incinerator that meets capacity. Payment made per unit of actual chamber size obtained from manufacturers' product literature. This option is not typically least-cost. In most states a roofed static pile with concrete floor and bins would be considered least cost. Therefore consider reducing payment rate as per State Conservationist discretion. The purpose of the practice is to address resource concerns related to water quality degradation due to excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Air quality impacts due to odors are reduced, however, in non-attainment areas, certain states may require a higher level of processing such as gasification or other approved methods. Potential Associated Practices: Heavy Use Area Protection (561), Fence (382), Critical Area Planting (342), Access Road (560), Waste Storage Facility (313), Nutrient Management (590), Roofs and Covers (367), Critical Area Planting (342).

Before Situation:

Animal mortality is done in a manner that results in non-point source pollution of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Improper operation results in odors and spread of pathogens from incomplete composting, incineration, or interaction with predators. No plan was formulated for both normal and catastrophic mortality events.

After Situation:

Animal mortality is being done in a manner that prevents non-point source pollution of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Proper operation results in little to no odors, complete incineration, and protection from predators to minimize pathogen survival or spreading. In non-attainment areas, certain states may require a higher level of processing such as gasification or different methods. An overall plan covers normal and catastrophic mortality events. Selected method for carcass treatment and disposal meet or are permitted by federal, state, and local laws, rules, regulation. Incinerator installed to handle 700 lbs per day average mortality for a medium poultry or swine operation. Included is a concrete slab to set the incinerator on. Ash materials to be stored in suitable containers until land disposal as per the nutrient managment plan or landfilled.

Feature Measure: Mortality in pounds per day

Scenario Unit: Pound

Scenario Typical Size: 850.0

Scenario Total Cost: $13,620.48

Scenario Cost/Unit: $16.02

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Concrete, CIP, slab on grade, reinforced	37	Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yards	$315.01	4	$1,260.04
Excavation, Common Earth, side cast, small equipment	48	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic Yards	$2.24	8	$17.92
Hydraulic Excavator, 1 CY	931	Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included.	Hours	$111.83	1	$111.83
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	1	$23.18
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	1	$25.31
Materials						
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic Yards	$39.34	4	$157.36
Fuel Tank, Anchored	1033	Fuel tank for operating incinerators and/or gasifiers. Materials only.	Gallons	$4.67	285	$1,330.95
Incinerator, 400 lbs/day	1625	Poultry and livestock incinerator with an approximate chamber capacity of 400 pounds per day. Includes equipment and after burner only.	Each	$10,440.00	1	$10,440.00
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 316 - Animal Mortality Facility

Scenario #3 - Incineration greater than 850 Pound Chamber

Scenario Description:

This scenario consists of installing a manufactured Type IV incinerator designed to handle a single 856 to 1,500 mortality. Typically a single dairy cow or multiple heifers or swine. System shall use high temperature (>1,300 degrees F) incineration with a secondary combustion or afterburner chamber prior to flue discharge. Select smallest incinerator that has a bin capacity to handle largest individual mortality. Payment made per unit of actual chamber size obtained from manufacturers' product literature. This option uses a very small footprint, however, it costs 15-20 gallons of diesel fuel per fill. The usage needs to be significant. At 500 cows with replacements, this option would offset a 4,000 SF concrete pad with another 8,000 to 12,000 SF of grassed area. Cost for that option would be for an area of 4,000 ft2 @$4.50 or $18,000 vs. $24,000. This option for small dairy operations would not typically be least-cost. In most states either a roofed or unroofed static pile with concrete floor and walls would be considered least cost. Unless regulations require this or severe site limitations exist, consider reducing payment rate as per State Conservationist discretion. The purpose of the practice is to address resource concerns related to water quality degradation due to excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Air quality impacts due to odors will also be addressed, however, in non-attainment areas, certain states may require a higher level of processing such as gasification or other approved methods. Potential Associated Practices: Heavy Use Area Protection (561), Fence (382), Critical Area Planting (342), Access Road (560), Waste Storage Facility (313), Nutrient Management (590), Roofs and Covers (367), Critical Area Planting (342).

Before Situation:

Animal mortality is done in a manner that results in non-point source pollution of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Improper operation results in odors and spread of pathogens from incomplete composting, incineration, or interaction with predators. No plan was formulated for both normal and catastrophic mortality events.

After Situation:

Animal mortality is being done in a manner that prevents non-point source pollution of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Proper operation results in little to no odors, complete incineration, and protection from predators to minimize pathogen survival or spreading. An overall plan covers normal and catastrophic mortality events. In non-attainment areas, certain states may require a higher level of processing such as gasification or other approved method. Selected method for carcass treatment and disposal meet or are permitted by federal, state, and local laws, rules, regulations. Incinerator installed to handle a whole 1500 lb dairy cow on a 1,000 cow operation. Included is a concrete slab to set the incinerator on. Ash materials to be stored in suitable containers, a waste storage pit until land disposal as per the nutrient management plan or landfilled. Proper incineration will require between 15 and 25 gallons of diesel fuel per usage.

Feature Measure: Mortality in Pounds per day

Scenario Unit: Pound

Scenario Typical Size: 1,500.0

Scenario Total Cost: $15,494.03

Scenario Cost/Unit: $10.33

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Concrete, CIP, slab on grade, reinforced	37	Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yards	$315.01	4	$1,260.04
Excavation, Common Earth, side cast, small equipment	48	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic Yards	$2.24	8	$17.92
Hydraulic Excavator, 1 CY	931	Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included.	Hours	$111.83	1	$111.83
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	1	$23.18
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	1	$25.31
Materials						
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic Yards	$39.34	4	$157.36
Fuel Tank, Anchored	1033	Fuel tank for operating incinerators and/or gasifiers. Materials only.	Gallons	$4.67	285	$1,330.95
Incinerator, 600 lbs/day	1626	Poultry and livestock incinerator with an approximate chamber capacity of 600 pounds per day. Includes equipment and after burner only.	Each	$12,313.55	1	$12,313.55
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 316 - Animal Mortality Facility

Scenario #9 - Static pile Wood Bins

Scenario Description:

This scenario consists of installing a group of small bins along one side and a long narrow bin on the backside of a concrete pad to compost poultry or small swine mortality in static pile(s) that have sufficient bulking material to allow natural aeration. Piles are turned to go through a second heat cycle prior to final land application. The roofed portion of the facility is addressed with Roofs and Covers (367). Size of facility based on daily mortality and sizing procedures accepted in particular state. Organic sites will require more frequent replacement of lumber. Potential Associated Practices: Roofs and Covers (367), Heavy Use Area Protection (561), Critical Area Planting (342), Nutrient Management (590), Access Road (560), Structure for Water Control (587), Roof Runoff Structure (558), Diversion (362), Subsurface Drain (606), and Underground Outlet (620).

Before Situation:

Animal mortality is done in a manner that results in non-point source pollution of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Improper operation results in odors and spread of pathogens from incomplete composting, incineration, or interaction with predators. No plan was formulated for both normal and catastrophic mortality events.

After Situation:

Animal mortality is being done in a manner that prevents non-point source pollution of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Proper operation results in little to no odors, complete composting, and protection from predators to minimize pathogen survival or spreading. An overall plan covers normal and catastrophic mortality events. Selected method for carcass treatment and disposal meet or are permitted by federal, state, and local laws, rules, regulation. Install facility on a 18' x 40' concrete pad with 4 bins (5' H x 10' W x 6' Length) along the front side and one 8'w by 40' long secondary bin. Bin wall consists of a 1' concrete curb and 4' of treated lumber. Roofed portion is addressed under Roofs and Covers (367). Site preparation includes topsoil removal, installing 4" of gravel, setting posts , installing concrete slab, installing wooden walls and doors. Piles turned to go through a second heat cycle prior to final land application.

Feature Measure: Total Bin Area

Scenario Unit: Square Feet

Scenario Typical Size: 720.0

Scenario Total Cost: $13,580.54

Scenario Cost/Unit: $18.86

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Concrete, CIP, formless, non reinforced	36	Non reinforced concrete cast-in-placed without forms by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yards	$157.03	3	$471.09
Concrete, CIP, slab on grade, reinforced	37	Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yards	$315.01	14	$4,410.14
Concrete, CIP, formed reinforced	38	Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yards	$415.80	3	$1,247.40
Excavation, Common Earth, side cast, small equipment	48	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic Yards	$2.24	40	$89.60
Skidsteer, 80 HP	933	Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$59.94	7	$419.58
Auger, Post driver attachment	934	Auger or post driver attachment to a tractor or skidsteer. Does not include power unit. Labor not included.	Hours	$12.82	7	$89.74
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	80	$2,404.00
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	7	$177.17
Materials						
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic Yards	$39.34	9	$354.06
Dimension Lumber, Treated	1044	Treated dimension lumber with nominal thickness equal or less than 2 inches. Includes lumber and fasteners	Board Feet	$2.00	880	$1,760.00
Lumber, planks, posts and timbers, treated	1609	Treated dimension lumber with nominal thickness greater than 2 inches. Includes lumber and fasteners. Does not include labor.	Board Feet	$3.37	448	$1,509.76
Mobilization						

Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	$70.11	2	$140.22
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: 316 - Animal Mortality Facility

Scenario #40 - InVessel Rotary Drum for All Daily Mortality Rates

Scenario Description:

This scenario consists of installing a horizontal rotary drum to compost average normal poultry and swine facility mortality. It can handle equal to or greater than 250 lbs per day of mortality plus equal or higher volumes of carbon material (i.e. wood chips). A secondary composting storage area is required to finish materials. Payment quantity based on average pounds per day of mortality for the smallest drum that can process daily mortality as per manufacturers' recommendations. The purpose of the practice is to address resource concerns related to water quality degradation due to excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Air quality impacts due to odors will also be addressed. Rotary Drums should be considered when the producer has very limited space for his/her animal mortality facility. If space is not the limiting factor, than scenarios 9 or 11 should be used. Potential Associated Practices: Roofs and Covers (367), Waste Storage Facility (313), Fence (382), Critical Area Planting (342), Nutrient Management (590), Access Road (560), Heavy Use Area Protection (561), Structure for Water Control (587), Diversion (362), Subsurface Drain (606), and Underground Outlet (620).

Before Situation:

Animal mortality is done in a manner that results in non-point source pollution of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Improper operation results in odors and spread of pathogens from incomplete composting, incineration, or interaction with predators. No plan was formulated for both normal and catastrophic mortality events.

After Situation:

Proper operation results in little to no odors, complete composting, and protection from predators to minimize pathogen survival or spreading. An overall plan covers normal and catastrophic mortality events. Install a 5' diameter by 49' long rotary drum on two concrete pads that can process 500 lbs of mortality per day. Drum rotation moves and mixes mortality and wood chips. Site preparation includes topsoil removal, gravel pad, and concrete pads and slab at two locations plus small floor and walls to complete composting. Input material reduced by 40-60 percent and put into 4' high, three sided, 20'x 20' concrete bin with 10'x20 concrete pad for secondary composting. Area can be protected by adding Roofs and Covers (367) standard.

Feature Measure: Pounds of animal mortality per day

Scenario Unit: Pounds per Day

Scenario Typical Size: 500.0

Scenario Total Cost: $86,937.33

Scenario Cost/Unit: $173.87

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Concrete, CIP, slab on grade, reinforced	37	Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yards	$315.01	14	$4,410.14
Concrete, CIP, formed reinforced	38	Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yards	$415.80	6	$2,494.80
Backhoe, 80 HP	926	Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$31.57	10	$315.70
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	176	$5,288.80
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	96	$2,225.28
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	10	$269.00
Materials						
Aggregate, Sand, Graded, Washed	45	Sand, typical ASTM C33 gradation, includes materials, equipment and labor to transport and place	Cubic Yards	$38.81	14	$543.34
Dimension Lumber, Treated	1044	Treated dimension lumber with nominal thickness equal or less than 2 inches. Includes lumber and fasteners	Board Feet	$2.00	94	$188.00
Lumber, planks, posts and timbers, treated	1609	Treated dimension lumber with nominal thickness greater than 2 inches. Includes lumber and fasteners. Does not include labor.	Board Feet	$3.37	180	$606.60
Composter, drum, 28 CY	1628	28 CY drum composter unit. Total capacity range is 20-29 CY. Includes equipment, operation controls, and shipping. Labor not included.	Each	$67,131.45	1	$67,131.45
Mobilization						

Mobilization, Material, distance > 50 miles	1043	Mobilization cost of materials for special cases where the distance from the supplier delivery point to the job site exceeds 50 miles. The costs for shipping by UPS or bulk freight shipping to a location within 50 miles of the job site have already been included in the component price.	Dollars	$1.00	3000	$3,000.00
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	$70.11	3	$210.33
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 316 - Animal Mortality Facility

Scenario #68 - Forced Air Composting with mortality preprocessing – poultry/turkey Unit

Scenario Description:

This scenario consists of installing a manufactured Forced Air Composting with mortality preprocessing – poultry/turkey Unit designed to handle up to 1200 lbs of average daily poultry/turkey mortality. The unit consist of a concrete slab with cut in forced aeration tubes, a mortality shredding/grinding machine, area for storage of 2nd stage compost and composting material, interior concrete wall to aid in handling the compost, and a roof over the entire system. The unit will be certified by a PE to meet state requirements. After determining average daily mortality in lbs, select the size unit needed from manufacturer supplied sizing table to determine square footage of facility needed. Payment made per unit square footage size obtained from manufacturers' product literature. This option is considered advanced mortality treatment and will require a smaller building footprint (75-50% less) than a roofed static compost pile with concrete floor and bins. Forced aeration compost facilities will also typically have reduced odor and process mortality in less time that static bin composting. The purpose of the practice is to address resource concerns related to water quality degradation due to excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Air quality impacts due to odors will also be addressed. Potential Associated Practices: Heavy Use Area Protection (561), Fence (382), Critical Area Planting (342), Access Road (560), Waste Storage Facility (313), Nutrient Management (590), Roofs and Covers (367), Critical Area Planting (342).

Before Situation:

Animal mortality is done in a manner that results in non-point source pollution of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Improper operation results in odors and spread of pathogens from incomplete composting, incineration, or interaction with predators. No plan was formulated for both normal and catastrophic mortality events.

After Situation:

Animal mortality is being done in a manner that prevents non-point source pollution of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Proper operation results in little to no odors and protection from predators to minimize pathogen survival or spreading. An overall plan covers normal and catastrophic mortality events. Selected method for carcass treatment and disposal meet or are permitted by federal, state, and local laws, rules, regulation.

Feature Measure: Sq Feet of roof covered facility

Scenario Unit: Square Feet

Scenario Typical Size: 2,970.0

Scenario Total Cost: $216,699.30

Scenario Cost/Unit: $72.96

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Materials						
Forced Air Composting with Mortality Preprocessing - Poultry/turkey Unit	2771	This force air with mortality preprocessing unit includes a preprocessing mortality shredder grinder capable of processing poultry carcasses, a roof over the composting area, and a concrete pad with forced air bins and secondary storage area. The facility can treat from 600 to 1600 lbs mortality daily with the square foot size of the facility dependent on the lbs of mortality and the number of days required secondary storage (see the sizing table).	Square Feet	$77.67	2790	$216,699.30

Practice: 316 - Animal Mortality Facility

Scenario #69 - Forced Air Composting with mortality preprocessing Unit for Sow-Finisher Animal Size

Scenario Description:

This scenario consists of installing a manufactured Forced Air Composting with mortality preprocessing Unit for sow/hog finisher sized animal designed to handle up to 900 lbs of average daily sow/finisher mortality. The unit consist of a concrete slab with cut in forced aeration tubes, a mortality shredding/grinding machine capable of handling larger animals, area for storage of 2nd stage compost and composting material, interior concrete wall to aid in handling the compost, and a roof over the entire system. The unit will be certified by a PE to meet state requirements. After determining average daily mortality in lbs, select the size unit needed from manufacturer supplied sizing table to determine square footage of facility needed. This typical design assumed 90 days of storage needed. Payment made per unit square footage size obtained from manufacturers' product literature. This option is considered advanced mortality treatment and will requires a smaller building footprint (75-50% less) than a roofed static compost pile with concrete floor and bins. Forced aeration compost facilities will also typically have reduced odor and process mortality in less time than static bin composting. The purpose of the practice is to address resource concerns related to water quality degradation due to excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Air quality impacts due to odors will also be addressed. Potential Associated Practices: Heavy Use Area Protection (561), Fence (382), Critical Area Planting (342), Access Road (560), Waste Storage Facility (313), Nutrient Management (590), Roofs and Covers (367), Critical Area Planting (342).

Before Situation:

Animal mortality is done in a manner that results in non-point source pollution of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Improper operation results in odors and spread of pathogens from incomplete composting, incineration, or interaction with predators. No plan was formulated for both normal and catastrophic mortality events.

After Situation:

Animal mortality is being done in a manner that prevents non-point source pollution of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Proper operation results in little to no odors and protection from predators to minimize pathogen survival or spreading. An overall plan covers normal and catastrophic mortality events. Selected method for carcass treatment and disposal meet or are permitted by federal, state, and local laws, rules, regulation.

Feature Measure: Square Feet of roof covered forced

Scenario Unit: Square Feet

Scenario Typical Size: 3,510.0

Scenario Total Cost: $280,098.00

Scenario Cost/Unit: $79.80

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Materials						
Forced Air Composting with Mortality Preprocessing - Sow/finisher Unit	2772	This Sow/Finisher force air with mortality preprocessing unit includes a preprocessing mortality shredder grinder capable of processing hog carcasses, a roof over the composting area, and a concrete pad with forced air bins and secondary storage area. The facility can treat from 300 to 1000 lbs mortality daily with the square foot size of the facility dependent on the lbs of mortality and the number of days required secondary storage (see the sizing table).	Square Feet	$79.80	3510	$280,098.00

Practice: 317 - Composting Facility

Scenario #1 - Composter, with concrete under bins wood or concrete only

Scenario Description:

The composting facility, with concrete under bins only, is installed to address water quality concerns and disease vectors resulting from improper waste disposal by providing a dedicated facility for storage and treatment, and by creating a compost product that can be used in multiple ways including land application for enrichment of crop ground. All animal mortality composting shall be done using Practice Standard 316 - Animal Mortality Facility. Potential Associated Practices:Fence (382), Critical Area Planting (342), Nutrient Management (590), Access Road (560), Structure for water control (587), Diversion (362), Pipeline (516), Subsurface Drain (606), Heavy Use Area Protection (561), Roofs and Covers (367), Roof Runoff Structure (558), Waste Storage Facility (313), Waste Recycling (633), Waste Transfer (634), Underground Outlet (620) and Vegetative Treatment Area (635).

Before Situation:

Manure and other agricultural by-products are not being utilized or controlled in an environmentally safe manner. The wastes are either accumulating at the source, or other location, or are being transported but not properly utilized or disposed of. This situation poses an environmentally threat of excessive nutrients, organics, and pathogens being transported into surface and groundwaters, in addition to the use of excessive amounts of fertilizers.

After Situation:

Manure, litter and other agricultural by-products are being controlled, by the collection at the source, and stored properly, at an environmentally suitable location, until such time that they are disposed of or utilized in a proper manner, typically in accordance with a nutrient management plan. Install facility on a 18' x 40' concrete pad with 4 bins (5' H x 10' W x 6' Length) along the front side and one 8'w by 40' long secondary bin. Bin wall consists of a 1' concrete curb and 4' of treated lumber. Roofed portion is addressed under Roofs and Covers (367). Site preparation includes topsoil removal, installing 4" of gravel, setting posts , installing concrete slab, installing wooden walls and doors. Piles turned to go through a second heat cycle prior to final land application. The bins are constructed on a 5" concrete slab used to store and stabilize manure, litter and other agricultural by-products from a four house complex on any farm.

Feature Measure: Square Foot Floor Area

Scenario Unit: Square Feet

Scenario Typical Size: 720.0

Scenario Total Cost: $13,613.66

Scenario Cost/Unit: $18.91

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Concrete, CIP, formless, non reinforced	36	Non reinforced concrete cast-in-placed without forms by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yards	$157.03	3	$471.09
Concrete, CIP, slab on grade, reinforced	37	Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yards	$315.01	14	$4,410.14
Concrete, CIP, formed reinforced	38	Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yards	$415.80	3	$1,247.40
Earthfill, Roller Compacted	49	Earthfill, roller or machine compacted, includes equipment and labor	Cubic Yards	$4.42	40	$176.80
Skidsteer, 80 HP	933	Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$59.94	7	$419.58
Auger, Post driver attachment	934	Auger or post driver attachment to a tractor or skidsteer. Does not include power unit. Labor not included.	Hours	$12.82	7	$89.74
Excavation, common earth, large equipment, 150 ft	1223	Bulk excavation of common earth including sand and gravel with dozer >100 HP with average push distance of 150 feet. Includes equipment and labor.	Cubic Yards	$3.85	40	$154.00
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	80	$1,854.40
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	7	$177.17
Materials						
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic Yards	$39.34	9	$354.06
Dimension Lumber, Treated	1044	Treated dimension lumber with nominal thickness equal or less than 2 inches. Includes lumber and fasteners	Board Feet	$2.00	880	$1,760.00
Lumber, planks, posts and timbers, treated	1609	Treated dimension lumber with nominal thickness greater than 2 inches. Includes lumber and fasteners. Does not include labor.	Board Feet	$3.37	448	$1,509.76
Mobilization						

Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	$70.11	2	$140.22
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	2	$341.52
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: 317 - Composting Facility

Scenario #20 - Urban-Small Farm Pad + Bins

Scenario Description:

The composting facility is installed on a small, urban or organic farm to address water quality concerns, pest/rodent concerns, and disease vectors resulting from improper vegetative waste disposal by providing a dedicated facility for storage and treatment, and by creating a compost product that can be used in multiple ways including land application for enrichment of crop ground. The typical facility size is 6 feet by 9 feet and is comprised of a two bin system. Screening is provided to limit access by vermin. Cost may be higher per unit than traditional compost facilities due to construction access limitations. Potential Associated Practices: Pond Sealing or Lining, Compacted Soil (520), Pond Sealing or Lining, Geomembrane or Geosynthetic Clay Liner (521), Pond Sealing or Lining, Concrete (522), Fence (382), Critical Area Planting (342), Nutrient Management (590), Access Road (560), Structure for Water Control (587), Diversion (362), Livestock Pipeline (516), Subsurface Drain (606), Heavy Use Area Protection (561), Roofs and Covers (367), Roof Runoff Structure (558), Waste Storage Facility (313), Waste Recycling (633), Waste Transfer (634), Underground Outlet (620) and Vegetative Treatment Area (635), Stormwater Runoff Control (570).

Before Situation:

Manure and other vegetative waste are not being utilized or controlled in an environmentally safe manner. The wastes are either accumulating at the source, or other location, or are being transported but not properly utilized or disposed. This situation poses an environmental threat of excessive nutrients, organics, and pathogens being transported into surface and groundwaters.

After Situation:

Manure and other agricultural by-products are being controlled by collection at the source and properly stored at an environmentally suitable location, until such time that they are utilized in a proper manner, typically in accordance with a nutrient management plan. This is incorporated as part of the overall waste management system meeting the National Engineering Handbook (NEH), Part 651, Agricultural Waste Management Field Handbook (AWMFH) that has been developed to also account for end use of the product from the composting facility. This scenario consists of installing a composting structure on a concrete pad. Concrete pad is 6'x9' on a compacted gravel surface. Include sufficient area for accessing compost structure. Site to be located out of drainage areas, off-site water diverted and any runoff to spread out into a grassed area or vegetated treatment area as per regulations. Site preparation includes topsoil removal, compaction of subsoil, and installing a geotextile plus compacted gravel, concrete pad, and composting structure.

Feature Measure: Square Foot Floor Area

Scenario Unit: Square Feet

Scenario Typical Size: 54.0

Scenario Total Cost: $3,417.30

Scenario Cost/Unit: $63.28

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Geotextile, woven	42	Woven Geotextile Fabric. Includes materials, equipment and labor	Square Yard	$1.18	6	$7.08
Earthfill, Manually Compacted	50	Earthfill, manually compacted, includes equipment and labor	Cubic Yards	$5.73	2	$11.46
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	5	$118.70
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	30	$901.50
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	16	$370.88
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	15	$626.70
Materials						
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic Yards	$39.34	2	$78.68
Concrete mix, bag	1226	Pre-mixed dry concrete mix in 60 pound bag. Materials only.	Each	$4.67	42	$196.14
Lumber, planks, posts and timbers, untreated, rot resistant	1612	Untreated dimension lumber with nominal thickness greater than 2 inches, milled from rot resistant species such as cedar. Includes lumber and fasteners. Does not include labor.	Board Feet	$4.19	264	$1,106.16

Practice: 318 - Short Term Storage of Animal Waste and By-Products

Scenario #3 - Poly Cover, Earthen Pad

Scenario Description:

A compacted earthen pad is constructed to store wastes on a short-term basis between collection and utilization as part of an agricultural waste management system. This practice will address soil and water quality by reducing the pollution potential for surface water and groundwater quality degradation. Potential Associated Practices: Nutrient Management (590), Waste Recycling (633)

Before Situation:

Operator presently has a confined animal feeding operation and daily manure spreading operations are not possible due to weather. Manure and other agricultural waste by-products are not being managed in an environmentally safe manner. The wastes are either accumulating at the source, or are being stockpiled in environmentally vulnerable areas and not properly managed. This situation poses an environmental threat of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources.

After Situation:

Using a compacted earthen pad with a cover provides an environmentally safe meaure for temporarily managing manure and other agricultural waste by-products. This facility provides the landowner a means of storing waste until it can be utilized in a proper manner in accordance with a nutrient management plan. This practice will address soil and water quality by reducing the pollution potential to soil, surface water and ground water. Typical design: volume of material temporarily stored 12,576 ft3, pad area 6,000 ft2 (60' X 100'); 4' width around edge of manure stack to properly anchor and cover the manure; footprint of manure pile: 52' X 92", 6' manure stack height on 4:1 slopes; cover is a 6 mil poly film; 15" x 1/2" dia auger anchors on 2' centers.

Feature Measure: Volume of stored manure solids

Scenario Unit: Cubic Feet

Scenario Typical Size: 12,576.0

Scenario Total Cost: $4,315.03

Scenario Cost/Unit: $0.34

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Earthfill, Roller Compacted	49	Earthfill, roller or machine compacted, includes equipment and labor	Cubic Yards	$4.42	222	$981.24
Materials						
Poly film, 6 mil.	245	6 mil, polyethylene, black	Square Feet	$0.09	222	$19.98
Earthfill Material, purchased, common	2060	Purchased earthfill materials includes both silt or clay. Material only.	Cubic Yards	$13.05	234	$3,053.70
Introduced Perennial Grasses, Legumes and/or Forbs, Low Density	2747	Introduced perennial grasses, legumes, and/or forbs, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Includes material and shipping.	Acres	$34.55	0.18	$6.22
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 324 - Deep Tillage

Scenario #10 - Deep Tillage less than 20 inches

Scenario Description:

Fields (80 acres) with adverse soils conditions that restrict plant growth such as compacted layers caused by tillage operations or restrictive layers such as hardpans (duripans) in the root zone. This practice does not apply to normal tillage practices to prepare a seedbed but is meant to fracture the restrictive soil layer.

Before Situation:

In this geographic area, crop plants are observed as having reduced yield, water is not infiltrating into the soil. Soil layers have been compacted by shallow tillage operations, or soils have a hardpan (duripan) layer that is restricting root growth. Typical field size is 80 acres with crop rotations consisting of annual row crops or small grains with conventional tillage or when the harvesting of row crops (onions, sugar beets, potato, and corn silage) use heavy trucks to assist with the harvest. Compaction has been caused when soil moisture is too wet for normal field operations or by excessive shallow tillage or field harvest haul traffic throughout the entire field. Soil structure has been reduced, aggregate strength is weak and soil biological activity is low. Soil organic matter is not adequate and the water holding capacity of the soil is limited for the desired root zone.

After Situation:

Soil compaction is measured with a penetrometer and visual observation of limiting root growth. Deep tillage operations such as subsoiling, paratilling or ripping are performed not as a part of the normal tillage operation for seedbed preparation, but used to relieve compaction at depths less than 20 inches. Soil moisture is less than 30 percent when deep tillage is used. The fractured zone will be sufficient to permit root penetration below the restrictive soil layer. Penetrometers are used to identify the severity (psi) of the compaction and the depth of the restrictive layer. Deep tillage is generally performed in the fall after crop harvest when soil conditions are dry. After deep tillage, harvest operations should be avoided when soil moisture is greater than 50% of field capacity. Field harvest haul traffic should be limited to end rows or haul roads. Using dual tires or tracks beneath tractors or grain wagons can help spread the weight load.

Feature Measure: <Unknown>

Scenario Unit: Acres

Scenario Typical Size: 80.0

Scenario Total Cost: $1,920.98

Scenario Cost/Unit: $24.01

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	1	$23.74
Ripper or subsoiler, 16 to 36 inch depth	1235	Deep ripper or subsoiler, (16-36 inches depth) includes tillage implement, power unit and labor.	Acres	$20.81	80	$1,664.80
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	2	$46.36
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	2	$186.08

Practice: 324 - Deep Tillage

Scenario #11 - Deep Tillage more than 20 inches

Scenario Description:

Fields (80 acres) with adverse soils conditions that restrict plant growth such as compacted layers caused by tillage operations or restrictive layers such as hardpans (duripans) in the root zone. This practice does not apply to normal tillage practices to prepare a seedbed but is meant to fracture the restrictive soil layer.

Before Situation:

In this geographic area, crop plants are observed as having reduced yield, water is not infiltrating into the soil. Soil layers have been compacted by shallow tillage operations, or soils have a hardpan (duripan) layer that is restricting root growth. Typical field size is 80 acres with crop rotations consisting of annual row crops, orchard /vineyards or small grains with conventional tillage or when the harvesting of row crops (onions, sugar beets, potato, and corn silage) use heavy trucks to assist with the harvest. Orchards and vineyards may be deep ripped prior to establishment of perennial crop. Compaction has been caused when soil moisture is too wet for normal field operations or by excessive shallow tillage or field harvest haul traffic throughout the entire field. Soil structure has been reduced, aggregate strength is weak and soil biological activity is low. Soil organic matter is not adequate and the water holding capacity of the soil is limited for the desired root zone.

After Situation:

Soil compaction is measured with a penetrometer and visual observation of limiting root growth. Deep tillage operations such as subsoiling, paratilling or ripping are performed not as a part of the normal tillage operation for seedbed preparation, but used to relieve compaction at depths more than 20 inches. Soil moisture is less than 30 percent when deep tillage is used. The fractured zone will be sufficient to permit root penetration below the restrictive soil layer. Penetrometers are used to identify the severity (psi) of the compaction and the depth of the restrictive layer. Deep tillage is generally performed in the fall after crop harvest when soil conditions are dry. When possible, harvest operations should be avoided when soil moisture is greater than 50% of field capacity. Field harvest haul traffic should be limited to end rows or haul roads. Using dual tires or tracks beneath tractors or grain wagons can help spread the weight load.

Feature Measure: <Unknown>

Scenario Unit: Acres

Scenario Typical Size: 80.0

Scenario Total Cost: $4,909.78

Scenario Cost/Unit: $61.37

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	1	$23.74
Ripper or subsoiler, > 36 inch depth	1236	Deep ripper or subsoiler, (>36 inches depth) includes tillage implement, power unit and labor.	Acres	$58.17	80	$4,653.60
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	2	$46.36
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	2	$186.08

Practice: 325 - High Tunnel System

Scenario #17 - Contiguous US

Scenario Description:

Used for contiguous US states in areas with low snowfall. A Quonset style (rounded) manufactured frame of tubular steel (30 x 72 ft.) covered with 4-year 6 mil plastic. Costs are based on purchase of manufactured kit and landowner installing the structure. Structure must be installed to manufacturer's specifications.

Before Situation:

Cropland where extension of the growing season is needed. Additional resource concerns that may need to be addressed include soil erosion, soil condition, water quality, water quantity, and plant condition.

After Situation:

A Quonset style high tunnel structure has been installed and the growing season has been extended for 1-4 months on average. Plant health and vigor has been improved.

Feature Measure: Area of Tunnel Installed

Scenario Unit: Square Feet

Scenario Typical Size: 2,160.0

Scenario Total Cost: $8,752.18

Scenario Cost/Unit: $4.05

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	71	$1,645.78
Materials						
Hoop House, quonset style, base package	1277	Includes the framework complete with all predrilled steel, hardware and instructions. Includes 6 mil 4-year polyethylene film to cover tunnel, and polylock for sides and ends for a quonset style (round top) hoop house. Materials and shipping only, does not include labor.	Square Feet	$3.29	2160	$7,106.40

Practice: 325 - High Tunnel System

Scenario #18 - High Tunnel, Low Wind or Snow Load, Intensive Sun

Scenario Description:

Use in areas with low expected snow and wind loads. Quonset-style (round) manufactured frame of tubular steel (30 x 72 ft.) covered with 4-year 6 mil plastic. Because of extensive sun intensity, shade cloth is provided. Costs are based on purchase of manufactured kit and landowner installation of structure. Structure must be installed to manufacturer's specifications. Associated practices might include CPS Roof Runoff Structure (588), Underground Outlet (620), Critical Area Planting (342), Mulching (484)

Before Situation:

Cropland where extension of the growing season is needed. Primary resource concern addressed will be plant health and vigor. High sun intensity shortens growing season, or decreases crop quality.

After Situation:

High Tunnel structure has been installed and the growing season has been extended for 1-4 months on average. Shade cloth protects crops from high intensity of sun, allowing crop production and quality to continue into summer months. Plant health and vigor is improved.

Feature Measure: Area of Tunnel Installed

Scenario Unit: Square Feet

Scenario Typical Size: 2,160.0

Scenario Total Cost: $9,748.98

Scenario Cost/Unit: $4.51

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	71	$1,645.78
Materials						
Hoop House, quonset style, with shade cloth	2636	Includes the framework complete with all predrilled steel, hardware and instructions. Includes 6 mil 4-year polyethylene film to cover tunnel, polylock for sides and ends, and knitted shade cloth for a quonset style (round top) hoop house in southern climates. Materials and shipping only, does not include labor.	Square Feet	$3.52	2160	$7,603.20
Mobilization						
Mobilization, Material, distance > 50 miles	1043	Mobilization cost of materials for special cases where the distance from the supplier delivery point to the job site exceeds 50 miles. The costs for shipping by UPS or bulk freight shipping to a location within 50 miles of the job site have already been included in the component price.	Dollars	$1.00	500	$500.00

Practice: 325 - High Tunnel System

Scenario #59 - Small High Tunnel, Snow and Wind

Scenario Description:

Use in areas with low expected snow and wind loads on sites less than 1 acre. Gothic-style (arched) manufactured frame of tubular steel (less than or equal to 20 ft x 30 ft.) covered with 4-year warrantee, 6 mil UV resistant plastic. Costs are based on purchase of manufactured kit and landowner installation of structure. Structure must be installed to manufacturer's specifications. Associated practices might include CPS Roof Runoff Structure (588), Underground Outlet (620), Critical Area Planting (342), Mulching (484).

Before Situation:

Cropland where extension of the growing season is needed. Primary resource concern addressed will be plant health and vigor.

After Situation:

High Tunnel structure has been installed and the growing season has been extended for 1-4 months on average. Plant health and vigor is improved.

Feature Measure: Area of High Tunnel Installed

Scenario Unit: Square Feet

Scenario Typical Size: 600.0

Scenario Total Cost: $5,586.86

Scenario Cost/Unit: $9.31

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	57	$1,321.26
Materials						
High Tunnel, Gothic Style, Fixed Cost	2791	Fixed cost portion of a gothic style high tunnel. Includes heavy-duty, gothic framework complete with all predrilled steel, hardware and instructions. Includes 6 mil 4-year polyethylene film to cover tunnel, roll-up sides, lumber, and polylock for sides and ends for a gothic style (peaked top) hoop house. Materials and shipping only.	Number	$2,459.60	1	$2,459.60
High Tunnel, Gothic Style, Variable Cost	2792	Variable cost portion of a Gothic style high tunnel. Includes heavy-duty, gothic framework complete with all predrilled steel, hardware and instructions. Includes 6 mil 4-year polyethylene film to cover tunnel, roll-up sides, lumber, and polylock for sides and ends for a gothic style (peaked top) hoop house. Includes materials and shipping only.	Square Feet	$3.01	600	$1,806.00

Practice: 327 - Conservation Cover

Scenario #59 - Introduced with Forgone Income

Scenario Description:

This practice applies on organically managed land needing permanent protective cover. This practice typically involves conversion from an intensive organic cropping system to permanent non-native vegetation (scenario includes non-native grass/legume mix). The typical size of the practice is 20 acres. This practice scenario is typically used to reduce soil erosion, reduce soil quality degradation, improve water quality, develop wildlife habitat, and reduce air quality impacts.

Before Situation:

Crops such as vegetables and small fruit crops are organically grown and harvested. Full width tillage is utilized, weeds controlled mainly by cultivation. Soil surface residue amounts average 10% or less. Erosion exceeds tolerable rates and sediment may be moving offsite into surface water degrading water quality. Soil quality (soil organic matter) declines over time as a result of tillage practices, low residue, and long periods of bare soil. Air quality may be impacted during field operations by the creation of particulates. The system provides little to no wildlife habitat.

After Situation:

The 327 Implementation Requirements have been developed for the site and has been applied. Organically managed land covered with permanent non- native grass/legume mix vegetation has reduced soil erosion, reduced water/sediment runoff, and improved air quality due to the elimination of dust emissions. . Plants sown for conservation cover may provide cover for beneficial insects and wildlife. This scenario does not apply to plantings for forage production or to critical area plantings.

Feature Measure: Area planted

Scenario Unit: Acres

Scenario Typical Size: 50.0

Scenario Total Cost: $19,714.75

Scenario Cost/Unit: $394.30

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acres	$11.35	150	$1,702.50
Fertilizer, ground application, dry bulk	950	Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$7.35	50	$367.50
Mechanical weed control, Vegetation termination	957	Mechanical operations, Includes: Roller/crimper, mower, shredder, etc. Includes equipment, power unit and labor costs.	Acres	$20.84	50	$1,042.00
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	50	$1,039.50
Foregone Income						
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acres	$287.72	25	$7,193.00
FI, Soybeans Dryland	1961	Dryland Soybeans is Primary Crop	Acres	$225.71	25	$5,642.75
Materials						
Nitrogen, Organic	266	ORGANIC Nitrogen	Pound	$0.32	2500	$800.00
Phosphorus, Organic	267	ORGANIC Phosphorus	Pound	$0.10	2000	$200.00
Introduced Perennial Grasses, Legumes and/or Forbs, Low Density	2747	Introduced perennial grasses, legumes, and/or forbs, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Includes material and shipping.	Acres	$34.55	50	$1,727.50

Practice: 327 - Conservation Cover

Scenario #60 - Native Species with Forgone Income

Scenario Description:

This practice applies on conventional or organically managed land needing permanent protective cover. This practice typically involves conversion from an intensive cropping system to permanent native vegetation (scenario includes native grass/legume mix). The typical size of the practice is 50 acres. This practice scenario is typically used to reduce soil erosion, reduce soil quality degradation, improve water quality, develop wildlife habitat, and reduce air quality impacts. Applies to conventional or organic systems.

Before Situation:

Crops such as vegetables and small fruit crops may be conventionally or organically grown and harvested. Full width tillage is utilized, weeds controlled mainly by cultivation. Soil surface residue amounts average 10% or less. Soil erosion exceeds tolerable rates and sediment may be moving offsite into surface water degrading water quality. Soil quality (soil organic matter) declines over time as a result of tillage practices, low residue, and long periods of bare soil. Air quality may be impacted during field operations by the creation of particulates. The system provides little to no wildlife habitat.

After Situation:

The 327 Implementation Requirements have been developed for the site and applied. Managed land covered with permanent native grass/legume mix vegetation has reduced soil erosion, reduced water/sediment runoff, and improved air quality due to the elimination of dust emissions. Plants sown for conservation cover may provide cover for beneficial insects and wildlife. This scenario does not apply to plantings for forage production or to critical area plantings.

Feature Measure: Area planted

Scenario Unit: Acres

Scenario Typical Size: 50.0

Scenario Total Cost: $23,409.75

Scenario Cost/Unit: $468.20

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acres	$11.35	150	$1,702.50
Mechanical weed control, Vegetation termination	957	Mechanical operations, Includes: Roller/crimper, mower, shredder, etc. Includes equipment, power unit and labor costs.	Acres	$20.84	100	$2,084.00
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	50	$1,039.50
Foregone Income						
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acres	$287.72	25	$7,193.00
FI, Soybeans Dryland	1961	Dryland Soybeans is Primary Crop	Acres	$225.71	25	$5,642.75
Materials						
Native Perennial Grasses, Low Density	2750	Native perennial grasses, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Includes material and shipping.	Acres	$114.96	50	$5,748.00

Practice: 327 - Conservation Cover

Scenario #61 - Pollinator Species with Forgone Income

Scenario Description:

Permanent vegetation, including a mix of native grasses, legumes, and forbs (mix may also include non-native species), established on land needing permanent vegetative cover that provides habitat for pollinators. Typical practice size is variable depending on site; this scenario uses 1 ac as the typical size. In addition to providing pollinator habitat, this practice scenario may also reduce sheet and rill erosion, improve soil quality, improve water quality, and improve air quality. The practice may also provide wildlife habitat. Practice applicable on cropland, odd areas, corners, etc. Applies to conventional or organic systems.

Before Situation:

Crops such as vegetables and small fruit crops may be conventionally or organically grown and harvested. Full width tillage is utilized, weeds controlled mainly by cultivation. Soil surface residue amounts average 10% or less. Soil erosion exceeds tolerable rates and sediment may be moving offsite into surface water degrading water quality. Soil quality (soil organic matter) declines over time as a result of tillage practices, low residue, and long periods of bare soil. Air quality may be impacted during field operations by the creation of particulates. The system provides little to no wildlife or pollinator habitat.

After Situation:

The 327 Implementation Requirements have been developed for the site and applied. Managed land covered with permanent pollinator habitat including a mix of native grasses, legumes, and forbs (mix may also include non-native species). This practice may also reduce soil erosion, reduce water/sediment runoff, and improve air quality due to the elimination of dust emissions. Plants sown for pollinator habitat may also provide cover for beneficial insects and wildlife. This scenario does not apply to critical area plantings.

Feature Measure: Area planted

Scenario Unit: Acres

Scenario Typical Size: 1.0

Scenario Total Cost: $750.06

Scenario Cost/Unit: $750.06

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acres	$11.35	3	$34.05
Mechanical weed control, Vegetation termination	957	Mechanical operations, Includes: Roller/crimper, mower, shredder, etc. Includes equipment, power unit and labor costs.	Acres	$20.84	2	$41.68
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	1	$20.79
Foregone Income						
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acres	$287.72	0.5	$143.86
FI, Soybeans Dryland	1961	Dryland Soybeans is Primary Crop	Acres	$225.71	0.5	$112.86
Materials						
Native Perennial Grasses, Legumes and/or Forb Mix for Targeted Wildlife/Pollinator Habitat or Ecological Restoration, moderate commercial availability	2619	Diverse mix of native perennial grasses, legumes and forbs, less than 50% grasses, may include biennials and a small percentage of annual species for establishment purposes and/or if allowed by the CPS. This is a mix composed of species required to meet specific wildlife/pollinator habitat or ecological requirements. Seed is moderately easy to purchase commercially. Includes materials and shipping.	Acres	$396.82	1	$396.82

Practice: 327 - Conservation Cover

Scenario #62 - Introduced Species

Scenario Description:

The land is covered with permanent non-native grass vegetation resulting in reduced soil erosion and water/sediment runoff, and the elimination of dust emissions which improves air quality significantly. Plants sown for conservation cover may provide cover for beneficial insects and wildlife. This scenario does not apply to plantings for forage production or to critical area plantings. Applies to conventional or organic systems.

Before Situation:

Crops such as corn, soybeans, or cotton may be conventionally or organically grown and harvested. Full width tillage is utilized, weeds controlled by cultivation and/or chemical application. Soil surface residue amounts average 10% or less. Soil erosion exceed allowable tolerance, sediment may be moving offsite into surface water degrading water quality. Soil quality (soil organic matter) declines over time as a result of tillage practices, low residue, and long periods of bare soil. Air quality may be impacted during field operations by the creation of particulates. The system provides little to no wildlife habitat.

After Situation:

The 327 Implementation Requirements have been developed for the site and applied. The land is covered with permanent non-native grass vegetation resulting in reduced soil erosion and water/sediment runoff, and the elimination of significant dust emissions which improves air quality. Plants sown for conservation cover may provide cover for beneficial insects and wildlife. This scenario does not apply to plantings for forage production or to critical area plantings.

Feature Measure: Area planted

Scenario Unit: Acres

Scenario Typical Size: 50.0

Scenario Total Cost: $8,514.00

Scenario Cost/Unit: $170.28

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acres	$11.35	150	$1,702.50
Fertilizer, ground application, dry bulk	950	Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$7.35	50	$367.50
Mechanical weed control, Vegetation termination	957	Mechanical operations, Includes: Roller/crimper, mower, shredder, etc. Includes equipment, power unit and labor costs.	Acres	$20.84	50	$1,042.00
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	50	$1,039.50
Materials						
Nitrogen (N), Ammonium Nitrate	69	Price per pound of N supplied by Ammonium Nitrate. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.59	2500	$1,475.00
Phosphorus, P2O5	73	Price per pound of P2O5 supplied by Superphosphate. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.58	2000	$1,160.00
Introduced Perennial Grasses, Legumes and/or Forbs, Low Density	2747	Introduced perennial grasses, legumes, and/or forbs, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Includes material and shipping.	Acres	$34.55	50	$1,727.50

Practice: 327 - Conservation Cover

Scenario #63 - Native Species

Scenario Description:

This practice applies on land to be retired from agricultural production and on other lands needing permanent protective cover. This practice typically involves conversion from a clean-tilled (conventional tilled) intensive cropping system to permanent native vegetation (scenario includes native grass). The typical size of the practice is 50 acres. This practice scenario is typically used to reduce soil erosion, reduce soil quality degradation, improve water quality, develop wildlife habitat, and reduce air quality impacts. Applies to conventional or organic systems

Before Situation:

Crops such as corn, soybeans, or cotton may be conventionally or organically grown and harvested. Full width tillage is utilized, weeds controlled by cultivation and/or chemical application. Soil surface residue amounts average 10% or less. Soil erosion exceeds allowable tolerance, and sediment may be moving offsite into surface water degrading water quality. Soil quality (soil organic matter) declines over time as a result of tillage practices, low residue, and long periods of bare soil. Air quality may be impacted during field operations by the creation of particulates. The system provides little to no wildlife habitat.

After Situation:

The 327 Implementation Requirements have been developed for the site and applied. The land is covered with permanent native grass vegetation which reduces soil erosion and water/sediment runoff, and eliminates dust emissions which improves air quality. Plants sown for conservation cover may provide cover for beneficial insects and wildlife. This scenario does not apply to plantings for forage production or to critical area plantings.

Feature Measure: Area planted

Scenario Unit: Acres

Scenario Typical Size: 50.0

Scenario Total Cost: $10,574.00

Scenario Cost/Unit: $211.48

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acres	$11.35	150	$1,702.50
Mechanical weed control, Vegetation termination	957	Mechanical operations, Includes: Roller/crimper, mower, shredder, etc. Includes equipment, power unit and labor costs.	Acres	$20.84	100	$2,084.00
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	50	$1,039.50
Materials						
Native Perennial Grasses, Low Density	2750	Native perennial grasses, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Includes material and shipping.	Acres	$114.96	50	$5,748.00

Practice: 327 - Conservation Cover

Scenario #64 - Orchard or Vineyard Alleyways

Scenario Description:

This practice applies on orchards and vineyards needing permanent protective cover in the alleyways between tree and vine rows. The typical size of this practice is 20 acres. This practice typically involves conversion from a clean-tilled (conventional tilled) intensive cropping system to permanent vegetation (scenario includes non-native grass and legume mix). This practice scenario is typically used to reduce soil erosion, reduce soil quality degradation, improve water quality, enhance wildlife and/or pollinator habitat, manage plant pests, and reduce air quality impacts. Typically 60% of the surface area is conservation cover per acre.

Before Situation:

Orchard or vineyard with bare soil between vine/tree rows. Bare soil is exposed to wind erosion and/or intense rainfall during the fall, winter, and early spring. Over the winter sediment/nutrient runoff from orchards/vineyards increases. Soil erosion exceeds tolerable levels. Runoff from the fields flows into streams, water courses or other water bodies causing degradation to the receiving waters. Soil health (soil organic matter) declines over time as a result of long periods of bare soil. Little to no wildlife/pollinator habitat is present.

After Situation:

The 327 Implementation Requirements have been developed for the site and has been applied. Orchard or Vineyard area between vine/tree rows are planted with permanent introduced grass/legume mix. Area covered has reduced soil erosion, reduced water/sediment runoff, and improved air quality as a result of the elimination of significant amounts of dust emissions.. Plants sown for conservation cover may provide cover for beneficial insects, pollinators, and wildlife.

Feature Measure: Area planted

Scenario Unit: Acres

Scenario Typical Size: 20.0

Scenario Total Cost: $2,358.84

Scenario Cost/Unit: $117.94

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acres	$11.35	24	$272.40
Fertilizer, ground application, dry bulk	950	Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$7.35	12	$88.20
Mechanical weed control, Vegetation termination	957	Mechanical operations, Includes: Roller/crimper, mower, shredder, etc. Includes equipment, power unit and labor costs.	Acres	$20.84	24	$500.16
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	12	$249.48
Materials						
Nitrogen (N), Ammonium Nitrate	69	Price per pound of N supplied by Ammonium Nitrate. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.59	600	$354.00
Phosphorus, P2O5	73	Price per pound of P2O5 supplied by Superphosphate. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.58	480	$278.40
Potassium, K2O	74	K2O supplied by Muriate Of Potash. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.42	480	$201.60
Introduced Perennial Grasses, Legumes and/or Forbs, Low Density	2747	Introduced perennial grasses, legumes, and/or forbs, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Includes material and shipping.	Acres	$34.55	12	$414.60

Practice: 327 - Conservation Cover

Scenario #65 - Pollinator Species

Scenario Description:

Permanent vegetation, including a mix of native grasses, legumes, and forbs (mix may also include non-native species), established on any land needing permanent vegetative cover that provides habitat for pollinators. Typical practice size is variable depending on site; this scenario uses 1 ac as the typical size. In addition to providing pollinator habitat, this practice scenario may also reduce sheet, rill, and wind erosion, improve soil quality, improve water quality, and improve air quality. The practice may also provide wildlife habitat. Practice applicable on cropland, odd areas, corners, etc. Applies to conventional or organic systems.

Before Situation:

Crops such as corn, soybeans, or cotton may be conventionally or organically grown and harvested. Full width tillage is utilized, weeds controlled by cultivation and/or chemical application. Soil surface residue amounts average 10% or less. Erosion exceeds tolerable rates and sediment may be moving offsite into surface water degrading water quality. Soil quality (soil organic matter) declines over time as a result of tillage practices, low residue, and long periods of bare soil. Air quality may be impacted during field operations by the creation of particulates. The system provides little to no wildlife or pollinator habitat.

After Situation:

The 327 Implementation Requirements have been developed for the site and applied. Land is covered with permanent pollinator habitat including a mix of native grasses, legumes, forbs (mix may also include non-native species). This practice may also have reduced soil erosion, reduced water/sediment runoff, and improved air quality as a result of the elimination of dust emissions. Plants sown for pollinator habitat may also provide cover for beneficial insects and wildlife. This scenario does not apply to critical area plantings.

Feature Measure: Area planted

Scenario Unit: Acres

Scenario Typical Size: 1.0

Scenario Total Cost: $637.28

Scenario Cost/Unit: $637.28

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	1	$23.74
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acres	$11.35	3	$34.05
Mechanical weed control, Vegetation termination	957	Mechanical operations, Includes: Roller/crimper, mower, shredder, etc. Includes equipment, power unit and labor costs.	Acres	$20.84	2	$41.68
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	1	$20.79
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	4	$120.20
Materials						
Native Perennial Grasses, Legumes and/or Forb Mix for Targeted Wildlife/Pollinator Habitat or Ecological Restoration, moderate commercial availability	2619	Diverse mix of native perennial grasses, legumes and forbs, less than 50% grasses, may include biennials and a small percentage of annual species for establishment purposes and/or if allowed by the CPS. This is a mix composed of species required to meet specific wildlife/pollinator habitat or ecological requirements. Seed is moderately easy to purchase commercially. Includes materials and shipping.	Acres	$396.82	1	$396.82

Practice: 327 - Conservation Cover

Scenario #66 - Monarch Species Mix

Scenario Description:

Establish permanent vegetative cover for pollinator habitat according to state specifications. Typically used for high quality nectar and pollen species. Assumes seed/plugs, equipment and labor for seed bed prep/planting, and weed management during establishment. Used for conventional or organic land on small, intensive areas that are central to specialty crop production. Not typically used for large-scale plantings. This is applicable to both organic and non-organic conditions.

Before Situation:

Old hayfields that are mowed typically in the fall lack milkweed needed for monarchs. Other crops such as corn, soybeans, or cotton are conventionally grown and harvested. The system provides little to no wildlife or pollinator habitat.

After Situation:

The 327 Implementation Requirements have been developed and applied for the site. Land covered with permanent monarch habitat including a mix of milkweed species, native grasses, legumes, and forbs. Plants sown for monarch habitat may also provide cover for beneficial insects and wildlife.

Feature Measure: area planted

Scenario Unit: Acres

Scenario Typical Size: 1.0

Scenario Total Cost: $796.01

Scenario Cost/Unit: $796.01

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	1	$23.74
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acres	$11.35	3	$34.05
Mechanical weed control, Vegetation termination	957	Mechanical operations, Includes: Roller/crimper, mower, shredder, etc. Includes equipment, power unit and labor costs.	Acres	$20.84	2	$41.68
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	1	$20.79
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	4	$120.20
Materials						
Native Perennial Grasses, Legumes and/or Forb Mix for Targeted Wildlife/Pollinator Habitat or Ecological Restoration, moderate commercial availability	2619	Diverse mix of native perennial grasses, legumes and forbs, less than 50% grasses, may include biennials and a small percentage of annual species for establishment purposes and/or if allowed by the CPS. This is a mix composed of species required to meet specific wildlife/pollinator habitat or ecological requirements. Seed is moderately easy to purchase commercially. Includes materials and shipping.	Acres	$396.82	1.4	$555.55

Practice: 327 - Conservation Cover

Scenario #92 - Pollinator Mix on Urban Sites

Scenario Description:

Permanent vegetation, including a mix of grasses, legumes and forbs established on any land needing permanent vegetative cover that provides habitat, cover, and food for pollinators. Typical size varies depending on the site feasibility for length and width. Urban sites typical size is 2000 square feet (20x100 ft). This scenario included mechanical site preparation. This practice scenario may also reduce wind and water erosion, improve soil quality, reduce water quality degradation and reduce air emissions of particulate matter or greenhouse gases. Applies to conventional and organic systems. This scenario does not applied to areas needing Critical Area Planting.

Before Situation:

Crop rotation include specialty crops such as vegetable and fruit/berry production that benefit from pollinator activity. Urban agricultural sites do not provide for pollinator habitat at this time. Planting operations include mechanical removal of weeds. Land adjacent to the planting beds is not managed for resource concerns.

After Situation:

The 327 implementation requirements have been developed for the site and applied. Land is in permanent vegetative cover reducing erosion and sediment delivery to water. Pollinator habitat has successfully established providing habitat and cover for pollinators and beneficial insects.

Feature Measure: Area of conservation Cover Installe

Scenario Unit: 1,000 Square Foot

Scenario Typical Size: 2.0

Scenario Total Cost: $240.97

Scenario Cost/Unit: $120.49

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acres	$11.35	1	$11.35
Mechanical weed control, Vegetation termination	957	Mechanical operations, Includes: Roller/crimper, mower, shredder, etc. Includes equipment, power unit and labor costs.	Acres	$20.84	0.5	$10.42
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	1	$20.79
Materials						
Native Perennial Grasses, Legumes and/or Forb Mix for Targeted Wildlife/Pollinator Habitat or Ecological Restoration, moderate commercial availability	2619	Diverse mix of native perennial grasses, legumes and forbs, less than 50% grasses, may include biennials and a small percentage of annual species for establishment purposes and/or if allowed by the CPS. This is a mix composed of species required to meet specific wildlife/pollinator habitat or ecological requirements. Seed is moderately easy to purchase commercially. Includes materials and shipping.	Acres	$396.82	0.5	$198.41

Practice: 328 - Conservation Crop Rotation

Scenario #73 - Irrigated to Dryland Rotation Organic and Non-Organic

Scenario Description:

In this region this practice may be part of a conservation management system to primarily convert from an irrigated cropping system to dryland farming. In addition to improving water use efficiency the rotation may: 1) Reduce sheet, rill and wind erosion, 2) Maintain or increase soil health and organic matter content, 3) Reduce water quality degradation due to excess nutrients, 4) Improve soil moisture efficiency, 5) Reduce the concentration of salts and other chemicals from saline seeps, 6) Reduce plant pest pressures, 7) Provide feed and forage for domestic livestock, and 8) Provide food and cover habitat for wildlife, including pollinator forage, and nesting. This practice payment is provided to acquire the technical knowledge and skills necessary to effectively implement a conservation crop rotation on a typical 200 acre cropland farm. There is foregone income involved with this conversion from irrigated to dryland farming due to lower yields and net return. Cost represents typical situations for conventional (non-organic) producers converting from irrigated cropping to dryland farming.

Before Situation:

This rotation consisted of growing row crop grains that received a significant (more than half) of the required water via irrigation. The water demands are impacting the area's water availability. Erosion, soil condition, and future water availability are the major concerns.

After Situation:

The dryland rotation, using the same crops or a rotation that grows crops over different periods, will be part of a management system capable of utilizing available rainfall and soil moisture more efficiently and controlling wind and water erosion. Corn yields will be expected to be reduced from 150 to 80 bu/acre.

Feature Measure: Area planted

Scenario Unit: Acres

Scenario Typical Size: 200.0

Scenario Total Cost: $20,589.40

Scenario Cost/Unit: $102.95

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Foregone Income						
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acres	$287.72	-200	($57,544.00)
FI, Corn Irrigated	1960	Irrigated Corn is Primary Crop	Acres	$384.40	200	$76,880.00
Labor						
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	30	$1,253.40

Practice: 328 - Conservation Crop Rotation

Scenario #74 - Basic Rotation Organic and Non-Organic

Scenario Description:

In this region this practice may be part of a conservation management system on both organic and non-organic operations to: 1) Reduce sheet, rill and wind erosion, 2) Maintain or increase soil health and organic matter content, 3) Reduce water quality degradation due to excess nutrients, 4) Improve soil moisture efficiency, 5) Reduce the concentration of salts and other chemicals from saline seeps, 6) Reduce plant pest pressures, 7) Provide feed and forage for domestic livestock, and 8) Provide food and cover habitat for wildlife, including pollinator forage, and nesting. This practice payment is provided to the producer for the time needed to plan and implement the logistics of changing the rotation to effectively implement a conservation crop rotation on a typical 200 acre cropland farm. No foregone income. Cost represents typical situations for conventional and organic producers.

Before Situation:

The rotation consists primarily of low residue producing row crops. Fields range from nearly flat to C and D slopes. Erosion, soil quality, and pest management are the primary concerns.

After Situation:

A rotation is established that provides additional high residue and/or perennial crops that may treat one or more of the following purposes: reduce sheet, rill and wind erosion, maintain or increase soil health and organic matter content, reduce water quality degradation due to excess nutrients, improve soil moisture efficiency, reduce the concentration of salts and other chemicals from saline seeps, reduce plant pest pressures, provide feed and forage for domestic livestock, or provide food and cover habitat for wildlife, including pollinator forage, and nesting.

Feature Measure: Area planted

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $1,253.40

Scenario Cost/Unit: $12.53

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	30	$1,253.40

Practice: 328 - Conservation Crop Rotation

Scenario #75 - Specialty Crops Organic and Non-Organic

Scenario Description:

In this region a rotation of organic or non-organic specialty crops (fruits and vegetable) are produced as part of a conservation management system to treat one or more of the following resource concerns: 1) Reduce sheet, rill and wind erosion, 2) Maintain or increase soil health and organic matter content, 3) Reduce water quality degradation due to excess nutrients, 4) Improve soil moisture efficiency, 5) Reduce the concentration of salts and other chemicals from saline seeps, 6) Reduce plant pest pressures, 7) Provide feed and forage for domestic livestock, and 8) Provide food and cover habitat for wildlife, including pollinator forage, and nesting. This practice payment is provided to acquire the technical knowledge and skills necessary to effectively implement a conservation crop rotation on a typical 50 acre specialty crop farm. No foregone income. Cost represents typical situations for organic and non-organic producers.

Before Situation:

This rotation consisted of growing specialty crops. Fields range from nearly flat to B and C slopes. Erosion, soil quality, and pest management are the primary concerns.

After Situation:

The rotation established adds higher residue crop(s) to the rotation that will treat one or more of the following resource concerns on organic and non- organic farms: 1) Reduce sheet, rill and wind erosion, 2) Maintain or increase soil health and organic matter content, 3) Reduce water quality degradation due to excess nutrients, 4) Improve soil moisture efficiency, 5) Reduce the concentration of salts and other chemicals from saline seeps, 6) Reduce plant pest pressures, 7) Provide feed and forage for domestic livestock, and 8) Provide food and cover habitat for wildlife, including pollinator forage, and nesting.

Feature Measure: Area planted

Scenario Unit: Acres

Scenario Typical Size: 50.0

Scenario Total Cost: $1,671.20

Scenario Cost/Unit: $33.42

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	40	$1,671.20

Practice: 328 - Conservation Crop Rotation

Scenario #76 - Rice Residue Management for Waterfowl

Scenario Description:

The resource concern is food and cover for waterfowl where rice is grown in the waterfowl flyway zones. This scenario manages the rice residue after rice harvest to enhance the food and cover for waterfowl. The payment for the practice scenario is based on the cost to roll alternate strips of rice residue flat while leaving the alternate strips of rice residue left undisturbed after rice harvest.

Before Situation:

The typical situation after rice harvest is tilling the soil to bury or mix the rice residue remaining after harvest into the soil. This results in virtually no food or cover for the waterfowl that traverse the waterfowl flyways.

After Situation:

The rice residue after rice harvest will remain standing except for the alternate strip of the rice residue rolled almost flat to provide alternate strip of both cover and food. The rice residue will be left in this condition until the following spring.

Feature Measure: Residue Cover

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $460.50

Scenario Cost/Unit: $4.61

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Cultipacking	1100	Includes equipment, power unit and labor costs.	Acres	$9.21	50	$460.50

Practice: 328 - Conservation Crop Rotation

Scenario #86 - Specialty Crop Rotations Urban or Small Scale

Scenario Description:

Scenario applies to Urban sites less than a 1/2 acre with a rotation of organic or non-organic specialty crops (fruits and vegetable) are produced as part of a conservation management system to treat one or more of the following resource concerns: 1) Reduce sheet, rill and wind erosion, 2) Maintain or increase soil health and organic matter content, 3) Reduce water quality degradation due to excess nutrients, 4) Improve soil moisture efficiency, 5) Reduce the concentration of salts and other chemicals from saline seeps, 6) Reduce plant pest pressures, 7) Provide feed and forage for domestic livestock, and 8) Provide food and cover habitat for wildlife, including pollinator forage, and nesting. This practice payment is provided to acquire the technical knowledge and skills necessary to effectively implement a conservation crop rotation on a typical urban specialty crop farm. Cost represents typical situations for organic and non-organic producers.

Before Situation:

This rotation consisted of growing specialty crops. Fields range from nearly flat to B and C slopes. Erosion, soil quality, and pest management are the primary concern. Removal of residue from the planted area is common leaving bare soil.

After Situation:

The rotation established adds diversity of plant material organic matter, higher residue amounts that will treat one or more of the following resource concerns on organic and non- organic farms: reduce sheet, rill and wind erosion, maintain or increase soil health and organic matter content, improve soil moisture efficiency or reduce plant pest pressure.

Feature Measure: area planned

Scenario Unit: 1,000 Square Foot

Scenario Typical Size: 15.0

Scenario Total Cost: $473.00

Scenario Cost/Unit: $31.53

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Mechanical weed control, Vegetation termination	957	Mechanical operations, Includes: Roller/crimper, mower, shredder, etc. Includes equipment, power unit and labor costs.	Acres	$20.84	0.34	$7.09
Seeding Operation, No Till/Strip Till Planter	1230	No Till/Strip Till row planters for seeding. Includes all costs for equipment, power unit, and labor.	Acres	$19.44	0.34	$6.61
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	9	$208.62
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	6	$250.68

Practice: 329 - Residue and Tillage Management, No Till

Scenario #10 - No-Till/Strip-Till

Scenario Description:

This practice typically involves conversion from a clean-tilled (conventional tilled) system to no-till or strip-till system on 100 acres of cropland. This involves managing the amount, orientation and distribution of crop and other plant residue on the soil surface year round while limiting soil-disturbing activities used to establish and harvest crops. The practice is used to reduce sheet and rill erosion, reduce wind erosion, improve soil quality, reduce CO2 losses from the soil, reduce energy use, increase plant available moisture and provide food and escape cover for wildlife. The no-till/strip-till system includes non-tillage types of weed control and may also include a period of no till fallow. System is applicable in both irrigated and non-irrigated fields of organic and non-organic operations.

Before Situation:

Row crops or small grains are grown and harvested. Full width tillage is performed prior to planting and weed control during crop production is typically cultivation and chemical application. Fields are disked immediately following harvest, with additional operations in some fields to facilitate drainage, seedbed preparation or additional weed control. Residue amounts after tillage operations average 10% or less, resulting in bare soil being exposed to wind erosion and/or intense rainfall. Any crop residue that is present degrades and sediment/nutrient runoff from fields increases during rainfall events. Sheet and rill erosion occurs with visible rills by spring. Soil health (soil organic matter) declines over time as a result of tillage practices, low residue, and long periods of bare soil. This system will typically have a negative Soil Conditioning Index (SCI) and a high Soil Tillage Intensity Rating (STIR).

After Situation:

The Implementation Requirements for 329 Residue Management, No Till is prepared and installed. Managing crop residue on the surface of a field (typical 100 acre) year around according to the 329 practice plan while limiting soil disturbing activities to those which place nutrients, and plant crops that meet the minimum criteria in the 329 practice standard. All crops are seeded/planted with a no-till drill or no-till/strip-till planter, which minimizes soil disturbance while establishing good seed-soil contact. All residues are to be maintained on the soil surface in a uniform distribution over the entire field and not burned or removed. Crop residues provide soil surface cover throughout the year. Runoff and erosion are reduced and no rills are visible on the soil surface. Wind erosion is reduced by standing residues and surface cover. Over time, soil health is improved due to the additional biomass (crop residues), ground cover, and soil infiltration. Crop residues and/or cover crop residues left on the soil surface may maximize weed control by increasing allelopathic and mulching effect, and provides cover for wildlife. The practice would require reducing soil disturbance and erosion and increasing biomass returned to the soil in sufficient amounts to achieve increased SCI and decreased STIR.

Feature Measure: Area planted

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $2,079.00

Scenario Cost/Unit: $20.79

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	100	$2,079.00

Practice: 329 - Residue and Tillage Management, No Till

Scenario #11 - No Till Adaptive Management

Scenario Description:

The practice scenario is for the implementation of no till in small replicated plots to allow the producer to learn how to manage no till on their operation. Scenario includes implementing replicated strip trials on a field plot to evaluate, identify and implement a particular no till management strategy (e.g., no till vs conventional till, drill vs planter, strip till vs no till, residue row cleaners, vs no row cleaners, etc.) This will be done by following the Agronomy Technical Note 10 - Adaptive Management.

Before Situation:

Row crops or small grains are grown and harvested. Full width tillage is performed prior to planting and weed control during crop production is typically cultivation and chemical application. Fields are disked immediately following harvest, with additional operations in some fields to facilitate drainage or additional weed control. Residue amounts after tillage operations average 10% or less, resulting in bare soil being exposed to wind erosion and/or intense rainfall. Any crop residue that is present degrades and sediment/nutrient runoff from fields increases during rainfall events. Sheet and rill erosion exceeds soil loss tolerances. Soil health (soil organic matter) declines over time as a result of tillage practices, low residue, and long periods of bare soil. This system will typically have a negative Soil Conditioning Index (SCI) and a high Soil Tillage Intensity Rating (STIR). The producer is considering using no till technology, but is unsure how to manage on their operation or needs to improve the management of no till to be successful.

After Situation:

Implementation Requirements are prepared and an Adaptive Management Plan for the plots is developed and implemented. Installation of this scenario will result in establishment of no till replicated plots to compare to different management strategies for no till and other residue management strategies following the guidance in the Agronomy Technical Note 10 - Adaptive Management Process. Implementation involves establishing the replicated plots to evaluate one or more no till management strategies. The plot will consist of at least 4 replicated plots designed, laid out, managed and evaluated with the assistance of a consultant knowledgeable in no till management. Results are used to make no till management decisions to address erosion, soil health, and water quality issues. Yields will be measured and statistically summarized following the procedures in Agronomy Technical Note 10 - Adaptive Management. The yields for each plot will be adjusted to the appropriate moisture content. This would be repeated for 3 years.

Feature Measure: Based on 15 acre plots

Scenario Unit: Each

Scenario Typical Size: 1.0

Scenario Total Cost: $3,089.73

Scenario Cost/Unit: $3,089.73

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	7.5	$155.93
Seeding Operation, No Till/Strip Till Planter	1230	No Till/Strip Till row planters for seeding. Includes all costs for equipment, power unit, and labor.	Acres	$19.44	7.5	$145.80
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	40	$927.20
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	20	$1,860.80

Practice: 329 - Residue and Tillage Management, No Till

Scenario #21 - Urban Small Scale No Till No Dig with Residue or Cover

Scenario Description:

Scenario applies to Urban sites less than a 1/2 acre with a rotation of organic or non-organic specialty crops (fruits and vegetable) are produced as part of a conservation management system to treat one or more of the following resource concerns: 1) Reduce sheet, rill and wind erosion, 2) Maintain or increase soil health and organic matter content, 3) Improve soil moisture efficiency, 4) Reduce plant pest pressures. This practice payment is provided to effectively implement no-till or strip-till management on a typical urban specialty crop farm. Cost represents typical situations for organic and non-organic producers.

Before Situation:

This rotation consisted of growing specialty crops. Fields range from nearly flat to B and C slopes. Erosion, soil quality, and pest management are the primary concern. Removal of residue from the planted area is common leaving bare soil-residue amounts average 10% or less. Full width tillage is performed prior to planting . Weed control typically cultivation.

After Situation:

The implementation requirements are written following CPS 329 Residue and Tillage Management to will treat one or more of the following resource concerns on organic and non- organic farms: reduce sheet, rill and wind erosion, maintain or increase soil health and organic matter content, improve soil moisture efficiency or reduce plant pest pressure. Soil disturbance is minimized with no-till drill or planter use. May include single slot opener and seedling or plugs follow. When pest management requires the removal of crop residue then planting beds are covered with cover crop using the 340 Cover Crop conservation practice. Runoff and erosion are reduced below T. No observed rills. Wind erosion reduced by maintaining surface cover. They system meets the soil condition index and STIR requirements.

Feature Measure: area planted

Scenario Unit: 1,000 Square Foot

Scenario Typical Size: 15.0

Scenario Total Cost: $535.68

Scenario Cost/Unit: $35.71

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	0.17	$3.53
Seeding Operation, No Till/Strip Till Planter	1230	No Till/Strip Till row planters for seeding. Includes all costs for equipment, power unit, and labor.	Acres	$19.44	0.17	$3.30
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	12	$278.16
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	6	$250.68

Practice: 330 - Contour Farming

Scenario #5 - Contour Farming

Scenario Description:

This scenario meets the specifications of the NRCS Contour Farming Standard. This scenario applies to fields greater than 5 acres. Payment reflects the extra labor and initial supervision costs in laying out and implementing contour farming. Annual erosion rates for the rotation exceeds tolerance levels. Excessive runoff leads to sedimentation of waterways

Before Situation:

The typical field size in this geographical region for this scenario is 30 acres. The field slope averages 6% while the slope length averages 160 feet. All farming operations on this cropland field including disking, bedding, planting, and cultivation are performed generally up and down the slope. Annual erosion rates for the rotation exceeds tolerance levels. Excessive runoff leads to sedimentation of waterways.

After Situation:

Implementation Requirements are prepared and implemented according to 330 Contour Farming. This practice is installed on the entire field. A survey is completed by trained and certified Federal, State, local personnel or consultant to determine and "stake" contour row arrangement. Permanent row markers are established to ensure that this practice is maintained for the life of this practice. All field operations including disking, bedding, planting, and cultivation are performed on the contour which is near perpendicular to the field slope. The farm manager is initially on site to ensure that equipment operators are properly following contour methods. Soil erosion rates are reduced by nearly half and may be below tolerance depending on the rotation. Likewise, sedimentation has been significantly reduced.

Feature Measure: acre

Scenario Unit: Acres

Scenario Typical Size: 30.0

Scenario Total Cost: $275.63

Scenario Cost/Unit: $9.19

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	1	$23.74
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	5	$126.55
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	3	$125.34

Practice: 331 - Contour Orchard and Other Perennial Crops

Scenario #3 - Contour Orchards/Vineyards

Scenario Description:

This scenario meets the specifications of the NRCS 331 Contour Orchards and Perennial Crops Standard. This scenario applies to fields greater than 5 acres. Payment reflects the extra labor and initial supervision costs in implementing and following contour operations compared to other methods. More time is usually needed when following contour operations due to more equipment time in shorter rows and more equipment turning. Annual erosion rates for the rotation exceeds tolerance levels. Excessive runoff leads to sedimentation of waterways.

Before Situation:

The typical field size in this geographical region for this scenario is 10 acres. The field slope averages 6% while the slope length averages 160 feet. All farming operations are performed up and down the slope. Annual erosion rates for the rotation exceeds tolerance levels. Excessive runoff leads to sedimentation of waterways.

After Situation:

Implementation Requirements are prepared and implemented according to the Contour Orchards and Perennial Crops Standard (331). This practice is installed on the entire field. All field operations including: harvesting, disking, bedding, and planting are performed on the contour which is near perpendicular to the field slope. The farm manager is initially on site to ensure that equipment operators are properly following contour methods. Soil erosion rates are reduced to tolerable soil loss levels. Likewise, sedimentation has be significantly reduced.

Feature Measure: acre

Scenario Unit: Acres

Scenario Typical Size: 10.0

Scenario Total Cost: $275.63

Scenario Cost/Unit: $27.56

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	1	$23.74
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	5	$126.55
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	3	$125.34

Practice: 332 - Contour Buffer Strips

Scenario #49 - Native Species, Foregone Income (Organic and Non-organic)

Scenario Description:

Narrow strips of permanent, herbaceous vegetative cover established around the hill slope and alternated down the slope with wider cropped strips in between that are organically or non-organically farmed on the contour. This practice applies to all cropland. Practice includes seedbed prep and planting of native species. The area of the contour grass strip is taken out of production.

Before Situation:

The NRCS water erosion prediction software indicates that there is a significant amount of sheet and rill erosion and/or a significant amount of sediment potentially delivered to the downslope edge of the field. A secondary concern is that there may not be enough wildlife/pollinator habitat, food source or refugia in the field or farm.

After Situation:

Native grasses, legumes and forbs will be established in strips in the field to meet the Contour buffer Strips (332) criteria, resource needs, and producer objectives. Minimum widths shall be based on NRCS local design criteria specific to the purpose for installing the practice. Native species shall be selected that do not function as a host for diseases of a field crop and have physical characteristics necessary to control water erosion to tolerable levels in the cropped area of the field.

Feature Measure: number of acres

Scenario Unit: Acres

Scenario Typical Size: 1.0

Scenario Total Cost: $438.45

Scenario Cost/Unit: $438.45

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$6.00	1	$6.00
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	1	$20.79
Foregone Income						
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acres	$287.72	1	$287.72
Materials						
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$8.98	1	$8.98
Native Perennial Grasses, Low Density	2750	Native perennial grasses, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Includes material and shipping.	Acres	$114.96	1	$114.96

Practice: 332 - Contour Buffer Strips

Scenario #50 - Introduced Species, Foregone Income (Organic and Non-Organic)

Scenario Description:

Narrow strips of permanent, herbaceous vegetative cover established around the hill slope and alternated down the slope with wider cropped strips in between that are farmed on the contour. This practice applies to all cropland. Practice includes seedbed prep and planting of native species. The area of the contour grass strip is taken out of production. This applies to both organic and non-organic.

Before Situation:

The NRCS water erosion prediction software indicates that there is a significant amount of sheet and rill erosion and/or a significant amount of sediment potentially delivered to the downslope edge of the field. A secondary concern is that there may not be enough wildlife/pollinator habitat, food source or refugia in the field or farm.

After Situation:

Introduced grasses and legumes will be established in strips in the field to meet the Contour buffer Strips (332) criteria, resource needs, and producer objectives. Minimum widths shall be based on NRCS local design criteria specific to the purpose for installing the practice. Introduced species shall be selected that do not function as a host for diseases of a field crop and have physical characteristics necessary to control water erosion to tolerable levels in the cropped area of the field.

Feature Measure: Number of acres

Scenario Unit: Acres

Scenario Typical Size: 1.0

Scenario Total Cost: $402.64

Scenario Cost/Unit: $402.64

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$6.00	1	$6.00
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	1	$20.79
Foregone Income						
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acres	$287.72	1	$287.72
Materials						
Nitrogen (N), Urea	71	Price per pound of N supplied by Urea. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.48	30	$14.40
Phosphorus, P2O5	73	Price per pound of P2O5 supplied by Superphosphate. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.58	20	$11.60
Sulfate of Potash	263	Approved for Organic Systems - Muriate of Potash	Pound	$0.93	20	$18.60
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$8.98	1	$8.98
Introduced Perennial Grasses, Legumes and/or Forbs, Low Density	2747	Introduced perennial grasses, legumes, and/or forbs, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Includes material and shipping.	Acres	$34.55	1	$34.55

Practice: 332 - Contour Buffer Strips

Scenario #51 - Wildlife/Pollinator, Foregone Income (Organic and Non-Organic)

Scenario Description:

Narrow strips of permanent, herbaceous vegetative cover established around the hill slope and alternated down the slope with wider cropped strips in between that are farmed on the contour. This practice applies to all cropland. Practice includes seedbed prep and planting of mainly pollinator friendly species. The area of the field border is taken out of production. This applies to organic and no-organic.

Before Situation:

Water Erosion Calculator (e.g. RUSLE2) indicates that there is a significant amount of sheet and rill erosion and/or a significant amount of sediment potentially delivered to the downslope edge of the field. A secondary concern is that there may not be enough wildlife/pollinator habitat, food source or refugia in the field or farm.

After Situation:

Plant species will be established in strips in the field to meet the Contour buffer Strips (332) criteria, resource needs, producer objectives, and the targeted wildlife/pollinators necessary food and/or cover. Minimum widths shall be based on NRCS local design criteria specific to the purpose for installing the practice. Species selected shall meet the wildlife/pollinator habitat requirements of the state and be adapted to site; not function as a host for diseases of a field crop and; have physical characteristics necessary to control sheet and rill erosion to tolerable levels on the cropped area of the field.

Feature Measure: Number of acres

Scenario Unit: Acres

Scenario Typical Size: 1.0

Scenario Total Cost: $438.45

Scenario Cost/Unit: $438.45

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$6.00	1	$6.00
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	1	$20.79
Foregone Income						
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acres	$287.72	1	$287.72
Materials						
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$8.98	1	$8.98
Native Perennial Grasses, Low Density	2750	Native perennial grasses, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Includes material and shipping.	Acres	$114.96	1	$114.96

Practice: 332 - Contour Buffer Strips

Scenario #52 - Native, Foregone Income-High Value Cropland

Scenario Description:

Narrow strips of permanent, herbaceous vegetative cover established around the hill slope and alternated down the slope with wider cropped strips in between that are farmed on the contour. This practice applies to all cropland. Practice includes seedbed prep and planting of native species. The area of the contour buffer strips is taken out of production.

Before Situation:

The NRCS water erosion prediction software indicates that there is a significant amount of sheet and rill erosion and/or a significant amount of sediment potentially delivered to the downslope edge of the field. Specialty crops for market are produced on this acreage. A secondary concern is that there may not be enough wildlife/pollinator habitat, food source or refugia in the field or farm.

After Situation:

Native grasses, legumes and forbs will be established in strips in the field to meet the Contour buffer Strips (332) criteria, resource needs, and producer objectives. Minimum widths shall be based on NRCS local design criteria specific to the purpose for installing the practice. Native species shall be selected that do not function as a host for diseases of a field crop and have physical characteristics necessary to control water erosion to tolerable levels in the cropped area of the field.

Feature Measure: number of acres

Scenario Unit: Acres

Scenario Typical Size: 1.0

Scenario Total Cost: $1,390.44

Scenario Cost/Unit: $1,390.44

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$6.00	1	$6.00
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	1	$20.79
Foregone Income						
FI, Vegetables	2033	Vegetables is Primary Crop	Acres	$1,239.71	1	$1,239.71
Materials						
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$8.98	1	$8.98
Native Perennial Grasses, Low Density	2750	Native perennial grasses, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Includes material and shipping.	Acres	$114.96	1	$114.96

Practice: 332 - Contour Buffer Strips

Scenario #53 - Introduced-High Value Cropland

Scenario Description:

Narrow strips of permanent, herbaceous vegetative cover established around the hill slope and alternated down the slope with wider cropped strips in between that are farmed on the contour. This practice applies to all cropland. Practice includes seedbed prep and planting of mainly introduced species. The area of the field border is taken out of production.

Before Situation:

The NRCS water erosion prediction software indicates that there is a significant amount of sheet and rill erosion and/or a significant amount of sediment potentially delivered to the downslope edge of the field. Specialty crops for market are grown in this field. A secondary concern is that there may not be enough wildlife/pollinator habitat, food source or refugia in the field or farm.

After Situation:

Introduced grasses and legumes will be established in strips in the field to meet the Contour buffer Strips (332) criteria, resource needs, and producer objectives. Minimum widths shall be based on NRCS local design criteria specific to the purpose for installing the practice. Introduced species shall be selected that do not function as a host for diseases of a field crop and have physical characteristics necessary to control water erosion to tolerable levels in the cropped area of the field.

Feature Measure: Number of acres

Scenario Unit: Acres

Scenario Typical Size: 1.0

Scenario Total Cost: $1,354.63

Scenario Cost/Unit: $1,354.63

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$6.00	1	$6.00
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	1	$20.79
Foregone Income						
FI, Vegetables	2033	Vegetables is Primary Crop	Acres	$1,239.71	1	$1,239.71
Materials						
Nitrogen (N), Urea	71	Price per pound of N supplied by Urea. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.48	30	$14.40
Phosphorus, P2O5	73	Price per pound of P2O5 supplied by Superphosphate. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.58	20	$11.60
Sulfate of Potash	263	Approved for Organic Systems - Muriate of Potash	Pound	$0.93	20	$18.60
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$8.98	1	$8.98
Introduced Perennial Grasses, Legumes and/or Forbs, Low Density	2747	Introduced perennial grasses, legumes, and/or forbs, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Includes material and shipping.	Acres	$34.55	1	$34.55

Practice: 332 - Contour Buffer Strips

Scenario #55 - Wildlife/Pollinator-High Value Cropland

Scenario Description:

Narrow strips of permanent, herbaceous vegetative cover established around the hill slope and alternated down the slope with wider cropped strips in between that are farmed on the contour. This practice applies to all cropland. Practice includes seedbed prep and planting of mainly pollinator friendly species. The area of the field border is taken out of production.

Before Situation:

The NRCS water erosion prediction software indicates that there is a significant amount of sheet and rill erosion and/or a significant amount of sediment potentially delivered to the downslope edge of the field. Specialty crops for market are grown in this field. A secondary concern is that there may not be enough wildlife/pollinator habitat, food source or refugia in the field or farm.

After Situation:

Introduced grasses and legumes will be established in strips in the field to meet the Contour buffer Strips (332) criteria, resource needs, and producer objectives. Minimum widths shall be based on NRCS local design criteria specific to the purpose for installing the practice. Species selected shall meet the wildlife/pollinator habitat requirements of the state and be adapted to the site; not function as a host for diseases of a field crop and; have physical characteristics necessary to control sheet and rill erosion to tolerable levels on the cropped area of the field.

Feature Measure: Number of acres

Scenario Unit: Acres

Scenario Typical Size: 1.0

Scenario Total Cost: $1,390.44

Scenario Cost/Unit: $1,390.44

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$6.00	1	$6.00
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	1	$20.79
Foregone Income						
FI, Vegetables	2033	Vegetables is Primary Crop	Acres	$1,239.71	1	$1,239.71
Materials						
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$8.98	1	$8.98
Native Perennial Grasses, Low Density	2750	Native perennial grasses, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Includes material and shipping.	Acres	$114.96	1	$114.96

Practice: 333 - Amending Soil Properties with Gypsum Products

Scenario #15 - Gypsum greater than 1 ton rate

Scenario Description:

Gypsum application of more than one ton/acre rate (typical average 1.5 tons/acre) to improve surface water quality due to phosphorus, pathogens, and soil health (Ca/Mg ratio). Scenario to be used in combination with an implemented nutrient management plan. The producer will use gypsum to improve soil surface structure and reduce concentration of dissolved reactive phosphorus (DRP) in runoff. Scenario includes the cost of material, application, and supervisor/management time to establish and manage new application methodology, including rates, timing, and sequence of application with other nutrient materials (i.e., manures, bio-solids, and fertilizers). The addressed resource concern is water quality and soil health. Associated practices are Nutrient Management (590), Conservation Crop Rotation (328), Cover Crop (340), Residue and Tillage Management, No-till (329) and Residue and Tillage Management, Reduced Till (345).

Before Situation:

Cropland in continuous production having relatively low soil organic matter and moderately high clay content with application of manure with a risk of pathogens. Soil in these fields has poor soil structure and a high risk of phosphorus and pathogen runoff. The soils are susceptible to soil crusting and as a result of long term tillage systems have a high concentration of phosphorous near the soil surface. The combination of poor soil structure and high nutrient levels at the soil surface results in runoff events with high concentrations of DRP that may contribute to degraded water quality.

After Situation:

A determination based on existing soil samples used in normal nutrient management has been made. The Implementation Requirements for Amending Soil Properties with Gypsum (333) has been developed for the site. The application of gypsum to the field based on the existing soil samples will result in reduced runoff and improved runoff water quality. This condition over time in combination with an implemented nutrient management plan and supporting practices to improve soil health will improve surface water quality.

Feature Measure: Acres with a gypsum product applic

Scenario Unit: Acres

Scenario Typical Size: 40.0

Scenario Total Cost: $2,148.58

Scenario Cost/Unit: $53.71

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Lime application	953	Lime application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$8.51	40	$340.40
Labor						
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	1	$41.78
Materials						
Gypsum, Ground Ag Grade, Bulk	1224	Agricultural grade quarry ground gypsum (CaCO4) for dispersive soil treatment. Materials and delivery only.	Ton	$29.44	60	$1,766.40

Practice: 333 - Amending Soil Properties with Gypsum Products

Scenario #16 - Gypsum less than 1 ton per acre

Scenario Description:

Gypsum application of less than or equal to one ton/acre rate (typical average 1 tons/acre) to improve surface water quality due to phosphorus, pathogens, and soil health (Ca/Mg ratio). Scenario to be used in combination with an implemented nutrient management plan. The producer will use gypsum to improve soil surface structure and reduce concentration of dissolved reactive phosphorus (DRP) in runoff. Scenario includes the cost of material, application, and management time to establish and manage new application methodology, including rates, timing, and sequence of application with other nutrient materials (i.e., manures, bio-solids, and fertilizers). . The addressed resource concern is water quality and soil health. Associated practices are Nutrient Management (590), Conservation Crop Rotation (328), Cover Crop (340), Residue and Tillage Management, No-till (329) and Residue and Tillage Management, Reduced Till (345).

Before Situation:

Cropland in continuous production having relatively low soil organic matter and moderately high clay content. Soil in these fields have poor soil structure and a high risk of phosphorus and pathogen runoff. The soils are susceptible to soil crusting and as a result of long term tillage systems have high concentration of phosphorous near the soil surface. The combination of poor soil structure and high nutrient levels at the soil surface results in runoff events with high concentrations of DRP that may contribute to degraded water quality.

After Situation:

A determination based on existing soil samples used in normal nutrient management has been made. The Implementation Requirements for Amending Soil Properties with Gypsum (333) has been developed for the site. The application of gypsum to the field is based on the existing soil samples and will result in reduce runoff and improve runoff water quality. This condition over time in combination with the implemented nutrient management plan and supporting practices to improve soil health will improve surface water quality.

Feature Measure: Acres with a gypsum product applic

Scenario Unit: Acres

Scenario Typical Size: 40.0

Scenario Total Cost: $1,265.38

Scenario Cost/Unit: $31.63

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Lime application	953	Lime application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$8.51	40	$340.40
Labor						
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	1	$41.78
Materials						
Gypsum, Ground Ag Grade, Bulk	1224	Agricultural grade quarry ground gypsum (CaCO4) for dispersive soil treatment. Materials and delivery only.	Ton	$29.44	30	$883.20

Practice: 338 - Prescribed Burning

Scenario #3 - Forest Heavy

Scenario Description:

Write site specific burn plan and apply a prescribed burn according to this designed burn plan and NRCS Prescribed Burning (338) standard and specifications in order to safely control undesirable species, reduce fuel load, improve wildlife habitat, improve plant productivity and/or quality, facilitate grazing distribution and maintain ecological processes.

Before Situation:

Area to be burned has a heavy fuel load, undesirable species and/or may be overstocked. Site has little to no herbaceous material.

After Situation:

Area has been burned to remove competing brush and undesirable species, adjust density and forest slash. Some bare ground is exposed to promote herbaceous growth.

Feature Measure: Acres planned

Scenario Unit: Acres

Scenario Typical Size: 80.0

Scenario Total Cost: $4,952.28

Scenario Cost/Unit: $61.90

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Acquisition of Technical Knowledge						
Training, Workshops	294	Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants.	Each	$100.83	1	$100.83
Equipment Installation						
Dozer, 80 HP	929	Track mounted Dozer with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$54.51	8	$436.08
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	16	$379.84
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hours	$18.07	16	$289.12
Trailer, water tank	1598	Mobile 5,000 gal water tank mounted on a trailer. Equipment only. Does not include towing equipment.	Hours	$20.45	8	$163.60
Water tank, portable	1602	Portable water tank transported in a pick up truck. Typically with 200 gallon capacity includes tank with pump, hose and sprayer. Does not include the pickup truck. Equipment only.	Hours	$13.82	8	$110.56
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	32	$961.60
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	8	$334.24
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	16	$1,488.64
Materials						
Fuel, ignition fuel mixture	1596	Mixture of gasoline and diesel for ignition of prescribed burns. Materials only.	Gallons	$3.14	20	$62.80
Mobilization						
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	$70.11	2	$140.22
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$484.75	1	$484.75

Practice: 340 - Cover Crop

Scenario #22 - Cover Crop - Basic (Organic and Non-organic)

Scenario Description:

Typically a small grain or legume (may also use forage sorghum, radishes, turnips, buckwheat, etc.) will be planted as a cover crop immediately after harvest of a row crop, and will be followed by a row crop that will utilize the residue as a mulch. This scenario assumes that seed will be planted with a drill. The cover crop should be allowed to generate as much biomass as possible, without delaying planting of the following crop. The cover crop will be terminated using an approved herbicide prior to planting the subsequent crop.

Before Situation:

Row crops such as corn, soybeans, or cotton are grown and harvested in mid-late fall. Fields are disked immediately following harvest, with rows in some fields being hipped for drainage. Residue amounts after harvest average 30% or less, resulting in bare soil being exposed to wind erosion and/or intense rainfall during the fall, winter, and early spring. Over the winter residue degrades and sediment/nutrient runoff from fields increases. Erosion exceeds soil loss tolerances. Runoff from the fields flows into streams, water courses or other water bodies causing degradation to the receiving waters. Soil health (soil organic matter) declines over time as a result of tillage practices, low residue crops, and long periods of bare soil.

After Situation:

Implementation Requirements according to Cover Crop (340) are prepared and implemented. Within 30 days after harvest of the row crop, fields are planted with a small grain or legume cover crop (may also use forage sorghum, radishes, turnips, buckwheat, etc.), typically rye or clover. The average field size is 40 acres. The cover crop is seeded with a drill. No additional fertilizer is applied with the cover crop. The cover crop provides soil cover by late fall, throughout the winter, and into the early spring. Runoff and erosion are reduced. Wind erosion is reduced by standing residues. The cover crop is terminated with an approved herbicide prior to spring planting as late as feasible to maximize plant biomass production. Over time, soil health is improved due to the additional biomass, ground cover, soil infiltration, and plant diversity introduced to the cropping system. Cover crop residues left on the surface may maximize weed control by increasing allelopathic and mulching effect.

Feature Measure: Area planted

Scenario Unit: Acres

Scenario Typical Size: 40.0

Scenario Total Cost: $2,695.60

Scenario Cost/Unit: $67.39

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$6.00	40	$240.00
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	40	$831.60
Materials						
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$8.98	40	$359.20
Annual Grasses	2730	Annual grasses, one or more species, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping.	Acres	$31.62	40	$1,264.80

Practice: 340 - Cover Crop

Scenario #23 - Cover Crop - Adaptive Management

Scenario Description:

The practice scenario is for the implementation of cover crops in small replicated plots to allow the producer to learn how to manage cover crops on their operation. Scenario includes implementing replicated strip trials on a field plot to evaluate, identify and implement a particular cover crop management strategy (e.g., cover crop vs no cover crop, multiple species vs, single species, evaluate different termination methods or timings, using a legume vs no legume for nitrogen credits). This will be done following the guidance in the NRCS Technical Note 10 - Adaptive Management.

Before Situation:

Row crops such as corn, soybeans, or cotton are grown and harvested in mid-late fall. Fields are disked immediately following harvest, with rows in some fields being hipped for drainage. Residue amounts after harvest average 30% or less, resulting in bare soil being exposed to wind erosion and/or intense rainfall. Over the winter residue degrades and sediment/nutrient runoff from fields increases. Sheet and rill erosion occurs with visible rills by spring. Runoff from the fields flows into streams, water courses or other water bodies causing degradation to the receiving waters. Soil health (soil organic matter) declines over time as a result of tillage practices, low residue crops, and long periods of bare soil. The producer is considering the use of cover crops but is unsure how to manage on their unique operation or is seeking a way to better manage cover crops in the operation.

After Situation:

Implementation Requirements for Cover Crop (340) will be prepared along with the Adaptive Management plan for the replicated cover crop plots and implemented. Installation of this scenario will result in establishment of a cover crop replicated plots to compare to different management strategies for cover crop management following the guidance in the Agronomy Technical Note 10 - Adaptive Management. Implementation involves establishing the replicated plots to evaluate one or more cover crop management strategies. The plot will consist of at least 4 replicated plots designed, laid out, managed and evaluated with the assistance of a consultant knowledgeable in cover crop management. Results are used to make cover crop management decisions to address erosion and water quality issues. Yields will be measured and statistically summarized following the procedures in Agronomy Technical Note 10 - Adaptive Management. The yields for each plot will be adjusted to the appropriate moisture content. This would be repeated for 3 years.

Feature Measure: Based on 10 acres

Scenario Unit: Each

Scenario Typical Size: 1.0

Scenario Total Cost: $2,357.50

Scenario Cost/Unit: $2,357.50

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$6.00	10	$60.00
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	10	$207.90
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	20	$601.00
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	40	$927.20
Materials						
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$8.98	10	$89.80
Annual Grasses, Legumes or Forbs	2732	A mix of annual grasses, legumes and/or forbs, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping.	Acres	$47.16	10	$471.60

Practice: 340 - Cover Crop

Scenario #24 - Cover Crop - Multiple Species (Organic and Non-organic)

Scenario Description:

Typically the multi-species cover crop (two or more species) mix includes a small grain, a legume, and may include other species such as forage sorghum, radishes, turnips, buckwheat, etc.). This mix will address all the purposes of the Cover Crop (340) standard. Typically the cover crop is seeded immediately after harvest of a row crop, but may be inter-seeded into a row crop using a broadcast seeder, drill, or similar device. The cover crop will be followed by another row crop and will utilize the residue as a mulch. The cover crop should be allowed to generate as much biomass as possible without delaying planting of the following crop. The cover crop will be terminated using an approved herbicide or tillage prior to planting the subsequent crop and terminated per the NRCS Cover Crop Termination Guidelines.

Before Situation:

Row crops such as corn, soybeans, or cotton are grown and harvested in mid-late fall. Fields are disked immediately following harvest with rows in some fields being hipped for drainage. Residue amounts after harvest average 30% or less resulting in bare soil being exposed to wind erosion and/or intense rainfall during the fall, winter, and early spring. Over the winter residue degrades and sediment/nutrient runoff from fields increases. Erosion exceeds soil loss tolerances. Runoff from the fields flows into streams, water courses or other water bodies causing degradation to the receiving waters. Soil health (soil organic matter) declines over time as a result of tillage practices, low residue crops, and long periods of bare soil.

After Situation:

Implementation Requirements according to Cover Crop (340) are prepared and implemented. Within 30 days after the harvest of row crop, fields are planted with a multi-species (2 or more species) cover crop mix that generally includes a small grain, a legume, and may include other species such as forage sorghum, radishes, turnips, buckwheat, etc. The average field size is 40 acres. The cover crop is seeded with a drill, broadcast seeder, aerial broadcast, or other method. No additional fertilizer is applied with the cover crop. The cover crop provides soil cover by late fall, throughout the winter, and into the early spring. Runoff and erosion are reduced. Wind erosion is reduced by standing residues. The cover crop is terminated with an approved herbicide prior to spring planting as late as feasible to maximize plant biomass production. Over time, soil health is improved due to the additional biomass, ground cover, soil infiltration, and plant diversity introduced to the cropping system. Cover crop residues left on the surface may maximize weed control by increasing allelopathic and mulching effect.

Feature Measure: Area planted

Scenario Unit: Acres

Scenario Typical Size: 40.0

Scenario Total Cost: $3,317.20

Scenario Cost/Unit: $82.93

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$6.00	40	$240.00
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	40	$831.60
Materials						
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$8.98	40	$359.20
Annual Grasses, Legumes or Forbs	2732	A mix of annual grasses, legumes and/or forbs, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping.	Acres	$47.16	40	$1,886.40

Practice: 340 - Cover Crop

Scenario #30 - Cover Crop - Basic Organic

Scenario Description:

"Typically a small grain or small grain-legume mix (may also use forage sorghum, radishes, turnips, buckwheat, etc) will be planted as a cover crop immediately after harvest of an organically grown crop, and will be followed by an organically grown crop that will utilize the residue as a mulch. This scenario assumes that seed will be planted with a no-till drill. The cover crop should be allowed to generate as much biomass as possible, without delaying planting of the following crop. The cover crop will be terminated using a mechnical kill method (mowing, rolling, undercutting, etc.), within weeks prior to planting the subsequent crop. This scenario REQUIRES use of Certified Organic Seed. Associated practices: Conservation Cover (327), Conservation Crop Rotation (328), Residue and Tillage Management, No-Till/Strip Till/Direct Seed (329), Critical Area Planting (342), Residue Management, Seasonal (344), Residue and Tillage Management, Mulch Till (345), Residue and Tillage Management, Ridge Till (346), Nutrient Management (590), Integrated Pest Management (595)."

Before Situation:

Organically grown crops such as various vegetable and fruit crops (along with organically produced row crops) are grown and harvested in mid-late fall. Fields are disked immediately following harvest. Residue amounts after harvest average 30% or less, resulting in bare soil being exposed to wind erosion and/or intense rainfall during the fall, winter, and early spring. Over the winter residue degrades and sediment/nutrient runoff from fields increases. Sheet and rill erosion occurs with visible rills by spring. Runoff from the fields flows into streams, water courses or other water bodies causing degradation to the receiving waters. Soil health (soil organic matter) declines over time as a result of tillage practices, low residue crops, and long periods of bare soil.

After Situation:

Within 30 days after harvest of organic crop, fields are planted with a small grain-legume mix cover crop, typically rye and clover. The average field size is 25 acres. The cover crop is seeded with a no-till drill. No additional fertilizer is applied with the cover crop. The cover crop provides soil cover by late fall, throughout the winter, and into the early spring. Runoff and erosion are reduced and no rills are visible on the soil surface in the spring. The cover crop is terminated with using a mechnical kill method (mowing, rolling, undercutting, etc.), prior to spring planting as late as feasible to maximize plant biomass production. Over time, soil health is improved due to the additional biomass, ground cover, and plant diversity introduced to the cropping system. Wind erosion is reduced by standing resides. Cover crop residues left on the surface may maximize weed control by increasing allelopathic and mulching effect.

Feature Measure: Area Planted

Scenario Unit: Acres

Scenario Typical Size: 30.0

Scenario Total Cost: $3,134.70

Scenario Cost/Unit: $104.49

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Mechanical weed control, Vegetation termination	957	Mechanical operations, Includes: Roller/crimper, mower, shredder, etc. Includes equipment, power unit and labor costs.	Acres	$20.84	30	$625.20
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	30	$623.70
Materials						
Certified Organic, Annual Grasses, Legumes and/or Forbs	2343	Annual grasses, mostly introduced but may be native. Used for temporary cover or cover crops. Certified organic. Includes material and shipping only.	Acres	$62.86	30	$1,885.80

Practice: 340 - Cover Crop

Scenario #69 - Cover Crop - 1 acre or less

Scenario Description:

Typically a small grain or legume will be planted as a cover crop immediately after harvest of a crop, and will be followed by a crop. This scenario assumes that seed will be planted by hand. The cover crop should be allowed to generate as much biomass as possible, without delaying planting of the following crop. The cover crop will typically be terminated by mowing or tilling prior to planting the subsequent crop.

Before Situation:

Crops such as sweet corn, vegetables, or root crops are grown and harvested in mid-late fall. Fields are disked immediately following harvest, with rows in some fields being hipped for drainage. Residue amounts after harvest average 30% or less, resulting in bare soil being exposed to wind erosion and/or intense rainfall during the fall, winter, and early spring. Over the winter residue degrades and sediment/nutrient runoff from fields increases. Erosion exceeds soil loss tolerances. Runoff from the fields flows into streams, water courses or other water bodies causing degradation to the receiving waters. Soil health (soil organic matter) declines over time as a result of tillage practices, low residue crops, and long periods of bare soil.

After Situation:

Implementation Requirements according to Cover Crop (340) are prepared and implemented. Within 10 days after harvest of the crop, fields are planted with a small grain or legume cover crop, typically rye or clover. The average field size is 0.25 acres. The cover crop is seeded by hand. No additional fertilizer is applied with the cover crop. The cover crop provides soil cover by late fall, throughout the winter, and into the early spring. Runoff and erosion are reduced. Wind erosion is reduced by standing residues. The cover crop is terminated with an approved herbicide prior to spring planting as late as feasible to maximize plant biomass production. Over time, soil health is improved due to the additional biomass, ground cover, soil infiltration, and plant diversity introduced to the cropping system. Cover crop residues left on the surface may maximize weed control by increasing allelopathic and mulching effect.

Feature Measure: area planted

Scenario Unit: Acres

Scenario Typical Size: 0.3

Scenario Total Cost: $121.87

Scenario Cost/Unit: $487.47

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	1	$23.74
Walk-behind Rototiller	2723	8 hp walk-behind rototiller, one-day rental	Day	$159.91	0.25	$39.98
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	2	$46.36
Materials						
Annual Grasses, Legumes or Forbs	2732	A mix of annual grasses, legumes and/or forbs, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping.	Acres	$47.16	0.25	$11.79

Practice: 340 - Cover Crop

Scenario #70 - Mechanical Termination of Cover Crop per 1000 square feet

Scenario Description:

Typical cover crop is more than one plant species, planted immediately after harvest of a crop and will be followed by a new crop. Cover crops are planted in the production bed typically 4000 square feet. Implementation is mostly hand labor or labor intensive. Cover crop is mechanically terminated in urban agricultural sites with State and local laws, ordinance and zoning restrictions on use of agrichemicals.

Before Situation:

Crop rotation include specialty crops such sweet corn, vegetables, or root crops are grown and harvested through out growing season and into mid-late fall. Residue amounts after harvest average 30% or less, resulting in bare soil being exposed to wind erosion and/or intense rainfall during the fall, winter, and early spring. Over the winter residue degrades and sediment/nutrient runoff from fields increases. Erosion exceeds soil loss tolerances. Runoff from the fields flows into streams, water courses or other water bodies causing degradation to the receiving waters. Soil health (soil organic matter) declines over time as a result of tillage practices, low residue crops, and long periods of bare soil.

After Situation:

Implementation Requirements according to Cover Crop (340) are prepared and implemented. The cover crop is seeded by hand. No additional fertilizer is applied with the cover crop. The cover crop provides soil cover at the critical period when cover is needed usually late fall, throughout the winter, and into the early spring. Runoff and erosion are reduced. Wind erosion is reduced by standing residues. The cover crop is mechanically terminated as late as feasible to maximize cover crop biomass production and meet the planting date needs of the next crop. Over time, soil health is improved due to additions of biomass, improvement of aggregate stability and infiltration/aeration.

Feature Measure: Area of Cover Crop Installed

Scenario Unit: 1,000 Square Foot

Scenario Typical Size: 4.0

Scenario Total Cost: $96.41

Scenario Cost/Unit: $24.10

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acres	$11.35	1	$11.35
Mechanical weed control, Vegetation termination	957	Mechanical operations, Includes: Roller/crimper, mower, shredder, etc. Includes equipment, power unit and labor costs.	Acres	$20.84	1.5	$31.26
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	1	$20.79
Materials						
Annual Grasses, Legumes or Forbs	2732	A mix of annual grasses, legumes and/or forbs, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping.	Acres	$47.16	0.7	$33.01

Practice: 340 - Cover Crop

Scenario #71 - Multi-species Cover Crop per 1000 square feet

Scenario Description:

Typical cover crop is more than one plant species, planted immediately after harvest of a crop and will be followed by a new crop. Cover crops are planted in the production bed typically 4000 square feet. Implementation is mostly hand labor or labor intensive. Cover crop is mechanically terminated in urban agricultural sites with State and local laws, ordinance and zoning restrictions on use of agrichemicals.

Before Situation:

Crop rotation include specialty crops such sweet corn, vegetables, or root crops are grown and harvested through out growing season and into mid-late fall. Residue amounts after harvest average 30% or less, resulting in bare soil being exposed to wind erosion and/or intense rainfall during the fall, winter, and early spring. Over the winter residue degrades and sediment/nutrient runoff from fields increases. Erosion exceeds soil loss tolerances. Runoff from the fields flows into streams, water courses or other water bodies causing degradation to the receiving waters. Soil health (soil organic matter) declines over time as a result of tillage practices, low residue crops, and long periods of bare soil.

After Situation:

Implementation Requirements according to Cover Crop (340) are prepared and implemented. The cover crop is seeded by hand. No additional fertilizer is applied with the cover crop. The cover crop provides soil cover at the critical period when cover is needed usually late fall, throughout the winter, and into the early spring. Runoff and erosion are reduced. Wind erosion is reduced by standing residues. The cover crop is mechanically terminated as late as feasible to maximize cover crop biomass production and meet the planting date needs of the next crop. Over time, soil health is improved due to additions of biomass, improvement of aggregate stability and infiltration/aeration.

Feature Measure: Area of Cover Crop Installed

Scenario Unit: 1,000 Square Foot

Scenario Typical Size: 4.0

Scenario Total Cost: $210.75

Scenario Cost/Unit: $52.69

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acres	$11.35	1	$11.35
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	1	$20.79
Chemical, spot treatment, single stem application	964	Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included.	Hours	$68.31	2	$136.62
Materials						
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$8.98	1	$8.98
Annual Grasses, Legumes or Forbs	2732	A mix of annual grasses, legumes and/or forbs, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping.	Acres	$47.16	0.7	$33.01

Practice: 342 - Critical Area Planting

Scenario #32 - Native or Introduced Vegetation - Normal Tillage (Organic and Non-Organic)

Scenario Description:

Establishment of permanent vegetation (Native and Introduced) on a site (both organic and non-organic) that is void or nearly void of vegetation due to a natural occurrence or a newly constructed conservation practice. Costs include seedbed preparation with typical tillage implements, grass/legume seed, companion crop, and fertilizer and lime with application.

Before Situation:

Areas that are void or nearly void of vegetation, resulting in bare soil being exposed to erosive processes. The exposed areas may be caused from recent natural occurrences (fire, flood, wind, etc.) or due to newly constructed conservation practices such as waterways, terraces, water and sediment basins or dams. The exposed areas will be subject to wind and water erosion that exceed soil loss tolerances. Runoff from the area flows into streams, water courses or other water bodies causing degradation to the receiving waters. The soil typically has a pH imbalance and low fertility.

After Situation:

Implementation Requirements are prepared and implemented according to the Critical Area Planting (342) standard. This typical 1.0 acre critical area is stabilized by applying fertilizer, lime and seed. Soil amendments will be incorporated at a depth of four to six inches to improve fertility and ensure establishment of permanent vegetative cover. The site will be stabilized, erosion reduced, and offsite damages reduced/eliminated.

Feature Measure: area seeded

Scenario Unit: Acres

Scenario Typical Size: 1.0

Scenario Total Cost: $324.72

Scenario Cost/Unit: $324.72

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acres	$11.35	2	$22.70
Fertilizer, ground application, dry bulk	950	Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$7.35	1	$7.35
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	1	$20.79
Cultipacking	1100	Includes equipment, power unit and labor costs.	Acres	$9.21	1	$9.21
Materials						
Nitrogen (N), Urea	71	Price per pound of N supplied by Urea. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.48	30	$14.40
Phosphorus, P2O5	73	Price per pound of P2O5 supplied by Superphosphate. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.58	60	$34.80
Potassium, K2O	74	K2O supplied by Muriate Of Potash. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.42	60	$25.20
Lime, ENM	75	Fertilizer: Limestone Spread on field.	Ton	$63.05	2	$126.10
Introduced Perennial Grasses, Legumes and/or Forbs, High Density	2749	Introduced perennial grasses, legumes, and/or forbs, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at high density (greater than 60 pure live seeds/sq ft). Includes material and shipping.	Acres	$64.17	1	$64.17

Practice: 342 - Critical Area Planting

Scenario #33 - Native or Introduced Vegetation - Moderate Grading (Organic and Non-Organic)

Scenario Description:

Establishment of permanent vegetation (native and introduced) on a site that is void or nearly void of vegetation due to a natural or human disturbance. Costs include a dozer for grading and shaping of small gullies, seedbed preparation with typical tillage implements, grass/legume seed, companion crop, and fertilizer and lime with application.

Before Situation:

Areas that are void or nearly void of vegetation, resulting in bare soil being exposed to erosive processes. The exposed areas may be caused from natural occurrences (fire, flood, etc.) or human disturbance. The exposed areas have visible rills and small gullies averaging 1 foot in depth and 1 foot in width that requires some moderate grading to prepare a seedbed. Runoff from the area flows into streams, water courses or other water bodies causing degradation to the receiving waters. The soil typically has a pH imbalance and low fertility.

After Situation:

Implementation Requirements are prepared and implemented according to the Critical Area Planting (342) standard.. This typical 1.0 acre critical area is stabilized by grading and shaping the small gullies with a dozer and then applying fertilizer, lime and seed. The site will be stabilized, erosion reduced, and offsite damages reduced/eliminated.

Feature Measure: area seeded

Scenario Unit: Acres

Scenario Typical Size: 1.0

Scenario Total Cost: $617.81

Scenario Cost/Unit: $617.81

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Dozer, 80 HP	929	Track mounted Dozer with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$54.51	4	$218.04
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acres	$11.35	2	$22.70
Fertilizer, ground application, dry bulk	950	Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$7.35	1	$7.35
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	1	$20.79
Cultipacking	1100	Includes equipment, power unit and labor costs.	Acres	$9.21	1	$9.21
Labor						
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	4	$107.60
Materials						
Nitrogen (N), Urea	71	Price per pound of N supplied by Urea. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.48	30	$14.40
Phosphorus, P2O5	73	Price per pound of P2O5 supplied by Superphosphate. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.58	60	$34.80
Potassium, K2O	74	K2O supplied by Muriate Of Potash. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.42	60	$25.20
Lime, ENM	75	Fertilizer: Limestone Spread on field.	Ton	$63.05	2	$126.10
Annual Grasses	2730	Annual grasses, one or more species, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping.	Acres	$31.62	1	$31.62

Practice: 342 - Critical Area Planting

Scenario #34 - Native or Introduced Vegetation - Heavy Grading (Organic and Non-Organic)

Scenario Description:

Establishment of permanent vegetation on a site that is void or nearly void of vegetation due to a natural or human disturbance. Costs include a dozer for grading and shaping of moderate to severe gullies, seedbed preparation with typical tillage implements, grass/legume seed, companion crop, and fertilizer and lime with application.

Before Situation:

Areas that are void or nearly void of vegetation, resulting in bare soil being exposed to erosive processes. The exposed areas may be caused from natural occurrences (fire, flood, etc.) or human disturbance. The exposed areas have visible rills and moderate to severe gullies averaging 3 feet in depth and 3 feet in width. Runoff from the area flows into streams, water courses or other water bodies causing degradation to the receiving waters. The soil typically has a pH imbalance and low fertility.

After Situation:

Implementation Requirements are prepared and implemented according to the Critical Area Planting (342) standard. This typical 1.0 acre critical area is stabilized by grading and shaping the moderate to severe gullies with a dozer and then applying fertilizer, lime and seed. The site will be stabilized, erosion reduced, and offsite damages reduced/eliminated.

Feature Measure: area seeded

Scenario Unit: Acres

Scenario Typical Size: 1.0

Scenario Total Cost: $958.99

Scenario Cost/Unit: $958.99

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Dozer, 80 HP	929	Track mounted Dozer with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$54.51	8	$436.08
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acres	$11.35	2	$22.70
Fertilizer, ground application, dry bulk	950	Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$7.35	1	$7.35
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	1	$20.79
Cultipacking	1100	Includes equipment, power unit and labor costs.	Acres	$9.21	1	$9.21
Labor						
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	8	$215.20
Materials						
Nitrogen (N), Urea	71	Price per pound of N supplied by Urea. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.48	30	$14.40
Phosphorus, P2O5	73	Price per pound of P2O5 supplied by Superphosphate. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.58	60	$34.80
Potassium, K2O	74	K2O supplied by Muriate Of Potash. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.42	60	$25.20
Lime, ENM	75	Fertilizer: Limestone Spread on field.	Ton	$63.05	2	$126.10
Annual Grasses, Legumes or Forbs	2732	A mix of annual grasses, legumes and/or forbs, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping.	Acres	$47.16	1	$47.16

Practice: 342 - Critical Area Planting

Scenario #57 - Small Scale or Urban Field Permanent Cover

Scenario Description:

Establishment of permanent vegetation on a site that is void of vegetation or needs to improve the vegetation to adequately cover the existing site soil to reduce particulate matter dust emissions. Costs include seedbed prep with light tillage, seed, fertilizer and lime. Small Scale fields and urban sites have soil conditions limiting vegetation growth or sensitive areas that need protection.

Before Situation:

Fields are bare or sparsely vegetated exposed to wind and water erosion. Soil physical of chemical properties limit vegetative growth. Urban site soils contain heavy metal contaminants at risk of emissions as particulate dust from field activities.

After Situation:

The Implementation Requirement with site specific instruction is prepared for each treatment site. The establishment of permanent vegetation will stabilize the soil. Sensitive areas are protected. Particulate dust is reduced. Wind and water erosion loss is within tolerance levels (T).

Feature Measure: planted area

Scenario Unit: 1,000 Square Foot

Scenario Typical Size: 15.0

Scenario Total Cost: $218.95

Scenario Cost/Unit: $14.60

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	2	$47.48
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acres	$11.35	0.04	$0.45
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	0.02	$0.42
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	6	$139.08
Materials						
Nitrogen (N), Ammonium Sulfate	70	Price per pound of N supplied by Ammonium Sulfate. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.79	5	$3.95
Phosphorus, P2O5	73	Price per pound of P2O5 supplied by Superphosphate. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.58	5	$2.90
Potassium, K2O	74	K2O supplied by Muriate Of Potash. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.42	5	$2.10
Test, Soil Test, Standard	299	Includes materials, shiping, labor, and equipment costs.	Each	$12.70	1	$12.70
Straw	1237	Small grain straw (non organic and certified organic). Includes materials only.	Ton	$73.06	0.1	$7.31
Introduced Perennial Grasses, Legumes and/or Forbs, High Density	2749	Introduced perennial grasses, legumes, and/or forbs, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at high density (greater than 60 pure live seeds/sq ft). Includes material and shipping.	Acres	$64.17	0.04	$2.57

Practice: 345 - Residue and Tillage Management, Reduced Till

Scenario #49 - Residue and Tillage Management, Reduced Till

Scenario Description:

Mulch-till is managing the amount, orientation and distribution of crop and other plant residue on the soil surface year round while limiting the soil-disturbing activities used to grow crops in systems where the entire field surface is tilled by the planter/drill or tillage tools prior to planting. This practice includes tillage methods commonly referred to as mulch tillage, vertical tillage, chiseling and disking, or the use of high disturbance drills without additional tillage. It applies to stubble mulching on summer-fallowed land, to tillage for annually planted crops, to tillage for planted crops and to tillage for planting perennial crops. All residue shall be uniformly spread or managed over the surface throughout the critical erosion period(s). All residue shall be uniformly distributed over the entire field and not burned or removed. These periods of intensive tillage have led to excessive soil loss, often above the soil loss tolerance (T), due to the loss of crop residue on the soil surface. The NRCS erosion prediction model(s) will be used to review the farming operations and determine the amount of surface residue to manage throughout the rotation to keep soil loss below T. The producer will adopt a reduced till system to meet one or more of the practice purposes.

Before Situation:

Crops such as corn, soybeans, small grains, or cotton are grown and harvested. Fields are tilled immediately following harvest, with rows in some fields being hipped for drainage. Residue amounts after harvest average 30% or less, resulting in bare soil being exposed to wind erosion and/or intense rainfall during the fall, winter, and early spring. Over the winter residue degrades and sediment/nutrient runoff from fields increase. Sheet, rill and wind erosion occurs. Spring tillage and seedbed preparation activities occur as early as possible in the late winter and early spring. Runoff from the fields flows into streams, water courses or other water bodies causing water quality degradation. Soil health (soil organic matter) declines over time as a result of tillage practices, low residue monocultures, and long periods of bare soil.

After Situation:

The Implementation Requirements are prepared following the criteria in the 345 Residue and Tillage Management, Reduced Till conservation practice standard. Reduced till applies to all cropland and other lands where crops are planted. This scenario includes the use of a reduce till systems and high disturbance drills, such as a hoe drill, air seeder, or no-till drill that disturbs a large percentage of soil surface during the planting operation. The residue that remains on the soil surface provides soil cover during late fall, throughout the winter, and into the early spring. Runoff and water/wind erosion are reduced and water quality improves. Over time, soil health is improved due to less tillage, the additional biomass, ground cover, soil infiltration, and plant diversity in the cropping system.

Feature Measure: Area planted

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $1,944.00

Scenario Cost/Unit: $19.44

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Seeding Operation, No Till/Strip Till Planter	1230	No Till/Strip Till row planters for seeding. Includes all costs for equipment, power unit, and labor.	Acres	$19.44	100	$1,944.00

Practice: 345 - Residue and Tillage Management, Reduced Till

Scenario #50 - Mulch till-Adaptive Management

Scenario Description:

The practice scenario is for the implementation of mulch till in small replicated plots to allow the producer to learn how to manage mulch till on their operation. Scenario includes implementing replicated strip trials on a field plot to evaluate, identify and implement a particular mulch till management strategy (e.g., mulch till vs. conventional till, two different mulch till systems, etc.). This will be done following the guidelines outlined in Agronomy Technical Note 10 - Adaptive Management.

Before Situation:

Row crops such as corn, soybeans, or cotton are grown and harvested in mid-late fall. Fields are disked immediately following harvest, with rows in some fields being hipped for drainage. Residue amounts after harvest average 30% or less, resulting in bare soil being exposed to wind erosion and/or intense rainfall. Over the winter residue degrades and sediment/nutrient runoff from fields increases. Erosion exceeds soil loss tolerances. Spring tillage and seedbed preparation activities occur as early as possible in the late winter and early spring prior to planting. Weed control is accomplished primarily through tillage, requiring multiple operations. Runoff from the fields flows into streams, water courses or other water bodies causing degradation to the receiving waters. Soil health (soil organic matter) declines over time as a result of tillage practices, low residue monocultures, and long periods of bare soil. The producer is considering using mulch till technology, but is unsure how to manage on their operation or needs to improve the management of mulch till to be successful.

After Situation:

Implementation Requirements and the Adaptive Management Plan is prepared for the plots and implemented. Installation of this scenario will result in establishment of mulch till replicated plots to compare to different management strategies for mulch till and other residue management strategies following the guidelines outlined in Agronomy Technical Note 10 - Adaptive Management and the Adaptive Management Guidance 345 for Mulch Till. Implementation involves establishing the replicated plots to evaluate one or more reduced till management strategies. The plot will consist of at least four replicated plots designed, laid out, managed and evaluated with the assistance of a consultant knowledgeable in reduced till management. Results are used to make reduced till management decisions to address erosion, soil health, and water quality issues. Yields will be measured and statistically summarized following the procedures in Agronomy Technical Note 10 - Adaptive Management. The yields for each plot will be adjusted to the appropriate moisture content and residue levels measured as needed. This practice will be repeated for three years.

Feature Measure: Based on 20 acres

Scenario Unit: Each

Scenario Typical Size: 1.0

Scenario Total Cost: $3,736.30

Scenario Cost/Unit: $3,736.30

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acres	$11.35	20	$227.00
Tillage, Primary	946	Includes heavy disking (offset) or chisel plow. Includes equipment, power unit and labor costs.	Acres	$15.95	20	$319.00
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	10	$207.90
Seeding Operation, No Till/Strip Till Planter	1230	No Till/Strip Till row planters for seeding. Includes all costs for equipment, power unit, and labor.	Acres	$19.44	10	$194.40
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	40	$927.20
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	20	$1,860.80

Practice: 345 - Residue and Tillage Management, Reduced Till

Scenario #58 - Urban Small Scale Reduced Tillage with Residue or Cover

Scenario Description:

Scenario applies to Urban sites less than a 1/2 acre with a rotation of organic or non-organic specialty crops (fruits and vegetable) are produced as part of a conservation management system to treat one or more of the following resource concerns: 1) Reduce sheet, rill and wind erosion, 2) Maintain or increase soil health and organic matter content, 3) Improve soil moisture efficiency, 4) Reduce plant pest pressures. This practice payment effectively implements a reduced tillage system on a typical urban specialty crop farm. Cost represents typical situations for organic and non-organic producers.

Before Situation:

This rotation consisted of growing specialty crops. Fields range from nearly flat to B and C slopes. Erosion, soil quality, and pest management are the primary concern. Removal of residue from the planted area is common leaving bare soil-residue amounts average 10% or less. Full width tillage is performed prior to planting . Weed control is typically by cultivation.

After Situation:

The implementation requirements are written following CPS 345 Residue and Tillage Management, Reduced Tillage to treat one or more of the following resource concerns on organic and non- organic farms: reduce sheet, rill and wind erosion, maintain or increase soil health and organic matter content, improve soil moisture efficiency or reduce plant pest pressure. Soil disturbance is minimized with no-till drill or planter use. May include single slot opener and seedling or plug planting follows. When pest management requires the removal of crop residue then planting beds are covered with cover crop using the 340 Cover Crop conservation practice. Runoff and erosion are reduced below T. No observed rills. Wind erosion reduced by maintaining surface cover. Over time, soil health is improved due to less tillage, the additional biomass, ground cover, soil infiltration, and plant diversity in the cropping system.

Feature Measure: area planted

Scenario Unit: 1,000 Square Foot

Scenario Typical Size: 15.0

Scenario Total Cost: $466.14

Scenario Cost/Unit: $31.08

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	0.17	$3.53
Seeding Operation, No Till/Strip Till Planter	1230	No Till/Strip Till row planters for seeding. Includes all costs for equipment, power unit, and labor.	Acres	$19.44	0.17	$3.30
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	9	$208.62
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	6	$250.68

Practice: 350 - Sediment Basin

Scenario #2 - Embankment earthen basin with no pipe

Scenario Description:

An low hazard class embankment earthen sediment basin in an existing drainage way on a farm for purpose of trapping sediment and preserving the capacity of reservoirs, ditches, canals, diversions, waterways and streams and to prevent undesirable deposition on bottom lands and other developed lands. An earthen embankment will be constructed with an earthen auxiliary spillway, as designed. Resource concerns addressed include excessive suspended sediment and turbidity in surface water, damage from sediment deposition, and reduced capacity of conveyances by sediment deposition. Surface water causes the sediment (and potentially pesticides and nutrients) to be transported into the riparian areas and water bodies downstream.

Before Situation:

Disturbed areas on all land uses that have excessive erosion lead to deterioration of receiving waters due to excessive sedimentation.

After Situation:

The typical sediment basin is constructed by excavating the pool area, constructing the auxiliary spillway, preparing the foundation as designed, and using 1500 cubic yards to create an embankment. The embankment will be designed and constructed according the pond standard (378). The product of the storage times the effective height of the dam is less than 3,000. The effective height of the dam is 35 feet or less. The sediment storage capacity should be a minimum of 900 cubic feet per acre of disturbed area. The detention storage should be a minimum of 3600 cubic feet per acre of drainage area. The earthen auxiliary spillway will be constructed as designed based on Pond standard (378). No principal spillway will be used. Associated practice(s): Other practices that may need to be implemented along with sediment basin to address all of the site specific resource concerns include: Critical Area Planting (342) and Mulching (484) where necessary to prevent erosion following construction activities, Structure for Water Control (587) if using a dewatering device, Pond Sealing or Lining (521A,521B,521C,521D).

Feature Measure: Embankment volume

Scenario Unit: Cubic Yards

Scenario Typical Size: 1,500.0

Scenario Total Cost: $3,124.75

Scenario Cost/Unit: $2.08

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Dozer, 140 HP	927	Track mounted Dozer with horsepower range of 125 to 160. Equipment and power unit costs. Labor not included.	Hours	$97.92	23	$2,252.16
Labor						
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	23	$618.70
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 350 - Sediment Basin

Scenario #3 - Embankment earthen basin with pipe

Scenario Description:

An low hazard class embankment earthen sediment basin in an existing drainage way on a farm for purpose of trapping sediment and preserving the capacity of reservoirs, ditches, canals, diversions, waterways and streams and to prevent undesirable deposition on bottom lands and other developed lands. An earthen embankment will be constructed with a principal spillway conduit and earthen auxiliary spillway, as designed. Resource concerns addressed include excessive suspended sediment and turbidity in surface water, damage from sediment deposition, and reduced capacity of conveyances by sediment deposition. Surface water causes the sediment (and potentially pesticides and nutrients) to be transported into the riparian areas and water bodies downstream.

Before Situation:

Disturbed areas on all land uses that have excessive erosion lead to deterioration of receiving waters due to excessive sedimentation.

After Situation:

The typical sediment basin is constructed by excavating the pool area, constructing the auxiliary spillway, preparing the foundation as designed, and using 1500 cubic yards to create an embankment. The embankment will be designed and constructed according the Pond standard (378). The product of the storage times the effective height of the dam is less than 3,000. The effective height of the dam is 35 feet or less. The sediment storage capacity should be a minimum of 900 cubic feet per acre of disturbed area. The detention storage should be a minimum of 3600 cubic feet per acre of drainage area. The principal spillway is created using an approved conduit material and filter diaphragm. The earthen auxiliary spillway will be constructed as designed based on Pond standard (378). Associated practice(s): Other practices that may need to be implemented along with sediment basin to address all of the site specific resource concerns include: Critical Area Planting (342) and Mulching (484) where necessary to prevent erosion following construction activities, Structure for Water Control (587) if using a dewatering device, Pond Sealing or Lining (521A,521B,521C,521D).

Feature Measure: Embankment volume

Scenario Unit: Cubic Yards

Scenario Typical Size: 1,500.0

Scenario Total Cost: $8,278.31

Scenario Cost/Unit: $5.52

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Concrete, CIP, formed reinforced	38	Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yards	$415.80	3	$1,247.40
Dozer, 140 HP	927	Track mounted Dozer with horsepower range of 125 to 160. Equipment and power unit costs. Labor not included.	Hours	$97.92	23	$2,252.16
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	8	$240.40
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	23	$618.70
Materials						
Aggregate, Sand, Graded, Washed	45	Sand, typical ASTM C33 gradation, includes materials, equipment and labor to transport and place	Cubic Yards	$38.81	19.6	$760.68
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic Yards	$39.34	1.6	$62.94
Pipe, PVC, 10 in., SCH 80	1351	Materials: - 10 inch - PVC - SCH 80 - ASTM D1785	Feet	$23.14	98	$2,267.72
Pipe, PVC, 12 in., SCH 80	1352	Materials: - 12 inch - PVC - SCH 80 - ASTM D1785	Feet	$31.83	8	$254.64
Trash Guard, metal	1608	Trash Guard, fabricated-steel, includes materials, equipment, and labor to transport and place Conical shaped trash guard for drop inlet spillway. Typically fabricated of CMP and steel. Includes materials, equipment, and labor to fabricate and transport.	Pound	$2.71	118	$319.78
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 351 - Well Decommissioning

Scenario #1 - Shallow Well less than 20 feet deep

Scenario Description:

A licensed well driller will seal and permanently close an inactive, abandoned, or unusable water well to prevent excess nutrients in surface and groundwater and to eliminate pesticides transported to surface and ground water. Well will be cleared of all equipment and materials. Residual water column must be treated with chlorine concentration of >50 ppm or according to local, State, Tribal, or Federal regulations.

Before Situation:

Shallow or hand dug well that is less than 20 feet deep and inactive, abandoned, or unusable and provides a potential conduit for pesticides or nutrients to enter an aquifer. Assume 30 inch diameter casing.

After Situation:

Well is permanently sealed to prevent potential contamination of aquifer. Procedures and sealing materials shall conform to ASTM D5299 and be compatible with all local, State, Tribal, and Federal requirements. Backfill shall be placed and compacted in a manner that minimizes segregation and bulking to prevent surface subsidense. Associated practices: 342 Critical Area Seeding

Feature Measure: Length of well casing

Scenario Unit: Feet

Scenario Typical Size: 15.0

Scenario Total Cost: $1,879.86

Scenario Cost/Unit: $125.32

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Earthfill, Manually Compacted	50	Earthfill, manually compacted, includes equipment and labor	Cubic Yards	$5.73	2.7	$15.47
Hydraulic Excavator, 2 CY	932	Track mounted hydraulic excavator with bucket capacity range of 1.5 to 2.5 CY. Equipment and power unit costs. Labor not included.	Hours	$126.60	1	$126.60
Grout pump	1334	Grout pump with tremie pipe. Equipment and power unit costs. Labor not included.	Hours	$22.88	2	$45.76
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	2	$60.10
Materials						
Grout, cement	1333	Cement grout meeting ASTM specifications for well sealing. Includes both neat-cement grout and bentonite gout mixtures. Includes materials, equipment and labor to place.	Cubic Yards	$414.72	2.7	$1,119.74
Chlorine	1335	Liquid chlorine bleach. Includes materials only.	Gallons	$4.40	1	$4.40
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: 351 - Well Decommissioning

Scenario #2 - Shallow Well greater than 20 feet deep

Scenario Description:

A licensed well driller will seal and permanently close an inactive, abandoned, or unusable water well to prevent excess nutrients in surface and groundwater and to eliminate pesticides transported to surface and ground water. Well will be cleared of all equipment and materials. Residual water column must be treated with chlorine concentration of >50 ppm or according to local, State, Tribal, or Federal regulations.

Before Situation:

Shallow or hand dug well that is greater than 20 feet deep and inactive, abandoned, or unusable and provides a potential conduit for pesticides or nutrients to enter an aquifer. Assume 30 inch diameter casing.

After Situation:

Well is permanently sealed to prevent potential contamination of aquifer. Procedures and sealing materials shall conform to ASTM D5299 and be compatible with all local, State, Tribal, and Federal requirements. Backfill shall be placed and compacted in a manner that minimizes segregation and bulking to prevent surface subsidense. Associated practices: 342 Critical Area Seeding

Feature Measure: Length of well casing

Scenario Unit: Feet

Scenario Typical Size: 30.0

Scenario Total Cost: $3,443.95

Scenario Cost/Unit: $114.80

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Earthfill, Manually Compacted	50	Earthfill, manually compacted, includes equipment and labor	Cubic Yards	$5.73	5.5	$31.52
Hydraulic Excavator, 2 CY	932	Track mounted hydraulic excavator with bucket capacity range of 1.5 to 2.5 CY. Equipment and power unit costs. Labor not included.	Hours	$126.60	3	$379.80
Grout pump	1334	Grout pump with tremie pipe. Equipment and power unit costs. Labor not included.	Hours	$22.88	3	$68.64
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	3	$90.15
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	3	$80.70
Materials						
Grout, cement	1333	Cement grout meeting ASTM specifications for well sealing. Includes both neat-cement grout and bentonite gout mixtures. Includes materials, equipment and labor to place.	Cubic Yards	$414.72	5.5	$2,280.96
Chlorine	1335	Liquid chlorine bleach. Includes materials only.	Gallons	$4.40	1	$4.40
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: 351 - Well Decommissioning

Scenario #3 - Drilled well less than 300 feet deep with casing removed

Scenario Description:

A licensed well driller will seal and permanently close an inactive, abandoned, or unusable water well to prevent excess nutrients in surface and groundwater and to eliminate pesticides transported to surface and ground water. Well will be cleared of all equipment and materials. Residual water column must be treated with chlorine concentration of >50 ppm or according to local, State, Tribal, or Federal regulations.

Before Situation:

Drilled well that is less than 300 feet deep and inactive, abandoned, or unusable and provides a potential conduit for pesticides or nutrients to enter an aquifer. Typical well has 6 inch diameter casing.

After Situation:

Well is permanently sealed to prevent potential contamination of aquifer. Procedures and sealing materials shall conform to ASTM D5299 and be compatible with all local, State, Tribal, and Federal requirements. Backfill shall be placed and compacted in a manner that minimizes segregation and bulking to prevent surface subsidense. Associated practices: 342 Critical Area Seeding

Feature Measure: Length of well casing

Scenario Unit: Feet

Scenario Typical Size: 200.0

Scenario Total Cost: $3,976.52

Scenario Cost/Unit: $19.88

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Hydraulic Excavator, 2 CY	932	Track mounted hydraulic excavator with bucket capacity range of 1.5 to 2.5 CY. Equipment and power unit costs. Labor not included.	Hours	$126.60	8	$1,012.80
Grout pump	1334	Grout pump with tremie pipe. Equipment and power unit costs. Labor not included.	Hours	$22.88	8	$183.04
Labor						
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	8	$215.20
Materials						
Grout, cement	1333	Cement grout meeting ASTM specifications for well sealing. Includes both neat-cement grout and bentonite gout mixtures. Includes materials, equipment and labor to place.	Cubic Yards	$414.72	1.5	$622.08
Chlorine	1335	Liquid chlorine bleach. Includes materials only.	Gallons	$4.40	1	$4.40
Mobilization						
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$484.75	4	$1,939.00

Practice: 351 - Well Decommissioning

Scenario #4 - Drilled well greater than 300 feet deep

Scenario Description:

A licensed well driller will seal and permanently close an inactive, abandoned, or unusable water well to prevent excess nutrients in surface and groundwater and to eliminate pesticides transported to surface and ground water. Well will be cleared of all equipment and materials. Residual water column must be treated with chlorine concentration of >50 ppm or according to local, State, Tribal, or Federal regulations.

Before Situation:

Drilled well that is greater than 300 feet deep and inactive, abandoned, or unusable and provides a potential conduit for pesticides or nutrients to enter an aquifer. Typical well has 6 inch diameter casing.

After Situation:

Well is permanently sealed to prevent potential contamination of aquifer. Procedures and sealing materials shall conform to ASTM D5299 and be compatible with all local, State, Tribal, and Federal requirements. Backfill shall be placed and compacted in a manner that minimizes segregation and bulking to prevent surface subsidense. Associated practices: 342 Critical Area Seeding

Feature Measure: Length of well casing

Scenario Unit: Feet

Scenario Typical Size: 500.0

Scenario Total Cost: $5,603.22

Scenario Cost/Unit: $11.21

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Hydraulic Excavator, 2 CY	932	Track mounted hydraulic excavator with bucket capacity range of 1.5 to 2.5 CY. Equipment and power unit costs. Labor not included.	Hours	$126.60	12	$1,519.20
Grout pump	1334	Grout pump with tremie pipe. Equipment and power unit costs. Labor not included.	Hours	$22.88	12	$274.56
Labor						
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	12	$322.80
Materials						
Grout, cement	1333	Cement grout meeting ASTM specifications for well sealing. Includes both neat-cement grout and bentonite gout mixtures. Includes materials, equipment and labor to place.	Cubic Yards	$414.72	3.7	$1,534.46
Chlorine	1335	Liquid chlorine bleach. Includes materials only.	Gallons	$4.40	3	$13.20
Mobilization						
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$484.75	4	$1,939.00

Practice: 355 - Groundwater Testing

Scenario #5 - Specialty Water Test

Scenario Description:

Typical scenario includes the professional testing for pesticides, heavy metals, VOC's or other less common substances, in addition to the basic water test items. Tests are intended to confirm well water meets water quality standards for consumption by livestock or use in irrigation. Water samples are sent to an EPA or state certified laboratory for testing. This scenario is recommended when water quality is suspected to be degraded due to a specialized substance.

Before Situation:

There are no known contaminants of the well, however, neighboring wells have known issues with water quality, and confirmation of acceptable water quality is desired. Manure, pesticides, or other potential contaminants have been spread near to the well, in an unmanaged manner; well contamination is possible.

After Situation:

Water quality results are known.

Feature Measure: No.

Scenario Unit: Each

Scenario Typical Size: 1.0

Scenario Total Cost: $250.67

Scenario Cost/Unit: $250.67

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	0.5	$11.59
Materials						
Test, Standard Water Test, Irrigation Suitability	310	Irrigation water suitability lab analysis. Includes pH, alkalinity, carbonates/bicarbonates, EC, dissolved solids, B, Cl, Ca, Mg, Na, SAR, and hardness.	Each	$51.52	1	$51.52
Test, singular specialized water test, well water	2003	Testing for specific pesticide, inorganic chemical or volatile organic not included in a basic well suitability test. Includes materials and shipping only.	Each	$187.56	1	$187.56

Practice: 355 - Groundwater Testing

Scenario #6 - Basic Water Test

Scenario Description:

Typical scenario includes the professional testing for nitrates, nitrites, and coliform to confirm well water meets basic water quality standards for consumption by livestock or use in irrigation. Water samples are sent to an EPA or state certified laboratory for testing. This scenario is recommended when water quality is suspected to be acceptable.

Before Situation:

There are no known contaminants of the well, however, neighboring wells have known issues with nitrates, or coliform, and confirmation of acceptable water quality is desired. Manure is spread near to the well, following a nutrient management plan; well contamination is unlikely but possible.

After Situation:

Water quality results are known.

Feature Measure: No.

Scenario Unit: Each

Scenario Typical Size: 1.0

Scenario Total Cost: $63.11

Scenario Cost/Unit: $63.11

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	0.5	$11.59
Materials						
Test, Standard Water Test, Irrigation Suitability	310	Irrigation water suitability lab analysis. Includes pH, alkalinity, carbonates/bicarbonates, EC, dissolved solids, B, Cl, Ca, Mg, Na, SAR, and hardness.	Each	$51.52	1	$51.52

Practice: 355 - Groundwater Testing

Scenario #7 - Full Spectrum Test

Scenario Description:

Typical scenario includes the professional comprehensive testing for all less common substances, to include: pesticides, heavy metals, VOC's or other less common substances, in addition to the basic water test items. Tests are intended to confirm well water meets water quality standards for consumption by livestock or use in irrigation. Water samples are sent to an EPA or state certified laboratory for testing. This scenario is recommended when water quality is known to be degraded due to a specialized substance but thorough analysis is warranted.

Before Situation:

There are no known contaminants of the well, however, neighboring wells have known issues with water quality, and confirmation of acceptable water quality is desired. Manure, pesticides, sewage sludge, or other potential contaminants have been spread near to the well, in an unmanaged manner; well contamination is likely.

After Situation:

Water quality results are known.

Feature Measure: No.

Scenario Unit: Each

Scenario Typical Size: 1.0

Scenario Total Cost: $353.55

Scenario Cost/Unit: $353.55

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	0.5	$11.59
Materials						
Test, Standard Water Test, Irrigation Suitability	310	Irrigation water suitability lab analysis. Includes pH, alkalinity, carbonates/bicarbonates, EC, dissolved solids, B, Cl, Ca, Mg, Na, SAR, and hardness.	Each	$51.52	1	$51.52
Test, comprehensive specialized water test, well water	2002	Comprehensive testing for a broad spectrum of pesticides, inorganic chemicals or volatile organics not included in a basic well suitability test. Includes materials and shipping only.	Each	$290.44	1	$290.44

Practice: 356 - Dike

Scenario #1 - Material haul Less Than 1 mile

Scenario Description:

Construction of a barrier, constructed of an earthen embankment, to control water level. Embankment structure to provide adequate freeboard, allowance for settlement, and foundation and embankment stability. Cost Estimate is based on an earthen dike assumed 1000 lineal feet, Class II (6 ft. in height, 8 ft. top width, 2H:1V side slopes) with a material haul distance of less than 1 mile. Associated practices include, but are not limited to: PS327 Conservation Cover, PS656 Constructed Wetland, PS342 Critical Area Planting, PS378 Ponds, PS382 Fence, PS464 Irrigation Land Levelling, PS500 Obstruction Removal, PS528 Prescribed Grazing, PS587 Structure for Water Control, PS620 Underground Outlet, PS645 Upland Wildlife Management, PS658 Wetland Creation, PS659 Wetland Enhancement, PS657 Wetland Restoration, PS644 Wetland Wildlife Habitat Management.

Before Situation:

Site is subject to flooding or indundation which poses a potential hazard to public safety, damage to land or property. Site may also require control of water level for purposes connected with crop production; fish and wildlife managment; or wetland maintenance, improvement, restoration, or construction. An adequate quantity of soil suitable for constructing an earthen dike is available at an economical haul distance. Material haul < 1 mile.

After Situation:

Water level controlled by a stable earthen structure. Potential hazard to public safety, land or property mitigated; environmental benefit provided.

Feature Measure: Volume of Earthfill (including volu

Scenario Unit: Cubic Yards

Scenario Typical Size: 4,500.0

Scenario Total Cost: $21,598.14

Scenario Cost/Unit: $4.80

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Earthfill, Roller Compacted	49	Earthfill, roller or machine compacted, includes equipment and labor	Cubic Yards	$4.42	4500	$19,890.00
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$484.75	3	$1,454.25

Practice: 360 - Waste Facility Closure

Scenario #5 - Liquid Waste Impoundment Closure with 50percent Liquids and 50percent Solids

Scenario Description:

This practice scenario includes the decommissioning of an earthen liquid waste impoundment (embankment or excavated type) where the estimated volume of waste to be removed is approximately 50% liquid/slurry waste and 50% sludge/solid waste of the structural storage capacity of the structure. The purpose of the practice is to address resource concerns related to water quality degradation due to excess nutrient and pathogens in ground and/or surface waters and air quality impacts from greenhouse gases, particulate matter and associated precursors, and objectionable odors. Associated practices: Nutrient Management (590), Critical Area Planting (342)

Before Situation:

An existing lagoon or waste storage pond is no longer functioning correctly or is not being used for its intended purpose. It poses a safety hazard for humans and livestock and is a threat to environmental sustainability by the potential for impacts to water and air quality.

After Situation:

This scenario assumes a waste storage pond, with top dimensions of 110 ft x 110 ft, 8 ft total depth with 2:1 side slopes. The total structural storage volume equals 63,851 cubic feet. The volume of liquid waste to be pumped approximately equals 50% if the structural volume (50% X 63,851 CF = 31,925 CF). The volume of solid waste to be removed approximately equals 50% of the structural volume (50% X 63,851 = 31,925 CF). The volume of earthwork (earthfill and excavation) required to breach the embankment and/or fill in the impoundment and perform final grading of the site is approximately 50% of the structural volume. The volume of earthwork will include 60% as excavation and 40% as compacted earthfill. Structural removal, as necessary, may include the removal and disposal of the synthetic liner, sealing or removal and disposal of waste transfer components and other appurtenances associated with closure of the facility. Decommissioning of a liquid waste storage impoundment includes agitating, removing, and spreading liquid/slurry waste material, removing solid/sludge waste remaining in the bottom. All waste material shall be land applied in accordance with Nutrient Management (590). If present, the synthetic liner will be removed and properly disposed of. All inflow devices and associated appurtenances will be removed and properly disposed of. The embankment will be breached and the excavation filled in with the embankment material or hauled in earthfill. The disturbed areas shall be vegetated in accordance with Critical Area Planting (342). Closure of the waste impoundment will address water quality degradation, air quality impacts and safety hazards by removing and properly utilizing the waste from the impoundment. The site will also become available for another use.

Feature Measure: Cubic feet of structural storage

Scenario Unit: Cubic Feet

Scenario Typical Size: 63,851.0

Scenario Total Cost: $14,937.33

Scenario Cost/Unit: $0.23

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Excavation, Common Earth, side cast, small equipment	48	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic Yards	$2.24	709	$1,588.16
Earthfill, Roller Compacted	49	Earthfill, roller or machine compacted, includes equipment and labor	Cubic Yards	$4.42	473	$2,090.66
Hydraulic Excavator, 1 CY	931	Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included.	Hours	$111.83	12	$1,341.96
Manure, compost, injection	956	Loading, hauling and injecting manure/compost by ground equipment. Includes equipment, power unit and labor costs.	Gallons	$0.01	238803	$2,388.03
Spreading, manure sludge	1633	Loading, hauling and spreading manure solids/sludge by ground equipment on nearby fields. Includes equipment, power unit and labor costs.	Cubic Feet	$0.17	31925	$5,427.25
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	12	$278.16
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	12	$322.80
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	4	$1,015.56
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$484.75	1	$484.75

Practice: 360 - Waste Facility Closure

Scenario #9 - Convert Liquid Waste Pond to Freshwater, 50 percent solids existing

Scenario Description:

This practice scenario includes the conversion of an earthen liquid waste impoundment (embankment or excavated type) to fresh water storage where the estimated volume of waste to be removed is approximately 50% liquid/slurry waste and 50% sludge/solid waste of the structural storage capacity of the structure. The purpose of the practice is to address resource concerns related to water quality degradation due to excess nutrient and pathogens in ground and/or surface waters and air quality impacts from greenhouse gases, particulate matter and associated precursors, and objectionable odors. Associated practices: Nutrient Management (590), Critical Area Planting (342)

Before Situation:

An existing lagoon or waste storage pond is no longer functioning correctly or is not being used for its intended purpose. It poses a safety hazard for humans and livestock and is a threat to environmental sustainability by the potential for impacts to water and air quality.

After Situation:

This scenario assumes a waste storage pond, with top dimensions of 110 ft x 110 ft, 8 ft total depth with 2:1 side slopes. The total structural storage volume equals 63,851 cubic feet. The volume of liquid waste to be pumped approximately equals 50% of the structural volume (50% X 63,851 CF = 31,925 CF). The volume of solid waste to be removed approximately equals 50% of the structural volume (50% X 63,851 = 31,925 CF). The volume of earthwork (earthfill and/or excavation) required to meet current NRCS standards and perform final grading and shaping of the site is approximately 5% of the structural volume. Structural removal, as necessary, may include the sealing or removal and disposal of waste transfer components and other appurtenances associated with closure of the facility. Conversion of a liquid waste storage impoundment for fresh water storage includes agitating, removing, and spreading liquid/slurry waste material, removing solid/sludge waste remaining in the bottom. All waste material shall be land applied in accordance with Nutrient Management (590). All inflow devices and associated appurtenances will be removed and properly disposed of. The embankment will be brought up to current NRCS standards for its intended purpose. The disturbed areas shall be vegetated in accordance with Critical Area Planting (342). Conversion to fresh water storage will address water quality degradation, air quality impacts and safety hazards by removing and properly utilizing the waste from the impoundment.

Feature Measure: Cubic feet of structural storage

Scenario Unit: Cubic Feet

Scenario Typical Size: 63,851.0

Scenario Total Cost: $11,132.43

Scenario Cost/Unit: $0.17

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Earthfill, Roller Compacted	49	Earthfill, roller or machine compacted, includes equipment and labor	Cubic Yards	$4.42	118	$521.56
Hydraulic Excavator, 1 CY	931	Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included.	Hours	$111.83	8	$894.64
Manure, compost, injection	956	Loading, hauling and injecting manure/compost by ground equipment. Includes equipment, power unit and labor costs.	Gallons	$0.01	238803	$2,388.03
Spreading, manure sludge	1633	Loading, hauling and spreading manure solids/sludge by ground equipment on nearby fields. Includes equipment, power unit and labor costs.	Cubic Feet	$0.17	31925	$5,427.25
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	8	$185.44
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	8	$215.20
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	4	$1,015.56
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$484.75	1	$484.75

Practice: 360 - Waste Facility Closure

Scenario #33 - Poultry House Soil Remediation

Scenario Description:

This practice scenario includes the remediation of the soil in an abandoned poultry structures previously used to store poultry waste (litter) on an earthen floor. The purpose of the practice is to address resource concerns related to water quality degradation due to excess nutrient and pathogens in ground and/or surface waters and air quality impacts from greenhouse gases, particulate matter and associated precursors, and objectionable odors. Associated practices: Nutrient Management (590), Critical Area Planting (342).

Before Situation:

The abandoned poultry house has a damaged roof exposing the earthen floor of the structure to rainfall. Rainfall and nutrients on the floor of the house pose a risk to surface water from contaminated runoff or to ground water from seepage into the underlying soils.

After Situation:

This scenario is based on a 40' wide x 400' long poultry house with 1 foot depth of nutrient laden soil to remediate (16,000 CF). Payment under this scenario includes only activities associated with the soil remediation. Soil remediation activities in this scenario include removing the nutrient enriched soil found in the first 7 inches of soil beneath the litter floor and mixing wood chips with the remaining 5 inches of soil. Nutrient level testing and field application of the removed soil shall be performed according to nutrient planning in conformance with Nutrient Management, Code 590. The remaining 5 inches of soil will be remediated in-situ by mixing in wood chips, at a rate of 33% of the volume of remaining soil, for the purpose of nitrogen sequestration. Additional soil will be hauled in (estimated at 110% of the soil volume that was removed for field application) to backfill the depression. Shaping and crowning of the soil material on the disturbed area and critical area seeding will be done to provide drainage, complete the site remediation and establish vegetation. Operation and maintenance of the site will include nutrient testing the following year to determine if the nutrients in the mixed soil have been remediated and surface and ground water resource concerns have been addressed. In this scenario, samples at four (4) locations will be taken at 6, 12, 18 and 24 inches at the end of Year 1.

Feature Measure: Cubic feet of soil remediated

Scenario Unit: Cubic Feet

Scenario Typical Size: 16,000.0

Scenario Total Cost: $14,069.51

Scenario Cost/Unit: $0.88

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Earthfill, Dumped and Spread	51	Earthfill, dumped and spread without compaction effort, includes equipment and labor	Cubic Yards	$3.61	380	$1,371.80
Hydraulic Excavator, 1 CY	931	Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included.	Hours	$111.83	31	$3,466.73
Manure, compost, application	955	Loading, hauling and spreading manure/compost by ground equipment. Includes equipment, power unit and labor costs.	Hours	$129.42	19	$2,458.98
Tractor, agricultural, 120 HP	962	Agricultural tractor with horsepower range of 90 to 140. Equipment and power unit costs. Labor not included.	Hours	$51.52	1	$51.52
Aggregate, Wood Chips	1098	Includes materials, equipment and labor	Cubic Yards	$40.43	82	$3,315.26
Front End Loader, 185 HP	1619	Wheeled front end loader with horsepower range of 160 to 210. Equipment and power unit costs. Labor not included.	Hours	$101.94	6	$611.64
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	1	$25.31
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	31	$833.90
Materials						
Test, Soil Test, Standard	299	Includes materials, shiping, labor, and equipment costs.	Each	$12.70	16	$203.20
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	3	$761.67
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$484.75	2	$969.50

Practice: 362 - Diversion

Scenario #1 - Diversion

Scenario Description:

An earthen channel constructed across long slopes with supporting ridge on lower side, to divert runoff away from farmsteads, agricultural waste systems, gullies, critical erosion areas, construction areas or other sensitive areas. Outlet may be waterway, underground outlet. or other suitable outlet. Typical diversion is, 500 feet long installed on a field slope of 5 percent and requires 1 CY excavation per LF. Channel my be level or gradient and ridge may be vegetated or farmed. The quantity of excavation and fill is balanced.

Before Situation:

Excessive sedimentation and soil erosion as a result of gully, rill or sheet erosion which exceeds "T" from farm fields and other locations. Also, roof runoff or surface runoff that becomes contaminated with agricultral wastes that significantly contributes to the amount of runoff that has to be stored or treated.

After Situation:

Diversion is installed using a dozer. Field system meets "T" or "clean" storm water runoff is diverted away from an agricultural waste management system to minimize the volume of runoff that is contaminated by agricultral waste. Associated practices are Critical Area Planting (342), Grassed Waterway (412), Underground Outlet (620), Mulching (484), and Subsurface Drainage (606).

Feature Measure: Diversion Fill Volume

Scenario Unit: Cubic Yards

Scenario Typical Size: 500.0

Scenario Total Cost: $1,503.81

Scenario Cost/Unit: $3.01

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Excavation, Common Earth, side cast, small equipment	48	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic Yards	$2.24	500	$1,120.00
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	2	$46.36
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	2	$83.56
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 362 - Diversion

Scenario #2 - Water Bars_Dips

Scenario Description:

An earthen channel constructed across long slopes with supporting ridge on lower side, to divert runoff off roads/travel ways, and away from gullies, critical erosion areas, construction areas or other sensitive areas in order to prevent concentrated flow down slopes. Outlet may be waterway, culvert, underground outlet. or other suitable stable outlet. Estimated cost is based on a 500 ft section access road and firebreak having a width of 14 ft and slope of 12%. In order to prevent gully erosion a system of 13 water bars and rolling dips each with a 3 ft top width, 4H:1V slope, average height of 1.5 ft and, 20 linear feet (total of 260 LF) are constructed including one on the top where the grade breaks. The quantity of excavation and fill is balanced.

Before Situation:

Excessive sedimentation and soil erosion as a result of gully, rill and sheet erosion which exceeds "T" from farm fields and other locations. Eroded soil is trasported via concentrated flow from natural gullies and ruts from vechile and/or animal traffic directly to a stream at the base of the slope.

After Situation:

Walter bars and rolling dips are installed along the road at approximately every 5 ft of verticle change and at the top of the hill using a dozer. Field system meets "T" or "clean" storm water runoff is diverted to stable outlets such as prevent concentrated flow along the road. Associated practices are Critical Area Planting (342), Grassed Waterway (412), Underground Outlet (620), Mulching (484), and Subsurface Drainage (606).

Feature Measure: Length of Diversion

Scenario Unit: Feet

Scenario Typical Size: 260.0

Scenario Total Cost: $742.35

Scenario Cost/Unit: $2.86

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Dozer, 80 HP	929	Track mounted Dozer with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$54.51	6	$327.06
Labor						
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	6	$161.40
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 367 - Roofs and Covers

Scenario #2 - Timber or Steel Sheet Roof

Scenario Description:

A timber framed building with a timber or steel "sheet" roof and supporting foundation. Manure is stored as a liquid in basins, tanks, and as a solid on concrete and earthen surfaces. Excess precipitation can cause premature filling of storages or cause nutrients to leach from solid manure piles leading to uncontrolled runoff as well as odor issues. Associated practices include Waste Storage Facility (313), Animal Mortality Facility (316), Composting Facility (317), Agrichemical Handling Facility (309), Roof Runoff Structure (558), and Waste Treatment (629).

Before Situation:

Applicable where the exclusion of precipitation from an animal waste storage and/or treatment facility will improve of an existing or planned system. Manure is stored as a liquid in basins, tanks, and as a solid on concrete and earthen surfaces. Excess precipitation can cause premature filling of storages or cause nutrients to leach from solid manure piles leading to uncontrolled runoff as well as odor issues.

After Situation:

A timber framed building with a timber or steel "sheet" roof and supporting foundation. Engineered and installed in accordance with appropriate building codes and permits. Typical size is 1,000 square feet and is over an approved animal waste management facility as a component of a CNMP. It is designed to prevent precipitation to allow proper management of animal waste streams (manure or compost streams), thus mitigating the negative factors from the "before practice implementation".

Feature Measure: Footprint of building

Scenario Unit: Square Feet

Scenario Typical Size: 1,000.0

Scenario Total Cost: $20,234.11

Scenario Cost/Unit: $20.23

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Materials						
Roof, Post Frame Building, 30 to 60 ft. wide	1676	Post Frame Building, no sides, - 30 to 60 ft. width. Building sites with expected snow loads up to 30 lbs. per square foot and wind exposure in semi protected areas (wooded or terrain with numerous closely spaced obstructions). Includes materials, shipping, equipment, and installation. Does not include foundation preparation.	Square Feet	$19.84	1000	$19,840.00
Mobilization						
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	$70.11	2	$140.22
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 367 - Roofs and Covers

Scenario #4 - Steel Frame and Roof

Scenario Description:

A steel framed building with steel "sheet" roof and supporting foundation. Manure is stored as a liquid in basins, tanks, and as a solid on concrete and earthen surfaces. Excess precipitation can cause premature filling of storages or cause nutrients to leach from solid manure piles leading to uncontrolled runoff as well as odor issues. Associated practices includes Waste Storage Facility (313), Animal Mortality Facility (316), Composting Facility (317), Roof Runoff Structure (558), and Waste Treatment (629).

Before Situation:

Applicable where the exclusion of precipitation from an animal waste storage and/or treatment facility will improve of an existing or planned system. Manure is stored as a liquid in basins, tanks, and as a solid on concrete and earthen surfaces. Excess precipitation can cause premature filling of storages or cause nutrients to leach from solid manure piles leading to uncontrolled runoff as well as odor issues.

After Situation:

A steel framed building with steel "sheet" roof and supporting foundation. Engineered and installed in accordance with appropriate building codes and permits. Typical size is 10,000 square feet and is over an approved animal waste management facility as a component of a CNMP. It is designed to prevent precipitation to allow proper management of animal waste streams (manure or compost streams), thus mitigating the negative factors from the "before practice implementation".

Feature Measure: Footprint of building

Scenario Unit: Square Feet

Scenario Typical Size: 10,000.0

Scenario Total Cost: $187,948.00

Scenario Cost/Unit: $18.79

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Materials						
Roof, Steel Frame Monoslope Building, greater than 60 ft. wide	1677	Steel Frame Monoslope Building, greater than 60 ft. width, includes materials, equipment, and installation. Does not include foundation preparation.	Square Feet	$18.73	10000	$187,300.00
Mobilization						
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	$70.11	2	$140.22
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: 368 - Emergency Animal Mortality Management

Scenario #7 - In-House Composting

Scenario Description:

This scenario consists the emergency disposal of poultry mortality by composting in a static windrow. The cause of mortatiy is an event not related to disease. Additional carbon based bulking material is added to facilitate aeration and provide a proper C:N ratio. The windrow is turned at least once to go into another heat cycle prior to land application. Access is infrequent. This option may not be desirable for sites with limited area, karst topography, and not isolated from of public view. The purpose of the practice is to address resource concerns related to water quality degradation due to excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Air quality impacts due to odors will also be addressed. Potential Associated Practices: Pond Sealing or Lining, Bentonite Sealant (521C), Pond Sealing or Lining, Compacted Clay Treatment (521D), Pond Sealing or Lining, Soil Dispersant (521B), Fence (382), Critical Area Planting (342), Nutrient Management (590), Access Road (560), Diversion (362).

Before Situation:

Animal mortality is done in a manner that results in non-point source pollution of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Improper operation results in odors and spread of pathogens from incomplete composting, or interaction with predators. No plan was formulated for catastrophic mortality events.

After Situation:

Animal mortality is being done in a manner that prevents non-point source pollution of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Proper operation results in little to no odors, complete composting, and protection from predators to minimize pathogen survival or spreading. An overall plan covers normal and catastrophic mortality events. The typical scenario number of birds to be disposed of is 20,000, 4 pound birds which can be composted in-house. Composting requires 1.5 pounds of carbon per pound of bird. There is 0.5 pounds of litter per bird already on site. Wood chips (45 pcf) will be used as the additional carbon source. The composting windrow construction operation consists of 2 pieces of equipment and 2 add'l laborers: 1) stockpiling birds and litter in center of house; 2) construct 2 windrow bases using carbon material; 3) place carcass/litter mix on bases; 4) cover with carbon material; 5) cap windrows with any remaining litter; 6) after first heat cycle remove windrow from house and reconstruct outside house for finishing. Site to be located out of drainage areas, off-site water diverted and any runoff to spread out into a grassed area.

Feature Measure: Number of 1000 lbs Animal Units

Scenario Unit: Animal Unit

Scenario Typical Size: 80.0

Scenario Total Cost: $7,398.21

Scenario Cost/Unit: $92.48

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Skidsteer, 80 HP	933	Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$59.94	28	$1,678.32
Aggregate, Wood Chips	1098	Includes materials, equipment and labor	Cubic Yards	$40.43	91	$3,679.13
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	28	$649.04
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	28	$708.68
Mobilization						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	4	$683.04

Practice: 368 - Emergency Animal Mortality Management

Scenario #8 - Burial

Scenario Description:

This scenario consists of the on-site burial of animal mortalities resulting from catastrophic events not related to disease. An earthen pit is excavated to contain the mortalities, and earth cover is placed over the mortalities to provide protection from predators to minimize pathogen survival or spreading. The purpose of the practice is to address resource concerns related to water quality degradation due to excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Air quality impacts due to odors will also be addressed. Potential Associated Practices: Pond Sealing or Lining, Bentonite Sealant (521C), Pond Sealing or Lining, Compacted Clay Treatment (521D), Pond Sealing or Lining, Soil Dispersant (521B), Fence (382), Critical Area Planting (342), Nutrient Management (590), Access Road (560), and Diversion (362).

Before Situation:

Animal mortality disposal is done in a manner that results in non-point source pollution of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Improper operation results in odors and spread of pathogens from incomplete composting, incineration, or interaction with predators. No plan was formulated for catastrophic mortality events.

After Situation:

Catastrophic Animal mortalities resulting from causes not related to disease are being disposed in a manner that prevents non-point source pollution of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Proper operation results in little to no odors, and protection from predators to minimize pathogen survival or spreading. An overall plan covers the burial of animals as a result of catastrophic mortality events. This typical scenario was developed based on the disposal of 25 head of mature cattle located near the area where the cattle have been found. The scenario includes equipment time and labor to recover and transport carcasses to the burial location. The scenario also includes a burial trench 4' deep plus 3' additional cover over carcasses. Construct a 6' x 60' (surface dimensions) burial site with appropriate cover. Site can handle mortality for 25 mature beef cattle. On site soils can be re-compacted to meet required imperviousness. Include 3' overfill or mounding excavated material to provide for settlement of the burial site and divert or minimize offsite runoff. Site to be located out of drainage areas, off-site water diverted and any runoff to spread out into a grassed area.

Feature Measure: Number of 1000 lbs Animal Units

Scenario Unit: Animal Unit

Scenario Typical Size: 25.0

Scenario Total Cost: $2,431.32

Scenario Cost/Unit: $97.25

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Earthfill, Dumped and Spread	51	Earthfill, dumped and spread without compaction effort, includes equipment and labor	Cubic Yards	$3.61	94	$339.34
Tractor, agricultural, 120 HP	962	Agricultural tractor with horsepower range of 90 to 140. Equipment and power unit costs. Labor not included.	Hours	$51.52	12	$618.24
Excavation, common earth, large equipment, 50 ft	1222	Bulk excavation of common earth including sand and gravel with dozer >100 HP with average push distance of 50 feet. Includes equipment and labor.	Cubic Yards	$1.63	94	$153.22
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	12	$278.16
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	12	$303.72
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$484.75	1	$484.75

Practice: 368 - Emergency Animal Mortality Management

Scenario #60 - Burial of Cattle or Horses

Scenario Description:

This scenario consists of the on-site burial of cattle or horse mortalities resulting from catastrophic events not related to disease. An earthen pit is excavated to contain the mortalities, and earth cover is placed over the mortalities to provide protection from predators to minimize pathogen survival or spreading. The purpose of the practice is to address resource concerns related to water quality degradation due to excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Air quality impacts due to odors will also be addressed. Potential Associated Practices: Pond Sealing or Lining, Bentonite Sealant (521C), Pond Sealing or Lining, Compacted Clay Treatment (521D), Pond Sealing or Lining, Soil Dispersant (521B), Fence (382), Critical Area Planting (342), Nutrient Management (590), Access Road (560), and Diversion (362).

Before Situation:

Animal mortality disposal is done in a manner that results in non-point source pollution of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Improper operation results in odors and spread of pathogens from incomplete composting, incineration, or interaction with predators.

After Situation:

Catastrophic Animal mortalities resulting from causes not related to disease are being disposed in a manner that prevents non-point source pollution of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Proper operation results in little to no odors, and protection from predators to minimize pathogen survival or spreading. An overall plan covers the burial of animals as a result of catastrophic mortality events. This typical scenario was developed based on the disposal of 5 head averaging 1000 pounds each located near the area where the cattle have been found. The scenario includes equipment time and labor to recover and transport carcasses to the burial location. The scenario also includes a burial trench 4' deep plus 2' additional cover over carcasses. Construct a 16'W x 32'L (surface dimensions) burial site with appropriate cover. On site soils can be recompacted to meet required imperviousness. Include 2' overfill or mounding excavated material to provide for settlement of the burial site and divert or minimize offsite runoff. Site to be located out of drainage areas, off-site water diverted and any runoff to spread out into a grassed area.

Feature Measure: Number of head

Scenario Unit: Each

Scenario Typical Size: 5.0

Scenario Total Cost: $1,970.41

Scenario Cost/Unit: $394.08

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Earthfill, Dumped and Spread	51	Earthfill, dumped and spread without compaction effort, includes equipment and labor	Cubic Yards	$3.61	78	$281.58
Tractor, agricultural, 120 HP	962	Agricultural tractor with horsepower range of 90 to 140. Equipment and power unit costs. Labor not included.	Hours	$51.52	5	$257.60
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	10	$231.80
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	5	$126.55
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	8	$334.24
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$484.75	1	$484.75

Practice: 368 - Emergency Animal Mortality Management

Scenario #61 - Cattle or Horse Disposal Other Than Burial

Scenario Description:

This scenario consists of the disposal of cattle, horse or other similarly sized animal carcasses by methods other than burial resulting from catastrophic events not related to disease. The purpose of the practice is to address resource concerns related to water quality degradation due to excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Air quality impacts due to odors will also be addressed. Potential Associated Practices: Critical Area Planting (342), Nutrient Management (590), Access Road (560)

Before Situation:

Animal mortality disposal is done in a manner that results in non-point source pollution of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Improper operation results in odors and spread of pathogens from incomplete composting, incineration, or interaction with predators.

After Situation:

Catastrophic Animal mortalities resulting from causes not related to disease are being disposed in a manner, other than burial, that prevents non-point source pollution of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Proper operation results in little to no odors, and protection from predators to minimize pathogen survival or spreading. An overall plan covers the burial of animals as a result of catastrophic mortality events. This typical scenario was developed based on the disposal of 5 head averaging 1000 pounds each in a landfill. The scenario includes materials, equipment time and labor to recover and transport carcasses to the landfill which is a distance of 35 miles from the farm.

Feature Measure: Number of Head

Scenario Unit: Each

Scenario Typical Size: 5.0

Scenario Total Cost: $1,835.15

Scenario Cost/Unit: $367.03

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Tractor, agricultural, 120 HP	962	Agricultural tractor with horsepower range of 90 to 140. Equipment and power unit costs. Labor not included.	Hours	$51.52	5	$257.60
Truck, dump, 8 CY	1401	Dump truck for moving bulk material. Typically capacity is 12 ton or 8 cubic yards. Includes equipment only.	Hours	$54.74	8	$437.92
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	5	$115.90
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	5	$126.55
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	8	$215.20
Materials						
Poly film, 6 mil.	245	6 mil, polyethylene, black	Square Feet	$0.09	360	$32.40
Landfill Fee, Animal Carcass	2711	Fees charged by a landfill for proper disposal of animal carcass or animal debris	Cubic Yards	$35.45	4	$141.80
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: 368 - Emergency Animal Mortality Management

Scenario #180 - National Emergency Shallow Burial of Swine or Cattle

Scenario Description:

This scenario consists of the disposal of animal carcasses by burial in a shallow trench resulting from impacts related to the National Emergency. The purpose of the practice is to address resource concerns related to water quality degradation due to excessive nutrients, and organics being transported into surface and groundwater resources. Air quality impacts due to odors will also be addressed. This scenario has been written to exclude feathered animals since early research has indicated that feathered animals do not break down quickly using this method. Potential Associated Practices: Critical Area Planting (342), Nutrient Management (590), Access Road (560), Fence (384)

Before Situation:

Animal mortality disposal is done in a manner that results in non-point source pollution of excessive nutrients, and organics being transported into surface and groundwater resources. Improper operation results in odors and spread of pathogens from incomplete composting, incineration, or interaction with predators. No plan was formulated for catastrophic mortality events.

After Situation:

Emergency animal mortalities resulting from causes not related to disease are being buried in a shallow trench,that prevents non-point source pollution of excessive nutrients, and organics being transported into surface and groundwater resources. The is a new method of mortality disposal recommended by APHIS. 50 animal units (50,000 pound) of animal mortality is the maximum allowed for this method. Proper operation results in little to no odors, and protection from predators to minimize pathogen survival or spreading. An overall plan covers the disposal of animals as a result of catastrophic mortality events. This typical scenario was developed based on the disposal of livestock animal mortality by burial in an 18 inch deep by 8 foot wide trench. A 12 inch thick layer of carbon material is placed in the bottom of the trench. The carcass is placed in the trench and covered with 4 inches of carbon material. Then the excavated soil is placed over the entire trench area. The scenario includes equipment time and labor to excavate the trench, place carbon layer in the trench bottom, recover and transport carcasses to the shallow burial location, place carcasses in the trench and cover with more carbon and the excavated soil. Wood chips (45 pcf) will be used as the carbon source.

Feature Measure: Number of 1000 lbs Animal Units

Scenario Unit: Animal Unit

Scenario Typical Size: 50.0

Scenario Total Cost: $7,445.29

Scenario Cost/Unit: $148.91

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Hydraulic Excavator, 1 CY	931	Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included.	Hours	$111.83	4	$447.32
Tractor, agricultural, 120 HP	962	Agricultural tractor with horsepower range of 90 to 140. Equipment and power unit costs. Labor not included.	Hours	$51.52	13	$669.76
Aggregate, Wood Chips	1098	Includes materials, equipment and labor	Cubic Yards	$40.43	120	$4,851.60
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	13	$301.34
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	13	$329.03
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	4	$107.60
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$484.75	1	$484.75

Practice: 368 - Emergency Animal Mortality Management

Scenario #196 - National Emergency Composting – purchase carbon material and mobilize equipment

Scenario Description:

This scenario consists of the disposal of animal carcasses by composting in a static windrow resulting from impacts related to the National Emergency. The purpose of the practice is to address resource concerns related to water quality degradation due to excessive nutrients, and organics being transported into surface and groundwater resources. Air quality impacts due to odors will also be addressed. Potential Associated Practices: Critical Area Planting (342), Nutrient Management (590), Access Road (560)

Before Situation:

Animal mortality disposal is done in a manner that results in non-point source pollution of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Improper operation results in odors from incomplete composting, incineration, or interaction with predators. No plan was formulated for catastrophic mortality events.

After Situation:

Emergency animal mortalities resulting from causes not related to disease are being disposed by composting in a static windrow that prevents non-point source pollution of excessive nutrients, and organics being transported into surface and groundwater resources. Proper operation results in little to no odors, and protection from predators. An overall plan covers the disposal of animals as a result of catastrophic mortality events. This typical scenario was developed based on the disposal of 30,000 pounds of animal mortality by composting on-site. The scenario includes equipment time and labor to recover and transport carcasses to the composting location and the building and turning of the pile at the appropriate time. Composting requires 5 cubic yards of carbon material per 1000 pounds of animal. Wood chips (45 pcf) will be used as the carbon source.

Feature Measure: Number of 1000 lbs Animal Units

Scenario Unit: Animal Unit

Scenario Typical Size: 30.0

Scenario Total Cost: $12,213.05

Scenario Cost/Unit: $407.10

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Tractor, agricultural, 120 HP	962	Agricultural tractor with horsepower range of 90 to 140. Equipment and power unit costs. Labor not included.	Hours	$51.52	55	$2,833.60
Aggregate, Wood Chips	1098	Includes materials, equipment and labor	Cubic Yards	$40.43	150	$6,064.50
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	55	$1,274.90
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	55	$1,392.05
Mobilization						
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	$70.11	2	$140.22
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: 368 - Emergency Animal Mortality Management

Scenario #212 - National Emergency Carcass Disposal Other Than Burial, Incineration, Landfill or Render

Scenario Description:

This scenario consists of the disposal of animal carcasses by methods other than burial, incineration, landfill or rendering resulting from impacts related to the National Emergency. The purpose of the practice is to address resource concerns related to water quality degradation due to excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Air quality impacts due to odors will also be addressed. Potential Associated Practices: Critical Area Planting (342), Nutrient Management (590), Access Road (560)

Before Situation:

Animal mortality disposal is done in a manner that results in non-point source pollution of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Improper operation results in odors and spread of pathogens from incomplete composting, incineration, or interaction with predators. No plan was formulated for catastrophic mortality events.

After Situation:

Emergency animal mortalities resulting from causes not related to disease are being disposed in a manner, other than burial, incineration, landfill or rendering, that prevents non-point source pollution of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Proper operation results in little to no odors, and protection from predators to minimize pathogen survival or spreading. An overall plan covers the disposal of animals as a result of catastrophic mortality events. This typical scenario was developed based on the disposal of livestock carcasses by composting on-site. The scenario assumes the grower will provide all equipment and labor and that 50% of the carbon for composting is available on-site.

Feature Measure: Number of 1000 lbs Animal Units

Scenario Unit: Animal Unit

Scenario Typical Size: 30.0

Scenario Total Cost: $8,532.80

Scenario Cost/Unit: $284.43

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Tractor, agricultural, 120 HP	962	Agricultural tractor with horsepower range of 90 to 140. Equipment and power unit costs. Labor not included.	Hours	$51.52	55	$2,833.60
Aggregate, Wood Chips	1098	Includes materials, equipment and labor	Cubic Yards	$40.43	75	$3,032.25
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	55	$1,274.90
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	55	$1,392.05

Practice: 368 - Emergency Animal Mortality Management

Scenario #228 - National Emergency Disposal At Landfill or Render

Scenario Description:

This scenario consists of the disposal of animal mortality carcasses by landfilling or rendering resulting from impacts related to the National Emergency. The purpose of the practice is to address resource concerns related to water quality degradation due to excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Air quality impacts due to odors will also be addressed. Potential Associated Practices: Critical Area Planting (342), Nutrient Management (590), Access Road (560)

Before Situation:

Animal mortality disposal is done in a manner that results in non-point source pollution of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Improper operation results in odors and spread of pathogens from incomplete composting, incineration, or interaction with predators. No plan was formulated for catastrophic mortality events.

After Situation:

Catastrophic Animal mortalities resulting from causes not related to disease are being disposed in a landfill or by rendering, that prevents non-point source pollution of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Proper operation results in little to no odors, and protection from predators to minimize pathogen survival or spreading. An overall plan covers disposal of animals as a result of catastrophic mortality events. This typical scenario was developed based on the disposal of 700 finisher swine carcasses at an average weight of 200 pounds each in a landfill. The scenario includes materials, equipment time and labor to recover and transport the carcasses to the landfill which is within a 1.5 hour drive of the farm.

Feature Measure: Pounds of mortality

Scenario Unit: Pound

Scenario Typical Size: 140,000.0

Scenario Total Cost: $7,764.76

Scenario Cost/Unit: $0.06

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Skidsteer, 80 HP	933	Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$59.94	5	$299.70
Truck, dump, 8 CY	1401	Dump truck for moving bulk material. Typically capacity is 12 ton or 8 cubic yards. Includes equipment only.	Hours	$54.74	39	$2,134.86
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	5	$115.90
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	5	$126.55
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	39	$1,049.10
Materials						
Poly film, 6 mil.	245	6 mil, polyethylene, black	Square Feet	$0.09	3388	$304.92
Landfill Fee, Animal Carcass	2711	Fees charged by a landfill for proper disposal of animal carcass or animal debris	Cubic Yards	$35.45	91	$3,225.95
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: 368 - Emergency Animal Mortality Management

Scenario #244 - National Emergency In-House Composting

Scenario Description:

This scenario consists the emergency disposal of poultry mortality by composting in a static windrow resulting from impacts related to the National Emergency. Additional carbon based bulking material is added to facilitate aeration and provide a proper C:N ratio. The windrow is turned at least once to go into another heat cycle prior to land application. Access is infrequent. This option may not be desirable for sites with limited area, karst topography, and not isolated from of public view. The purpose of the practice is to address resource concerns related to water quality degradation due to excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Air quality impacts due to odors will also be addressed. Potential Associated Practices: Pond Sealing or Lining, Bentonite Sealant (521C), Pond Sealing or Lining, Compacted Clay Treatment (521D), Pond Sealing or Lining, Soil Dispersant (521B), Fence (382), Critical Area Planting (342), Nutrient Management (590), Access Road (560), Diversion (362).

Before Situation:

Animal mortality is done in a manner that results in non-point source pollution of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Improper operation results in odors and spread of pathogens from incomplete composting, or interaction with predators. No plan was formulated for catastrophic mortality events.

After Situation:

Animal mortality disposal is being done in a manner that prevents non-point source pollution of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Proper operation results in little to no odors, complete composting, and protection from predators to minimize pathogen survival or spreading. An overall plan covers normal and catastrophic mortality events. The typical scenario consists of in-house composting of animal mortality. Composting requires 1.5 pounds of carbon per pound of mortatility. There is some manure and bedding already on site. Wood chips (45 pcf) will be used as the additional carbon source. The composting windrow construction operation consists of 2 pieces of equipment and 2 add'l laborers: 1) stockpiling carcasses, bedding, and manure in center of house; 2) construct 2 windrow bases using carbon material; 3) place carcass/bedding/manure mix on bases; 4) cover with carbon material; 5) cap windrows with any remaining bedding/manure; 6) after first heat cycle remove windrow from house and reconstruct outside house for finishing. Site to be located out of drainage areas, off-site water diverted and any runoff to spread out into a grassed area.

Feature Measure: Number of 1000 lbs Animal Units

Scenario Unit: Animal Unit

Scenario Typical Size: 80.0

Scenario Total Cost: $7,538.43

Scenario Cost/Unit: $94.23

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Skidsteer, 80 HP	933	Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$59.94	28	$1,678.32
Aggregate, Wood Chips	1098	Includes materials, equipment and labor	Cubic Yards	$40.43	91	$3,679.13
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	28	$649.04
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	28	$708.68
Mobilization						
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	$70.11	2	$140.22
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	4	$683.04

Practice: 368 - Emergency Animal Mortality Management

Scenario #260 - National Emergency Forced Air Incineration

Scenario Description:

This scenario consists the emergency disposal of a large number of livestock resulting from impacts related to the National Emergency. The cause of mortatiy is an event not related to disease. Additional carbon based bulking material is added to facilitate aeration and provide a proper C:N ratio. The windrow is turned at least once to go into another heat cycle prior to land application. Access is infrequent. This option may not be desirable for sites with limited area, karst topography, and not isolated from of public view. The purpose of the practice is to address resource concerns related to water quality degradation due to excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Air quality impacts due to odors will also be addressed. Potential Associated Practices: Critical Area Planting (342), Nutrient Management (590), Access Road (560), Diversion (362).

Before Situation:

Animal mortality disposal is done in a manner that results in non-point source pollution of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Improper operation results in odors and spread of pathogens from incomplete composting, incineration, or interaction with predators. No plan was formulated for catastrophic mortality events.

After Situation:

Animal mortality is being done in a manner that prevents non-point source pollution of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. An overall plan covers normal and catastrophic mortality events. This typical scenario was developed based on the forced air incineration of 50 animal units of livestock carcasses. The scenario includes equipment time and labor to recover and transport carcasses to a suitable on-site incineration location and the rental and operation of a portable forced air incinerator. Wood fuel is also added to assist with the incineration process. The forced air incineration operation consists of a tractor plus operator to collect and transport carcasses to the incineration site, a portable forced air incinerator plus operator, and 1 add'l laborer. Site to be located out of drainage areas, off-site water diverted and any runoff to spread out into a grassed area. The forced air incineration operation consists of a tractor plus operator to collect and transport carcasses to the incineration site, a portable forced air incinerator plus operator, and 1 add'l laborer. Site to be located out of drainage areas, off-site water diverted and any runoff to spread out into a grassed area.

Feature Measure: Number of 1000 lbs Animal Units

Scenario Unit: Animal Unit

Scenario Typical Size: 50.0

Scenario Total Cost: $13,577.17

Scenario Cost/Unit: $271.54

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Tractor, agricultural, 120 HP	962	Agricultural tractor with horsepower range of 90 to 140. Equipment and power unit costs. Labor not included.	Hours	$51.52	50	$2,576.00
Aggregate, Wood Chips	1098	Includes materials, equipment and labor	Cubic Yards	$40.43	42	$1,698.06
Incinerator, Portable, Trench Burner	2712	A portable incinerator used with the development of a trench to incinerate animal carcasses or other debris	Week	$1,205.18	2	$2,410.36
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	50	$1,159.00
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	94	$2,379.14
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	56	$2,339.68
Materials						
Fuel, propane	1597	20 pound propane bottle, with propane, for ignition of prescribed burns. Materials only.	Each	$11.27	45	$507.15
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: 368 - Emergency Animal Mortality Management

Scenario #276 - National Emergency Burial

Scenario Description:

This scenario consists of the on-site burial of animal mortalities resulting from impacts related to the National Emergency. An earthen pit is excavated to contain the mortalities, and earth cover is placed over the mortalities to provide protection from predators to minimize pathogen survival or spreading. The purpose of the practice is to address resource concerns related to water quality degradation due to excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Air quality impacts due to odors will also be addressed. Potential Associated Practices: Pond Sealing or Lining, Bentonite Sealant (521C), Pond Sealing or Lining, Compacted Clay Treatment (521D), Pond Sealing or Lining, Soil Dispersant (521B), Fence (382), Critical Area Planting (342), Nutrient Management (590), Access Road (560), and Diversion (362).

Before Situation:

Animal mortality disposal is done in a manner that results in non-point source pollution of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Improper operation results in odors and spread of pathogens from incomplete composting, incineration, or interaction with predators. No plan was formulated for catastrophic mortality events.

After Situation:

Catastrophic Animal mortalities resultuing from causes not related to disease are being disposed in a manner that prevents non-point source pollution of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources. Proper operation results in little to no odors, and protection from predators to minimize pathogen survival or spreading. An overall plan covers the burial of animals as a result of catastrophic mortality events. This typical scenario was developed based on the disposal of 25 head of mature cattle located near the area where the cattle have been found. The scenario includes equipment time and labor to recover and transport carcasses to the burial location. The scenario also includes a burial trench 4' deep plus 3' additional cover over carcasses. Construct a 6' x 60' (surface dimensions) burial site with appropriate cover. Site can handle mortality for 25 mature beef cattle. On site soils can be recompacted to meet required imperviousness. Include 3' overfill or mounding excavated material to provide for settlement of the burial site and divert or minimize offsite runoff. Site to be located out of drainage areas, off-site water diverted and any runoff to spread out into a grassed area.

Feature Measure: Number of 1000 lbs Animal Units

Scenario Unit: Animal Unit

Scenario Typical Size: 25.0

Scenario Total Cost: $2,431.32

Scenario Cost/Unit: $97.25

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Earthfill, Dumped and Spread	51	Earthfill, dumped and spread without compaction effort, includes equipment and labor	Cubic Yards	$3.61	94	$339.34
Tractor, agricultural, 120 HP	962	Agricultural tractor with horsepower range of 90 to 140. Equipment and power unit costs. Labor not included.	Hours	$51.52	12	$618.24
Excavation, common earth, large equipment, 50 ft	1222	Bulk excavation of common earth including sand and gravel with dozer >100 HP with average push distance of 50 feet. Includes equipment and labor.	Cubic Yards	$1.63	94	$153.22
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	12	$278.16
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	12	$303.72
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$484.75	1	$484.75

Practice: 374 - Energy Efficient Agricultural Operation

Scenario #1 - Ventilation, Exhaust

Scenario Description:

Replacement of a conventional exhaust fan with high volume, low speed, efficient exhaust fan. Fans being installed should be models previously tested by BESS Lab or the Air Movement and Control Association and be in top 20 percentile of fans tested. Practice certification will be through receipts and pictures from the applicant. Typical scenario is replacement of old fan with 54" fan.

Before Situation:

Inefficient ventilation in an agricultural building.

After Situation:

High-efficiency ventilation system which reduces energy use. The new ventilation equipment will provide suitable air quality and reduce overall power requirements (kW) compared to the existing ventilation system as evidenced in an energy audit. Associated practices/activities: may include 122-AgEMP - HQ, and other activities within 374-Farmstead Energy Improvement. The resource concern is inefficient use of energy in the farm operation which increases dependence on non-renewable energy sources and can be addressed through improved energy efficiency. Any improvements are based on a Type 2 energy audit meeting the requirements of ASABE S612.

Feature Measure: Each

Scenario Unit: Each

Scenario Typical Size: 1.0

Scenario Total Cost: $1,912.03

Scenario Cost/Unit: $1,912.03

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	3	$90.15
Materials						
Fan, exhaust, 54 in. High Efficiency	1188	54 inch high efficiency exhaust fan, controls, wiring, and associated appurtenances. Materials only.	Each	$1,821.88	1	$1,821.88

Practice: 374 - Energy Efficient Agricultural Operation

Scenario #2 - Ventilation, HAF

Scenario Description:

A system of fans are installed to create a horizontal air circulation pattern; the new system promotes efficient heat and moisture distribution. In a typical 10,000 square foot greenhouse, 10 HAF fans are needed. Fan performance meets Energy Audit efficiency criteria as tested by AMCA or BESS Labs.

Before Situation:

Inefficent air circulation system in a greenhouse.

After Situation:

High-efficiency air circulation system which reduces energy use. The new equipment will provide suitable air quality and reduce overall power requirements (kW) compared to the existing system as evidenced in an energy audit. Associated practices/activities: may include 122-AgEMP - HQ, and other activities within 374-Farmstead Energy Improvement. The resource concern is inefficient use of energy in the farm operation which increases dependence on non-renewable energy sources and can be addressed through improved energy efficiency. Any improvements are based on a Type 2 energy audit meeting the requirements of ASABE S612.

Feature Measure: Each

Scenario Unit: Each

Scenario Typical Size: 1.0

Scenario Total Cost: $230.99

Scenario Cost/Unit: $230.99

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	2	$60.10
Materials						
Fan, HAF, 1/10 to 1/15 HP	1189	High efficiency Horizontal Air Flow (HAF) fan, controls, wiring, and associated appurtenances. Materials only.	Each	$170.89	1	$170.89

Practice: 374 - Energy Efficient Agricultural Operation

Scenario #5 - Variable Speed Drive, greater than 5 HP

Scenario Description:

The typical scenario consists of a variable speed drive (VSD) and appurtances, such as hook-ups, control panels, wiring, control blocks, filters, switches, pads, etc. attached to an electric motor used to drive a ventilation fan, irrigation pumps, vacuum pump, or similar equipment involved with agricultural production. The motor size, on which the VSD is added, is larger than 5 HP.

Before Situation:

The system is inefficient when a motor operates at constant speed to satisfy a load which varies as to flow rate and/or pressure requirements.

After Situation:

An on-farm energy audit has determined that energy use can be reduced through use of a VSD to control electric motors. After the VSD is applied, the motor speed can be adjusted to reduce power requirements and better match varied flow or pressure requirements. Associated practices/activities: may include 122-AgEMP - HQ, and other activities within 374-Farmstead Energy Improvement. The resource concern is inefficient use of energy in the farm operation which increases dependence on non-renewable energy sources and can be addressed through improved energy efficiency. Any improvements are based on a Type 2 energy audit meeting the requirements of ASABE S612.

Feature Measure: Nameplate Power of the Attached

Scenario Unit: Horsepower

Scenario Typical Size: 50.0

Scenario Total Cost: $6,074.90

Scenario Cost/Unit: $121.50

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	8	$240.40
Materials						
Variable Speed Drive, 50 HP	1288	Variable speed drive for 50 Horsepower electric motor. Does not include motor. Materials only.	Horsepower	$116.69	50	$5,834.50

Practice: 374 - Energy Efficient Agricultural Operation

Scenario #6 - Automatic Controller System

Scenario Description:

The typical scenario consists of an automatic control system installed on an existing manually controlled agricultural system (non-poultry). Typical components may include any of the following: wiring, sensors, data logger, logic controller, communication link, software, switches, and relay.

Before Situation:

A manually controlled system is existing in an agricultural facility (non-poultry) that causes the inefficient use of energy, as evidenced by an on-farm energy audit.

After Situation:

An on-farm energy audit has determined that energy use can be reduced through use of an automatic controller that helps regulates the energy consumption of the existing system. Associated practices/activities may include: 122-AgEMP - HQ, and other activities within 374-Farmstead Energy Improvement. The resource concern is inefficient use of energy in the farm operation which increases dependence on non-renewable energy sources and can be addressed through improved energy efficiency. Any improvements are based on a Type 2 energy audit meeting the requirements of ASABE S612.

Feature Measure: Each system

Scenario Unit: Each

Scenario Typical Size: 1.0

Scenario Total Cost: $1,971.31

Scenario Cost/Unit: $1,971.31

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	8	$240.40
Materials						
Switches and Controls, temp sensors	1192	Temperature and soil moisture sensors installed as part of an electronic monitoring (with or without wireless telecommunications) commonly used to control pumps and irrigation systems	Each	$611.15	1	$611.15
Switches and Controls, programmable controller	1193	Programmable logic controller (with or without wireless telecommunications) commonly used to control pumps and irrigation systems	Each	$319.93	1	$319.93
Switches and Controls, Wi-Fi system and software	1194	Software with built-in cellular or Wi-Fi communication commonly used to control pumps and irrigation systems	Each	$799.83	1	$799.83

Practice: 374 - Energy Efficient Agricultural Operation

Scenario #7 - Motor Upgrade, greater than 100 HP

Scenario Description:

The typical scenario consists of replacing an existing electric motor used to drive a ventilation fan, irrigation pumps, vacuum pump, or similar equipment involved with agricultural production with a new, high efficiency motor. The motor size is larger than 100 horsepower.

Before Situation:

The system is inefficient with a standard efficiency motor.

After Situation:

An on-farm energy audit has determined that energy use can be reduced through use of a NEMA premium efficiency motor. Associated practices/activities may include: 122-AgEMP - HQ, and other activities within 374-Farmstead Energy Improvement. The resource concern is inefficient use of energy in the farm operation which increases dependence on non-renewable energy sources and can be addressed through improved energy efficiency. Any improvements are based on a Type 2 energy audit meeting the requirements of ASABE S612.

Feature Measure: Nameplate Power of Motor

Scenario Unit: Horsepower

Scenario Typical Size: 150.0

Scenario Total Cost: $11,337.96

Scenario Cost/Unit: $75.59

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	16	$480.80
Materials						
Motor, electric, NEMA Premium, 100 HP	1174	Premium NEMA approved electric motor, 100 Horsepower and all required appurtenances. Includes materials and shipping only.	Each	$7,607.77	0.5	$3,803.89
Motor, electric, NEMA Premium, 200 HP	1175	Premium NEMA approved electric motor, 200 Horsepower and all required appurtenances. Includes materials and shipping only.	Each	$14,106.54	0.5	$7,053.27

Practice: 374 - Energy Efficient Agricultural Operation

Scenario #8 - Motor Upgrade, 10 to 100 HP

Scenario Description:

The typical scenario consists of replacing an existing electric motor used to drive a ventilation fan, irrigation pumps, vacuum pump, or similar equipment involved with agricultural production with a new, high efficiency motor. The motor size is equal to or larger than 10 and less than or equal to 100 horsepower.

Before Situation:

The system is inefficient with a standard efficiency motor.

After Situation:

An on-farm energy audit has determined that energy use can be reduced through use of a NEMA premium efficiency motor. Associated practices/activities may include: 122-AgEMP - HQ, and other activities within 374-Farmstead Energy Improvement. The resource concern is inefficient use of energy in the farm operation which increases dependence on non-renewable energy sources and can be addressed through improved energy efficiency. Any improvements are based on a Type 2 energy audit meeting the requirements of ASABE S612.

Feature Measure: Nameplate Power of Motor

Scenario Unit: Horsepower

Scenario Typical Size: 50.0

Scenario Total Cost: $4,592.75

Scenario Cost/Unit: $91.86

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	8	$240.40
Materials						
Motor, electric, NEMA Premium, 50 HP	1173	Premium NEMA approved electric motor, 50 Horsepower and all required appurtenances. Includes materials and shipping only.	Each	$4,352.35	1	$4,352.35

Practice: 374 - Energy Efficient Agricultural Operation

Scenario #9 - Motor Upgrade, 1 to 10 HP

Scenario Description:

The typical scenario consists of replacing an existing electric motor used to drive a ventilation fan, irrigation pumps, vacuum pump, or similar equipment involved with agricultural production with a new, high efficiency motor. The motor size is larger than 1 and less than 10 horsepower.

Before Situation:

The system is inefficient with a standard efficiency motor.

After Situation:

An on-farm energy audit has determined that energy use can be reduced through use of a NEMA premium efficiency motor. Associated practices/activities may include: 122-AgEMP - HQ, and other activities within 374-Farmstead Energy Improvement. The resource concern is inefficient use of energy in the farm operation which increases dependence on non-renewable energy sources and can be addressed through improved energy efficiency. Any improvements are based on a Type 2 energy audit meeting the requirements of ASABE S612.

Feature Measure: Nameplate Power of Motor

Scenario Unit: Horsepower

Scenario Typical Size: 5.0

Scenario Total Cost: $805.35

Scenario Cost/Unit: $161.07

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	4	$120.20
Materials						
Motor, electric, NEMA Premium, 5 HP	1171	Premium NEMA approved electric motor, 5 Horsepower and all required appurtenances. Includes materials and shipping only.	Each	$685.15	1	$685.15

Practice: 374 - Energy Efficient Agricultural Operation

Scenario #11 - Heating, Radiant Heater

Scenario Description:

Replace "pancake" Brood Heaters in a poultry house with Radiant Tube Heaters, or similar. Replacement will require the materials and labor to remove existing heating system, re-plumb gas lines, cables and wench system to retrofit new radiant tube heaters, and miscellaneous items to complete the installation. Alternate acceptable radiant heating systems can include radiant brooders and quad radiant systems as evidenced by the energy audit. The typical scenario consists of the replacement of 28 brood heaters with 6 radiant tube heaters.

Before Situation:

Inefficient heat distribution equipment, such as conventional "pancake" brood heaters. The Pancake brooder, mounted at a low installation height, primarily warms the air. They provide a one-to-two foot perimeter at desired temperatures around each brooder. A large number of brooders are required to cover a significant percent of floor space. As the warmed air naturally rises it loses effectiveness for poultry on the ground.

After Situation:

Energy use is reduced through installation of a more efficient heater. Radiant tube heaters primarily warm objects within a direct line of sight (similar to the sun or an open fire). Air temperature is of relatively little importance for a radiant heating systems to be effective. As a result, radiant sytems are typically installed 5' or more above the floor level. This height extends the distribution of the radiant heat over a larger area than is possible with pancake style heaters. A roughly 16' diameter radiant heat zone heats over twice that of a convential pancake brooder. Associated practices/activities may include: 122-AgEMP - HQ, and other activities within 374-Farmstead Energy Improvement. The resource concern is inefficient use of energy in the farm operation which increases dependence on non-renewable energy sources and can be addressed through improved energy efficiency. Any improvements are based on a Type 2 energy audit meeting the requirements of ASABE S612.

Feature Measure: Radiant Heating Capacity

Scenario Unit: 1,000 BTU/Hour

Scenario Typical Size: 875.0

Scenario Total Cost: $11,285.79

Scenario Cost/Unit: $12.90

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	16	$480.80
Materials						
Heater, radiant tube	1163	Radiant tube heater rated at 125,000 BTU/hour. Materials only.	Each	$1,543.57	7	$10,804.99

Practice: 374 - Energy Efficient Agricultural Operation

Scenario #12 - Heating (Building)

Scenario Description:

Replace existing low efficiency heaters with new high efficiency heaters. High-efficiency heating systems include any heating unit with efficiency rating of 80%+ for fuel oil and 90%+ for natural gas and propane. Applications may be air heating/building environment and hydronic (boiler) heating for agricultural operations, including under bench, or root zone heating. An alternative to heater replacement might be the addition of climate control system and electronic temperature controls with +/- 1 degree F differential, to reduce the annual run time.

Before Situation:

Buildings heated with low efficiency heaters or heaters without proper electronic climate controls

After Situation:

Higher efficiency heaters reduce energy consumption, energy costs, and GHG emissions. These replacement systems can be fueled by natural gas, propane, or fuel oil. Associated practices/activities: 122-AgEMP - HQ and other activities within 374-Farmstead Energy Improvement. The resource concern is inefficient use of energy in the farm operation which increases dependence on non-renewable energy sources and can be addressed through improved energy efficiency. Any improvements are based on a Type 2 energy audit meeting the requirements of ASABE S612.

Feature Measure: Rated Heat Output

Scenario Unit: 1,000 BTU/Hour

Scenario Typical Size: 750.0

Scenario Total Cost: $12,870.80

Scenario Cost/Unit: $17.16

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	16	$480.80
Materials						
Heater, high efficiency	1165	Natural gas, propane, or fuel oil unit heater or boiler and venting materials. Based on input kBTU/hour. Includes materials and shipping only.	1,000 BTU/Hour	$16.52	750	$12,390.00

Practice: 374 - Energy Efficient Agricultural Operation

Scenario #13 - Heating - Attic Heat Recovery vents

Scenario Description:

Install actuated inlets or automatic latching gravity inlets that draw warmer, drier air from the attic to assist with moisture and heat control when ventiliation fans are being operated in poultry houses and swine barns. Other systems to transfer heat, as detailed in ASABE S612-compliant energy audit may also be used. Based on a 40' x 500' poultry house.

Before Situation:

Heated buildings with attic spaces but no means to transfer heat between the heated space, attic, and ambient (outside) air when relative conditions allow for reduced energy use.

After Situation:

Attic vents or inlets allow dry warm air from the attic to cirulated through out the building. By using pre-warmed air from the attic less energy is needed for heating 122-AgEMP - HQ and other activities within 374-Farmstead Energy Improvement. The resource concern is inefficient use of energy in the farm operation which increases dependence on non-renewable energy sources and can be addressed through improved energy efficiency. Any improvements are based on a Type 2 energy audit meeting the requirements of ASABE S612.

Feature Measure: Each inlet

Scenario Unit: Each

Scenario Typical Size: 14.0

Scenario Total Cost: $2,768.98

Scenario Cost/Unit: $197.78

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	24	$721.20
Materials						
Inlet, Attic Ceiling	2414	Poultry house attic air inlets. Includes materials only.	Each	$146.27	14	$2,047.78

Practice: 378 - Pond

Scenario #1 - Excavated Pit

Scenario Description:

A low-hazard water impoundment structure on agricultural lands to improve water quality and to provide water for livestock, fish and wildlife, recreation, fire control, crop and orchard irrigation, and other related uses. Pond is created solely by excavation and impounds less than 3 feet against the embankment or spoil. Excavated material is spoiled, not placed in a designed embankment. Earthen spillway is constructed as needed. The resource concerns addressed include inadequate livestock water, excessive suspended sediment and turbidity in surface water, damage from sediment deposition, and reduced capacity of conveyances by sediment deposition.

Before Situation:

Area exists where water could naturally pool or run off to create a pond for livestock, wildlife, fire control or irrigation. Failure of the pond will not result in loss of life; damage to homes, commercial or industrial buildings, main highways, or railroads; or in interruption of the use or service of public utilities.

After Situation:

The typical pond is constructed by excavating 3100 cubic yards and spreading the spoil outside the pool area using a dozer or similar excavation equipment. Vegetation will be completed under critical area planting (342). Other associated practices include 382, 516, 521A, 533, 614, 587, 396.

Feature Measure: Excavated Volume

Scenario Unit: Cubic Yards

Scenario Typical Size: 1,500.0

Scenario Total Cost: $5,154.68

Scenario Cost/Unit: $3.44

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Dozer, 140 HP	927	Track mounted Dozer with horsepower range of 125 to 160. Equipment and power unit costs. Labor not included.	Hours	$97.92	15	$1,468.80
Hydraulic Excavator, 1 CY	931	Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included.	Hours	$111.83	20	$2,236.60
Labor						
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	35	$941.50
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: 378 - Pond

Scenario #2 - Embankment Pond without Pipe

Scenario Description:

A water impoundment structure on agricultural land to improve water quality or to provide water for livestock, fish and wildlife, recreation, fire control, crop and orchard irrigation, and other related uses. An earthen embankment will be constructed with an earthen auxiliary spillway. The resource concerns addressed include inadequate livestock water, excessive suspended sediment and turbidity in surface water, damage from sediment deposition, and reduced capacity of conveyances by sediment deposition.

Before Situation:

Area exists where water could naturally pool or run off to create a pond for livestock, wildlife, fire control or irrigation. Failure of the embankment will not result in loss of life or damages of any kind.

After Situation:

The typical pond is constructed by excavating the pool area, constructing the auxiliary spillway, preparing the foundation as designed, and using 1500 cubic yards to create an embankment. The product of the storage times the effective height of the dam is less than 3,000. The effective height of the dam is 35 feet or less. The earthen auxiliary spillway will be constructed as designed. No principle spillway pipe will be used. Vegetation will be completed under critical area planting (342). Other associated practices include 382, 516, 521A, 533, 614, 587, 396.

Feature Measure: Embankment Volume

Scenario Unit: Cubic Yards

Scenario Typical Size: 1,500.0

Scenario Total Cost: $7,069.33

Scenario Cost/Unit: $4.71

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Earthfill, Roller Compacted	49	Earthfill, roller or machine compacted, includes equipment and labor	Cubic Yards	$4.42	1500	$6,630.00
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	8	$185.44
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 378 - Pond

Scenario #3 - Embankment Pond with Pipe

Scenario Description:

A low-hazard water impoundment structure on agricultural land to improve water quality and to provide water for livestock, fish and wildlife, recreation, fire control, crop and orchard irrigation, and other related uses. An earthen embankment will be constructed with a principle spillway conduit and earthen auxiliary spillway, as designed. The resource concerns addressed include inadequate livestock water, excessive suspended sediment and turbidity in surface water, damage from sediment deposition, and reduced capacity of conveyances by sediment deposition.

Before Situation:

Area exists where water could naturally pool or run off to create a pond for livestock, wildlife, fire control or irrigation. Failure of the embankment will not result in loss of life or damages of any kind.

After Situation:

The typical low hazard pond is constructed by excavating the pool area, constructing the auxiliary spillway, preparing the foundation as designed, and using 2000 cubic yards to create an embankment. The product of the storage times the effective height of the dam is less than 3,000. The effective height of the dam is 35 feet or less. The principle spillway is installed using an approved conduit material. The earthen auxiliary spillway will be constructed as designed. Vegetation will be completed under critical area planting (342). Other associated practices include 382, 516, 521A, 533, 614, 587, 396.

Feature Measure: Embankment Volume

Scenario Unit: Cubic Yards

Scenario Typical Size: 2,000.0

Scenario Total Cost: $13,581.03

Scenario Cost/Unit: $6.79

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Concrete, CIP, formed reinforced	38	Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yards	$415.80	3	$1,247.40
Excavation, Common Earth, side cast, small equipment	48	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic Yards	$2.24	1.6	$3.58
Earthfill, Roller Compacted	49	Earthfill, roller or machine compacted, includes equipment and labor	Cubic Yards	$4.42	2000	$8,840.00
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	8	$240.40
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	40	$927.20
Materials						
Aggregate, Sand, Graded, Washed	45	Sand, typical ASTM C33 gradation, includes materials, equipment and labor to transport and place	Cubic Yards	$38.81	19.6	$760.68
Pipe, PVC, dia. < 18 in., weight priced	1323	Polyvinyl Chloride (PVC) pressure rated pipe priced by the weight of the pipe materials for pipes with diameters less than 18 inch. Materials	Pound	$1.91	628	$1,199.48
Trash Guard, metal	1608	Trash Guard, fabricated-steel, includes materials, equipment, and labor to transport and place Conical shaped trash guard for drop inlet spillway. Typically fabricated of CMP and steel. Includes materials, equipment, and labor to fabricate and transport.	Pound	$2.71	40	$108.40
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 380 - Windbreak/Shelterbelt Establishment and Renovation

Scenario #1 - Shrubs, potted

Scenario Description:

Use the shrub, conifer, and hardwood scenarios of this practice to design windbreak as needed. Usually, a multi-row windbreak of low growing shrubs (outside row), tall growing hardwoods (inside row), and conifers (middle row) can provide multiple benefits. For multiple rows, planting should be staggered in adjacent rows. Consider using evergreen conifers when planting around confined animal operations for odor control. Windbreaks in and around pastures provide shade to livestock. Windbreaks can be as wide as needed but common sizes can be as wide as 5 rows or as narrow as 1 row. Can be mix of shrub, hardwood, or conifer as well as a mix of species. Spacing of trees within the rows should be kept relatively wide to promote low branching and wide crown development (4 to 6 ft for shrubs and 10 to 12 ft for trees). A larger windbreak provides more opportunity for species diversity. An example would be mast trees and shrubs for food, and dense growing conifers, deciduous trees and shrubs for shelter and cover. Space trees from 10 to 15 feet apart and shrubs 3 to 13 feet apart depending on the species and its growth habits. The minimum spacing between rows for multiple row plantings is 12 feet, and the maximum spacing is 20 feet. Rows should be 4 ft wider than equipment used for maintenance. This practice is typically applied to crop, pasture or confined animal operations. Resource Concerns to be addressed may include: Soil Erosion (wind); Excess/Insufficient Water (inefficient moisture management); Water Quality Degradation (excess nutrients in surface waters, excessive sediment in surface waters,); Degraded Plant Condition (undesirable plant productivity and health); Inadequate habitat for Fish and Wildlife (food, cover/shelter, continuity); Inefficient Energy Use (facilities, farming/ranching practices and field operations); Inadequate shelter for Livestock (cover/shelter); or Objectionable Odors (air quality).

Before Situation:

Agricultural field, livestock paddock, feedlot or farmstead needing protection from wind, additional wildlife food and cover, livestock shelter or management of objectionsble odors.

After Situation:

Wind velocity suitably reduced to reduce soil erosion, or to manage objectionable odors. Additional livestock shelter, or wildlife food and cover is provided.

Feature Measure: length of windbreak row(s)

Scenario Unit: Each

Scenario Typical Size: 100.0

Scenario Total Cost: $2,189.20

Scenario Cost/Unit: $21.89

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Auger, Post driver attachment	934	Auger or post driver attachment to a tractor or skidsteer. Does not include power unit. Labor not included.	Hours	$12.82	8	$102.56
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hours	$22.62	8	$180.96
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	8	$185.44
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	8	$334.24
Materials						
Shrub, Potted, Medium	1527	Potted shrub seedling, 2 gallons or larger. Includes materials and shipping only.	Each	$11.73	100	$1,173.00
Wire flags	1586	Small vinyl flags attached to wire stakes, typically, 36 in. length, for marking tree rows	Each	$0.13	100	$13.00
Mobilization						
Mobilization, Material, distance > 50 miles	1043	Mobilization cost of materials for special cases where the distance from the supplier delivery point to the job site exceeds 50 miles. The costs for shipping by UPS or bulk freight shipping to a location within 50 miles of the job site have already been included in the component price.	Dollars	$1.00	200	$200.00

Practice: 380 - Windbreak/Shelterbelt Establishment and Renovation

Scenario #2 - conifer trees, container

Scenario Description:

Use the shrub, conifer, and hardwood scenarios of this practice to design windbreak as needed. Usually, a multi-row windbreak of low growing shrubs (outside row), tall growing hardwoods (inside row), and conifers (middle row) can provide multiple benefits. For multiple rows, planting should be staggered in adjacent rows. Consider using evergreen conifers when planting around confined animal operations for odor control. Windbreaks in and around pastures provide shade to livestock. Windbreaks can be as wide as needed but common sizes can be as wide as 5 rows or as narrow as 1 row. Can be mix of shrub, hardwood, or conifer as well as a mix of species. Spacing of trees within the rows should be kept relatively wide to promote low branching and wide crown development (4 to 6 ft for shrubs and 10 to 12 ft for trees). A larger windbreak provides more opportunity for species diversity. An example would be mast trees and shrubs for food, and dense growing conifers, deciduous trees and shrubs for shelter and cover. Space trees from 10 to 15 feet apart and shrubs 3 to 13 feet apart depending on the species and its growth habits. The minimum spacing between rows for multiple row plantings is 12 feet, and the maximum spacing is 20 feet. Rows should be 4 ft wider than equipment used for maintenance. This practice is typically applied to crop, pasture or confined animal operations. Resource Concerns to be addressed may include: Soil Erosion (wind); Excess/Insufficient Water (inefficient moisture management); Water Quality Degradation (excess nutrients in surface waters, excessive sediment in surface waters,); Degraded Plant Condition (undesirable plant productivity and health); Inadequate habitat for Fish and Wildlife (food, cover/shelter, continuity); Inefficient Energy Use (facilities, farming/ranching practices and field operations); Inadequate shelter for Livestock (cover/shelter); or Objectionable Odors (air quality).

Before Situation:

Agricultural field, livestock paddock, feedlot or farmstead needing protection from wind, additional wildlife food and cover, livestock shelter or management of objectionsble odors.

After Situation:

Wind velocity suitably reduced to reduce soil erosion, or to manage objectionable odors. Additional livestock shelter, or wildlife food and cover.

Feature Measure: length of windbreak row(s)

Scenario Unit: Each

Scenario Typical Size: 50.0

Scenario Total Cost: $317.58

Scenario Cost/Unit: $6.35

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Hand tools, tree planting	1590	Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included.	Hours	$12.58	2	$25.16
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	2	$46.36
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	2	$83.56
Materials						
Tree, Conifer, Seedling, Small	1512	Containerized conifer seedlings, 4 or 6 cubic inches; or bare root conifer seedlings 1+0 (one-year old seedlings grown in their original seedbed). Includes materials and shipping only.	Each	$0.12	50	$6.00
Wire flags	1586	Small vinyl flags attached to wire stakes, typically, 36 in. length, for marking tree rows	Each	$0.13	50	$6.50
Mobilization						
Mobilization, Material, distance > 50 miles	1043	Mobilization cost of materials for special cases where the distance from the supplier delivery point to the job site exceeds 50 miles. The costs for shipping by UPS or bulk freight shipping to a location within 50 miles of the job site have already been included in the component price.	Dollars	$1.00	150	$150.00

Practice: 380 - Windbreak/Shelterbelt Establishment and Renovation

Scenario #3 - Hardwood trees, potted

Scenario Description:

Use the shrub, conifer, and hardwood scenarios of this practice to design windbreak as needed. Usually, a multi-row windbreak of low growing shrubs (outside row), tall growing hardwoods (inside row), and conifers (middle row) can provide multiple benefits. For multiple rows, planting should be staggered in adjacent rows. Consider using evergreen conifers when planting around confined animal operations for odor control. Windbreaks in and around pastures provide shade to livestock. Windbreaks can be as wide as needed but common sizes can be as wide as 5 rows or as narrow as 1 row. Can be mix of shrub, hardwood, or conifer as well as a mix of species. Spacing of trees within the rows should be kept relatively wide to promote low branching and wide crown development (4 to 6 ft for shrubs and 10 to 12 ft for trees). A larger windbreak provides more opportunity for species diversity. An example would be mast trees and shrubs for food, and dense growing conifers, deciduous trees and shrubs for shelter and cover. Space trees from 10 to 15 feet apart and shrubs 3 to 13 feet apart depending on the species and its growth habits. The minimum spacing between rows for multiple row plantings is 12 feet, and the maximum spacing is 20 feet. Rows should be 4 ft wider than equipment used for maintenance. This practice is typically applied to crop, pasture or confined animal operations. Resource Concerns to be addressed may include: Soil Erosion (wind); Excess/Insufficient Water (inefficient moisture management); Water Quality Degradation (excess nutrients in surface waters, excessive sediment in surface waters,); Degraded Plant Condition (undesirable plant productivity and health); Inadequate habitat for Fish and Wildlife (food, cover/shelter, continuity); Inefficient Energy Use (facilities, farming/ranching practices and field operations); Inadequate shelter for Livestock (cover/shelter); or Objectionable Odors (air quality).

Before Situation:

Agricultural field, livestock paddock, feedlot or farmstead needing protection from wind, additional wildlife food and cover, livestock shelter or management of objectionsble odors.

After Situation:

Wind velocity suitably reduced to reduce soil erosion, or to manage objectionable odors. Additional livestock shelter or wildlife food and cover is created.

Feature Measure: length of windbreak row(s)

Scenario Unit: Each

Scenario Typical Size: 50.0

Scenario Total Cost: $1,072.10

Scenario Cost/Unit: $21.44

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Auger, Post driver attachment	934	Auger or post driver attachment to a tractor or skidsteer. Does not include power unit. Labor not included.	Hours	$12.82	4	$51.28
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hours	$22.62	4	$90.48
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	4	$92.72
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	4	$167.12
Materials						
Tree, Hardwood, Potted, Medium	1532	Potted hardwood seedling, 2 gallons or larger. Includes materials and shipping only.	Each	$9.28	50	$464.00
Wire flags	1586	Small vinyl flags attached to wire stakes, typically, 36 in. length, for marking tree rows	Each	$0.13	50	$6.50
Mobilization						
Mobilization, Material, distance > 50 miles	1043	Mobilization cost of materials for special cases where the distance from the supplier delivery point to the job site exceeds 50 miles. The costs for shipping by UPS or bulk freight shipping to a location within 50 miles of the job site have already been included in the component price.	Dollars	$1.00	200	$200.00

Practice: 380 - Windbreak/Shelterbelt Establishment and Renovation

Scenario #4 - Conifer-bareroot

Scenario Description:

Use the shrub, conifer, and hardwood scenarios of this practice to design windbreak as needed. Usually, a multi-row windbreak of low growing shrubs (outside row), tall growing hardwoods (inside row), and conifers (middle row) can provide multiple benefits. For multiple rows, planting should be staggered in adjacent rows. Consider using evergreen conifers when planting around confined animal operations for odor control. Windbreaks in and around pastures provide shade to livestock. Windbreaks can be as wide as needed but common sizes can be as wide as 5 rows or as narrow as 1 row. Can be mix of shrub, hardwood, or conifer as well as a mix of species. Spacing of trees within the rows should be kept relatively wide to promote low branching and wide crown development (4 to 6 ft for shrubs and 10 to 12 ft for trees). A larger windbreak provides more opportunity for species diversity. An example would be mast trees and shrubs for food, and dense growing conifers, deciduous trees and shrubs for shelter and cover. Space trees from 10 to 15 feet apart and shrubs 3 to 13 feet apart depending on the species and its growth habits. The minimum spacing between rows for multiple row plantings is 12 feet, and the maximum spacing is 20 feet. Rows should be 4 ft wider than equipment used for maintenance. This practice is typically applied to crop, pasture or confined animal operations. Resource Concerns to be addressed may include: Soil Erosion (wind); Excess/Insufficient Water (inefficient moisture management); Water Quality Degradation (excess nutrients in surface waters, excessive sediment in surface waters,); Degraded Plant Condition (undesirable plant productivity and health); Inadequate habitat for Fish and Wildlife (food, cover/shelter, continuity); Inefficient Energy Use (facilities, farming/ranching practices and field operations); Inadequate shelter for Livestock (cover/shelter); or Objectionable Odors (air quality).

Before Situation:

Agricultural field, livestock paddock, feedlot or farmstead needing protection from wind, additional wildlife food and cover, livestock shelter or management of objectionsble odors.

After Situation:

Wind velocity suitably reduced to reduce soil erosion, or to manage objectionable odors. Additional livestock shelter or wildlife food and cover is created.

Feature Measure: length of windbreak row(s)

Scenario Unit: Each

Scenario Typical Size: 132.0

Scenario Total Cost: $180.92

Scenario Cost/Unit: $1.37

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Hand tools, tree planting	1590	Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included.	Hours	$12.58	2	$25.16
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	2	$46.36
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	2	$83.56
Materials						
Tree, Conifer, Seedling, Small	1512	Containerized conifer seedlings, 4 or 6 cubic inches; or bare root conifer seedlings 1+0 (one-year old seedlings grown in their original seedbed). Includes materials and shipping only.	Each	$0.12	132	$15.84
Mobilization						
Mobilization, Material, distance > 50 miles	1043	Mobilization cost of materials for special cases where the distance from the supplier delivery point to the job site exceeds 50 miles. The costs for shipping by UPS or bulk freight shipping to a location within 50 miles of the job site have already been included in the component price.	Dollars	$1.00	10	$10.00

Practice: 380 - Windbreak/Shelterbelt Establishment and Renovation

Scenario #5 - Hardwood_ bareroot

Scenario Description:

Use the shrub, conifer, and hardwood scenarios of this practice to design windbreak as needed. Usually, a multi-row windbreak of low growing shrubs (outside row), tall growing hardwoods (inside row), and conifers (middle row) can provide multiple benefits. For multiple rows, planting should be staggered in adjacent rows. Consider using evergreen conifers when planting around confined animal operations for odor control. Windbreaks in and around pastures provide shade to livestock. Windbreaks can be as wide as needed but common sizes can be as wide as 5 rows or as narrow as 1 row. Can be mix of shrub, hardwood, or conifer as well as a mix of species. Spacing of trees within the rows should be kept relatively wide to promote low branching and wide crown development (4 to 6 ft for shrubs and 10 to 12 ft for trees). A larger windbreak provides more opportunity for species diversity. An example would be mast trees and shrubs for food, and dense growing conifers, deciduous trees and shrubs for shelter and cover. Space trees from 10 to 15 feet apart and shrubs 3 to 13 feet apart depending on the species and its growth habits. The minimum spacing between rows for multiple row plantings is 12 feet, and the maximum spacing is 20 feet. Rows should be 4 ft wider than equipment used for maintenance. This practice is typically applied to crop, pasture or confined animal operations. Resource Concerns to be addressed may include: Soil Erosion (wind); Excess/Insufficient Water (inefficient moisture management); Water Quality Degradation (excess nutrients in surface waters, excessive sediment in surface waters,); Degraded Plant Condition (undesirable plant productivity and health); Inadequate habitat for Fish and Wildlife (food, cover/shelter, continuity); Inefficient Energy Use (facilities, farming/ranching practices and field operations); Inadequate shelter for Livestock (cover/shelter); or Objectionable Odors (air quality).

Before Situation:

Agricultural field, livestock paddock, feedlot or farmstead needing protection from wind, additional wildlife food and cover, livestock shelter or management of objectionsble odors.

After Situation:

Wind velocity suitably reduced to reduce soil erosion, or to manage objectionable odors. Additional livestock shelter or wildlife food and cover is created.

Feature Measure: length of windbreak row(s)

Scenario Unit: Each

Scenario Typical Size: 132.0

Scenario Total Cost: $248.24

Scenario Cost/Unit: $1.88

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Hand tools, tree planting	1590	Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included.	Hours	$12.58	2	$25.16
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	2	$46.36
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	2	$83.56
Materials						
Tree, Hardwood, Seedling, Small	1509	Bare root hardwood seedlings 6 to 18 inches tall; includes tropical containerized seedlings of 8 cubic inches or smaller. Includes materials and shipping only.	Each	$0.63	132	$83.16
Mobilization						
Mobilization, Material, distance > 50 miles	1043	Mobilization cost of materials for special cases where the distance from the supplier delivery point to the job site exceeds 50 miles. The costs for shipping by UPS or bulk freight shipping to a location within 50 miles of the job site have already been included in the component price.	Dollars	$1.00	10	$10.00

Practice: 380 - Windbreak/Shelterbelt Establishment and Renovation

Scenario #6 - Shrub-bareroot

Scenario Description:

Use the shrub, conifer, and hardwood scenarios of this practice to design windbreak as needed. Usually, a multi-row windbreak of low growing shrubs (outside row), tall growing hardwoods (inside row), and conifers (middle row) can provide multiple benefits. For multiple rows, planting should be staggered in adjacent rows. Consider using evergreen conifers when planting around confined animal operations for odor control. Windbreaks in and around pastures provide shade to livestock. Windbreaks can be as wide as needed but common sizes can be as wide as 5 rows or as narrow as 1 row. Can be mix of shrub, hardwood, or conifer as well as a mix of species. Spacing of trees within the rows should be kept relatively wide to promote low branching and wide crown development (4 to 6 ft for shrubs and 10 to 12 ft for trees). A larger windbreak provides more opportunity for species diversity. An example would be mast trees and shrubs for food, and dense growing conifers, deciduous trees and shrubs for shelter and cover. Space trees from 10 to 15 feet apart and shrubs 3 to 13 feet apart depending on the species and its growth habits. The minimum spacing between rows for multiple row plantings is 12 feet, and the maximum spacing is 20 feet. Rows should be 4 ft wider than equipment used for maintenance. This practice is typically applied to crop, pasture or confined animal operations. Resource Concerns to be addressed may include: Soil Erosion (wind); Excess/Insufficient Water (inefficient moisture management); Water Quality Degradation (excess nutrients in surface waters, excessive sediment in surface waters,); Degraded Plant Condition (undesirable plant productivity and health); Inadequate habitat for Fish and Wildlife (food, cover/shelter, continuity); Inefficient Energy Use (facilities, farming/ranching practices and field operations); Inadequate shelter for Livestock (cover/shelter); or Objectionable Odors (air quality).

Before Situation:

Agricultural field, livestock paddock, feedlot or farmstead needing protection from wind, additional wildlife food and cover, livestock shelter or management of objectionsble odors.

After Situation:

Wind velocity suitably reduced to reduce soil erosion, or to manage objectionable odors. Additional livestock shelter or wildlife food and cover is created.

Feature Measure: length of windbreak row(s)

Scenario Unit: Each

Scenario Typical Size: 264.0

Scenario Total Cost: $514.12

Scenario Cost/Unit: $1.95

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Hand tools, tree planting	1590	Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included.	Hours	$12.58	2	$25.16
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	4	$92.72
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	4	$167.12
Materials						
Shrub, Seedling, Medium	1507	Bare root shrub seedling, 18 to 36 inches tall; includes tropical containerized seedlings 10 to 20 cubic inches. Includes materials and shipping only.	Each	$0.83	264	$219.12
Mobilization						
Mobilization, Material, distance > 50 miles	1043	Mobilization cost of materials for special cases where the distance from the supplier delivery point to the job site exceeds 50 miles. The costs for shipping by UPS or bulk freight shipping to a location within 50 miles of the job site have already been included in the component price.	Dollars	$1.00	10	$10.00

Practice: 381 - Silvopasture

Scenario #1 - Establish Trees

Scenario Description:

Establishment of trees into an existing pasture that contains adequate native or introduced forage.

Before Situation:

Pasture with suitable forage for livestock. There is very little protection from the elements (sun, wind, etc.) available to the livestock. Additionally, there are no long-term wood products being produced. Resource Concerns include Degraded Plant Condition - Undesirable Plant Productivity and Health, Inadequate Structure and Composition, Livestock Production Limitation - Inadequate Livestock Shelter.

After Situation:

The site will be prepared using Tree/Shrub Site Preparation (490), if needed, and then 200 to 400 pine trees per acre will be planted, providing shade and wind protection to livestock and wildlife, and, in time, producing a viable wood products crop. Per the conservation practice standard, livestock grazing will be deferred until the trees reach adequate height to resist damage, or use exclusion measures are established. All Resource Concerns listed above are adressed.

Feature Measure: Acres of silvopasture established

Scenario Unit: Each

Scenario Typical Size: 4,000.0

Scenario Total Cost: $1,096.32

Scenario Cost/Unit: $0.27

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hours	$22.62	8	$180.96
Mechanical tree planter	1600	Mechanical tree planter. Requires a pulling unit of either tractor or small dozer depending upon site conditions. Does not include labor.	Hours	$5.93	8	$47.44
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	8	$185.44
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	8	$202.48
Materials						
Tree, Conifer, Seedling, Small	1512	Containerized conifer seedlings, 4 or 6 cubic inches; or bare root conifer seedlings 1+0 (one-year old seedlings grown in their original seedbed). Includes materials and shipping only.	Each	$0.12	4000	$480.00

Practice: 381 - Silvopasture

Scenario #2 - Thin Forest

Scenario Description:

Reduce density of existing forest stand (pine or hardwood, native or planted) so as to achieve 35 to 45 percent canopy cover followed by establishment of native grasses. Typically, forest sites require thinning and tillage to provide a favorable seedbed for the establishment of forages. Use heavy equipment (usually bull dozers, masticator, or mulcher & not typical farming equipment) to reduce the stocking level of a stand of desirable trees.

Before Situation:

Forest stand with very little available forage for livestock due to the dense shade of the tree canopy. Resource Concerns include Degraded Plant Condition - Undesirable Plant Productivity and Health, Inadequate Structure and Composition, Wildfire Hazard, Excessive Biomass Accumulation; Livestock Production Limitation - Inadequate Feed and Forage, Inadequate Livestock Shelter, and Forage Quality and Palatability,

After Situation:

The stand is thinned which will allow adequate sunlight to the forest floor for grass production, yet still provide shade and some protection from the elements for livestock and wildlife. The soil is prepared for planting using chemical and mechanical means. All Resource Concerns listed above are adressed.

Feature Measure: Acres of silvopasture established

Scenario Unit: Acres

Scenario Typical Size: 10.0

Scenario Total Cost: $4,212.59

Scenario Cost/Unit: $421.26

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	8	$189.92
Mechanical cutter, chopper	943	Forestry mulcher, flail shredder, hydro axe, brush cutter, etc. Equipment and power unit costs. Labor not included.	Hours	$95.19	24	$2,284.56
Labor						
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	24	$645.60
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	8	$744.32
Materials						
Tree Marking Paint	313	Trees to be cut through tree marking are physically identified through the application of paint on the tree. Typically one quart of paint is used to mark one acre of trees. Includes materials and shipping only.	Acres	$9.43	10	$94.30
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 381 - Silvopasture

Scenario #3 - Establish Native Grass

Scenario Description:

Establishment of native grasses into an existing or planted stand of trees.

Before Situation:

Existing forest stand (pine or hardwood, native or planted) with 35 to 45 percent canopy cover or newly planted stand of trees with 200 to 400 trees per acre. There is very little available forage for livestock, due to undesirable species in the understory. Resource Concerns include Degraded Plant Condition - Undesirable Plant Productivity and Health, Inadequate Structure and Composition; Livestock Production Limitation - Inadequate Feed and Forage.

After Situation:

The soil is prepared for planting using chemical and mechanical means, then a mix of native warm-season grasses will be established, providing forage to livestock and wildlife. All Resource Concerns listed above are adressed.

Feature Measure: Acres of silvopasture established

Scenario Unit: Acres

Scenario Typical Size: 10.0

Scenario Total Cost: $3,792.00

Scenario Cost/Unit: $379.20

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acres	$11.35	10	$113.50
Tillage, Primary	946	Includes heavy disking (offset) or chisel plow. Includes equipment, power unit and labor costs.	Acres	$15.95	10	$159.50
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$6.00	10	$60.00
Fertilizer, ground application, dry bulk	950	Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$7.35	10	$73.50
Lime application	953	Lime application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$8.51	10	$85.10
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	10	$207.90
Cultipacking	1100	Includes equipment, power unit and labor costs.	Acres	$9.21	10	$92.10
Materials						
Phosphorus, P2O5	73	Price per pound of P2O5 supplied by Superphosphate. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.58	500	$290.00
Potassium, K2O	74	K2O supplied by Muriate Of Potash. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.42	500	$210.00
Lime, ENM	75	Fertilizer: Limestone Spread on field.	Ton	$63.05	20	$1,261.00
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$8.98	10	$89.80
Native Perennial Grasses, Low Density	2750	Native perennial grasses, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Includes material and shipping.	Acres	$114.96	10	$1,149.60

Practice: 381 - Silvopasture

Scenario #4 - Establish Introduced Grass

Scenario Description:

Establishment of introduced grasses into an existing stand of trees that is already at an adequate density .

Before Situation:

Forest stand (pine or hardwood, native or planted) with 35 to 45 percent canopy cover for warm season introduced grasses or 60 percnet canopy cover for cool season introduced grasses. There is very little available forage for livestock, due to undesirable species in the understory. Resource Concerns include Degraded Plant Condition - Undesirable Plant Productivity and Health, Inadequate Structure and Composition; Livestock Production Limitation - Inadequate Feed and Forage.

After Situation:

The soil is prepared for planting using chemical and mechanical means, then a mix of warm season introduced grasses or introduced cool-season grasses and legumes will be established, providing forage to livestock and wildlife. All Resource Concerns listed above are adressed.

Feature Measure: Acres of silvopasture established

Scenario Unit: Acres

Scenario Typical Size: 10.0

Scenario Total Cost: $3,133.70

Scenario Cost/Unit: $313.37

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acres	$11.35	10	$113.50
Tillage, Primary	946	Includes heavy disking (offset) or chisel plow. Includes equipment, power unit and labor costs.	Acres	$15.95	10	$159.50
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$6.00	10	$60.00
Fertilizer, ground application, dry bulk	950	Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$7.35	10	$73.50
Lime application	953	Lime application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$8.51	10	$85.10
Seeding Operation, Broadcast, Ground	959	Broadcast seed via ground operation. May require post tillage operation to incorporate seed. Includes equipment, power unit and labor costs.	Acres	$11.77	10	$117.70
Cultipacking	1100	Includes equipment, power unit and labor costs.	Acres	$9.21	10	$92.10
Materials						
Nitrogen (N), Ammonium Nitrate	69	Price per pound of N supplied by Ammonium Nitrate. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.59	400	$236.00
Phosphorus, P2O5	73	Price per pound of P2O5 supplied by Superphosphate. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.58	500	$290.00
Potassium, K2O	74	K2O supplied by Muriate Of Potash. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.42	500	$210.00
Lime, ENM	75	Fertilizer: Limestone Spread on field.	Ton	$63.05	20	$1,261.00
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$8.98	10	$89.80
Introduced Perennial Grasses, Legumes and/or Forbs, Low Density	2747	Introduced perennial grasses, legumes, and/or forbs, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Includes material and shipping.	Acres	$34.55	10	$345.50

Practice: 382 - Fence

Scenario #1 - Barbed/Smooth Wire

Scenario Description:

Multi-strand, Barbed or Smooth Wire - Installation of fence will allow for implementation of grazing management that allows for an adequate rest and recovery period, protection of sensitive area, improved water quality, reduction of noxious and invasive weeds. Constructed using fencing materials rather than a pre-manufactured gate.

Before Situation:

On grazing lands health and vigor are negatively impacted by poor grazing distribution, timing of grazing and inadequate rest and recovery periods. Water quality is impacted by increased erosion and runoff, cattle access to water bodies is uncontrolled. Reduced vegetative cover increases the opportunity for encroachment of noxious and invasive weeds.

After Situation:

Installation of fence will allow for implementation of grazing management that allows for an adequate rest and recovery period, protection of sensitive area, improved water quality, reduction of noxious and invasive weeds. Fence includes posts, wire, fasteners, gates, etc... Four strand wire is commonly installed. Fence will be installed with wildlife friendly considerations.

Feature Measure: Length of Fence

Scenario Unit: Feet

Scenario Typical Size: 2,640.0

Scenario Total Cost: $7,435.63

Scenario Cost/Unit: $2.82

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Auger, Post driver attachment	934	Auger or post driver attachment to a tractor or skidsteer. Does not include power unit. Labor not included.	Hours	$12.82	40	$512.80
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	20	$474.80
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hours	$22.62	40	$904.80
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	96	$2,225.28
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	40	$1,012.40
Materials						
Wire, Barbed, Galvanized, 12.5 Gauge, 1,320' roll	1	Galvanized 12.5 gauge, 1,320' roll. Includes materials and shipping only.	Each	$79.36	8	$634.88
Post, Wood, CCA treated, 4 in x 8 ft	10	Wood Post, Line 4 inch X 8 foot, CCA Treated. Includes materials and shipping only.	Each	$10.47	6	$62.82
Post, Wood, CCA treated, 6 in. x 8 ft.	12	Wood Post, End 6 inch dia. X 8 ft., CCA Treated. Includes materials and shipping only.	Each	$18.55	12	$222.60
Post, Steel T, 1.33 lbs, 6 ft.	15	Steel Post, Studded 6 ft. - 1.33 lb. Includes materials and shipping only.	Each	$5.95	130	$773.50
Gate, Pipe, 10 ft.	1056	6 rail tube gate, 16 gauge. Includes materials and shipping only.	Each	$185.44	2	$370.88
Mobilization						
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	$70.11	1	$70.11
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	1	$170.76

Practice: 382 - Fence

Scenario #2 - Woven Wire

Scenario Description:

Woven - Installation of fence will allow for implementation of a grazing management that allows for an adequate rest and recovery period, protection of sensitive area, improved water quality, reduction of noxious and invasive weeds. Woven wire is typically used in applications with sheep, goats, hogs, wildlife exclusion, shelterbelt/tree protection, etc. Constructed using fencing materials rather than a pre-manufactured gate.

Before Situation:

On grazing lands health and vigor are negatively impacted by poor grazing distribution, timing of grazing and inadequate rest and recovery periods. Water quality is impacted by increased erosion and runoff, livestock access to water bodies is uncontrolled. Reduced vegetative cover increases opportunity for encroachment of noxious and invasive weeds.

After Situation:

Installation of fence will allow for implementation of a rotational grazing plan that allows for an adequate rest and recovery period, protection of sensitive area, improved water quality, reduction of noxious and invasive weeds. Woven wire fence includes posts, wire, fasteners, gates, etc... Woven wire is typically used in applications with sheep, goats, hogs, wildlife exclusion, shelterbelt/tree protection, etc.

Feature Measure: Length of Fence

Scenario Unit: Feet

Scenario Typical Size: 2,640.0

Scenario Total Cost: $8,703.75

Scenario Cost/Unit: $3.30

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Auger, Post driver attachment	934	Auger or post driver attachment to a tractor or skidsteer. Does not include power unit. Labor not included.	Hours	$12.82	40	$512.80
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	10	$237.40
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hours	$22.62	40	$904.80
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	96	$2,225.28
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	40	$1,012.40
Materials						
Wire, Barbed, Galvanized, 12.5 Gauge, 1,320' roll	1	Galvanized 12.5 gauge, 1,320' roll. Includes materials and shipping only.	Each	$79.36	4	$317.44
Wire, Woven, Galvanized, 12.5 Gauge, 32 in	3	Galvanized 12.5 gauge, 32 inch - 330 foot roll. Includes materials and shipping only.	Each	$162.74	8	$1,301.92
Post, Wood, CCA treated, 3-4 in. x 7 ft.	9	Wood Post, Line 3-4 inch dia. X 7 ft., CCA Treated. Includes materials and shipping only.	Each	$8.06	6	$48.36
Post, Wood, CCA treated, 6 in. x 8 ft.	12	Wood Post, End 6 inch dia. X 8 ft., CCA Treated. Includes materials and shipping only.	Each	$18.55	12	$222.60
Post, Steel T, 1.33 lbs, 6 ft.	15	Steel Post, Studded 6 ft. - 1.33 lb. Includes materials and shipping only.	Each	$5.95	220	$1,309.00
Gate, Pipe, 10 ft.	1056	6 rail tube gate, 16 gauge. Includes materials and shipping only.	Each	$185.44	2	$370.88
Mobilization						
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	$70.11	1	$70.11
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	1	$170.76

Practice: 382 - Fence

Scenario #55 - Electric 3+ Wires

Scenario Description:

Electric - Installation of 3+ wire electric fence will allow for implementation of a grazing management that allows for an adequate rest and recovery period, protection of sensitive area, improved water quality, reduction of noxious and invasive weeds.

Before Situation:

On grazinglands health and vigor are negatively impacted by poor grazing distribution, timing of grazing and inadequate rest and recovery periods. Water quality is impacted by increased erosion and runoff, cattle access to water bodies is uncontrolled. Reduced vegetative cover increases the opportunity for encroachment of noxious and invasive weeds.

After Situation:

Installation of fence will allow for implementation of grazing management that allows for an adequate rest and recovery period, protection of sensitive area, improved water quality, reduction of noxious and invasive weeds. Fence includes posts, wire, fasteners, gates, fence charger, etc... Two strand wire is commonly installed. Fence will be installed with wildlife friendly considerations.

Feature Measure: Length of Fence

Scenario Unit: Feet

Scenario Typical Size: 1,320.0

Scenario Total Cost: $2,942.52

Scenario Cost/Unit: $2.23

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Auger, Post driver attachment	934	Auger or post driver attachment to a tractor or skidsteer. Does not include power unit. Labor not included.	Hours	$12.82	4	$51.28
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hours	$22.62	4	$90.48
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	20	$463.60
Materials						
Wire, High Tensile, 12.5 Gauge, 4,000' roll	2	High Tensile 12.5 gauge, 4,000' roll. Includes materials and shipping only.	Each	$123.90	2	$247.80
Post, Wood, CCA treated, 4 in x 8 ft	10	Wood Post, Line 4 inch X 8 foot, CCA Treated. Includes materials and shipping only.	Each	$10.47	4	$41.88
Post, Wood, CCA treated, 6 in. x 8 ft.	12	Wood Post, End 6 inch dia. X 8 ft., CCA Treated. Includes materials and shipping only.	Each	$18.55	8	$148.40
Post, Fiberglass, 7/8 in X 6 ft	18	Fiberglass line post, 7/8 inch diameter X 6 foot length. Includes materials and shipping only.	Each	$10.17	27	$274.59
Electric, Ground Rods	20	Electric, Ground Rod for electric fence. Includes materials and shipping only.	Each	$12.55	7	$87.85
Electric, Ground Rod Clamps	21	Electric, Ground Rod Clamps for electric fence. Includes materials and shipping only.	Each	$2.57	7	$17.99
Electric, Lightening Diverter	22	Electric, Lightening diverter for electric fence. Includes materials and shipping only.	Each	$9.27	1	$9.27
Electric, Insulated cable	23	Electric, Insulated cable for electric fence. Typically in spools of 100 to 200 feet. Includes materials and shipping only.	Each	$39.07	30	$1,172.10
Electric, Power Surge Protector	24	Electric, Power Surge Protector for electric fence. Includes materials and shipping only.	Each	$15.80	1	$15.80
Electric, Tester	26	Electric, Tester for electric fence. Includes materials and shipping only.	Each	$50.23	1	$50.23
Electric, Energizer, 3-4 joule	28	Electric, Energizer, 3-4 joule for electric fence. Includes materials and shipping only.	Each	$271.25	1	$271.25

Practice: 382 - Fence

Scenario #56 - Electric 1-2 Wire(s)

Scenario Description:

Electric - Installation of 1-2 wire electric fence will allow for implementation of a grazing management that allows for an adequate rest and recovery period, protection of sensitive area, improved water quality, reduction of noxious and invasive weeds.

Before Situation:

On grazinglands health and vigor are negatively impacted by poor grazing distribution, timing of grazing and inadequate rest and recovery periods. Water quality is impacted by increased erosion and runoff, cattle access to water bodies is uncontrolled. Reduced vegetative cover increases the opportunity for encroachment of noxious and invasive weeds.

After Situation:

Installation of fence will allow for implementation of grazing management that allows for an adequate rest and recovery period, protection of sensitive area, improved water quality, reduction of noxious and invasive weeds. Fence includes posts, wire, fasteners, gates, fence charger, etc... Two strand wire is commonly installed. Fence will be installed with wildlife friendly considerations.

Feature Measure: Length of Fence

Scenario Unit: Feet

Scenario Typical Size: 1,320.0

Scenario Total Cost: $2,332.34

Scenario Cost/Unit: $1.77

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Auger, Post driver attachment	934	Auger or post driver attachment to a tractor or skidsteer. Does not include power unit. Labor not included.	Hours	$12.82	2	$25.64
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hours	$22.62	2	$45.24
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	8	$185.44
Materials						
Wire, High Tensile, 12.5 Gauge, 4,000' roll	2	High Tensile 12.5 gauge, 4,000' roll. Includes materials and shipping only.	Each	$123.90	1	$123.90
Post, Wood, CCA treated, 5 in. x 8 ft.	11	Wood Post, End 5 inch dia. X 8 ft., CCA Treated. Includes materials and shipping only.	Each	$13.26	4	$53.04
Post, Fiberglass, 7/8 in X 6 ft	18	Fiberglass line post, 7/8 inch diameter X 6 foot length. Includes materials and shipping only.	Each	$10.17	27	$274.59
Electric, Ground Rods	20	Electric, Ground Rod for electric fence. Includes materials and shipping only.	Each	$12.55	7	$87.85
Electric, Ground Rod Clamps	21	Electric, Ground Rod Clamps for electric fence. Includes materials and shipping only.	Each	$2.57	7	$17.99
Electric, Lightening Diverter	22	Electric, Lightening diverter for electric fence. Includes materials and shipping only.	Each	$9.27	1	$9.27
Electric, Insulated cable	23	Electric, Insulated cable for electric fence. Typically in spools of 100 to 200 feet. Includes materials and shipping only.	Each	$39.07	30	$1,172.10
Electric, Power Surge Protector	24	Electric, Power Surge Protector for electric fence. Includes materials and shipping only.	Each	$15.80	1	$15.80
Electric, Tester	26	Electric, Tester for electric fence. Includes materials and shipping only.	Each	$50.23	1	$50.23
Electric, Energizer, 3-4 joule	28	Electric, Energizer, 3-4 joule for electric fence. Includes materials and shipping only.	Each	$271.25	1	$271.25

Practice: 383 - Fuel Break

Scenario #1 - Grinder

Scenario Description:

Dwelling or structure exists in or adjacent to a overstocked forest standwith higher than normal wildfire threat. Fuel Break installation requires tree thinning, treating woody residue, pruning and mowing to remove wildfire hazard to stand and structure. Treating woody residue (piling/burning, crushing, grinding or off-site removal) and mowing are mostly mechanized with some hand treatment. Resource concerns are degraded plant condition - wildfire hazard, excess biomass accumulation & undesirable productivity and health.

Before Situation:

Stand condition creates conditions conducive to wildfire movement across the landscape. Higher than normal fuel load is created by tree crowns touching, trees retaining limbs down to understory vegetation (creating a "ladder" for fire movement into the overstory), understory vegetation (brush and grasses), and existing woody residue. Slope of terrain increases fire hazard. Existing conditions can be rated as a high to severe fire hazard. Dwelling or structure and forest stand is at risk of loss if a wildfire should occur.

After Situation:

Fuel Break is installed around structure to reduce intensity and rate of spread of a wildfire. Defensible space is provided for the structure. Existing trees should survive a wildfire. Width of fue break can vary from 30' to 250' depending on slope and fuel type. Trees are thinned so as to have at least 20' between the edge of the crowns. Trees are pruned so as not to have any branches within 15' of the ground. All woody residue (thinned trees, branches and brush) are mostly ground up but some is piled/burned, hauled of site or lopped/scattered) understory vegetation is cut down to less than 1 foot in height. Cut stumps have been chemically treated to control sprouting.

Feature Measure: Area of Treatment

Scenario Unit: Acres

Scenario Typical Size: 4.0

Scenario Total Cost: $2,924.69

Scenario Cost/Unit: $731.17

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Mechanical cutter, chopper	943	Forestry mulcher, flail shredder, hydro axe, brush cutter, etc. Equipment and power unit costs. Labor not included.	Hours	$95.19	16	$1,523.04
Chemical, spot treatment, single stem application	964	Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included.	Hours	$68.31	3	$204.93
Pruning tools, hand tools	1318	Pruning tools, hand tools, shears, loppers, pole saw, handsaw. Material costs only. Labor not included.	Hours	$2.22	16	$35.52
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	16	$370.88
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	16	$430.40
Materials						
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$8.98	4	$35.92
Mobilization						
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	$70.11	1	$70.11
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 383 - Fuel Break

Scenario #17 - Fuel Break

Scenario Description:

Fuel Break installation requires tree thinning, treating woody residue, pruning, and mowing. Thinning treatment and pruning is done by hand, treating woody residue (piling/burning, crushing, or off-site removal) and mowing are mechanized. Resource concerns are degraded plant condition - wildfire hazard, excess biomass accumulation & undesirable productivity and health.

Before Situation:

Forest stand is overstocked with desirable and undesirable trees. Overstocking creates conditions conducive to wildfire movement across the landscape, and severe loss/damage of the forest stand. Shrub levels are high and significanly increase wildfire risk. Tree crowns are touching, trees retain limbs down to understory vegetation creating a "ladder" for fire movement into the overstory, and understory vegetation (brush and grasses) create a significant fuel load to rate a high to severe fire hazard. The terrain is moderately to steeply sloped (1-30%), increasing difficulty as slope steepens.

After Situation:

Fuel Break is installed at the property line or a key locations to reduce crown fire spread. Size of fuel break is 4 acres; the width varies due to site conditions. The trees are thinned so open gaps are created in crown overstory, branches on remaining trees are pruned to 8 to 10 feet in height, all woody residue (thinned trees and pruned branches) are treated (piled/burned or lopped/scattered) so little remains in the fuel break and understory vegetation is mowed down to less than 1 foot in height. Cut stumps have been chemically treated to control sprouting.

Feature Measure: Area of Treatment

Scenario Unit: Acres

Scenario Typical Size: 4.0

Scenario Total Cost: $6,180.37

Scenario Cost/Unit: $1,545.09

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Dozer, 140 HP	927	Track mounted Dozer with horsepower range of 125 to 160. Equipment and power unit costs. Labor not included.	Hours	$97.92	10	$979.20
Chainsaw	937	Equipment and power unit costs. Labor not included.	Hours	$7.00	80	$560.00
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	8	$189.92
Mower, Bush Hog	940	Equipment and power unit costs. Labor not included.	Hours	$49.85	8	$398.80
Chemical, spot treatment, single stem application	964	Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included.	Hours	$68.31	8	$546.48
Pruning tools, hand tools	1318	Pruning tools, hand tools, shears, loppers, pole saw, handsaw. Material costs only. Labor not included.	Hours	$2.22	8	$17.76
Pruning tool, pole saw	1319	Gasoline powered pole chainsaw. Labor not included.	Hours	$8.55	8	$68.40
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	80	$1,854.40
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	8	$202.48
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	10	$269.00
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	12	$501.36
Materials						
Tree Marking Paint	313	Trees to be cut through tree marking are physically identified through the application of paint on the tree. Typically one quart of paint is used to mark one acre of trees. Includes materials and shipping only.	Acres	$9.43	4	$37.72
Herbicide, Triclopyor	338	Refer to WIN-PST for product names and active ingredients. Materials and shipping	Acres	$32.55	4	$130.20
Mobilization						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	1	$170.76
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 383 - Fuel Break

Scenario #34 - Fuel Break- Masticator

Scenario Description:

Fuel Break installation requires tree thinning, treating woody residue, pruning, and mowing. Thinning treatment and pruning is done by hand; treating woody residue (piling/burning, crushing, or off-site removal) and mowing are mostly mechanized. Resource concerns are degraded plant condition - wildfire hazard, excess biomass accumulation & undesirable productivity and health.

Before Situation:

The forest stand is overstocked with trees (desirable and undesirable) and is at risk of loss if a wildfire should occur. Tree crowns are touching, trees retain limbs down to understory vegetation creating a "ladder" for fire movement into the overstory, and understory vegetation (brush and grasses) create a significant fuel load to rate a high to severe fire hazard. Slope of terrain increases fire hazard. The terrain moderately sloped, 1-30+% increasing difficulty as slope steepens.

After Situation:

Fuel Break is installed at the property line or key locations to reduce crown fire spread. Size of fuel break is 4 acres; the width varies due to site conditions. The trees are thinned so open gaps are created in crown overstory, branches on remaining trees are pruned to 8 to 10 feet in height, all woody residue (thinned trees, pruned branches and brush) are mostly masticated but some is piled/burned, hauled of site or lopped/scattered) understory vegetation is cut down to less than 1 foot in height. Cut stumps have been chemically treated to control sprouting.

Feature Measure: Area of Treatment

Scenario Unit: Acres

Scenario Typical Size: 4.0

Scenario Total Cost: $6,089.73

Scenario Cost/Unit: $1,522.43

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Chainsaw	937	Equipment and power unit costs. Labor not included.	Hours	$7.00	60	$420.00
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	8	$189.92
Mower, Bush Hog	940	Equipment and power unit costs. Labor not included.	Hours	$49.85	5	$249.25
Mechanical cutter, chopper	943	Forestry mulcher, flail shredder, hydro axe, brush cutter, etc. Equipment and power unit costs. Labor not included.	Hours	$95.19	16	$1,523.04
Chemical, spot treatment, single stem application	964	Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included.	Hours	$68.31	8	$546.48
Pruning tools, hand tools	1318	Pruning tools, hand tools, shears, loppers, pole saw, handsaw. Material costs only. Labor not included.	Hours	$2.22	8	$17.76
Pruning tool, pole saw	1319	Gasoline powered pole chainsaw. Labor not included.	Hours	$8.55	8	$68.40
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	80	$1,854.40
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	5	$126.55
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	12	$501.36
Materials						
Tree Marking Paint	313	Trees to be cut through tree marking are physically identified through the application of paint on the tree. Typically one quart of paint is used to mark one acre of trees. Includes materials and shipping only.	Acres	$9.43	4	$37.72
Herbicide, Triclopyor	338	Refer to WIN-PST for product names and active ingredients. Materials and shipping	Acres	$32.55	4	$130.20
Mobilization						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	1	$170.76
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 384 - Woody Residue Treatment

Scenario #1 - Wood Residue Treatment

Scenario Description:

The use of heavy equipment similar to those used in logging to treat slash resulting from catastrophic events such as fire, wind, severe pest outbreak, ice storm, etc. This scenario will remove/treat the larger material the size of which is consistent with the large equipment used. Methods of treatment: Lopping and scatter: Lopping is the cutting of limbs, branches, treetops, small diameter trees, or other woody plant residue into lengths so that the remaining slash will lie close to the ground. Scattering is the spreading of lopped slash evenly over the ground so that the remaining slash will lie close to the ground. Piling and burning: Piling is placing, laying, heaping or stacking of slash into piles to facilitate intended burning. Burning is igniting piled slash under prescribed conditions to reduce the amount and continuity of fuels. Chipping: This method includes the mechanical conversion of slash to chips and chunks of varying sizes to distribute on site or utilized offsite as landscape mulch. Crushing: This method involves the use of heavy ground-based equipment that crushes/grinds slash to a depth not exceeding 1 foot. Resource concerns include: Excessive plant pest pressure, Potential emissions of particulate matter, Wildfire hazard from excessive biomass accumulation, and Habitat degradation. If the land is being prepared for tree planting, use Tree/Shrub Site Preparation instead.

Before Situation:

A large amount of slash and woody residue is created as a result of a non-silvicultural event such as a wind storm, wildfire, ice storm, pest outbreak, etc. Because the slash and residue is created by a catastrophic event that can cause tree-lodging, snags, broken tops, etc.; treatment is both difficult and dangerous. The presence of this material causes adverse effects on the forest include limiting access for management purposes, increasing the wildfire hazard, increasing the risk of potential harm to humans and livestock, and providing harboring sites for pests.

After Situation:

The material resulting from the catastrophic event is reduced to a level that will minimize the resource concerns. The clean up should allow the forest land to be utilized as is intended and reduce the risk of catastrophic wild fire. Installation of the practice should be complete within 3 years of the event.

Feature Measure: Acres of affected forest

Scenario Unit: Acres

Scenario Typical Size: 20.0

Scenario Total Cost: $10,079.10

Scenario Cost/Unit: $503.96

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Chainsaw	937	Equipment and power unit costs. Labor not included.	Hours	$7.00	10	$70.00
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	10	$237.40
Log skidder	942	Equipment and power unit costs. Labor not included.	Hours	$122.67	20	$2,453.40
Mechanical cutter, chopper	943	Forestry mulcher, flail shredder, hydro axe, brush cutter, etc. Equipment and power unit costs. Labor not included.	Hours	$95.19	40	$3,807.60
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	40	$927.20
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	60	$1,614.00
Mobilization						
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$484.75	2	$969.50

Practice: 384 - Woody Residue Treatment

Scenario #2 - Woody debris - Silviculture light

Scenario Description:

Treating an area of forest slash to reduce hazardous fuels and remove diseased or damaged trees due to insects or high winds while improving the organic matter, water quality and wildife habitat. Slash is treated both with hand (chainsaws, lopping, cutting, etc.) and mechanically (masticating, chipping, etc.). Typically done using both hand and light equipment. The resource concerns addressed include wildfire hazards from excessive debris, excessive down woody material to harbor insects and disease, plant health and vigor and inadequate wildlife habitat.

Before Situation:

Excessive woody material resulting from a heavy infestation of insects, disease or wind storms. The woody material is a wildlfire hazard, pest hazard and may negatively impact the residual plant health and vigor and wildlife habitat.

After Situation:

Wildfire and pest issues are reduced with the woody debris cut, shreaded, or chipped and spread out in better contact with the ground. The ground contact will spead up its decomposition improving the organic matter in the soil and allow the residual trees to benefit from these nutrients. Wildlife habitat is enhanced as sunlight can reach the forest floor where the former debris covered the site. Twenty acres is the typical scenario but larger or smaller acreages may be impacted.

Feature Measure: acres treated

Scenario Unit: Acres

Scenario Typical Size: 20.0

Scenario Total Cost: $3,616.32

Scenario Cost/Unit: $180.82

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Chainsaw	937	Equipment and power unit costs. Labor not included.	Hours	$7.00	24	$168.00
Mechanical cutter, chopper	943	Forestry mulcher, flail shredder, hydro axe, brush cutter, etc. Equipment and power unit costs. Labor not included.	Hours	$95.19	24	$2,284.56
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	24	$556.32
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	24	$607.44

Practice: 384 - Woody Residue Treatment

Scenario #3 - Orchard/Vineyard - Woody debris treatment

Scenario Description:

Woody debris created in an orchard/vineyard due to high winds, storms or insects/disease is chipped or mulched and removed from the site in order to accomplish one or more purposes: reducing wildfire fuels and insect/disease substrate; improving access; and/or reducing potential risk to livestock and humans. Air emission reductions are achieved by chipping or shredding the materials in lieu of burning them. Material may be incorporated in the soil, used as a dust suppressant on unpaved roads or traffic areas. Resource concerns include Wildfire hazard from excessive biomass accumulation and Emissions of particulate matter, plant health and vigor by reducing the risk of insects and disease and human by improving access and removing hazards.

Before Situation:

Wood waste created in an orchard or vinyard due to weather related storms or insects and disease is either burned, creating an air quality issue, or left in place creating a wildfire hazard, an impediment to access, or a potential site for harboring pests.

After Situation:

Treatment of orchard or vinyard debris is chipped and removed from the site which results in the reduction in air pollutants, improvement in access, and the reduction of sites that can harbor pests improving plant health and vigor.

Feature Measure: Acres of orchard/vineyard with slas

Scenario Unit: Acres

Scenario Typical Size: 20.0

Scenario Total Cost: $2,297.20

Scenario Cost/Unit: $114.86

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Skidsteer, 80 HP	933	Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$59.94	8	$479.52
Brush Chipper, 6 in. capacity	938	Brush Chipper, 6 inch capacity, typically 35 HP. Includes chipper and power unit. Labor not included.	Hours	$27.00	8	$216.00
Truck, dump, 8 CY	1401	Dump truck for moving bulk material. Typically capacity is 12 ton or 8 cubic yards. Includes equipment only.	Hours	$54.74	8	$437.92
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	24	$556.32
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	24	$607.44

Practice: 386 - Field Border

Scenario #37 - Field Border, Native Species, Forgone Income

Scenario Description:

A strip of permanent vegetation established at the edge or around the perimeter of an agricultural field. Practice includes seedbed prep and planting of native species. The area of the field border is taken out of production.

Before Situation:

Before practice conditions may vary widely. Fields may have erosion issues from wind or water, a field border may be needed to manage pest populations, protect soil and water quality, provide wildlife food and cover, provide pollinator habitat, or a field border may be used to increase carbon storage and improve air quality. Water quality, soil erosion and/or wildlife food and cover may all be primary resource concerns.

After Situation:

The 386 Implementation Requirements have been developed and applied for the site. This practice when applied around a field may support and connect other buffer practices within and between fields. Native grasses, legumes and forbs will be established in the field borders to the extent needed to meet the resource needs and producer objectives. Minimum field border widths shall be based on NRCS local design criteria specific to the purpose for installing the practice. Native species shall be selected that do not function as a host for diseases of a field crop and have physical characteristics necessary to control wind and water erosion to tolerable levels on the field border area.

Feature Measure: number of acres

Scenario Unit: Acres

Scenario Typical Size: 1.0

Scenario Total Cost: $426.52

Scenario Cost/Unit: $426.52

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acres	$11.35	3	$34.05
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	1	$20.79
Foregone Income						
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acres	$287.72	0.5	$143.86
FI, Soybeans Dryland	1961	Dryland Soybeans is Primary Crop	Acres	$225.71	0.5	$112.86
Materials						
Native Perennial Grasses, Low Density	2750	Native perennial grasses, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Includes material and shipping.	Acres	$114.96	1	$114.96

Practice: 386 - Field Border

Scenario #38 - Field Border, Introduced Species, Forgone Income

Scenario Description:

A strip of permanent vegetation established at the edge or around the perimeter of an agricultural field. Practice includes seedbed prep and planting of introduced species. The area of the field border is taken out of production.

Before Situation:

Before practice conditions may vary widely. Fields may have erosion issues from wind or water, a field border may be needed to manage pest populations, protect soil and water quality, provide wildlife food and cover, provide pollinator habitat, or a field border may be used to increase carbon storage and improve air quality. Water quality, soil erosion and/or wildlife food and cover may all be primary resource concerns.

After Situation:

The 386 Implementation Requirements have been developed and applied for the site. This practice when applied around a field may support and connect other buffer practices within and between fields. Introduced grasses and legumes will be established for the field border to the extent needed to meet the resource needs and producer objectives. Minimum field border widths shall be based on NRCS local design criteria specific to the purpose for installing the practice. Introduced species of grasses, legumes, forbs or shrubs shall be selected that are adapted to site, will not function as a host for diseases of a field crop and have physical characteristics necessary to control wind and water erosion to tolerable levels on the field border area.

Feature Measure: Number of acres

Scenario Unit: Acres

Scenario Typical Size: 1.0

Scenario Total Cost: $349.41

Scenario Cost/Unit: $349.41

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acres	$11.35	1	$11.35
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	1	$20.79
Foregone Income						
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acres	$287.72	0.5	$143.86
FI, Soybeans Dryland	1961	Dryland Soybeans is Primary Crop	Acres	$225.71	0.5	$112.86
Materials						
Nitrogen (N), Urea	71	Price per pound of N supplied by Urea. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.48	30	$14.40
Phosphorus, P2O5	73	Price per pound of P2O5 supplied by Superphosphate. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.58	20	$11.60
Introduced Perennial Grasses, Legumes and/or Forbs, Low Density	2747	Introduced perennial grasses, legumes, and/or forbs, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Includes material and shipping.	Acres	$34.55	1	$34.55

Practice: 386 - Field Border

Scenario #39 - Field Border, Pollinator, Forgone Income

Scenario Description:

A strip of permanent vegetation established at the edge or around the perimeter of an agricultural field. Practice includes seedbed prep and planting of pollinator friendly herbaceous species. The area of the field border is taken out of production.

Before Situation:

Before practice conditions may vary widely. Fields may have erosion issues from wind or water, a field border may be needed to manage pest populations, protect soil and water quality, provide wildlife food and cover, provide pollinator habitat, or a field border may be used to increase carbon storage and improve air quality. Water quality, soil erosion and/or wildlife food and cover may all be primary resource concerns.

After Situation:

The 386 Implementation Requirements have been developed and applied for the site. This practice when applied around a field may support and connect other buffer practices within and between fields. Pollinator herbaceous plantings will provide species which flower throughout the growing season. This provides a source of nectar for adult pollinators and a diversity of herbaceous material for immature pollinator life stages and for nesting. Minimum field border widths shall be based on NRCS local design criteria specific to the purpose for installing the practice. Species selected shall meet the pollinator habitat requirements of the state and be adapted to site; not function as a host for diseases of a field crop and; have physical characteristics necessary to control wind and water erosion to tolerable levels on the field border area.

Feature Measure: Number of acres

Scenario Unit: Acres

Scenario Typical Size: 1.0

Scenario Total Cost: $708.38

Scenario Cost/Unit: $708.38

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acres	$11.35	3	$34.05
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	1	$20.79
Foregone Income						
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acres	$287.72	0.5	$143.86
FI, Soybeans Dryland	1961	Dryland Soybeans is Primary Crop	Acres	$225.71	0.5	$112.86
Materials						
Native Perennial Grasses, Legumes and/or Forb Mix for Targeted Wildlife/Pollinator Habitat or Ecological Restoration, moderate commercial availability	2619	Diverse mix of native perennial grasses, legumes and forbs, less than 50% grasses, may include biennials and a small percentage of annual species for establishment purposes and/or if allowed by the CPS. This is a mix composed of species required to meet specific wildlife/pollinator habitat or ecological requirements. Seed is moderately easy to purchase commercially. Includes materials and shipping.	Acres	$396.82	1	$396.82

Practice: 386 - Field Border

Scenario #42 - Field Border, Introduced Species

Scenario Description:

A strip of permanent vegetation established at the edge or around the perimeter of an agricultural field. Practice includes seedbed prep and planting of introduced species.

Before Situation:

Before practice conditions may vary widely. Fields may have erosion issues from wind or water, a field border may be needed to manage pest populations, protect soil and water quality, provide wildlife food and cover, provide pollinator habitat, or a field border may be used to increase carbon storage and improve air quality. Water quality, soil erosion and/or wildlife food and cover may all be primary resource concerns.

After Situation:

The 386 Implementation Requirements have been developed and applied for the site. This practice when applied around a field may support and connect other buffer practices within and between fields. Introduced grasses and legumes will be established in the field border to the extent needed to meet the resource needs and producer objectives. Minimum field border widths shall be based on NRCS local design criteria specific to the purpose for installing the practice. Species selected shall be adapted to site, will not function as a host for diseases of a field crop, and have physical characteristics necessary to control wind and water erosion to tolerable levels on the field border area.

Feature Measure: Number of acres

Scenario Unit: Acres

Scenario Typical Size: 1.0

Scenario Total Cost: $92.69

Scenario Cost/Unit: $92.69

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acres	$11.35	1	$11.35
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	1	$20.79
Materials						
Nitrogen (N), Urea	71	Price per pound of N supplied by Urea. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.48	30	$14.40
Phosphorus, P2O5	73	Price per pound of P2O5 supplied by Superphosphate. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.58	20	$11.60
Introduced Perennial Grasses, Legumes and/or Forbs, Low Density	2747	Introduced perennial grasses, legumes, and/or forbs, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Includes material and shipping.	Acres	$34.55	1	$34.55

Practice: 386 - Field Border

Scenario #43 - Field Border, Pollinator

Scenario Description:

A strip of permanent vegetation established at the edge or around the perimeter of a field. This practice may also apply to recreation land or other land uses where agronomic crops including forages are grown. Practice includes seedbed prep and planting of pollinator friendly species.

Before Situation:

Before practice conditions may vary widely. Fields may have erosion issues from wind or water, a field border may be needed to manage pest populations, protect soil and water quality, provide wildlife food and cover, provide pollinator habitat, or a field border may be used to increase carbon storage and improve air quality. Water quality, soil erosion and/or wildlife food and cover may all be primary resource concerns.

After Situation:

The 386 Implementation Requirements have been developed and applied for the site. This practice when applied around a field may support and connect other buffer practices within and between fields. Pollinator herbaceous plantings will provide species which flower throughout the growing season. This provides a source of nectar for adult pollinators and a diversity of herbaceous material for immature pollinator life stages and for nesting. Minimum field border widths shall be based on NRCS local design criteria specific to the purpose for installing the practice. Species selected shall be adapted to site, will not function as a host for diseases of a field crop, and have physical characteristics necessary to control wind and water erosion to tolerable levels on the field border area.

Feature Measure: Number of acres

Scenario Unit: Acres

Scenario Typical Size: 1.0

Scenario Total Cost: $451.66

Scenario Cost/Unit: $451.66

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acres	$11.35	3	$34.05
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	1	$20.79
Materials						
Native Perennial Grasses, Legumes and/or Forb Mix for Targeted Wildlife/Pollinator Habitat or Ecological Restoration, moderate commercial availability	2619	Diverse mix of native perennial grasses, legumes and forbs, less than 50% grasses, may include biennials and a small percentage of annual species for establishment purposes and/or if allowed by the CPS. This is a mix composed of species required to meet specific wildlife/pollinator habitat or ecological requirements. Seed is moderately easy to purchase commercially. Includes materials and shipping.	Acres	$396.82	1	$396.82

Practice: 386 - Field Border

Scenario #52 - CB/VI - Field Border

Scenario Description:

A strip of permanent vegetation established at the edge or around the perimeter of an agricultural field. Practice includes seedbed prep and planting of native species. The area of the field border is taken out of production.

Before Situation:

Before practice conditions may vary widely. Fields may have erosion issues from wind or water, a field border may be needed to manage pest populations, protect soil and water quality, provide wildlife food and cover, provide pollinator habitat, or a field border may be used to increase carbon storage and improve air quality. Water quality, soil erosion and/or wildlife food and cover may all be primary resource concerns.

After Situation:

The 386 Implementation Requirements have been developed and applied for the site. This practice when applied around a field may support and connect other buffer practices within and between fields. Native grasses, legumes and forbs will be established in the field border to the extent needed to meet the resource needs and producer objectives. Minimum field border widths shall be based on NRCS local design criteria specific to the purpose for installing the practice. Native species shall be selected that do not function as a host for diseases of a field crop and have physical characteristics necessary to control wind and water erosion to tolerable levels on the field border area.

Feature Measure: Acres planted

Scenario Unit: Acres

Scenario Typical Size: 0.1

Scenario Total Cost: $85.60

Scenario Cost/Unit: $856.02

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acres	$11.35	0.1	$1.14
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$6.00	0.1	$0.60
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	3	$69.54
Materials						
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$8.98	0.1	$0.90
Native and Introduced Perennial Grasses, Legumes and/or Forbs, Medium Density	2756	A mix of native and introduced perennial grasses, legumes, and/or forbs, grasses typically greater than 50% of the mix, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at medium to high density (41-60 pure live seeds/sq ft). Includes material and shipping.	Acres	$134.29	0.1	$13.43
Mobilization						
Mobilization, Pacific Island	2679	Mobilization cost of materials for sea or air freight services between islands.	Pound	$0.00	5	$0.00

Practice: 386 - Field Border

Scenario #70 - Small Scale Urban Field Border

Scenario Description:

A strip of permanent vegetation established at the edge or around the perimeter of an agricultural field. Practice includes seedbed prep and planting of introduced plant species.

Before Situation:

Before practice conditions may vary based on farm size and location. Fields may have erosion by wind or water. Site provides little wildlife food or cover or pollinator habitat. Site soil organic matter is depleting. Particulate matter as dust is generated by field activity.

After Situation:

The 386 Implementation Requirements have been developed and applied for the site. Field border widths are based on NRCS local design criteria specific to the purpose for installing the practices. Species selected shall be adapted to site and not host disease or pests of the adjacent field crop. Species have physical characteristics necessary to control wind and water erosion to tolerable levels on the field border area.

Feature Measure: planted area

Scenario Unit: 1,000 Square Foot

Scenario Typical Size: 2.0

Scenario Total Cost: $131.56

Scenario Cost/Unit: $65.78

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acres	$11.35	0.05	$0.57
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	0.05	$1.04
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	5	$115.90
Materials						
Nitrogen (N), Urea	71	Price per pound of N supplied by Urea. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.48	10	$4.80
Phosphorus, P2O5	73	Price per pound of P2O5 supplied by Superphosphate. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.58	10	$5.80
Introduced Perennial Grasses, Legumes and/or Forbs, Low Density	2747	Introduced perennial grasses, legumes, and/or forbs, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Includes material and shipping.	Acres	$34.55	0.1	$3.46

Practice: 390 - Riparian Herbaceous Cover

Scenario #1 - Native Warm Season Grass

Scenario Description:

Native Warm Season Grasses with naturally regenerated Forbs: This scenario addresses inadequate herbaceous plant community function or diversity within the specific transitional zone between terrestrial and aquatic habitats in rangeland, pasture, cropland, and forest where natural seeding methods and/or management is unlikely to improve the plant community within a reasonable time period. This scenario applies to work not covered under NRCS Conservation Practice Range Planting (528), Forage and Biomass Planting (512), Critical Area Planting (342), Filter Strip (393), Restoration and Management of Rare and Declining Habitats (643), Streambank and Shoreline Protection (580), Vegetated Treatment Area (635), Wetland Enhancement (659), or Wetland Restoration (657). This practice can be used nation wide. The typical setting for this scenario is usually a narrow strip between the aquatic and terrestrial habitats subject to intermittant flooding and saturated soils where the exising plant community has been disturbed, destroyed, or the species diversity is unable to provide proper function and/or adequate habitat. Where the establishment of a diverse riparian herbaceous plant community is desired, an adapted mix of primarily native warm season grasses tolerant to the site conditions will be planted by broadcast and/or no-till or range drill seeding methods as necessary to accomplish the intended purpose(s) and legumes, and/or forbs are expected to naturally regenerate on-site. Where chemical control of undesirable vegetation, including invasives, is required to reduce competition for the desired plant community the Herbaceous Weed Control (315) practice should be used. Seedbed preparation may require LIGHT TILLAGE (disking). WHEN POLLINATOR HABITAT IS A CONSIDERATION: Include 5-10 adapted forb species that bloom sequentially throughout the growing season where feasible. To address the high diversity of riparian plant communities and their adjacent stream types that exist from the tropics to the tundra, and the deserts, prairies, mountains, and lowlands across the various regions and/or MLRA's, up to 20 adapted riparian plant community-specific scenarios may be required

Before Situation:

The riparian zone, the specific area between terrestrial and aquatic habitats, is currently an undesirable or inadequate stand of perennial or annual vegetation and natural reseeding or vegetation management is unlikely to improve the plant community within a reasonable amount of time to adequately address streambank and/or shoreline stability, dissipate stream energy and trap sediment, improve and/or maintain water quality, and/or provide adequate habitat corridors, food and/or cover for fish, wildlife, pollinators, and/or livestock resource conern(s). Existing conditions often require suppression or eradication of current vegetation by conventional mechanical or chemical (Herbaceous Weed Control (315)) methods to ensure establishment success of the new planting.

After Situation:

The riparian zone, the transitional zone between the terrestrial and aquatic habitats, is established to an adapted, diverse vegetative plant community and is under close management to insure long term survival and ecological succession. The quality and quantity of the riparian zone components are managed to support the species that depend on it for habitat as well as the functions it performs for stabilizing the streambank and/or shoreline, dissipating stream energy and trapping sediment, and improving and/or maintaining water quality. These functions include: stream temperature moderation through shading, recruitment of non-woody organic matter, habitat for terrestrial insects and other riparian dependent species, streambank integrity, and filtration of contaminants from surface run-off into the stream.

Feature Measure: Acres of Riparian Herbaceous Cove

Scenario Unit: Acres

Scenario Typical Size: 0.5

Scenario Total Cost: $143.64

Scenario Cost/Unit: $287.27

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acres	$11.35	1	$11.35
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	1	$20.79
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	1	$25.31
Materials						
Native Perennial Grasses, Legumes and/or Forbs, Low Density	2753	A mix of native perennial grasses, legumes, and/or forbs, grasses typically greater than 50% of the mix, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Species typically easy to purchase. Includes material and shipping.	Acres	$172.37	0.5	$86.19

Practice: 390 - Riparian Herbaceous Cover

Scenario #2 - Native Warm Season Grass w/ Forbs

Scenario Description:

Planting Native Warm Season Grasses with Forbs: This scenario addresses inadequate herbaceous plant community function or diversity within the specific transitional zone between terrestrial and aquatic habitats in rangeland, pasture, cropland, and forest where natural seeding methods and/or management is unlikely to improve the plant community within a reasonable time period. This scenario applies to work not covered under NRCS Conservation Practice Range Planting (528), Forage and Biomass Planting (512), Critical Area Planting (342), Filter Strip (393), Restoration and Management of Rare and Declining Habitats (643), Streambank and Shoreline Protection (580), Vegetated Treatment Area (635), Wetland Enhancement (659), or Wetland Restoration (657). This practice can be used nation wide. The typical setting for this scenario is usually a narrow strip between the aquatic and terrestrial habitats subject to intermittant flooding and saturated soils where the exising plant community has been disturbed, destroyed, or the species diversity is unable to provide proper function and/or adequate habitat. Where the establishment of a diverse riparian herbaceous plant community is desired, an adapted mix of primarily native warm season grasses, legumes, and/or forbs tolerant to the site conditions will be planted by broadcast and/or no-till or range drill seeding methods as necessary to accomplish the intended purpose(s). Where chemical control of undesirable vegetation, including invasives, is required to reduce competition for the desired plant community the Herbaceous Weed Control (315) practice should be used. Seedbed preparation may require LIGHT TILLAGE (disking). WHEN POLLINATOR HABITAT IS A CONSIDERATION: Include 5-10 adapted forb species that bloom sequentially throughout the growing season where feasible. To address the high diversity of riparian plant communities and their adjacent stream types that exist from the tropics to the tundra, and the deserts, prairies, mountains, and lowlands across the various regions and/or MLRA's, up to 20 adapted riparian plant community-specific scenarios may be required.

Before Situation:

The riparian zone, the specific area between terrestrial and aquatic habitats, is currently an undesirable or inadequate stand of perennial or annual vegetation and natural reseeding or vegetation management is unlikely to improve the plant community within a reasonable amount of time to adequately address streambank and/or shoreline stability, dissipate stream energy and trap sediment, improve and/or maintain water quality, and/or provide adequate habitat corridors, food and/or cover for fish, wildlife, pollinators, and/or livestock resource conern(s). Existing conditions often require suppression or eradication of current vegetation by conventional mechanical or chemical (Herbaceous Weed Control (315)) methods to ensure establishment success of the new planting.

After Situation:

The riparian zone, the transitional zone between the terrestrial and aquatic habitats, is established to an adapted, diverse vegetative plant community and is under close management to insure long term survival and ecological succession. The quality and quantity of the riparian zone components are managed to support the species that depend on it for habitat as well as the functions it performs for stabilizing the streambank and/or shoreline, dissipating stream energy and trapping sediment, and improving and/or maintaining water quality. These functions include: stream temperature moderation through shading, recruitment of non-woody organic matter, habitat for terrestrial insects and other riparian dependent species, streambank integrity, and filtration of contaminants from surface run-off into the stream.

Feature Measure: Acres of Riparian Herbaceous Cove

Scenario Unit: Acres

Scenario Typical Size: 0.5

Scenario Total Cost: $135.02

Scenario Cost/Unit: $270.03

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acres	$11.35	1	$11.35
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	1	$20.79
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	1	$25.31
Materials						
Native Perennial Grasses, Legumes and/or Forbs, Low Density	2753	A mix of native perennial grasses, legumes, and/or forbs, grasses typically greater than 50% of the mix, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Species typically easy to purchase. Includes material and shipping.	Acres	$172.37	0.45	$77.57

Practice: 391 - Riparian Forest Buffer

Scenario #1 - Hardwood with Pasture Foregone Income

Scenario Description:

Establish a buffer of hardwood trees into a suitably prepared pasture site to restore riparian plant communities and associated benefits. The buffer will be located adjacent to and up-gradient from a watercourse or water body extending a minimum of 35 feet wide. The planting will consist of hand planted bare-root deciduous trees. Generally, planting spacing is at 12' x 12'; however, other spacing may be used depending on the objectives. Resource concerns to be addressed are Soil Erosion - excessive bank erosion; Water Quality - excess sediment and organics in surface waters and elevated temperature; Degraded Plant Condition - inadequate structure and composition; and Inadequate Habitat for Fish and Wildlife - habitat degradation.

Before Situation:

Typical sites include former riparian forests and habitat used for forage, cropland, speculation property, or other nonforest condition which contains undesirable amounts or types of vegetation. Active bank erosion is depositing sediment, nutrients and organics in the riparian area. Water temperature is high due to lack of shade. Habitat is not desirable for wildlife.

After Situation:

A buffer of trees will be established along the riparian corridor which will provide stability, filtration, shade, and desirable habitat to address the above mentioned resource concerns.

Feature Measure: Area of planting

Scenario Unit: Acres

Scenario Typical Size: 5.0

Scenario Total Cost: $2,290.36

Scenario Cost/Unit: $458.07

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hours	$18.07	8	$144.56
Hand tools, tree planting	1590	Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included.	Hours	$12.58	16	$201.28
Foregone Income						
FI, Grazing AUMs	2079	Grazing is the Primary Land Use	Animal Unit Month	$19.44	10	$194.40
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	16	$370.88
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	8	$334.24
Materials						
Tree, Hardwood, Seedling, Small	1509	Bare root hardwood seedlings 6 to 18 inches tall; includes tropical containerized seedlings of 8 cubic inches or smaller. Includes materials and shipping only.	Each	$0.63	1500	$945.00
Mobilization						
Mobilization, Material, distance > 50 miles	1043	Mobilization cost of materials for special cases where the distance from the supplier delivery point to the job site exceeds 50 miles. The costs for shipping by UPS or bulk freight shipping to a location within 50 miles of the job site have already been included in the component price.	Dollars	$1.00	100	$100.00

Practice: 391 - Riparian Forest Buffer

Scenario #2 - Hardwood with Row Crop Foregone Income

Scenario Description:

Establish a buffer of hardwood into a suitably prepared row crop site to restore riparian plant communities and associated benefits. The buffer will be located adjacent to and up-gradient from a watercourse or water body extending a minimum of 35 feet wide. The planting will consist of hand planted bare-root deciduous trees. Generally, planting spacing is at 12' x 12'; however, other spacing may be used depending on the objectives. Resource concerns to be addressed are Soil Erosion - excessive bank erosion; Water Quality - excess sediment and organics in surface waters and elevated temperature; Degraded Plant Condition - inadequate structure and composition; and Inadequate Habitat for Fish and Wildlife - habitat degradation.

Before Situation:

Typical sites include former riparian forests and habitat used for forage, cropland, speculation property, or other nonforest condition which contains undesirable amounts or types of vegetation. Active bank erosion is depositing sediment, nutrients and organics in the riparian area. Water temperature is high due to lack of shade. Habitat is not desirable for wildlife.

After Situation:

A buffer of trees will be established along the riparian corridor which will provide stability, filtration, shade, and desirable habitat to address the above mentioned resource concerns.

Feature Measure: Area of planting

Scenario Unit: Acres

Scenario Typical Size: 5.0

Scenario Total Cost: $3,224.51

Scenario Cost/Unit: $644.90

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hours	$18.07	8	$144.56
Hand tools, tree planting	1590	Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included.	Hours	$12.58	16	$201.28
Foregone Income						
FI, Soybeans Dryland	1961	Dryland Soybeans is Primary Crop	Acres	$225.71	5	$1,128.55
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	16	$370.88
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	8	$334.24
Materials						
Tree, Hardwood, Seedling, Small	1509	Bare root hardwood seedlings 6 to 18 inches tall; includes tropical containerized seedlings of 8 cubic inches or smaller. Includes materials and shipping only.	Each	$0.63	1500	$945.00
Mobilization						
Mobilization, Material, distance > 50 miles	1043	Mobilization cost of materials for special cases where the distance from the supplier delivery point to the job site exceeds 50 miles. The costs for shipping by UPS or bulk freight shipping to a location within 50 miles of the job site have already been included in the component price.	Dollars	$1.00	100	$100.00

Practice: 391 - Riparian Forest Buffer

Scenario #3 - Hardwood Seedlings, Bare-root

Scenario Description:

Establish deciduous trees into a suitably prepared site to restore riparian plant communities and associated benefits. The tree planting will be located adjacent to a planned buffer of hardwood trees that is immediately adjacent to the stream and up-gradient from a watercourse or water body. The planting will consist of hand planted deciduous trees. Generally, spacing for deciduous tree planting is 12' x 12'; however, other spacings may be used depending on the objective. Resource concerns to be addressed are Soil Erosion - excessive bank erosion; Water Quality - excess sediment and organics in surface waters and elevated temperature; Degraded Plant Condition - inadequate structure and composition; and Inadequate Habitat for Fish and Wildlife - habitat degradation.

Before Situation:

Typical sites include former riparian forests and habitat used for forage, cropland, speculation property, or other nonforest condition which contains undesirable amounts or types of vegetation. Active bank erosion is depositing sediment, nutrients and organics in the riparian area. Water temperature is high due to lack of shade. Habitat is not desirable for wildlife.

After Situation:

A buffer of trees and shrubs will be established along the riparian corridor which will provide stability, filtration, shade, and desirable habitat to address the above mentioned resource concerns.

Feature Measure: Area of planting

Scenario Unit: Each

Scenario Typical Size: 1,500.0

Scenario Total Cost: $1,736.84

Scenario Cost/Unit: $1.16

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Hand tools, tree planting	1590	Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included.	Hours	$12.58	10	$125.80
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	10	$231.80
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	8	$334.24
Materials						
Tree, Hardwood, Seedling, Small	1509	Bare root hardwood seedlings 6 to 18 inches tall; includes tropical containerized seedlings of 8 cubic inches or smaller. Includes materials and shipping only.	Each	$0.63	1500	$945.00
Mobilization						
Mobilization, Material, distance > 50 miles	1043	Mobilization cost of materials for special cases where the distance from the supplier delivery point to the job site exceeds 50 miles. The costs for shipping by UPS or bulk freight shipping to a location within 50 miles of the job site have already been included in the component price.	Dollars	$1.00	100	$100.00

Practice: 391 - Riparian Forest Buffer

Scenario #5 - Shrub Seedlings, Bare-root

Scenario Description:

Establish shrub seedlings as part of a planned forest buffer into a suitably prepared site to restore riparian plant communities and associated benefits. The buffer will be located adjacent to and up-gradient from a watercourse or water body extending a minimum of 35 feet wide. The planting will consist of hand planted shrub seedlings outside the 35' hardwood buffer imediately adjacent to the stream. Generally, planting for shrubs will be done at 6' x 6' spacing. However, other spacings may be used depending on the objective. Resource concerns to be addressed are Soil Erosion - excessive bank erosion; Water Quality - excess sediment and organics in surface waters and elevated temperature; Degraded Plant Condition - inadequate structure and composition; and Inadequate Habitat for Fish and Wildlife - habitat degradation.

Before Situation:

Typical sites include former riparian forests and habitat used for forage, cropland, speculation property, or other nonforest condition which contains undesirable amounts or types of vegetation. Active bank erosion is depositing sediment, nutrients and organics in the riparian area. Water temperature is high due to lack of shade. Habitat is not desirable for wildlife.

After Situation:

A buffer of trees and shrubs will be established along the riparian corridor which will provide stability, filtration, shade, and desirable habitat to address the above mentioned resource concerns.

Feature Measure: Number planted

Scenario Unit: Each

Scenario Typical Size: 1,000.0

Scenario Total Cost: $1,381.84

Scenario Cost/Unit: $1.38

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Hand tools, tree planting	1590	Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included.	Hours	$12.58	10	$125.80
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	10	$231.80
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	8	$334.24
Materials						
Shrub, Seedling, Small	1506	Bare root shrub seedling, 6 to 18 inches tall, includes containerized seedlings less than 10 cubic inches. Includes materials and shipping only.	Each	$0.59	1000	$590.00
Mobilization						
Mobilization, Material, distance > 50 miles	1043	Mobilization cost of materials for special cases where the distance from the supplier delivery point to the job site exceeds 50 miles. The costs for shipping by UPS or bulk freight shipping to a location within 50 miles of the job site have already been included in the component price.	Dollars	$1.00	100	$100.00

Practice: 391 - Riparian Forest Buffer

Scenario #6 - Mark Riparian Forest Buffer in existing Forest

Scenario Description:

Forest land use planning may require creation of forested riparian buffers along existing watercourses to meet best management practice criteria. These buffers, termed streamside management zones (SMZ), will be located adjacent to and upgrade from perennial, intermittent, or ephemeral watercourses within a forest stand. They will extend a minimum of 35 feet from edge of the watercourse either on one-side or both sides. Resource concerns to be addressed are Soil Erosion - excessive bank erosion; Water Quality - excess sediment and organics in surface waters and elevated temperature; Degraded Plant Condition - inadequate structure and composition; and Inadequate Habitat for Fish and Wildlife - habitat degradation.

Before Situation:

Typical sites include overstocked tree conditions adjacent to the water course that shade out ground cover vegetation increasing surface flow. Active bank erosion is depositing sediment, nutrients and organics in the watercourse. The resulting sediment is creating habitat degradation locally and farther down watercourse.

After Situation:

The SMZ boundaries are planned and identified with paint prior to any overstocking reduction intervention. The identified boundaries provide watercourse protection during harvesting operation and allow for planned forest stand improvement within the SMZ area.

Feature Measure: Length of boundary

Scenario Unit: Feet

Scenario Typical Size: 3,000.0

Scenario Total Cost: $464.88

Scenario Cost/Unit: $0.15

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	4	$92.72
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	4	$372.16

Practice: 391 - Riparian Forest Buffer

Scenario #13 - Planting Cuttings

Scenario Description:

Establish deciduous trees into a suitably prepared site to restore riparian plant communities and associated benefits. The tree planting will be located adjacent to a planned buffer of hardwood trees that is immediately adjacent to the stream and up-gradient from a watercourse or water body. The planting will consist of hand planted cuttings of deciduous trees. Generally, spacing for deciduous tree planting is 12' x 12'; however, other spacings may be used depending on the objective. Resource concerns to be addressed are Soil Erosion - excessive bank erosion; Water Quality - excess sediment and organics in surface waters and elevated temperature; Degraded Plant Condition - inadequate structure and composition; and Inadequate Habitat for Fish and Wildlife - habitat degradation.

Before Situation:

Typical sites include stream banks or waterbodies with little or no woody vegetatoin adjacent to the water course. Active bank erosion is depositing sediment, nutrients and organics in the watercourse. The resulting sediment is creating habitat degradation locally and farther down watercourse.

After Situation:

The stream bank is planted with hardwood species that grow from cuttings to help stabilize the soil, protect the stream bank from further erosion. The cuttings will also provide wildlife habitat and shade the stream or waterbody to keep the water cooler that when exposed to full sunlight. Cuttings should be used on sites where they would normally grow. The planted cuttings will address the listed resource concerns.

Feature Measure: Area of planting

Scenario Unit: Each

Scenario Typical Size: 3,000.0

Scenario Total Cost: $5,125.72

Scenario Cost/Unit: $1.71

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Hand tools, tree planting	1590	Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included.	Hours	$12.58	16	$201.28
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	16	$370.88
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	2	$83.56
Materials						
Tree & Shrub, Woody, Cuttings, Medium	1308	Woody cuttings, live stakes or whips typically 1/4 to 1 inch diameter and 24 to 48 inches long. Includes materials and shipping only.	Each	$1.49	3000	$4,470.00

Practice: 393 - Filter Strip

Scenario #29 - Filter Strip, Native species, Forgone Income

Scenario Description:

A strip or area of herbaceous vegetation that removes contaminants from overland flow. Practice includes seedbed prep and planting of native species. The area of the filter strip is taken out of production.

Before Situation:

Annual cropland, grazing land, or disturbed land (including forestland) allows for runoff of suspended solids, dissolved and/or associated contaminants into environmentally-sensitive areas such as wetlands, riparian zones, critical habitat and neighboring non-ag properties. Water Quality resource concerns are associated with this practice.

After Situation:

The 393 Implementation Requirements are developed for the site and applied. The planned filter strip will be established and maintained per the practice plan that will meet the criteria for the planned purpose(s). The vegetation will consist of native species. The filter strip will have adequate width to filter the planned pollutants. The practice includes seedbed preparation, seeding, and seed. Species selected shall be able to withstand partial burial by sediment and tolerant of herbicides used on the contribution area while protecting environmentally-sensitive areas. The area of the filter strip is taken out of production.

Feature Measure: number of acres

Scenario Unit: Acres

Scenario Typical Size: 1.0

Scenario Total Cost: $502.89

Scenario Cost/Unit: $502.89

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acres	$11.35	3	$34.05
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	1	$20.79
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hours	$18.07	1.5	$27.11
Foregone Income						
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acres	$287.72	0.5	$143.86
FI, Soybeans Dryland	1961	Dryland Soybeans is Primary Crop	Acres	$225.71	0.5	$112.86
Materials						
Native Perennial Grasses, Medium Density	2751	Native perennial grasses, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at medium to higher density (41-60 pure live seeds/sq ft). Includes material and shipping.	Acres	$164.23	1	$164.23

Practice: 393 - Filter Strip

Scenario #30 - Filter Strip, Introduced species, Forgone Income

Scenario Description:

A strip or area of herbaceous vegetation that removes contaminants from overland flow. Practice includes seedbed prep and planting of introduced species. The area of the filter strip is taken out of production.

Before Situation:

Annual cropland, grazing land, or disturbed land (including forestland) allows for runoff of suspended solids, dissolved and/or associated contaminants into environmentally-sensitive areas such as wetlands, riparian zones, critical habitat and neighboring non-ag properties. Water Quality resource concerns are associated with this practice.

After Situation:

The 393 Implementation Requirements are developed for the site and applied. The planned filter strip will be established and maintained per the practice plan that will meet the criteria for the planned purpose(s). The vegetation will consist of introduced species. The filter strip will have adequate width to filter the planned pollutants. The practice includes seedbed preparation, seeding, and seed. Species selected shall be able to withstand partial burial by sediment and tolerant of herbicides used on contribution area while protecting environmentally-sensitive areas. The area of the filter strip is taken out of production.

Feature Measure: Number of acres

Scenario Unit: Acres

Scenario Typical Size: 1.0

Scenario Total Cost: $436.18

Scenario Cost/Unit: $436.18

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acres	$11.35	3	$34.05
Fertilizer, ground application, dry bulk	950	Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$7.35	1	$7.35
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	1	$20.79
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hours	$18.07	1.5	$27.11
Foregone Income						
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acres	$287.72	0.5	$143.86
FI, Soybeans Dryland	1961	Dryland Soybeans is Primary Crop	Acres	$225.71	0.5	$112.86
Materials						
Nitrogen (N), Urea	71	Price per pound of N supplied by Urea. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.48	30	$14.40
Phosphorus, P2O5	73	Price per pound of P2O5 supplied by Superphosphate. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.58	20	$11.60
Introduced Perennial Grasses, Legumes and/or Forbs, High Density	2749	Introduced perennial grasses, legumes, and/or forbs, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at high density (greater than 60 pure live seeds/sq ft). Includes material and shipping.	Acres	$64.17	1	$64.17

Practice: 393 - Filter Strip

Scenario #32 - Filter Strip, Native species

Scenario Description:

A strip or area of herbaceous vegetation that removes contaminants from overland flow. Practice includes seedbed prep and planting of native species.

Before Situation:

Annual cropland, grazing land, or disturbed land (including forestland) allows for runoff of suspended solids, dissolved and/or associated contaminants into environmentally-sensitive areas such as wetlands, riparian zones, critical habitat and neighboring nonagricultural properties. Water Quality resource concerns are associated with this practice.

After Situation:

The 393 Implementation Requirements are developed for the site and applied. The planned filter strip will be established and maintained per the practice plan that will meet the criteria for the planned purpose(s). The vegetation will consist of native species. The filter strip will have adequate width to filter the planned pollutants. The practice includes seedbed preparation, seeding, and seed. Species selected shall be able to withstand partial burial by sediment and tolerant of herbicides used on contribution area while protecting environmentally-sensitive areas.

Feature Measure: number of acres

Scenario Unit: Acres

Scenario Typical Size: 1.0

Scenario Total Cost: $246.18

Scenario Cost/Unit: $246.18

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acres	$11.35	3	$34.05
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	1	$20.79
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hours	$18.07	1.5	$27.11
Materials						
Native Perennial Grasses, Medium Density	2751	Native perennial grasses, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at medium to higher density (41-60 pure live seeds/sq ft). Includes material and shipping.	Acres	$164.23	1	$164.23

Practice: 393 - Filter Strip

Scenario #33 - Filter Strip, Introduced species

Scenario Description:

A strip or area of herbaceous vegetation that removes contaminants from overland flow. Practice includes seedbed prep and planting of introduced species.

Before Situation:

Annual cropland, grazing land, or disturbed land (including forestland) allows for runoff of suspended solids, dissolved and/or associated contaminants into environmentally-sensitive areas such as wetlands, riparian zones, critical habitat and neighboring nonagricultural properties. Water Quality resource concerns are associated with this practice.

After Situation:

The 393 Implementation Requirements are developed for the site and applied. The planned filter strip will be established and maintained per the practice plan that will meet the criteria for the planned purpose(s). The vegetation will consist of introduced species. The filter strip will have adequate width to filter the planned pollutants. The practice includes seedbed preparation, seeding, and seed. Species selected shall be able to withstand partial burial by sediment and tolerant of herbicides used on contribution area while protecting environmentally-sensitive areas.

Feature Measure: Number of acres

Scenario Unit: Acres

Scenario Typical Size: 1.0

Scenario Total Cost: $179.47

Scenario Cost/Unit: $179.47

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acres	$11.35	3	$34.05
Fertilizer, ground application, dry bulk	950	Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$7.35	1	$7.35
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	1	$20.79
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hours	$18.07	1.5	$27.11
Materials						
Nitrogen (N), Urea	71	Price per pound of N supplied by Urea. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.48	30	$14.40
Phosphorus, P2O5	73	Price per pound of P2O5 supplied by Superphosphate. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.58	20	$11.60
Introduced Perennial Grasses, Legumes and/or Forbs, High Density	2749	Introduced perennial grasses, legumes, and/or forbs, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at high density (greater than 60 pure live seeds/sq ft). Includes material and shipping.	Acres	$64.17	1	$64.17

Practice: 394 - Firebreak

Scenario #1 - Bare Soil - Light Equipment

Scenario Description:

Installation of a bare-ground firebreak of a minimum width of 10' around a 20 acre field/farm using farm equipment (2 passes). Generally water control devices such as water bars are not needed due either to the lack of steep terrain or the temporary nature of the firebreak. Resource concerns include Wildfire hazard from excessive biomass accumulation, Undesirable plant productivity and health, Inadequate plant structure and composition, and Habitat degradation.

Before Situation:

Tract, field, or farm lacks adequate firebreaks to either reduce the spread of wildfires or contain a prescribed burn. Installation will be accomplished by making two passes with the use of typical farm equipment such as tractors, plows, disks, or similar implements.

After Situation:

The property is adequately protected from wildfire or can be safely prescribe burned.

Feature Measure: Length of firebreak

Scenario Unit: Feet

Scenario Typical Size: 3,000.0

Scenario Total Cost: $501.62

Scenario Cost/Unit: $0.17

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Dozer, 80 HP	929	Track mounted Dozer with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$54.51	6	$327.06
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acres	$11.35	2	$22.70
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	6	$151.86

Practice: 394 - Firebreak

Scenario #2 - Bare Soil - Medium Slope

Scenario Description:

Use of medium equipment such as dozers to blade, disk, plow, etc. bare-soil firebreaks on slopes less than 15% along the boundary line or edge of the forest. All necessary water bars and/or wing ditches must be installed according to specifications to control erosion. Payment calculated for one erosion control structure every 80 ft. in. addition to cost of fire break. This practice implemented ONLY in the areas where the slope meet these requirements. Firebreak should average at least 15 feet wide (not to be less than 10' wide) Resource concerns include Wildfire hazards from excessive biomass accumulation, Undesirable plant productivity and health, Inadequate plant structure and composition, and Habitat degradation.

Before Situation:

Tract, field, or farm lacks adequate firebreaks to either reduce the spread of wildfires or contain a prescribed burn. Conditions such as topography, the presence of brush and trees, etc. make the use of typical farm equipment impractical.

After Situation:

The property is adequately protected from wildfire or can be safely prescribe burned and the potential for excessive erosion from the firebreak is negligible.

Feature Measure: Length of firebreak

Scenario Unit: Feet

Scenario Typical Size: 4,000.0

Scenario Total Cost: $8,575.75

Scenario Cost/Unit: $2.14

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Dozer, 140 HP	927	Track mounted Dozer with horsepower range of 125 to 160. Equipment and power unit costs. Labor not included.	Hours	$97.92	24	$2,350.08
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	7	$166.18
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hours	$18.07	24	$433.68
Water Bars	1500	Installation of graded trail water controlling structures such as water bars, broad based dips for erosion control. Typical cross section is 1.5 feet high with 4:1 side slopes yielding about 0.33 CY/ft of length.	Feet	$2.78	1500	$4,170.00
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	24	$556.32
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	24	$645.60
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 394 - Firebreak

Scenario #3 - Bare soil - Steep Slope

Scenario Description:

Use of equipment such as dozers to blade bare-soil firebreaks 15' wide on slopes greater than 15% along the boundary line or edge of the forest. All necessary water bars and/or wing ditches must be installed according to specifications to control erosion with same equipment. Payment calculated for one erosion control structure every 40 ft. in. addition to cost of fire break. This practice implemented ONLY in the areas where the slope meet these requirements. Firebreak should average at least 15 feet wide (not to be less than 10' wide) Resource concerns include Wildfire hazard from excessive biomass accumulation, Undesirable plant productivity and health, Inadequate plant structure and composition, Habitat degradation, Soil erosion, and Excessive sediment in surface waters.

Before Situation:

Tract, field, or farm lacks adequate firebreaks to either reduce the spread of wildfires or contain a prescribed burn. Conditions such as topography, the presence of brush and trees, etc. make the use of typical farm equipment impractical. As slopes increase, the potential for excessive erosion increases from soil disturbances. Therefore the installation of water control devices such as water bars will be important in protecting the resource base.

After Situation:

The property is adequately protected from wildfire or can be safely prescribe burned and the potential for excessive erosion from the firebreak is minimized.

Feature Measure: Length of firebreak

Scenario Unit: Feet

Scenario Typical Size: 4,000.0

Scenario Total Cost: $14,098.05

Scenario Cost/Unit: $3.52

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Dozer, 140 HP	927	Track mounted Dozer with horsepower range of 125 to 160. Equipment and power unit costs. Labor not included.	Hours	$97.92	32	$3,133.44
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	8	$189.92
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hours	$18.07	32	$578.24
Water Bars	1500	Installation of graded trail water controlling structures such as water bars, broad based dips for erosion control. Typical cross section is 1.5 feet high with 4:1 side slopes yielding about 0.33 CY/ft of length.	Feet	$2.78	3000	$8,340.00
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	32	$741.76
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	32	$860.80
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 394 - Firebreak

Scenario #4 - Vegetated - Light Equipment

Scenario Description:

Establishing a 30 - 50 foot wide strip of permanent vegetation that will serve as a green firebreak. Scenario includes clearing the site, preparing the seedbed, seeding (typically cool season grasses and/or legumes), and applying needed soil amendments. Clearing will be achieved with the use of a bush hog or similar equipment. Seedbed preparation and vegetation establishment will be accomplished with farm equipment. Soil amendments will be applied according to local FOTG guidance. This scenario does not include follow-up maintenance operations such as weed control. mowing, etc. Resource concerns include Wildfire hazard from excessive biomass accumulation, Soil erosion, and Excessive sediment in surface waters.

Before Situation:

Tract, field, or farm lacks adequate firebreaks to either reduce the spread of wildfires or contain a prescribed burn.

After Situation:

The property is adequately protected from wildfire or can be safely prescribe burned. Wildlife habitat will also be enhanced and the potential for erosion from the firebreak is minimized.

Feature Measure: Length of firebreak

Scenario Unit: Feet

Scenario Typical Size: 4,000.0

Scenario Total Cost: $1,738.28

Scenario Cost/Unit: $0.43

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	4	$94.96
Mower, Bush Hog	940	Equipment and power unit costs. Labor not included.	Hours	$49.85	4	$199.40
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acres	$11.35	4	$45.40
Tillage, Primary	946	Includes heavy disking (offset) or chisel plow. Includes equipment, power unit and labor costs.	Acres	$15.95	4	$63.80
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$6.00	4	$24.00
Fertilizer, ground application, dry bulk	950	Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$7.35	4	$29.40
Lime application	953	Lime application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$8.51	4	$34.04
Seeding Operation, Broadcast, Ground	959	Broadcast seed via ground operation. May require post tillage operation to incorporate seed. Includes equipment, power unit and labor costs.	Acres	$11.77	4	$47.08
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	4	$83.16
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	8	$185.44
Materials						
Nitrogen (N), Ammonium Nitrate	69	Price per pound of N supplied by Ammonium Nitrate. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.59	160	$94.40
Phosphorus, P2O5	73	Price per pound of P2O5 supplied by Superphosphate. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.58	200	$116.00
Potassium, K2O	74	K2O supplied by Muriate Of Potash. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.42	200	$84.00
Lime, ENM	75	Fertilizer: Limestone Spread on field.	Ton	$63.05	4	$252.20
Herbicide, Picloram	337	Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$19.01	4	$76.04
Introduced Perennial Grasses, Legumes and/or Forbs, Low Density	2747	Introduced perennial grasses, legumes, and/or forbs, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Includes material and shipping.	Acres	$34.55	4	$138.20
Mobilization						

Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	1	$170.76

Practice: 394 - Firebreak

Scenario #5 - Vegetated - Medium slope

Scenario Description:

Forest or grassland with a 30' wide firebreak cleared with dozer along the boundary line or edge of the forest with slope greater than 5% but less than 15% and planted with cool season native grasses. All necessary water bars and/or wing ditches must be installed according to Fire Break Practice 394 specifications to control erosion. Payment calculated for one erosion control structure every 80 ft. in addition to cost of fire break. This practice implemented ONLY in the areas where the slope meet these requirements. Cool season grasses must be established according to Critical Area Planting Practice 342. Warm Season grasses MUST NOT be used!

Before Situation:

Tract, field, or farm lacks adequate firebreaks to either reduce the spread of wildfires or contain a prescribed burn.

After Situation:

The property is adequately protected from wildfire or can be safely prescribe burned. Wildlife habitat will also be enhanced and the potential for erosion from the firebreak is minimized.

Feature Measure: <Unknown>

Scenario Unit: Feet

Scenario Typical Size: 4,000.0

Scenario Total Cost: $10,405.99

Scenario Cost/Unit: $2.60

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Dozer, 140 HP	927	Track mounted Dozer with horsepower range of 125 to 160. Equipment and power unit costs. Labor not included.	Hours	$97.92	24	$2,350.08
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	8	$189.92
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acres	$11.35	4	$45.40
Tillage, Primary	946	Includes heavy disking (offset) or chisel plow. Includes equipment, power unit and labor costs.	Acres	$15.95	4	$63.80
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$6.00	4	$24.00
Fertilizer, ground application, dry bulk	950	Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$7.35	4	$29.40
Lime application	953	Lime application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$8.51	4	$34.04
Seeding Operation, Broadcast, Ground	959	Broadcast seed via ground operation. May require post tillage operation to incorporate seed. Includes equipment, power unit and labor costs.	Acres	$11.77	4	$47.08
Water Bars	1500	Installation of graded trail water controlling structures such as water bars, broad based dips for erosion control. Typical cross section is 1.5 feet high with 4:1 side slopes yielding about 0.33 CY/ft of length.	Feet	$2.78	1800	$5,004.00
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	24	$556.32
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	24	$645.60
Materials						
Nitrogen (N), Ammonium Nitrate	69	Price per pound of N supplied by Ammonium Nitrate. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.59	160	$94.40
Phosphorus, P2O5	73	Price per pound of P2O5 supplied by Superphosphate. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.58	200	$116.00
Potassium, K2O	74	K2O supplied by Muriate Of Potash. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.42	200	$84.00
Lime, ENM	75	Fertilizer: Limestone Spread on field.	Ton	$63.05	4	$252.20
Herbicide, Picloram	337	Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$19.01	4	$76.04

Introduced Perennial Grasses, Legumes and/or Forbs, Low Density	2747	Introduced perennial grasses, legumes, and/or forbs, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Includes material and shipping.	Acres	$34.55	4	$138.20
Mobilization						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	1	$170.76
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$484.75	1	$484.75

Practice: 394 - Firebreak

Scenario #6 - Vegetative - Steep Slope

Scenario Description:

Forest or grassland with a 30' wide firebreak cleared with dozer along the boundary line or edge of the forest with slope greater than 15% and planted with cool season native grasses. All necessary water bars and/or wing ditches must be installed according to Fire Break Practice 394 specifications to control erosion. Payment calculated for one erosion control structure every 40 ft. in addition to cost of fire break. This practice implemented ONLY in the areas where the slope meet these requirements. Cool season grasses must be established according to Critical Area Planting Practice 342. Warm Season grasses MUST NOT be used

Before Situation:

Tract, field, or farm lacks adequate firebreaks to either reduce the spread of wildfires or contain a prescribed burn.

After Situation:

The property is adequately protected from wildfire or can be safely prescribe burned. Wildlife habitat will also be enhanced and the potential for erosion from the firebreak is minimized.

Feature Measure: <Unknown>

Scenario Unit: Feet

Scenario Typical Size: 4,000.0

Scenario Total Cost: $16,315.99

Scenario Cost/Unit: $4.08

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Dozer, 140 HP	927	Track mounted Dozer with horsepower range of 125 to 160. Equipment and power unit costs. Labor not included.	Hours	$97.92	32	$3,133.44
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	8	$189.92
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acres	$11.35	4	$45.40
Tillage, Primary	946	Includes heavy disking (offset) or chisel plow. Includes equipment, power unit and labor costs.	Acres	$15.95	4	$63.80
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$6.00	4	$24.00
Fertilizer, ground application, dry bulk	950	Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$7.35	4	$29.40
Lime application	953	Lime application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$8.51	4	$34.04
Seeding Operation, Broadcast, Ground	959	Broadcast seed via ground operation. May require post tillage operation to incorporate seed. Includes equipment, power unit and labor costs.	Acres	$11.77	4	$47.08
Water Bars	1500	Installation of graded trail water controlling structures such as water bars, broad based dips for erosion control. Typical cross section is 1.5 feet high with 4:1 side slopes yielding about 0.33 CY/ft of length.	Feet	$2.78	3500	$9,730.00
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	32	$741.76
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	32	$860.80
Materials						
Nitrogen (N), Ammonium Nitrate	69	Price per pound of N supplied by Ammonium Nitrate. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.59	160	$94.40
Phosphorus, P2O5	73	Price per pound of P2O5 supplied by Superphosphate. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.58	200	$116.00
Potassium, K2O	74	K2O supplied by Muriate Of Potash. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.42	200	$84.00
Lime, ENM	75	Fertilizer: Limestone Spread on field.	Ton	$63.05	4	$252.20
Herbicide, Picloram	337	Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$19.01	4	$76.04

Introduced Perennial Grasses, Legumes and/or Forbs, Low Density	2747	Introduced perennial grasses, legumes, and/or forbs, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Includes material and shipping.	Acres	$34.55	4	$138.20
Mobilization						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	1	$170.76
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$484.75	1	$484.75

Practice: 395 - Stream Habitat Improvement and Management

Scenario #22 - Riparian Zone Improvement-Forested

Scenario Description:

This scenario describes fish and wildlife habitat improvement and/or management actions focused on the community structure and function of forested riparian zone plant communities. The planned activity meets the 395 standard, and facilitating practice standards, especially Codes 390 and 391, utilized in combination to satisfy all requirements specific to habitats needed for the stream and riparian species for which the practice is being implemented. Implementation will improve instream and riparian habitat complexity, water quality, hiding and resting cover, and/or increased food availability for desired riparian and stream species. Because species and habitats differ dramatically within and across regions and/or MLRAs, up to 12 riparian plant community-specific scenarios may be required across the US.

Before Situation:

Riparian quality and quantity are at risk as determined by the NRCS Stream Visual Assessment Protocol score of less than 5 for those elements. The site does not have adequate food, cover, and/or connectivity for riparian wildlife, and contributes insufficient amounts of organic matter andor large woody material for stream species food and cover. The site's riparian vegetation is compromised by human activities and/or access of vehicles, people, and/or livestock is not controlled adequately to protect riparian functions and stream habitat quality. Nutrients are transported to surface waters through runoff or soil erosion or to ground water from leaching in quantities that degrade water quality and limit use of intended purposes. Soil quality may be reduced due to compaction. Riparian vegetation quality and/or quantity is compromised to the extent that the riparian area and floodplain are not functioning to provide necessary stream and riparian habitat components.

After Situation:

Revegetation/reforestation of the riparian zone is completed and the vegetation community is under close management to insure long-term survival and ecological succession of the plant community. The quality and quantity of the riparian zone components of the site are managed to support a diverse vegetation community suitable for the site, the species that depend on it for habitat, and the functions it performs or will eventually perform as the vegetation matures. These functions include: stream temperature moderation thru shading, recruitment of instream large wood and/or non-woody organic matter, riparian habitat for terrestrial insects and other riparian-dependent species, streambank integrity, and filtration of contaminants from surface run-off into the stream.

Feature Measure: acres

Scenario Unit: Acres

Scenario Typical Size: 2.0

Scenario Total Cost: $16,048.84

Scenario Cost/Unit: $8,024.42

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Backhoe, 80 HP	926	Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$31.57	16	$505.12
Dozer, 80 HP	929	Track mounted Dozer with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$54.51	8	$436.08
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	160	$4,808.00
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	40	$927.20
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	24	$645.60
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	40	$1,671.20
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	40	$3,721.60
Materials						
Compost	265	A mixture of decaying organic matter, as from leaves and manure, used to improve soil structure and provide nutrients.	Ton	$60.26	1	$60.26
Tree & Shrub, Woody, Cuttings, Large	1309	Woody pole cuttings or posts 2 to 6 inches in diameter and 6 ft. long. Includes materials and shipping only.	Each	$10.66	200	$2,132.00
Tree, Hardwood, Seedling, Medium	1510	Bare root hardwood seedlings 18 to 36 inches tall; includes tropical containerized seedlings of 10 to 20 cubic inches. Includes materials and shipping only.	Each	$1.17	200	$234.00
Tree shelter, wire mesh	1557	5 feet tall, Woven Wire mesh, 6x6 inch opening or smaller, 10 gauge wire (minimum) cage placed around seedling for animal protection. Materials only.	Each	$2.00	200	$400.00

Mobilization

Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: 395 - Stream Habitat Improvement and Management

Scenario #23 - Instream wood placement

Scenario Description:

This scenario involves placement of large wood (logs, root wads, log structures) into a stream channel in order to improve aquatic habitat that currently does not meet quality criteria for stream species habitat. A stream assessment (i.e. Stream Visual Assessment Protocol) should be conducted in order to document habitat components lacking for aquatic species (i.e. large wood, pools). A project design for wood placement will be based on assessment of the target stream reach characteristics and those of a suitable reference reach. These characteristics include channel geometry, channel slope, stream bottom substrate size and composition, and the geomorphic setting influencing the channel form, pattern and profile. Large wood and root wads placed into the stream will mimic genus, age, and size of mature trees found in intact, reference riparian areas in the MLRA where the project is located. Large wood/trees with rootwads intact should be placed in streams to create pool habitat according to NRCS engineering specifications and with close review & approval of a fish habitat biologist. Boulders placed to provide ballast shall only be used if the geomorphic setting and project design demand this component. The planned activity will meet the current 395 standard, and facilitating practice standards utilized, including timing of work windows required for protected aquatic and riparian species, and protecting/restoring vegetation and substrates of/to areas impacted by heavy equipment. Implementation will result in the improvement of instream habitat complexity, hiding and resting cover, and/or increased food availability for fish and other stream species. Payment for implementation is to defray the costs of project implementation. Monitoring records demonstrating implementation of this scenario will address resource concerns for stream species of concern are required.

Before Situation:

In this stream reach, habitat for fish, aquatic insects and/or other stream species is sub-optimal as determined by the NRCS Stream Visual Assessment Protocol score of less than 5 overall. The site does not have adequate food, cover, and perhaps habitat connectivity for desired species. Riparian vegetation quality and/or quantity may also be compromised to the extent that the riparian area and floodplain are not functioning to provide necessary stream and riparian habitat components, such as large wood.

After Situation:

Stream habitat within the project reach is improving as a result of placing logs, root wads, and/or wood structures in the channel and/or along the stream bank. Pool habitat in the reach is improved, and hiding cover, food availability and refuge habitat for all stream species is improving.

Feature Measure: Bankfull width x reach length

Scenario Unit: Acres

Scenario Typical Size: 1.0

Scenario Total Cost: $18,962.84

Scenario Cost/Unit: $18,962.84

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Hydraulic Excavator, 2 CY	932	Track mounted hydraulic excavator with bucket capacity range of 1.5 to 2.5 CY. Equipment and power unit costs. Labor not included.	Hours	$126.60	16	$2,025.60
Truck, dump, 12 CY	1215	Dump truck for moving bulk material. Typically capacity is 16 ton or 12 cubic yards. Includes equipment only.	Hours	$77.81	8	$622.48
Labor						
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	24	$645.60
Materials						
Aggregate, Sand, Graded, Washed	45	Sand, typical ASTM C33 gradation, includes materials, equipment and labor to transport and place	Cubic Yards	$38.81	20	$776.20
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic Yards	$39.34	30	$1,180.20
Compost	265	A mixture of decaying organic matter, as from leaves and manure, used to improve soil structure and provide nutrients.	Ton	$60.26	1	$60.26
Tree & Shrub, Woody, Cuttings, Large	1309	Woody pole cuttings or posts 2 to 6 inches in diameter and 6 ft. long. Includes materials and shipping only.	Each	$10.66	300	$3,198.00
Boulder	1761	Rock boulders (approximately 5 ft dia. 6.67 Tons) Inlcudes materials and delivery (up to 100 miles) only.	Ton	$82.31	40	$3,292.40
Steel, rebar	1832	Steel rebar, grade 60. Materials only.	Pound	$0.54	50	$27.00
Aggregate, river rock	1834	Well graded, rounded mineral substrates derived from local riverine settings. Includes materials and local delivery	Ton	$34.98	15	$524.70
Log, un-anchored	2035	Price of log picked up at the Mill. Includes material only.	Ton	$182.79	30	$5,483.70
Root Wad	2045	Tree stump buried into the streambank with the roots left exposed. Includes material only.	Ton	$7.86	20	$157.20
Mobilization						
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$484.75	2	$969.50

Practice: 395 - Stream Habitat Improvement and Management

Scenario #24 - Instream rock placement

Scenario Description:

This scenario describes the implementation of a stream habitat improvement and management project that places individual boulders or boulder clusters, or rock structures in or adjacent to the stream channel as habitat components. A project design for boulder placement will be based on assessment of the target stream reach characteristics and those of a suitable reference reach. These characteristics include channel geometry, channel slope, stream bottom substrate size and composition, and the geomorphic setting influencing the channel form, pattern and profile. Large rocks/boulders placed in the stream channel will mimic geologic material sizes typically present in the watershed or observed in intact, reference stream reaches in the MLRA where the project is located. Boulders should be placed in streams to create pool habitat and hydraulic complexity according to NRCS engineering specifications and with close review & approval of a fish habitat biologis onsite during implementation of the project design. Spawning gravel placement should be placed to restore spawning area substrates potentially disturbed by rock placement. The planned activity will meet the current 395 standard, and facilitating practice standards utilized. Implementation will result in the improvement of instream habitat complexity, hiding and resting cover, spawning habitat, and/or increased food availability for fish and other stream species. Payment for implementation is to defray the costs of stream habitat assessment, and project implementation. Records demonstrating implementation of this scenario will address resource concerns for stream species of concern will be required.

Before Situation:

In this stream reach, habitat for fish, aquatic insects and other stream species is sub-optimal as determined by the NRCS Stream Visual Assessment Protocol score of less than 5 overall. The site does not have adequate food, cover, and perhaps habitat connectivity for desired species. Riparian vegetation quality and/or quantity may be also compromised to the extent that the riparian area and floodplain are not functioning to provide necessary stream and riparian habitat components, such as large wood, leaf matter, and shade.

After Situation:

Stream habitat within the project reach is improving as a result of placing boulders or constructing rock structures in the channel and/or along the stream bank. Hydraulic complexity of the habitat in the reach is increased, and hiding cover, food availability and refuge habitat for stream species is improving. Streambank vegetation is increasing and contributing to stability of the streambanks.

Feature Measure: Bankfull width x reach length

Scenario Unit: Acres

Scenario Typical Size: 1.0

Scenario Total Cost: $17,223.36

Scenario Cost/Unit: $17,223.36

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Hydraulic Excavator, 2 CY	932	Track mounted hydraulic excavator with bucket capacity range of 1.5 to 2.5 CY. Equipment and power unit costs. Labor not included.	Hours	$126.60	16	$2,025.60
Truck, dump, 12 CY	1215	Dump truck for moving bulk material. Typically capacity is 16 ton or 12 cubic yards. Includes equipment only.	Hours	$77.81	8	$622.48
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	16	$370.88
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	24	$645.60
Materials						
Aggregate, Sand, Graded, Washed	45	Sand, typical ASTM C33 gradation, includes materials, equipment and labor to transport and place	Cubic Yards	$38.81	30	$1,164.30
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic Yards	$39.34	120	$4,720.80
Tree & Shrub, Woody, Cuttings, Large	1309	Woody pole cuttings or posts 2 to 6 inches in diameter and 6 ft. long. Includes materials and shipping only.	Each	$10.66	100	$1,066.00
Boulder	1761	Rock boulders (approximately 5 ft dia. 6.67 Tons) Inlcudes materials and delivery (up to 100 miles) only.	Ton	$82.31	60	$4,938.60
Aggregate, river rock	1834	Well graded, rounded mineral substrates derived from local riverine settings. Includes materials and local delivery	Ton	$34.98	20	$699.60
Mobilization						
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$484.75	2	$969.50

Practice: 395 - Stream Habitat Improvement and Management

Scenario #25 - Rock and wood structures

Scenario Description:

This scenario describes the implementation of a stream habitat improvement and management project where practices are focused on instream habitat improvement with a combination of rock AND wood structures. This senario involves placement of large wood and rock structures into a stream channel in order to improve aquatic habitat that currently does not meet quality criteria for stream species habitat. A stream assessment (i.e. Stream Visual Assessment Protocol) should be conducted in order to document habitat components (such as large wood, pools) are not currently present in the stream or are limited for aquatic species. A project design for placement of habitat structures (boulders, boulder clusters, wood, wood structures) will be based on assessment of (a) the target stream reach characteristics and (b) those of a suitable reference reach. These characteristics include channel geometry, channel slope, stream bottom substrate size and composition, and the geomorphic setting influencing the channel form, pattern and profile. Large rocks/boulders placed in the stream channel will mimic geologic material sizes typically present in the watershed or observed in intact, reference stream reaches in the MLRA where the project is located. Rock boulder sizes should also reflect the geomorphic setting of the stream reach. Large wood placed into the stream under this scenario should be similar in species, age, and size (diameter) as trees found in the surrounding riparian area, to the extent possible. Wood, boulders and/or boulder clusters will be placed in the stream to create pool habitat and hydraulic complexity according to NRCS engineering specifications and with close review & approval of a fish habitat biologist onsite during the planning and implementation of the project. This scenario involves restoring one acre of stream. The planned activity will meet the current 395 standard, and facilitating practice standards utilized. Implementation will result in the improvement of instream habitat complexity, hiding and resting cover, and/or increased food availability for fish and other stream species. Payment for implementation is to defray the costs of project implementation. Records demonstrating implementation of this scenario will address resource concerns for stream species of concern will be required.

Before Situation:

In this stream reach, habitat for fish, aquatic insects and/or other stream species is sub-optimal as determined by the NRCS Stream Visual Assessment Protocol score of less than 5. The site does not have adequate food, cover, and perhaps habitat connectivity for desired species. Riparian vegetation quality and/or quantity may also be compromised to the extent that the riparian area and floodplain are not functioning to provide necessary stream habitat components, such as large wood and off-channel refuge habitat.

After Situation:

Stream habitat within the project reach is improving as a result of placing logs, rocks, or constructing wood and rock structures in the channel and/or along the stream bank. Pool habitat in the reach is improved, and hiding cover, food availability and refuge habitat for all stream species is improving.

Feature Measure: stream length X bankfull width

Scenario Unit: Acres

Scenario Typical Size: 1.0

Scenario Total Cost: $32,502.49

Scenario Cost/Unit: $32,502.49

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Hydraulic Excavator, 2 CY	932	Track mounted hydraulic excavator with bucket capacity range of 1.5 to 2.5 CY. Equipment and power unit costs. Labor not included.	Hours	$126.60	16	$2,025.60
Truck, dump, 12 CY	1215	Dump truck for moving bulk material. Typically capacity is 16 ton or 12 cubic yards. Includes equipment only.	Hours	$77.81	8	$622.48
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	60	$1,803.00
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	24	$556.32
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	24	$645.60
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	180	$7,520.40
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	32	$2,977.28
Materials						
Aggregate, Sand, Graded, Washed	45	Sand, typical ASTM C33 gradation, includes materials, equipment and labor to transport and place	Cubic Yards	$38.81	17	$659.77
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic Yards	$39.34	60	$2,360.40
Compost	265	A mixture of decaying organic matter, as from leaves and manure, used to improve soil structure and provide nutrients.	Ton	$60.26	1	$60.26

Tree & Shrub, Woody, Cuttings, Large	1309	Woody pole cuttings or posts 2 to 6 inches in diameter and 6 ft. long. Includes materials and shipping only.	Each	$10.66	300	$3,198.00
Boulder	1761	Rock boulders (approximately 5 ft dia. 6.67 Tons) Inlcudes materials and delivery (up to 100 miles) only.	Ton	$82.31	40	$3,292.40
Steel, rebar	1832	Steel rebar, grade 60. Materials only.	Pound	$0.54	8	$4.32
Aggregate, river rock	1834	Well graded, rounded mineral substrates derived from local riverine settings. Includes materials and local delivery	Ton	$34.98	7	$244.86
Log, un-anchored	2035	Price of log picked up at the Mill. Includes material only.	Ton	$182.79	30	$5,483.70
Root Wad	2045	Tree stump buried into the streambank with the roots left exposed. Includes material only.	Ton	$7.86	10	$78.60
Mobilization						
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$484.75	2	$969.50

Practice: 395 - Stream Habitat Improvement and Management

Scenario #26 - Fish Barrier

Scenario Description:

This scenario describes the implementation of a stream habitat improvement and management project where practices are focused on the stream channel. The planned activity will meet the current 395 standard, and facilitating practice standards utilized. Implementation will result in protecting native aquatic fauna in the reach from competition or harrassament from non-native fish. This action may also increase food availability for fish and other stream species located above the constructed barrier. Payment for implementation is to defray the costs of stream habitat assessment above the barrier, and project implementation. Records demonstrating implementation of this scenario will address resource concerns for aquatic and riparian species of concern will be required.

Before Situation:

In this stream corridor, native aquatic species are at risk as determined by the state fish and wildlife agency. NRCS Stream Visual Assessment Protocol for the reach being protected by a barrier meets quality criteria and provides habitat for native species of concern, as determined by a Stream Visual Assessment Protocol score of greater than 5 .

After Situation:

Native fish inhabiting areas upstream of the newly constructed concrete barrier will not be adversely affected by interactions with non-native species/competitors.

Feature Measure: Each

Scenario Unit: Cubic Yards

Scenario Typical Size: 5.0

Scenario Total Cost: $32,256.43

Scenario Cost/Unit: $6,451.29

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Concrete, CIP, formed reinforced	38	Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yards	$415.80	60	$24,948.00
Hydraulic Excavator, 2 CY	932	Track mounted hydraulic excavator with bucket capacity range of 1.5 to 2.5 CY. Equipment and power unit costs. Labor not included.	Hours	$126.60	10	$1,266.00
Truck, Concrete Pump	1211	Concrete pump, normally truck mounted. Use this item in association with other concrete components when job requires placement by other than normal chutes. Include drive and setup time in quantity; therefore, do not include mobilization. Includes equipment and operator.	Hours	$72.51	36	$2,610.36
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	10	$300.50
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	10	$231.80
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	10	$269.00
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	8	$744.32
Materials						
Steel, rebar	1832	Steel rebar, grade 60. Materials only.	Pound	$0.54	40	$21.60
Plywood, 3/4 inch, untreated	1833	Untreated 4 x 8 ft. sheets of 3/4 inch exterior grade plywood. Includes materials only.	Each	$59.69	15	$895.35
Mobilization						
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$484.75	2	$969.50

Practice: 396 - Aquatic Organism Passage

Scenario #31 - Concrete Dam Removal

Scenario Description:

Full or partial removal of a concrete or earthen dam to restore aquatic organism passage, improve water quality, and promote functional river ecology and geomorphology. The extent of removal (full or partial) is determined through consultations with the dam owner in consideration of prevailing regulations and site historical status. Adjacent floodplain surfaces above and below the target dam are considered in the planning process to account for shifts in streamflow and geomorphic regime. Resulting channel dimensions and profile are determined on a site-specific basis to reflect--to the fullest extent possible--pre-dam conditions. Pre-removal sediment assays are completed to determine the toxicity of sediment stored behind the dam. Planning for the reclamation and management of stored sediments is completed according to geomorphic conditions, prevailing regulations, and the results of sediment toxicity investigations. Removal is done with an assortment of equipment, including tracked excavators outfitted with hydraulic chisels, hammers and/or buckets with "thumbs", bull dozers, skid steers, cranes, front-end loaders, and dump trucks. Alternative demolition techniques may include the use of high explosives, diamond-chain, or similar circular saws to remove the dam in a piecewise manner. Removed materials are trucked away and disposed or recycled off-site. Disturbed areas are revegetated with a mix of site-adapted species. Scenario does not include additional measures needed in the active channel and floodplain to account for post-removal changes to stream plan, pattern, or profile, or reclamation of any former impounded areas. Additional structural measures may be necessary to address constructed features associated with the removed dam including canals, raceways, adjacent spillways, navigation locks, access and maintenance roads, or similar civil works. RESOURCE CONCERNS: INADEQUATE HABITAT FOR FISH AND WILDLIFE –Habitat degradation; EXCESS WATER – Ponding, flooding, seasonal high water table, seeps, and drifted snow; WATER QUALITY DEGRADATION – Elevated water temperature. Payments for these associated practices are made separately and are covered by other typical scenarios and payment schedules. See relevant CPS for additional information. ---Site Preparation and Reclamation associated with project footprint: (326) Clearing and Snagging, (342) Critical Area Planting, (382) Fence, (390) Riparian Herbaceous Cover, (391) Riparian Forest Buffer, (612) Tree/Shrub Establishment ---Reach Planning/Habitat Enhancement: (395) Stream Habitat Improvement and Management, ---Structural Measures Associated with Scenario but outside of project footprint: (410) Grade Stabilization Structure, (584) Channel Bed Stabilization, (580) Streambank and Shoreline Protection, (587) Structure for Water Control

Before Situation:

A channel-spanning concrete dam no longer has functional use, may be failing, or creates a hazard to downstream capital infrastructure or communities. The dam blocks upstream aquatic organism migration, and downstream migrants may be diverted into hydraulic structures that increase mortality or result in migration delays or dead-ends. The dam disrupts the downstream cycling and transport of sediment, woody material and nutrients. The pool created by the dam may impair water quality by increasing temperatures, capturing fine sediment--sometimes laden with heavy metals or other pollutants--later mobilized by high flow events, and creating slackwater habitat for invasive aquatic vegetation. Non-native or exotic fish species inhabit the pool and predate upon and/or displace native fish.

After Situation:

The existing dam is removed and reach geometry and slope are restored to pre-dam conditions to the fullest extent practicable. Aquatic organism passage and river ecology and geomorphic conditions are restored to pre-dam conditions to the fullest extent practicable. Resource Concerns are addressed within the context of the site.

Feature Measure: Cubic Yards of concrete in dam and

Scenario Unit: Cubic Yards

Scenario Typical Size: 250.0

Scenario Total Cost: $34,196.63

Scenario Cost/Unit: $136.79

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Clearing and Grubbing	40	Clearing and Grubbing, includes materials, equipment and labor	Acres	$304.62	1.5	$456.93
Dozer, 140 HP	927	Track mounted Dozer with horsepower range of 125 to 160. Equipment and power unit costs. Labor not included.	Hours	$97.92	20	$1,958.40
Hydraulic Excavator, 2 CY	932	Track mounted hydraulic excavator with bucket capacity range of 1.5 to 2.5 CY. Equipment and power unit costs. Labor not included.	Hours	$126.60	60	$7,596.00
Skidsteer, 80 HP	933	Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$59.94	60	$3,596.40
Water management, Flooding & dewatering	969	Includes equipment and power unit. Labor not included.	Acre Feet	$165.84	6	$995.04
Truck, dump, 12 CY	1215	Dump truck for moving bulk material. Typically capacity is 16 ton or 12 cubic yards. Includes equipment only.	Hours	$77.81	80	$6,224.80
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	80	$2,404.00
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	60	$1,390.80
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	220	$5,918.00

Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	40	$1,671.20
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	4	$1,015.56
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$484.75	2	$969.50

Practice: 396 - Aquatic Organism Passage

Scenario #32 - Earthen Dam Removal

Scenario Description:

Full removal of an earthen dam to restore aquatic organism passage, improve water quality, and promote functional river ecology and geomorphology. The removal extent is determined through consultations with the dam owner in consideration of prevailing regulations and site historical status. Adjacent floodplain surfaces above and below the target dam are considered in the planning process to account for shifts in streamflow and geomorphic regime. Resulting channel dimensions and profile are determined on a site-specific basis to reflect, to the fullest extent possible, pre-dam conditions. Pre-removal sediment assays are be completed as necessary to determine the toxicity of sediment stored behind the dam. Planning for the reclamation and management of stored sediments is completed according to geomorphic conditions, prevailing regulations, and the results of sediment toxicity investigations. Removal is done with an assortment of equipment, including tracked excavators outfitted with hydraulic chisels, hammers and/or buckets with "thumbs", bull dozers, skid steers, cranes, front-end loaders, and dump trucks. Removed materials are trucked away and disposed or recycled off-site, unless native streambed material found in the embankment can be used in site reclamation. Disturbed areas are revegetated with a mix of site-adapted species. Scenario does not include additional measures needed in the active channel and floodplain to account for post-removal changes to stream plan, pattern, or profile, or reclamation of any former impounded areas. Additional structural measures may be necessary to address constructed features associated with the removed dam including head gates, canals, raceways, access and maintenance roads, or similar civil works. RESOURCE CONCERNS: INADEQUATE HABITAT FOR FISH AND WILDLIFE –Habitat degradation; EXCESS WATER – Ponding, flooding, seasonal high water table, seeps, and drifted snow; WATER QUALITY DEGRADATION – Elevated water temperature. Payments for these associated practices are made separately and are covered by other typical scenarios and payment schedules. See relevant CPS for additional information. ---Site Preparation and Reclamation associated with project footprint: (326) Clearing and Snagging, (342) Critical Area Planting, (382) Fence, (390) Riparian Herbaceous Cover, (391) Riparian Forest Buffer, (612) Tree/Shrub Establishment ---Reach Planning/Habitat Enhancement: (395) Stream Habitat Improvement and Management, ---Structural Measures Associated with Scenario but outside of project footprint: (410) Grade Stabilization Structure, (584) Channel Bed Stabilization, (580) Streambank and Shoreline Protection, (587) Structure for Water Control

Before Situation:

A channel-spanning earthen dam no longer has functional use, may be failing, or creates a hazard to downstream capital infrastructure or communities. The dam blocks upstream aquatic organism migration, and downstream migrants may be diverted into hydraulic structures that increase mortality or result in migration delays or dead-ends. The dam disrupts the downstream cycling and transport of sediment, woody material and nutrients. The pool created by the dam may impair water quality by increasing temperatures, capturing fine sediment--sometimes laden with heavy metals or other pollutants--later mobilized by high flow events, and creating slackwater habitat for invasive aquatic vegetation. Non-native or exotic fish species inhabit the pool and predate upon and/or displace native fish.

After Situation:

The existing dam is removed and reach geometry and slope are restored to pre-dam conditions to the fullest extent practicable. Aquatic organism passage and river ecology and geomorphic conditions are restored to pre-dam conditions to the fullest extent practicable. Resource Concerns are addressed within the context of the site.

Feature Measure: Cubic Yards of earthen embankme

Scenario Unit: Cubic Yards

Scenario Typical Size: 500.0

Scenario Total Cost: $29,011.76

Scenario Cost/Unit: $58.02

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Clearing and Grubbing	40	Clearing and Grubbing, includes materials, equipment and labor	Acres	$304.62	3	$913.86
Dozer, 140 HP	927	Track mounted Dozer with horsepower range of 125 to 160. Equipment and power unit costs. Labor not included.	Hours	$97.92	40	$3,916.80
Hydraulic Excavator, 2 CY	932	Track mounted hydraulic excavator with bucket capacity range of 1.5 to 2.5 CY. Equipment and power unit costs. Labor not included.	Hours	$126.60	60	$7,596.00
Skidsteer, 80 HP	933	Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$59.94	60	$3,596.40
Water management, Flooding & dewatering	969	Includes equipment and power unit. Labor not included.	Acre Feet	$165.84	6	$995.04
Truck, dump, 12 CY	1215	Dump truck for moving bulk material. Typically capacity is 16 ton or 12 cubic yards. Includes equipment only.	Hours	$77.81	60	$4,668.60
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	40	$1,202.00
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	60	$1,390.80
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	40	$1,076.00
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	40	$1,671.20

Mobilization

Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	4	$1,015.56
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$484.75	2	$969.50

Practice: 396 - Aquatic Organism Passage

Scenario #33 - Blockage Removal

Scenario Description:

Removal of passage barriers, including small relict earthen diversions (e.g., splash dams), failing or undersized culverts, and sediment or large woody material (>10cm diameter and 2m length) from mass wasting or major flood events. Instream material associated with the previously mentioned circumstances or structures prevents aquatic organism passage by the creation of channel-spanning blockages, or areas of shallow depth, high velocities, or extensive changes in water surface elevation. In addition, these features may encourage abrupt channel changes that endanger adjacent capital infrastructure or transportation corridors. Excessive streambank erosion by flows deflected around or impounded behind these features may impair water quality by introducing fine sediment out of phase with the natural hydrograph and the life history requirements of native aquatic species. Removal is done with an assortment of equipment, including tracked excavators outfitted with buckets with "thumbs", bull dozers, skid steers, front-end loaders, and dump trucks. The channel and adjacent floodplain are restored to pre-blockage conditions to the fullest extent practicable. Removed materials are trucked away and disposed or recycled off-site, unless native streambed material found in the blockage can be used in site reclamation. Large woody material, if present, is used for instream reclamation, replaced in the channel downstream of the blockage, or trucked offsite for disposal or stockpiling for future projects. Disturbed areas are revegetated with a mix of site-adapted species. Scenario does not include additional measures needed in the active channel and floodplain. RESOURCE CONCERNS: INADEQUATE HABITAT FOR FISH AND WILDLIFE –Habitat degradation; EXCESS WATER – Ponding, flooding, seasonal high water table, seeps, and drifted snow; WATER QUALITY DEGRADATION – Elevated water temperature; SOIL EROSION– Excessive bank erosion from streams shorelines or water conveyance channels Payments for these associated practices are made separately and are covered by other typical scenarios and payment schedules. See relevant CPS for additional information. ---Site Preparation and Reclamation associated with project footprint: (342) Critical Area Planting, (382) Fence, (390) Riparian Herbaceous Cover, (391) Riparian Forest Buffer, (612) Tree/Shrub Establishment; (643) Restoration and Management of Rare and Declining Habitats. ---Reach Planning/Habitat Enhancement: (395) Stream Habitat Improvement and Management, ---Structural Measures Associated with Scenario but outside of project footprint: (410) Grade Stabilization Structure, (584) Channel Bed Stabilization, (580) Streambank and Shoreline Protection

Before Situation:

An instream feature spanning the active channel creates hydraulic conditions that exceed the swimming or crawling abilities of native aquatic organisms. Event-driven mass wasting or instream deposits of coarse sediment create channel blockages or areas of shallow, fast-moving water. An instream plug of material transported to the site by flood flows or delivered to the channel from a hillslope failure not only blocks passage, but may deflect the stream toward a new course than endangers adjacent capital infrastructure or transportation corridors. Elevated risks associated with eventual over-topping or failure of the blockage to downstream features or communities are imminent in the event of a blockage that forms a temporary dam. Accelerated instream or lateral channel erosion may introduce fine sediment that impairs water quality.

After Situation:

The instream barrier is removed by a combination of methods and equipment and the channel and affected floodplain are restored to pre-blockage conditions to the fullest extent practicable. Resource Concerns are addressed within the context of the site.

Feature Measure: Cubic Yards of mineral sediment, fil

Scenario Unit: Cubic Yards

Scenario Typical Size: 200.0

Scenario Total Cost: $18,091.52

Scenario Cost/Unit: $90.46

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Backhoe, 80 HP	926	Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$31.57	40	$1,262.80
Dozer, 140 HP	927	Track mounted Dozer with horsepower range of 125 to 160. Equipment and power unit costs. Labor not included.	Hours	$97.92	20	$1,958.40
Hydraulic Excavator, 2 CY	932	Track mounted hydraulic excavator with bucket capacity range of 1.5 to 2.5 CY. Equipment and power unit costs. Labor not included.	Hours	$126.60	20	$2,532.00
Skidsteer, 80 HP	933	Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$59.94	20	$1,198.80
Water management, Flooding & dewatering	969	Includes equipment and power unit. Labor not included.	Acre Feet	$165.84	2	$331.68
Truck, dump, 12 CY	1215	Dump truck for moving bulk material. Typically capacity is 16 ton or 12 cubic yards. Includes equipment only.	Hours	$77.81	40	$3,112.40
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	20	$601.00
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	140	$3,766.00
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	20	$835.60
Mobilization						

Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	6	$1,523.34
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$484.75	2	$969.50

Practice: 396 - Aquatic Organism Passage

Scenario #34 - Nature-Like Fishway

Scenario Description:

Nature-like fishways, also known as roughened channels, rock ramps, or bypass channels, are constructed features that provide passage around an instream barrier or in place of a removed barrier. Fishway design is based on simulating or mimicking adjacent stream characteristics, using natural materials, and providing suitable passage conditions over a range of flows for a wide variety of fish species and other aquatic organisms. Nature-like fishways provide enhanced passage conditions compared to concrete or aluminum (Alaskan Steeppass) ladders, and are not as susceptible to debris-related operational issues. When used to bypass an instream barrier, they require a larger footprint than instream structures, and may also require control structures to regulate flow through the fishway or address tailwater fluctuations affecting the fishway entrance (downstream end). Fishway design includes an assessment of adjacent stream characteristics, including channel geometry, slope, sediment texture and composition, and major geomorphic units that govern channel plan, pattern and profile. In the case of a fishway that bypasses an instream barrier, the design is tailored to these elements, the elevation required to ascend the barrier, and the known range of flow variation or operations. For fishways constructed in the place of a removed barrier, the design may be a hybrid approach that meets the same criteria, although in a smaller instream footprint. Nature-like fishways are constructed with an assortment of equipment used for excavation, placing material, and delivering and removing material. Construction elements generally include an assortment of rock used to create riffles, cascades, or riffle-pool sequences with between 6 to 12 inches of water surface elevation drop between adjacent structures. Large woody material is used to create channel structural elements in some settings, when available and where approved by oversight agencies. Removed materials are trucked away and disposed or recycled off-site, unless excavated native streambed material can be used in fishway construction. Large woody material or removed trees, if present, are used for fishway construction trucked offsite for disposal, or trucked offsite for stockpiling for future projects. Disturbed areas are revegetated with a mix of site-adapted species, and access control and signage are provided. Scenario does not include additional measures needed in the active channel and floodplain or at an existing dam necessary to control flow associated with nature-like fishway. RESOURCE CONCERNS: INADEQUATE HABITAT FOR FISH AND WILDLIFE –Habitat degradation; EXCESS WATER – Ponding, flooding, seasonal high water table, seeps, and drifted snow; WATER QUALITY DEGRADATION – Elevated water temperature; EROSION– Excessive bank erosion from streams shorelines or water conveyance channels Payments for these associated practices are made separately and are covered by other typical scenarios and payment schedules. See relevant CPS for additional information. ---Site Preparation and Reclamation associated with project footprint: (326) Clearing and Snagging, (342) Critical Area Planting, (382) Fence, (390) Riparian Herbaceous Cover, (391) Riparian Forest Buffer, (612) Tree/Shrub Establishment ---Reach Planning/Habitat Enhancement: (395) Stream Habitat Improvement and Management, ---Structural Measures Associated with Scenario but outside of project footprint: (410) Grade Stabilization Structure, (582) Open Channel, (584) Channel Bed Stabilization, (580) Streambank and Shoreline Protection, (587) Structure for Water Control

Before Situation:

An instream barrier prevents upstream migration of native aquatic organisms and no support exists for removal. Similarly, an instream barrier is removed, and interested parties require maintenance of an upstream pool or pond. The subject stream contains a number of migrating aquatic organisms ranging in size from small to large with a range of propulsion abilities--weak to strong swimmers and animals that crawl along the bottom. In either case--barrier removal or bypassing an existing barrier--local sentiment to preserve existing or natural conditions and the desire to provide passage for a range of aquatic organisms indicate the use of a nature-like fishway. Adequate space for a bypass channel is available, and adjacent landowners approve.

After Situation:

A nature-like fishway is constructed in place of a removed barrier or around an existing barrier. The fishway is designed to mimic the adjacent natural stream, and is constructed of rock and/or large woody material that provides quality passage conditions for a number of species and geomorphic stability over a range of flows. Resource Concerns are addressed within the context of the site.

Feature Measure: Acres of constructed fishway (bank

Scenario Unit: Acres

Scenario Typical Size: 1.0

Scenario Total Cost: $82,304.40

Scenario Cost/Unit: $82,304.40

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Clearing and Grubbing	40	Clearing and Grubbing, includes materials, equipment and labor	Acres	$304.62	3	$913.86
Geotextile, woven	42	Woven Geotextile Fabric. Includes materials, equipment and labor	Square Yard	$1.18	12000	$14,160.00
Earthfill, Manually Compacted	50	Earthfill, manually compacted, includes equipment and labor	Cubic Yards	$5.73	100	$573.00
Backhoe, 80 HP	926	Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$31.57	80	$2,525.60
Hydraulic Excavator, 2 CY	932	Track mounted hydraulic excavator with bucket capacity range of 1.5 to 2.5 CY. Equipment and power unit costs. Labor not included.	Hours	$126.60	80	$10,128.00
Skidsteer, 80 HP	933	Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$59.94	100	$5,994.00
Water management, Flooding & dewatering	969	Includes equipment and power unit. Labor not included.	Acre Feet	$165.84	2	$331.68
Truck, dump, 12 CY	1215	Dump truck for moving bulk material. Typically capacity is 16 ton or 12 cubic yards. Includes equipment only.	Hours	$77.81	100	$7,781.00
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	80	$2,404.00

General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	60	$1,390.80
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	280	$7,532.00
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	60	$2,506.80
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	240	$22,329.60
Materials						
Aggregate, river rock	1834	Well graded, rounded mineral substrates derived from local riverine settings. Includes materials and local delivery	Ton	$34.98	50	$1,749.00
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	4	$1,015.56
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$484.75	2	$969.50

Practice: 396 - Aquatic Organism Passage

Scenario #35 - CMP Culvert

Scenario Description:

A corrugated metal (galvanized steel or aluminum) pipe culvert (CMP) of any shape (round, elliptical, or squash) used at a road-stream crossing to provide aquatic organism passage (AOP) and promote stream ecological and geomorphic function. CMPs used for AOP are sized according to geomorphic analyses, not just an estimate of runoff and streamflow at the site from the contributing watershed. In addition, CMPs used for AOP are filled with a mixture of rock and gravel sized to emulate site stream conditions and geomorphic units in the channel. The simulated streambed material is continuous throughout the culvert barrel, and blended with the intact streambed at the culvert inlet and outlet. The first estimate of culvert size--diameter or span--is obtained by analyzing bankfull channel width on a reach of stream not affected by an existing road crossing or other conditions that alter self-formed conditions. In the case of a culvert replacement, bankfull investigations are begun at least 10-20 estimated bankfull channel widths above the existing stream crossing. Culvert diameter or span is then increased according to channel bed composition and texture, bank characteristics, channel alignment at the crossing section, and other parameters that may affect channel dynamics and stability. Once the CMP diameter or span is determined, culvert length will be determined by roadway geometry and loading requirements, and site stream conditions. Concrete headwalls and/or wingwalls may be necessary in shorter installations and/or where fill/roadway cover is limited or the stream alignment is not perpendicular to the road axis. Culvert wall thickness and corrugations are determined by road loading requirements. Stream geomorphic characteristics, including the reach longitudinal profile, channel cross-sectional shape, substrate composition and arrangement, and bank shape and composition are determined. CMPs are installed with an assortment of equipment used for excavation, placing material, and delivering and removing material. Construction elements generally include an assortment of rock used to create riffles, cascades, or riffle-pool sequences with between 6 to 12 inches of water surface elevation drop between adjacent structures. Stream dewatering and diversion around the work site is often required, and temporary road closure or re-routing may also be required. . Channel bed material within the culvert barrel varies according to prevailing stream characteristics at the crossing site. The culvert is placed within the roadway on a subexcavated compacted bed, set at a slope that matches the design longitudinal profile, and backfilled with a bed mixture that mimics adjacent stream characteristics with special attention to channel pattern. Backfill depths are typically at least 20% of the culvert diameter or rise, but may deviate based on the shape of the culvert used, channel dimensions, substrate size, and the site longitudinal profile. Special equipment such as motorized wheelbarrows may be necessary to backfill smaller CMPs. Once the simulated streambed in the culvert barrel is complete, the roadway is replaced and any necessary armoring and revegetating material is placed at the culvert inlet and outlet where it intersects the road fill prism. Other actions include construction staking and signage, soil erosion and pollution control, removal and disposal of the old culvert, and topsoil conservation for site reclamation. Disturbed areas are revegetated with a mix of site-adapted species. Scenario does not include additional measures needed to address channel incision, bank stability, and other factors associated with the presence of the stream crossing. RESOURCE CONCERNS: INADEQUATE HABITAT FOR FISH AND WILDLIFE –Habitat degradation; EXCESS WATER – Ponding, flooding, seasonal high water table, seeps, and drifted snow; WATER QUALITY DEGRADATION – Elevated water temperature; SOIL EROSION– Excessive bank erosion from streams shorelines or water conveyance channels Payments for these associated practices are made separately and are covered by other typical scenarios and payment schedules. See relevant CPS for additional information. ---Site Preparation and Reclamation associated with project footprint: (342) Critical Area Planting, (382) Fence, (390) Riparian Herbaceous Cover, (391) Riparian Forest Buffer, (612) Tree/Shrub Establishment; ---Reach Planning/Habitat Enhancement: (395) Stream Habitat Improvement and Management, ---Structural Measures Associated with Scenario but outside of project footprint: (410) Grade Stabilization Structure, (584) Channel Bed Stabilization, (580) Streambank and Shoreline Protection

Before Situation:

An existing undersized culvert as contributed to general bed and bank scour downstream of a road crossing, and may have contributed to the deposition of a wedge of sediment upstream of the road crossing. The road may be overtopped by high flows, resulting in outright failure, landowner accessibility problems, access by and to emergency services, and hamper post-flood recovery efforts. An upstream impoundment created by the undersized culvert has contributed to water quality problems including high water temperatures and the deposition and later mobilization of polluted fine sediment. Native aquatic organisms are unable to pass through the road crossing because the culvert outlet is perched above the downstream pool, and high velocities are not negotiable by animals that are able to leap into the culvert barrel.

After Situation:

The undersized culvert is replaced with a CMP sized, placed, and backfilled with material determined by geomorphic analyses performed in a reference reach upstream of the crossing location. Geomorphic and ecological functions are preserved through the crossing site, enhancing AOP, water quality, and culvert longevity. In addition, because the culvert is sized to promote the transport of streamflow and the materials it carries, it requires decreased maintenance activities over time. Landowners are able to access their holdings across a range of flows, and are able to seek and receive emergency and post-flood recovery services. Resource Concerns are addressed within the context of the site.

Feature Measure: CMP

Scenario Unit: Each

Scenario Typical Size: 1.0

Scenario Total Cost: $28,442.22

Scenario Cost/Unit: $28,442.22

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Geotextile, woven	42	Woven Geotextile Fabric. Includes materials, equipment and labor	Square Yard	$1.18	900	$1,062.00
Hydraulic Excavator, 2 CY	932	Track mounted hydraulic excavator with bucket capacity range of 1.5 to 2.5 CY. Equipment and power unit costs. Labor not included.	Hours	$126.60	40	$5,064.00
Skidsteer, 80 HP	933	Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$59.94	60	$3,596.40
Water management, Flooding & dewatering	969	Includes equipment and power unit. Labor not included.	Acre Feet	$165.84	1	$165.84
Truck, dump, 12 CY	1215	Dump truck for moving bulk material. Typically capacity is 16 ton or 12 cubic yards. Includes equipment only.	Hours	$77.81	40	$3,112.40
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	40	$1,202.00
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	60	$1,390.80
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	140	$3,766.00
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	40	$1,671.20
Materials						
Aggregate, river rock	1834	Well graded, rounded mineral substrates derived from local riverine settings. Includes materials and local delivery	Ton	$34.98	75	$2,623.50
Pipe, CMP, 96 in., 14 Gauge	1835	96 inch Corrugated Metal Pipe, Galvanized, Uncoated, 14 gage. Material cost only.	Feet	$82.77	40	$3,310.80
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$484.75	2	$969.50

Practice: 396 - Aquatic Organism Passage

Scenario #36 - Bottomless Culvert

Scenario Description:

A multi-plate galvanized steel or aluminum culvert (arch or box) used at a road-stream crossing to provide aquatic organism passage (AOP) and promote stream ecological and geomorphic function. They commonly attach to preformed reinforced or poured-in-place concrete footings. Bottomless culverts used for AOP are sized according to geomorphic analyses, not just an estimate of runoff and streamflow at the site from the contributing watershed. In addition, bottomless culverts used for AOP are filled with a mixture of rock and gravel sized to emulate site stream conditions and geomorphic units in the channel. The simulated streambed material is continuous throughout the culvert barrel, and blended with the intact streambed at the culvert inlet and outlet. The first estimate of culvert span is obtained by analyzing bankfull channel width on a reach of stream not affected by an existing road crossing or other conditions that alter self-formed conditions. In the case of a culvert replacement, bankfull investigations are begun at least 10-20 estimated bankfull channel widths above the existing stream crossing. Culvert span is then increased according to channel bed composition and texture, bank characteristics, channel alignment at the crossing section, and other parameters that may affect channel dynamics and stability. Once the culvert span is determined, culvert length will be dictated by roadway geometry and loading requirements, and site stream conditions. Concrete headwalls and/or wingwalls may be necessary in shorter installations and/or where fill/roadway cover is limited or the stream alignment is not perpendicular to the road axis. Culvert wall thickness and footing requirements are determined by road loading requirements and site geotechnical investigations. Generally, the preferred footing is a T-design with a spread footing with stem wall. Connecting the culvert leg to the footing can be done by welding, grouting, bolting. Stream geomorphic characteristics, including the reach longitudinal profile, channel cross-sectional shape, substrate composition and arrangement, and bank shape and composition are determined. Bottomless arch or box culverts are commonly delivered in sections and bolted together in the field. Smaller arches can be delivered in one piece. They are installed with an assortment of equipment used for excavation, placing material, and delivering and removing material. Construction elements generally include an assortment of rock used to create riffles, cascades, or riffle-pool sequences with between 6 to 12 inches of water surface elevation drop between adjacent structures. Stream dewatering and diversion around the work site is often required, and temporary road closure or re-routing may also be required. Channel bed material within the culvert barrel varies according to prevailing stream characteristics at the crossing site. Footings are placed or poured, and the new streambed is set at a slope that matches the design longitudinal profile, and backfilled with a bed mixture that mimics adjacent stream characteristics with special attention to channel pattern. Once the simulated streambed between the footings is complete, the culvert sections are assembled and attached to the footings. Larger rock may be placed along the footing/culvert stemwall to project the connection from damage by transported bedload. The roadway is replaced and any necessary armoring and revegetating material is placed at the culvert inlet and outlet where it intersects the road fill prism. Other actions include construction staking and signage, soil erosion and pollution control, removal and disposal of the old culvert, and topsoil conservation for site reclamation. Disturbed areas are revegetated with a mix of site-adapted species. Scenario does not include additional measures needed to address channel incision, bank stability, and other factors associated with the presence of the stream crossing. Scenario does not include concrete for head or wingwalls. RESOURCE CONCERNS: INADEQUATE HABITAT FOR FISH AND WILDLIFE –Habitat degradation; EXCESS WATER – Ponding, flooding, seasonal high water table, seeps, and drifted snow; WATER QUALITY DEGRADATION – Elevated water temperature; SOIL EROSION– Excessive bank erosion from streams shorelines or water conveyance channels Payments for these associated practices are made separately and are covered by other typical scenarios and payment schedules. See relevant CPS for additional information. ---Site Preparation and Reclamation associated with project footprint: (342) Critical Area Planting, (382) Fence, (390) Riparian Herbaceous Cover, (391) Riparian Forest Buffer, (612) Tree/Shrub Establishment; ---Reach Planning/Habitat Enhancement: (395) Stream Habitat Improvement and Management, ---Structural Measures Associated with Scenario but outside of project footprint: (410) Grade Stabilization Structure, (584) Channel Bed Stabilization, (580) Streambank and Shoreline Protection

Before Situation:

An existing undersized culvert as contributed to general bed and bank scour downstream of a road crossing, and may have contributed to the deposition of a wedge of sediment upstream of the road crossing. The road may be overtopped by high flows, resulting in outright failure, landowner accessibility problems, access by and to emergency services, and hamper post-flood recovery efforts. An upstream impoundment created by the undersized culvert has contributed to water quality problems including high water temperatures and the deposition and later mobilization of polluted fine sediment. Native aquatic organisms are unable to pass through the road crossing because the culvert outlet is perched above the downstream pool, and high velocities are not negotiable by animals that are able to leap into the culvert barrel.

After Situation:

The undersized culvert is replaced with a bottomless arch or box culvert sized, placed, and backfilled with material determined by geomorphic analyses performed in a reference reach upstream of the crossing location. Geomorphic and ecological functions are preserved through the crossing site, enhancing AOP, water quality, and culvert longevity. In addition, because the culvert is sized to promote the transport of streamflow and the materials it carries, it requires decreased maintenance activities over time. Landowners are able to access their holdings across a range of flows, and are able to seek and receive emergency and post-flood recovery services. Resource Concerns are addressed within the context of the site.

Feature Measure: Multi-plate arch or box and rock fill

Scenario Unit: Each

Scenario Typical Size: 1.0

Scenario Total Cost: $43,659.91

Scenario Cost/Unit: $43,659.91

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Geotextile, woven	42	Woven Geotextile Fabric. Includes materials, equipment and labor	Square Yard	$1.18	900	$1,062.00
Earthfill, Manually Compacted	50	Earthfill, manually compacted, includes equipment and labor	Cubic Yards	$5.73	50	$286.50
Hydraulic Excavator, 2 CY	932	Track mounted hydraulic excavator with bucket capacity range of 1.5 to 2.5 CY. Equipment and power unit costs. Labor not included.	Hours	$126.60	40	$5,064.00
Skidsteer, 80 HP	933	Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$59.94	60	$3,596.40
Water management, Flooding & dewatering	969	Includes equipment and power unit. Labor not included.	Acre Feet	$165.84	1	$165.84
Truck, dump, 12 CY	1215	Dump truck for moving bulk material. Typically capacity is 16 ton or 12 cubic yards. Includes equipment only.	Hours	$77.81	40	$3,112.40
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	40	$1,202.00
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	60	$1,390.80
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	140	$3,766.00
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	40	$1,671.20
Materials						
Aggregate, river rock	1834	Well graded, rounded mineral substrates derived from local riverine settings. Includes materials and local delivery	Ton	$34.98	75	$2,623.50
Footing, concrete, precast	1836	Precast spread footing with stemwall, T-shaped, with channel built to accept arched culvert leg. Includes materials only.	Feet	$61.69	80	$4,935.20
Geocell, 6 inch	1842	6-inch thick cellular confinement system, three-dimensional, expandable panels made from high-density polyethylene (HDPE), polyester or another polymer material. Includes materials, labor and equipment for the geocell only, does not include backfill.	Square Yard	$26.61	500	$13,305.00
Culvert, Multi-Plate arch	1979	Multi-plate arch culvert, typically 7 Gauge corrugated plate. Includes metal arch materials only, does not include footings.	Pound	$1.79	1	$1.79
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$484.75	2	$969.50

Practice: 396 - Aquatic Organism Passage

Scenario #37 - Concrete Box Culvert

Scenario Description:

A four-sided precast concrete box (square or rectangular) culvert used at a road-stream crossing to provide aquatic organism passage (AOP) and promote stream ecological and geomorphic function. Concrete box culverts are generally available in sections of 1-foot increments. Concrete box culverts used for AOP are sized according to geomorphic analyses, not just an estimate of runoff and streamflow at the site from the contributing watershed. In addition, concrete box culverts used for AOP are filled with a mixture of rock and gravel sized to emulate site stream conditions and geomorphic units in the channel. The simulated streambed material is continuous throughout the culvert barrel, and blended with the intact streambed at the culvert inlet and outlet. The first estimate of culvert width is obtained by analyzing bankfull channel width on a reach of stream not affected by an existing road crossing or other conditions that alter self-formed conditions. In the case of a culvert replacement, bankfull investigations are begun at least 10-20 estimated bankfull channel widths above the existing stream crossing. Culvert width is then increased according to channel bed composition and texture, bank characteristics, channel alignment at the crossing section, and other parameters that may affect channel dynamics and stability. Once the culvert width is determined, culvert length will be determined by roadway geometry and loading requirements, and site stream conditions. Concrete headwalls and/or wingwalls may be necessary in shorter installations and/or where fill/roadway cover is limited or the stream alignment is not perpendicular to the road axis. Stream geomorphic characteristics, including the reach longitudinal profile, channel cross-sectional shape, substrate composition and arrangement, and bank shape and composition are determined. Concrete box culverts are delivered in sections and assembled onsite, and require adequate bed compaction throughout the crossing section. They are installed with an assortment of equipment used for excavation, placing material, and delivering and removing material. Construction elements generally include an assortment of rock used to create riffles, cascades, or riffle-pool sequences with between 6 to 12 inches of water surface elevation drop between adjacent structures. Stream dewatering and diversion around the work site is often required, and temporary road closure or re-routing may also be required. Channel bed material within the culvert barrel varies according to prevailing stream characteristics at the crossing site. The new streambed is set at a slope that matches the design longitudinal profile, and backfilled with a bed mixture that mimics adjacent stream characteristics with special attention to channel pattern. The roadway is replaced and any necessary armoring and revegetating material is placed at the culvert inlet and outlet where it intersects the road fill prism. Other actions include construction staking and signage, soil erosion and pollution control, removal and disposal of the old culvert, and topsoil conservation for site reclamation. Disturbed areas are revegetated with a mix of site-adapted species. Scenario does not include additional measures needed to address channel incision, bank stability, and other factors associated with the presence of the stream crossing. RESOURCE CONCERNS: INADEQUATE HABITAT FOR FISH AND WILDLIFE –Habitat degradation; EXCESS WATER – Ponding, flooding, seasonal high water table, seeps, and drifted snow; WATER QUALITY DEGRADATION – Elevated water temperature; SOIL EROSION– Excessive bank erosion from streams shorelines or water conveyance channels Payments for these associated practices are made separately and are covered by other typical scenarios and payment schedules. See relevant CPS for additional information. ---Site Preparation and Reclamation associated with project footprint: (342) Critical Area Planting, (382) Fence, (390) Riparian Herbaceous Cover, (391) Riparian Forest Buffer, (612) Tree/Shrub Establishment; ---Reach Planning/Habitat Enhancement: (395) Stream Habitat Improvement and Management, ---Structural Measures Associated with Scenario but outside of project footprint: (410) Grade Stabilization Structure, (584) Channel Bed Stabilization, (580) Streambank and Shoreline Protection

Before Situation:

An existing undersized culvert as contributed to general bed and bank scour downstream of a road crossing, and may have contributed to the deposition of a wedge of sediment upstream of the road crossing. The road may be overtopped by high flows, resulting in outright failure, landowner accessibility problems, access by and to emergency services, and hamper post-flood recovery efforts. An upstream impoundment created by the undersized culvert has contributed to water quality problems including high water temperatures and the deposition and later mobilization of polluted fine sediment. Native aquatic organisms are unable to pass through the road crossing because the culvert outlet is perched above the downstream pool, and high velocities are not negotiable by animals that are able to leap into the culvert barrel.

After Situation:

The undersized culvert is replaced with a concrete box culvert sized, placed, and backfilled with material determined by geomorphic analyses performed in a reference reach upstream of the crossing location. Geomorphic and ecological functions are preserved through the crossing site, enhancing AOP, water quality, and culvert longevity. In addition, because the culvert is sized to promote the transport of streamflow and the materials it carries, it requires decreased maintenance activities over time. Landowners are able to access their holdings across a range of flows, and are able to seek and receive emergency and post-flood recovery services. Resource Concerns are addressed within the context of the site.

Feature Measure: Concrete box culvert and rock fill

Scenario Unit: Each

Scenario Typical Size: 1.0

Scenario Total Cost: $49,001.37

Scenario Cost/Unit: $49,001.37

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Geotextile, woven	42	Woven Geotextile Fabric. Includes materials, equipment and labor	Square Yard	$1.18	1000	$1,180.00
Earthfill, Manually Compacted	50	Earthfill, manually compacted, includes equipment and labor	Cubic Yards	$5.73	75	$429.75
Hydraulic Excavator, 2 CY	932	Track mounted hydraulic excavator with bucket capacity range of 1.5 to 2.5 CY. Equipment and power unit costs. Labor not included.	Hours	$126.60	40	$5,064.00
Skidsteer, 80 HP	933	Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$59.94	60	$3,596.40
Water management, Flooding & dewatering	969	Includes equipment and power unit. Labor not included.	Acre Feet	$165.84	1	$165.84
Truck, dump, 12 CY	1215	Dump truck for moving bulk material. Typically capacity is 16 ton or 12 cubic yards. Includes equipment only.	Hours	$77.81	40	$3,112.40
Labor						

Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	40	$1,202.00
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	60	$1,390.80
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	140	$3,766.00
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	40	$1,671.20
Materials						
Aggregate, river rock	1834	Well graded, rounded mineral substrates derived from local riverine settings. Includes materials and local delivery	Ton	$34.98	75	$2,623.50
Culvert, box, 6 ft x 6 ft	1837	Precast concrete box culvert, 6 feet x 6 feet. Typically in 4 foot sections. Includes materials only.	Feet	$250.43	40	$10,017.20
Geocell, 6 inch	1842	6-inch thick cellular confinement system, three-dimensional, expandable panels made from high-density polyethylene (HDPE), polyester or another polymer material. Includes materials, labor and equipment for the geocell only, does not include backfill.	Square Yard	$26.61	500	$13,305.00
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$484.75	2	$969.50

Practice: 396 - Aquatic Organism Passage

Scenario #38 - Bridge

Scenario Description:

A channel-spanning structure that carries a road or trailway across a river or stream. Constructed of timber, i-beams, or concrete, bridges are attached at either end to prefabricated, reinforced and poured-in-place, or piling abutments capped/surrounded with concrete. Longer span bridges may require instream pilings to support the travel surface. Bridge decking can be timber, concrete, asphalt, or some combination thereof. Typical size 30 ft span bridge, with most single lane bridges being 16 ft width= 480 sq ft Bridge design is completed to conform to loading requirements and site conditions. Geotechnical investigations are used to determine the best support structure suited to a given site. The bridge deck is designed to rest on abutments placed on the adjacent floodplain. Bridge components are delivered to the site and assembled by a combination of equipment and manual labor. They are installed with an assortment of equipment used for excavation, placing material, delivering and removing material, and lifting bridge components from delivery trucks onto the constructed bridge support elements. Other actions include construction staking and signage, soil erosion and pollution control, removal and disposal of the old culvert (if applicable), and topsoil conservation for site reclamation. Stream diversion is not necessary since the bridge will be constructed above the active channel. Disturbed areas are revegetated with a mix of site-adapted species. Scenario does not include additional measures needed to address channel incision, bank stability, and other factors associated with the presence of the bridge crossing. RESOURCE CONCERNS: INADEQUATE HABITAT FOR FISH AND WILDLIFE –Habitat degradation; EXCESS WATER – Ponding, flooding, seasonal high water table, seeps, and drifted snow; WATER QUALITY DEGRADATION – Elevated water temperature; SOIL EROSION– Excessive bank erosion from streams shorelines or water conveyance channels Payments for these associated practices are made separately and are covered by other typical scenarios and payment schedules. See relevant CPS for additional information. ---Site Preparation and Reclamation associated with project footprint: (326) Clearing and Snagging, (342) Critical Area Planting, (382) Fence, (390) Riparian Herbaceous Cover, (391) Riparian Forest Buffer, (612) Tree/Shrub Establishment; ---Reach Planning/Habitat Enhancement: (395) Stream Habitat Improvement and Management, ---Structural Measures Associated with Scenario but outside of project footprint: (410) Grade Stabilization Structure, (582) Open Channel, (584) Channel Bed Stabilization, (580) Streambank and Shoreline Protection

Before Situation:

An existing stream crossing outfitted with an undersized culvert has a history of maintenance issues and failure. The downstream channel has experienced bed and bank scour, and the crossing may have to the deposition of a wedge of sediment upstream of the road. The road may be overtopped by high flows, resulting in outright failure, landowner accessibility problems, access by and to emergency services, and hamper post-flood recovery efforts. An upstream impoundment created by the undersized culvert has contributed to water quality problems including high water temperatures and the deposition and later mobilization of polluted fine sediment. Native aquatic organisms are unable to pass through the road crossing because the culvert outlet is perched above the downstream pool, and high velocities are not negotiable by animals that are able to leap into the culvert barrel.

After Situation:

The undersized culvert is replaced with a timber bridge placed on precast concrete abutments. The bridge deck is composed of timber planks, and elevated, continuous railings run down each side connecting one abutment to its counterpart on the opposite bank. Signs on either approach indicate bridge capacity and weight restrictions. Because the bridge spans the active channel and sits atop the adjacent floodplain surface, geomorphic and ecological functions are preserved through the crossing site, enhancing AOP, water quality, and culvert longevity. Landowners are able to access their holdings across a range of flows, and are able to seek and receive emergency and post-flood recovery services. Resource Concerns are addressed within the context of the site.

Feature Measure: square feet of bridge deck

Scenario Unit: Square Feet

Scenario Typical Size: 480.0

Scenario Total Cost: $89,455.16

Scenario Cost/Unit: $186.36

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Concrete, CIP, formed reinforced	38	Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yards	$415.80	100	$41,580.00
Earthfill, Manually Compacted	50	Earthfill, manually compacted, includes equipment and labor	Cubic Yards	$5.73	50	$286.50
Backhoe, 80 HP	926	Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$31.57	40	$1,262.80
Hydraulic Excavator, 2 CY	932	Track mounted hydraulic excavator with bucket capacity range of 1.5 to 2.5 CY. Equipment and power unit costs. Labor not included.	Hours	$126.60	40	$5,064.00
Skidsteer, 80 HP	933	Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$59.94	60	$3,596.40
Truck, Concrete Pump	1211	Concrete pump, normally truck mounted. Use this item in association with other concrete components when job requires placement by other than normal chutes. Include drive and setup time in quantity; therefore, do not include mobilization. Includes equipment and operator.	Hours	$72.51	40	$2,900.40
Truck, dump, 12 CY	1215	Dump truck for moving bulk material. Typically capacity is 16 ton or 12 cubic yards. Includes equipment only.	Hours	$77.81	40	$3,112.40
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	40	$1,202.00

General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	60	$1,390.80
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	180	$4,842.00
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	40	$1,671.20
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	120	$11,164.80
Materials						
Dimension Lumber, Treated	1044	Treated dimension lumber with nominal thickness equal or less than 2 inches. Includes lumber and fasteners	Board Feet	$2.00	1000	$2,000.00
Steel, structural steel members	1779	Structural steel, includes materials and fabrication.	Pound	$1.38	5360	$7,396.80
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	4	$1,015.56
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$484.75	2	$969.50

Practice: 396 - Aquatic Organism Passage

Scenario #39 - Concrete Ladder

Scenario Description:

Formed, reinforced, poured-in-place concrete structures outfitted with baffles (Denil), vertical slots, pools and weirs, submerged orifices, chutes or some combination thereof to provide upstream passage for aquatic organisms over dams and other hydraulic structures. Although fish ladder designs vary according to target species and site conditions, they can generally be described as a three-sided concrete channel with integrated hydraulic features that provide a gradual elevation increase across some distance that allows aquatic organism to swim over a barrier--they convert the total barrier head elevation into passable increments. Concrete ladders are often constructed with resting pools and may have switchbacks. The primary water source for a concrete ladder comes from streamflow diverted into the ladder exit (upstream end) and since it is passed through the ladder to the river below, it is not a consumptive use. These ladders often require flow control and regulating devices (sometimes automated), gates, and may need auxiliary pumps to provide attraction flows at the ladder entrance (downstream end) or augment flow in the ladder. Gages above and below the dam are required to inform ladder operation. Trash racks are used at the upstream end to block debris from entering the ladder. Concrete ladders also require frequent maintenance, and flow through unautomated ladders may need to be adjusted manually when adjacent river conditions or dam operations change. Concrete ladder designs can be complex and require interactions between engineering and ecological sciences for successful implementation. For example, the ladder entrance is one of the most important elements of the structure, and placement of this entrance in the downstream reach is a function of site characteristics and aquatic organism biology. In addition, some aquatic animals will not swim through a submerged orifice, so use of pool-orifice ladders is not recommended. Partners associated with dam ownership and operation, regulatory agencies, and others are consulted and included in the design and construction process. Ladder designs account for run volume and timing, and the swimming capabilities of target species. Some ladders in highly visible areas are finished with masonry facades to blend the ladder to the site in the interest of aesthetics or to conform with historic appearances. Concrete ladders are constructed with equipment for excavation, placing material, and delivering and removing material. Lifts or booms are required to place concrete into forms. Because ladders are often attached to existing dams, personnel familiar with the dam structure are involved at all phases of the process to ensure that plans conform with site requirements. Bed and bank excavation are necessary to create the location for concrete ladders, so site isolation and sediment and erosion control measures are used. Disturbed areas are revegetated with a mix of site-adapted species, and access control and signage are provided. Scenario does not include additional measures in the adjacent active channel necessary to control flow, address channel elevation or stability, or encourage fish guidance into the concrete ladder. Scenario does not include structures used as counting stations or to trap and sample upstream migrants. RESOURCE CONCERNS: INADEQUATE HABITAT FOR FISH AND WILDLIFE –Habitat degradation Payments for these associated practices are made separately and are covered by other typical scenarios and payment schedules. See relevant CPS for additional information. ---Site Preparation and Reclamation associated with project footprint: (326) Clearing and Snagging, (342) Critical Area Planting, (382) Fence, (390) Riparian Herbaceous Cover, (391) Riparian Forest Buffer, (612) Tree/Shrub Establishment ---Reach Planning/Habitat Enhancement: (395) Stream Habitat Improvement and Management, ---Structural Measures Associated with Scenario but outside of project footprint: (410) Grade Stabilization Structure, (582) Open Channel, (584) Channel Bed Stabilization, (580) Streambank and Shoreline Protection, (587) Structure for Water Control

Before Situation:

An operational, low hazard class fixed crest concrete dam becomes the target of parties interested in providing fish passage. The dam presently blocks the upstream migration of a number of native aquatic organisms, and suitable spawning and rearing habitats for targeted fish species exists in upstream river reaches. Assessment of site conditions, dam operation, and target species swimming abilities indicate that a concrete ladder will provide suitable passage conditions during the migration season and pass the expected run volume without excessive delays.

After Situation:

A concrete pool and chute ladder outfitted with aluminum internal features and 2 turn/resting pool is installed. The ladder is attached to the face and abutment of the dam, and the entrance is located along the streambank where migrating aquatic organisms are likely to encounter it. The ladder passes the estimated run volume with minimal delays, and native aquatic animals are able to reach upstream spawning and rearing areas and successfully produce offspring that become part of the population. The ladder has an operating plan that stipulates actions and responsible parties for every month of the year. The ladder is fenced to control access and signage indicating its function and relevant warnings is provided at numerous locations. Resource Concerns are addressed within the context of the site.

Feature Measure: Barrier height (feet)

Scenario Unit: Feet

Scenario Typical Size: 20.0

Scenario Total Cost: $273,588.36

Scenario Cost/Unit: $13,679.42

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Concrete, CIP, formed reinforced	38	Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yards	$415.80	500	$207,900.00
Clearing and Grubbing	40	Clearing and Grubbing, includes materials, equipment and labor	Acres	$304.62	3	$913.86
Earthfill, Manually Compacted	50	Earthfill, manually compacted, includes equipment and labor	Cubic Yards	$5.73	100	$573.00
Backhoe, 80 HP	926	Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$31.57	60	$1,894.20
Hydraulic Excavator, 2 CY	932	Track mounted hydraulic excavator with bucket capacity range of 1.5 to 2.5 CY. Equipment and power unit costs. Labor not included.	Hours	$126.60	80	$10,128.00
Skidsteer, 80 HP	933	Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$59.94	80	$4,795.20
Water management, Flooding & dewatering	969	Includes equipment and power unit. Labor not included.	Acre Feet	$165.84	6	$995.04

Truck, Concrete Pump	1211	Concrete pump, normally truck mounted. Use this item in association with other concrete components when job requires placement by other than normal chutes. Include drive and setup time in quantity; therefore, do not include mobilization. Includes equipment and operator.	Hours	$72.51	60	$4,350.60
Truck, dump, 12 CY	1215	Dump truck for moving bulk material. Typically capacity is 16 ton or 12 cubic yards. Includes equipment only.	Hours	$77.81	60	$4,668.60
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	80	$2,404.00
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	60	$1,390.80
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	220	$5,918.00
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	80	$3,342.40
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	240	$22,329.60
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	4	$1,015.56
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$484.75	2	$969.50

Practice: 396 - Aquatic Organism Passage

Scenario #42 - Low Water Crossing

Scenario Description:

Structure installed on low volume or on unimproved roads at watercourse crossings. Primary use is to allow livestock and equipment access to other parcels of land or operational units. Low-water crossings provide safe and stable stream crossings that don't negatively impact water and ecological quality while remaining stable across a wide range of flows. Variations exist, but a common application consists of an improved or hardened ford located above a hydraulic control (e.g., bedrock outcropping, riffle, or step composed of coarse substrates). Properly designed and installed low water crossings provide aquatic organism passage (AOP), promote stream ecological and geomorphic function, remain stable over time, and can pass sediment and woody debris. Conservation planning and interaction with the landowner is vital to determine if existing crossings can be consolidated into fewer, more reliable locations. Characterizing a site according to its watershed position and geomorphic function will aid design decisions. Optimal AOP conditions are usually realized when the backfill is composed of a mixture that mimics bed material as evaluated from a reference reach adjacent to the crossing—preferably at least 10-20 estimated bankfull channel widths above an existing crossing to avoid effects that alter channel geometry or bedform composition and spacing. Low water crossings are installed with an assortment of equipment used for excavation, placing material, and delivering and removing material. Low water crossings provide the best mix of function and longevity when they are designed and built to conform to existing channel geometry and slope, constructed to match the shape of the existing channel, and oriented to cross the stream at a 90 degree angle. Crossing width, measured along the downstream axis, should not exceed 2X bankfull width. Low water crossings are commonly constructed by overexcavating the crossing section 6-12 inches below the existing streambed and backfilling the void with well-graded rock back to natural bed elevation. Geotextile lining may be required in some settings. Rock size and gradation is the smallest mix needed to remain stable under prevailing flow conditions—larger rock can endanger livestock and turbulence impairs passage. Sand or soil may be added into the mix to seal the section to ensure that the stream doesn't percolate into the crossing substrate. Smaller material increases bed diversity, chokes voids between bigger stones, and helps preserve passage quality. Smaller rock smaller (< 2 inches) at the finished surface may become lodged in livestock hooves. The road/trail surface of the crossing should be extended to an elevation that exceeds the known high water level on each side of the crossing. The downstream edge of the crossing should not produce a sharp drop in water surface to preserve AOP quality and discourage sediment deposition and debris accumulation. Other actions include construction staking and signage, soil erosion and pollution control, removal and disposal of the old culvert, and topsoil conservation for site reclamation. Disturbed areas are revegetated with a mix of site-adapted species. Scenario does not include additional measures needed to address channel incision, bank stability, and other factors associated with the presence of the stream crossing. Stream corridor fencing should be considered to control livestock access and preserve water and riparian quality. RESOURCE CONCERNS: INADEQUATE HABITAT FOR FISH AND WILDLIFE –Habitat degradation Payments for these associated practices are made separately and are covered by other typical scenarios and payment schedules. See relevant CPS for additional information. ---Site Preparation and Reclamation associated with project footprint: (326) Clearing and Snagging, (342) Critical Area Planting, (382) Fence, (390) Riparian Herbaceous Cover, (391) Riparian Forest Buffer, (612) Tree/Shrub Establishment ---Reach Planning/Habitat Enhancement: (395) Stream Habitat Improvement and Management, ---Structural Measures Associated with Scenario but outside of project footprint: (410) Grade Stabilization Structure, (582) Open Channel, (584) Channel Bed Stabilization, (580) Streambank and Shoreline Protection, (587) Structure for Water Control

Before Situation:

A small farming operation has a mixture of pastures, hay meadows, and crops that all require seasonal movement of equipment and livestock between parcels. Four unimproved stream crossings provide unreliable access across the property and require yearly maintenance to clear debris and sediment. Farm equipment has gotten stuck in the past, and uncontrolled livestock access and frequent crossing or loafing in the stream contributes to chronic water quality problems associated with elevated fine sediment, high water temperatures, invasive aquatic vegetation, and fecal coliform bacteria. Livestock avoid three of the crossings when streamflow increases moderately. Two of the crossings are overwide and shallow, and impair AOP. The property and landowner's yearly operations are reviewed by conservation planners and—with the input and agreement of the landowner—it is decided that three of the four crossings can be eliminated and consolidated at one site above a cobble/boulder deposit in the stream.

After Situation:

An improved ford is constructed by excavating the channel just upstream of the boulder/cobble hydraulic control. The cut is lined with geotextile to control seepage and subsurface flow, and backfilled up to the existing bed elevation with a well-graded mix of rock sized to mimic the material in the channel upstream of the crossing. The finished crossing surface is at grade with the up and downstream channel elevation, and no drop exists along the downstream edge. Approaches on either side of the crossing are extended up to the adjacent floodplain surface, and the finished instream portion of the ford matches the existing channel cross section. Approach slopes are shallow enough for expected equipment traffic, including towed combinations, and armored as needed with larger rock to protect against erosion that may occur when the floodplain is inundated. The crossing is fenced and gated to control livestock access and provide greater flexibility to the landowner's grazing needs. AOP is provided, and the crossing remains stable across a range of flow and sediment and debris transport events. Resource Concerns are addressed within the context of the site.

Feature Measure: Cubic Yard

Scenario Unit: Cubic Yards

Scenario Typical Size: 60.0

Scenario Total Cost: $36,115.57

Scenario Cost/Unit: $601.93

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Clearing and Grubbing	40	Clearing and Grubbing, includes materials, equipment and labor	Acres	$304.62	0.5	$152.31
Geotextile, woven	42	Woven Geotextile Fabric. Includes materials, equipment and labor	Square Yard	$1.18	1000	$1,180.00
Earthfill, Manually Compacted	50	Earthfill, manually compacted, includes equipment and labor	Cubic Yards	$5.73	50	$286.50
Backhoe, 80 HP	926	Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$31.57	80	$2,525.60
Hydraulic Excavator, 2 CY	932	Track mounted hydraulic excavator with bucket capacity range of 1.5 to 2.5 CY. Equipment and power unit costs. Labor not included.	Hours	$126.60	60	$7,596.00
Skidsteer, 80 HP	933	Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$59.94	80	$4,795.20
Truck, dump, 12 CY	1215	Dump truck for moving bulk material. Typically capacity is 16 ton or 12 cubic yards. Includes equipment only.	Hours	$77.81	40	$3,112.40
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	60	$1,803.00
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	60	$1,390.80
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	260	$6,994.00
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	40	$1,671.20
Materials						
Aggregate, river rock	1834	Well graded, rounded mineral substrates derived from local riverine settings. Includes materials and local delivery	Ton	$34.98	75	$2,623.50
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	4	$1,015.56
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$484.75	2	$969.50

Practice: 396 - Aquatic Organism Passage

Scenario #43 - Paddlewheel Screen

Scenario Description:

A fish screen used at surface (gravity) diversions intended to prevent juvenile or small-bodied adult fish from entering ditches, canals, laterals or other pathways that lead to migration dead-ends or sources of mortality. Paddlewheel screens are active by design, meaning that they are outfitted with mechanisms that automatically cycle to keep the screen free of debris that will restrict the screen area, impede flow through the screen, and may cause the screen to fail. These screens are powered by a paddlewheel driven by flowing water and are thus suitable for remote locations without electrical services. Paddlewheel screens can be installed in the active channel along a streambank, but are most commonly built in a canal below a diversion structure. Aquatic organisms that encounter a screen installed in a canal are diverted back into the adjacent stream through a buried pipe. Screens installed in the active channel are built at the point of diversion with the screen face aligned parallel to the flow of the river. Bankline modifications can be necessary to achieve proper alignment. Screens installed in a canal can be aligned differently and are best sited at a canal location that minimizes the straight-line bypass/return path distance. Again, canal installation is the most common. A fully functional screen is designed to meet criteria intended to protect target organisms from being swept into and pinned against or along the screen face (impingement). When this occurs, animals can be physically harmed or, in the case of a rotating drum screen, introduced into the diversion works behind the screen. Active screens are designed to ensure that the approach velocity will not exceed .4 feet per second (fps). Approach velocity is calculating by dividing the maximum screened flow volume by the vertical projection of the effective screen area at maximum submergence. For a rotating drum screen the design submergence should not be more than 85% or less than 65% of the screen diameter. Screen design should strive to provide nearly uniform flow distribution across the screen surface. Screens longer than 6 feet must be angled to the direction of incoming flow and have sweeping velocities (along the face of the screen) greater than the approach velocity, and sweeping velocities should not decrease along the face of the screen. Screen face openings must not exceed 3/32 inch in diameter, and perforated plate must be smooth to the touch with openings punched through in the direction of approaching flow. Material used for the screen face should be corrosion resistant and sufficiently durable to maintain a smooth uniform surface with long term use. Bypass design flow should be about 5% of the diverted amount, include an easily accessible entrance, and flow velocity in the bypass pipe or channel should not exceed 0.2fps. Minimum design depth in a bypass pipe should be at least 40% of the pipe diameter. Bypass entrances should be installed with independent flow control capability. The face of all screen surfaces must be placed flush (to the extent possible) with any adjacent screen bay, pier noses, and walls to allow fish unimpeded movement parallel to the screen face and ready access to bypass routes. Paddlewheel screens are generally fabricated at a machine shop and delivered to the project site. Site conditions may require the construction of a small concrete headwall that will anchor the screen and may be outfitted with flow control that to adjust hydraulic conditions and optimize screen function. In addition, concrete training walls to conduct flow into, through, and below the screen may be required at some sites. Paddlewheel screens are installed with an assortment of equipment used for excavation, placing material, and delivering and removing material. A crane or boom truck may be needed to place the screen assembly. Other actions include construction staking and signage, soil erosion and pollution control, access control and fencing, and topsoil conservation for site reclamation. Disturbed areas are revegetated with a mix of site-adapted species. Scenario does not include additional measures needed to address channel incision, bank stability, or factors associated with channel improvements at the bypass pipe outfall. Final contracts stipulate entities and schedules for operation and maintenance. RESOURCE CONCERNS: INADEQUATE HABITAT FOR FISH AND WILDLIFE –Habitat degradation Payments for these associated practices are made separately and are covered by other typical scenarios and payment schedules. See relevant CPS for additional information. ---Site Preparation and Reclamation associated with project footprint: (326) Clearing and Snagging, (342) Critical Area Planting, (382) Fence, (390) Riparian Herbaceous Cover, (391) Riparian Forest Buffer, (612) Tree/Shrub Establishment ---Reach Planning/Habitat Enhancement: (395) Stream Habitat Improvement and Management, ---Structural Measures Associated with Scenario but outside of project footprint: (410) Grade Stabilization Structure, (582) Open Channel, (584) Channel Bed Stabilization, (580) Streambank and Shoreline Protection, (587) Structure for Water Control

Before Situation:

An unscreened gravity diversion removes water and fish from a small stream. The ditch under the 5 cfs diversion serves a number of pumps and turnouts used to irrigate alfalfa and flood irrigate hay. The diversion is run from late winter into fall, although the flood irrigated crops are shut off in mid-summer to allow growth and prepare the fields for mowing and haying. Although the diversion is owned by a nth-generation landowner with proven, long-standing rights to the diverted water, recent fish listings under the Endangered Species Act present liability risks in the face of a third party lawsuit. Diverted listed fish are killed in residual depressions in the irrigated meadow, and often become entrained and killed in pumps used to drive wheel lines used to irrigate alfalfa.

After Situation:

A modular rotating drum paddlewheel screen is installed in the ditch about 100 feet downstream of the diversion dam. The screen is outfitted with a screw-gated 10-inch smooth HDPE pipe buried below the floodplain that connects the bypass entrance to a deep pool in the adjacent stream. The screen is placed on an excavated bed backfilled with compacted sand and gravel, and bolted to a small reinforced poured-in-place concrete headwall. Inspection during the first operational season following construction confirms that the screen is within hydraulic criteria and providing adequate protection to listed fish. The screen structure is fenced from livestock, and inspected and maintained according to contractual agreements. Resource Concerns are addressed within the context of the site.

Feature Measure: CFS

Scenario Unit: Cubic Feet per Second

Scenario Typical Size: 5.0

Scenario Total Cost: $41,394.14

Scenario Cost/Unit: $8,278.83

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Concrete, CIP, formed reinforced	38	Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yards	$415.80	15	$6,237.00
Clearing and Grubbing	40	Clearing and Grubbing, includes materials, equipment and labor	Acres	$304.62	1	$304.62
Earthfill, Manually Compacted	50	Earthfill, manually compacted, includes equipment and labor	Cubic Yards	$5.73	20	$114.60
Hydraulic Excavator, 2 CY	932	Track mounted hydraulic excavator with bucket capacity range of 1.5 to 2.5 CY. Equipment and power unit costs. Labor not included.	Hours	$126.60	40	$5,064.00
Skidsteer, 80 HP	933	Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$59.94	40	$2,397.60
Truck, Concrete Pump	1211	Concrete pump, normally truck mounted. Use this item in association with other concrete components when job requires placement by other than normal chutes. Include drive and setup time in quantity; therefore, do not include mobilization. Includes equipment and operator.	Hours	$72.51	32	$2,320.32
Truck, dump, 12 CY	1215	Dump truck for moving bulk material. Typically capacity is 16 ton or 12 cubic yards. Includes equipment only.	Hours	$77.81	32	$2,489.92
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	60	$1,803.00
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	60	$1,390.80
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	110	$2,959.00
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	40	$1,671.20
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	120	$11,164.80
Mobilization						
Mobilization, Material, distance > 50 miles	1043	Mobilization cost of materials for special cases where the distance from the supplier delivery point to the job site exceeds 50 miles. The costs for shipping by UPS or bulk freight shipping to a location within 50 miles of the job site have already been included in the component price.	Dollars	$1.00	2000	$2,000.00
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$484.75	2	$969.50

Practice: 396 - Aquatic Organism Passage

Scenario #44 - Rotating Drum Screen

Scenario Description:

A fish screen used at surface (gravity) diversions intended to prevent juvenile or small-bodied adult fish from entering ditches, canals, laterals or other pathways that lead to migration dead-ends or sources of mortality. Rotating drum screens are active by design, meaning that they are outfitted with mechanisms that automatically cycle to keep the screen free of debris that will restrict the screen area, impede flow through the screen, and may cause the screen to fail. These screens are powered electric motors that rotate a drum covered in fine stainless steel mesh. The drum rotates in the direction of the incoming flow, and is designed to protect fish from entrainment into the diversion while at the same time rolling fine debris attached to the screen face into the ditch or canal below. Rotating drum screens can be installed in the active channel along a streambank, but are most commonly built in a canal below a diversion structure. . Aquatic organisms that encounter a screen installed in a canal are diverted back into the adjacent stream through a buried pipe. Screens installed in the active channel are built at the point of diversion with the screen face aligned parallel to the flow of the river. Bankline modifications can be necessary to achieve proper alignment. Screens installed in a canal can be aligned differently and are best sited at a canal location that minimizes the straight-line bypass/return path distance. Again, canal installation is the most common. A fully functional screen is designed to meet criteria intended to protect target organisms from being swept into and pinned against or along the screen face (impingement). When this occurs, animals can be physically harmed or, in the case of a rotating drum screen, introduced into the diversion works behind the screen. Active screens are designed to ensure that the approach velocity will not exceed .4 feet per second (fps). Approach velocity is calculating by dividing the maximum screened flow volume by the vertical projection of the effective screen area at maximum submergence. For a rotating drum screen the design submergence should not be more than 85% or less than 65% of the screen diameter. Screen design should strive to provide nearly uniform flow distribution across the screen surface. Screens longer than 6 feet must be angled to the direction of incoming flow and have sweeping velocities (along the face of the screen) greater than the approach velocity, and sweeping velocities should not decrease along the face of the screen. Screen face openings must not exceed 3/32 inch in diameter, and perforated plate must be smooth to the touch with openings punched through in the direction of approaching flow. Material used for the screen face should be corrosion resistant and sufficiently durable to maintain a smooth uniform surface with long term use. Bypass design flow should be about 5% of the diverted amount, include an easily accessible entrance, and flow velocity in the bypass pipe or channel should not exceed 0.2fps. Minimum design depth in a bypass pipe should be at least 40% of the pipe diameter. Bypass entrances should be installed with independent flow control capability. The face of all screen surfaces must be placed flush (to the extent possible) with any adjacent screen bay, pier noses, and walls to allow fish unimpeded movement parallel to the screen face and ready access to bypass routes. Rotating drum screens are composed of elements fabricated at a machine shop and delivered to the project site, or built onsite. They are generally part of a reinforced, poured-in-place mass of concrete that forms a three-sided section above, around, and below the screen. Onsite derricks or metal framework can be required above screen bays to facilitate lifting drums for maintenance and inspection of side and bottom seals. Rotating drum screens may need to be fitted with flow control devices that to adjust hydraulic conditions and optimize screen function. Rotating drum screens are installed with an assortment of equipment used for excavation, placing material, and delivering and removing material. A crane or boom truck may be needed to place elements of larger screen installations, including gates, drums, and overhead metal framework. Other actions include construction staking and signage, soil erosion and pollution control, access control and fencing, and topsoil conservation for site reclamation. Disturbed areas are revegetated with a mix of site-adapted species. Scenario does not include additional measures needed to address channel incision, bank stability, or factors associated with channel improvements at the bypass pipe outfall. RESOURCE CONCERNS: INADEQUATE HABITAT FOR FISH AND WILDLIFE –Habitat degradation Payments for these associated practices are made separately and are covered by other typical scenarios and payment schedules. See relevant CPS for additional information. ---Site Preparation and Reclamation associated with project footprint: (326) Clearing and Snagging, (342) Critical Area Planting, (382) Fence, (390) Riparian Herbaceous Cover, (391) Riparian Forest Buffer, (612) Tree/Shrub Establishment ---Reach Planning/Habitat Enhancement: (395) Stream Habitat Improvement and Management, ---Structural Measures Associated with Scenario but outside of project footprint: (410) Grade Stabilization Structure, (582) Open Channel, (584) Channel Bed Stabilization, (580) Streambank and Shoreline Protection, (587) Structure for Water Control

Before Situation:

An unscreened gravity diversion removes water and fish from a medium-sized stream. The ditch under the 75 cfs diversion serves a number of pumps and turnouts used to irrigate alfalfa and flood irrigate hay. The diversion is run from late winter into fall, although the flood irrigated crops are shut off in mid-summer to allow growth and prepare the fields for mowing and haying. Although the diversion is owned by a nth-generation landowner with proven, long-standing rights to the diverted water, recent fish listings under the Endangered Species Act present liability risks in the face of a third party lawsuit. Diverted listed fish are killed in residual depressions in the irrigated meadow, and often become entrained and killed in pumps used to drive wheel lines used to irrigate alfalfa.

After Situation:

A rotating drum screen consisting of three 8-foot wide, 4-foot diameter drums each driven by a 5hp electric motor is installed in the ditch about 200 feet downstream of the diversion dam. The screen is outfitted with a screw-gated 20-inch smooth HDPE pipe buried below the floodplain that connects the bypass entrance to a deep pool in the adjacent stream. The screen is placed in a concrete section extending above, underneath and below the drum location that forms the structure holding the drums, side and bottom seals, bypass entrance, and screen fore and afterbay. A steel I-beam structure is erected to form continuous overhead cover above the screen bays, and outfitted with a traveling electric winch used to raise each drum for periodic maintenance and seal inspection. Inspection during the first operational season following construction confirms that the screen is within hydraulic criteria and providing adequate protection to listed fish. The screen structure is fenced from livestock, and inspected and maintained according to contractual agreements. Resource Concerns are addressed within the context of the site.

Feature Measure: CFS

Scenario Unit: Cubic Feet per Second

Scenario Typical Size: 75.0

Scenario Total Cost: $77,744.64

Scenario Cost/Unit: $1,036.60

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Concrete, CIP, formed reinforced	38	Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yards	$415.80	100	$41,580.00
Clearing and Grubbing	40	Clearing and Grubbing, includes materials, equipment and labor	Acres	$304.62	1	$304.62
Earthfill, Manually Compacted	50	Earthfill, manually compacted, includes equipment and labor	Cubic Yards	$5.73	50	$286.50
Hydraulic Excavator, 2 CY	932	Track mounted hydraulic excavator with bucket capacity range of 1.5 to 2.5 CY. Equipment and power unit costs. Labor not included.	Hours	$126.60	40	$5,064.00
Skidsteer, 80 HP	933	Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$59.94	40	$2,397.60
Truck, Concrete Pump	1211	Concrete pump, normally truck mounted. Use this item in association with other concrete components when job requires placement by other than normal chutes. Include drive and setup time in quantity; therefore, do not include mobilization. Includes equipment and operator.	Hours	$72.51	32	$2,320.32
Truck, dump, 12 CY	1215	Dump truck for moving bulk material. Typically capacity is 16 ton or 12 cubic yards. Includes equipment only.	Hours	$77.81	32	$2,489.92
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	60	$1,803.00
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	60	$1,390.80
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	110	$2,959.00
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	60	$2,506.80
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	120	$11,164.80
Mobilization						
Mobilization, Material, distance > 50 miles	1043	Mobilization cost of materials for special cases where the distance from the supplier delivery point to the job site exceeds 50 miles. The costs for shipping by UPS or bulk freight shipping to a location within 50 miles of the job site have already been included in the component price.	Dollars	$1.00	2000	$2,000.00
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$484.75	2	$969.50

Practice: 410 - Grade Stabilization Structure

Scenario #1 - Check Dams

Scenario Description:

Typical setting is on a 40-acre pasture/hayland field having a slope of 5 to 10 percent where ephemeral gullies have formed. Typical installation consists of stabilizing/regrading the gully and installing six check dams with a top width of 3', average height of 2.5', 19' length, and 2:1 side slopes, ; containing an average of 21 tons of rock for a total of 126 tons. The check dams are underlain with geotextile fabric. Disturbed areas are protected with permanent vegetative cover. Addresses resource concerns such as water quality degradation and soil erosion-concentrated flow erosion.

Before Situation:

The operator presently has erosion gullies forming and/or worsening on the farmland and impacting the useable area and the downstream water quality. Erosion from the gullies is allowing soil and possibly nutrients to be transported to downstream receiving waters degrading water quality and causing soil loss.

After Situation:

Area is stabilized. The advancement and/or formation of gullies is stopped, soil from gullies no longer leaves the farm, useable farm area is increased, sedimentation and other pollution hazards are decreased, and water quality downstream is protected. Any needed vegetation of disturbed areas use Critical Area Planting (342).

Feature Measure: Tons of rock installed

Scenario Unit: Ton

Scenario Typical Size: 126.0

Scenario Total Cost: $9,629.54

Scenario Cost/Unit: $76.42

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Excavation, common earth, large equipment, 50 ft	1222	Bulk excavation of common earth including sand and gravel with dozer >100 HP with average push distance of 50 feet. Includes equipment and labor.	Cubic Yards	$1.63	160	$260.80
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	8	$185.44
Materials						
Rock Riprap, Placed with geotextile	44	Rock Riprap, placed with geotextile, includes materials, equipment and labor to transport and place	Cubic Yards	$103.28	84	$8,675.52
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: 410 - Grade Stabilization Structure

Scenario #4 - Embankment, Pipe >12 inch

Scenario Description:

An earthen embankment dam with a principle spillway pipe greater than 12 inches. Installed to stabilized the grade and control erosion in natural or artificial channels, to prevent the formation or advancing of gullies, and to enhance environmental quality and reduce pollution hazards. Applied in areas where the concentration and flow velocity of water require structures to stabilize the grade in channels or to control gully erosion. Cost estimate is based upon a typical amount of earthfill of 2,500 cubic yards, smooth steel drop inlet principle spillway with a 7 ft riser and 90 ft barrel, and 82 Square feet of anti-seep collars. A rock lined plunge pool protects the outlet channel. Disturbed areas are protected with permanent vegetative cover. Addresses resource concerns such as soil erosion-concentrated flow erosion and water quality degradation.

Before Situation:

The operator presently has gullies forming and/or worsening on the farmland and impacting the useable area and the downstream water quality. Erosion from the gullies is allowing soil and possibly nutrients to be transported to downstream receiving waters degrading water quality and causing soil loss.

After Situation:

Area is stabilized. The advancement and/or formation of gullies is stopped, soil from gullies no longer leaves the farm, useable farm area is increased, sedimentation and other pollution hazards are decreased, and water quality downstream is protected. Any needed re-vegetation of disturbed areas use Critical Area Planting (342). Other associated practices such as; Pond (378), Dam (402), Fence (382), Pumping Plant (533), Watering Facility (614), and Livestock Pipeline (516) will use the corresponding Standard(s) as appropriate.

Feature Measure: Cubic Yards of Earthfill

Scenario Unit: Cubic Yards

Scenario Typical Size: 2,500.0

Scenario Total Cost: $22,317.83

Scenario Cost/Unit: $8.93

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Concrete, CIP, formless, non reinforced	36	Non reinforced concrete cast-in-placed without forms by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yards	$157.03	1	$157.03
Concrete, CIP, formed reinforced	38	Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yards	$415.80	2	$831.60
Earthfill, Roller Compacted	49	Earthfill, roller or machine compacted, includes equipment and labor	Cubic Yards	$4.42	2500	$11,050.00
Earthfill, Manually Compacted	50	Earthfill, manually compacted, includes equipment and labor	Cubic Yards	$5.73	129	$739.17
Hydraulic Excavator, 1 CY	931	Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included.	Hours	$111.83	13	$1,453.79
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	38	$1,141.90
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	42	$973.56
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	13	$349.70
Materials						
Rock Riprap, Placed with geotextile	44	Rock Riprap, placed with geotextile, includes materials, equipment and labor to transport and place	Cubic Yards	$103.28	14	$1,445.92
Dimension Lumber, Treated	1044	Treated dimension lumber with nominal thickness equal or less than 2 inches. Includes lumber and fasteners	Board Feet	$2.00	30	$60.00
Steel, Plate, 1/8 in.	1047	Flat Steel Plate, 1/8 inch thick, materials only.	Square Feet	$4.97	82	$407.54
Pipe, Steel, 12 in., Std Wt, USED	1356	Materials: - USED - 12 inch - Steel Std Wt	Feet	$30.63	90	$2,756.70
Pipe, Steel, 16 in., Std Wt, USED	1357	Materials: - USED - 16 inch - Steel Std Wt	Feet	$53.29	7	$373.03
Mobilization						

Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	$70.11	1	$70.11
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: 410 - Grade Stabilization Structure

Scenario #5 - Embankment, Soil Treatment

Scenario Description:

An earthen embankment dam with a principal spillway pipe where on site soils are not acceptable and require extra processing or hauling from off farm, distances greater than one mile. Installed to stabilized the grade and control erosion in natural or artificial channels, to prevent the formation or advancing of gullies, and to enhance environmental quality and reduce pollution hazards. Applied in areas where the concentration and flow velocity of water require structures to stabilize the grade in channels or to control gully erosion. Cost estimate is based upon a typical amount of earthfill of 2,500 cubic yards, 90 feet of 10" pace, pipe with a canopy inlet, and 3 cubic yard sand diaphragm. A non-lined plunge pool protects the outlet channel. Disturbed areas are protected with permanent vegetative cover. Addresses resource concerns such as soil erosion-concentrated flow erosion and water quality degradation.

Before Situation:

The operator presently has gullies forming and/or worsening on the farmland and impacting the useable area and the downstream water quality. Erosion from the gullies is allowing soil and possibly nutrients to be transported to downstream receiving waters degrading water quality and causing soil loss.

After Situation:

Area is stabilized. The advancement and/or formation of gullies is stopped, soil from gullies no longer leaves the farm, useable farm area is increased, sedimentation and other pollution hazards are decreased, and water quality downstream is protected. Any needed re-vegetation of disturbed areas use Critical Area Planting (342). Other associated practices such as; Pond (378), Dam (402), Fence (382), Pumping Plant (533), Watering Facility (614), and Livestock Pipeline (516) will use the corresponding Standard(s) as appropriate.

Feature Measure: Cubic Yards of Earthfill

Scenario Unit: Cubic Yards

Scenario Typical Size: 2,500.0

Scenario Total Cost: $24,322.09

Scenario Cost/Unit: $9.73

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Earthfill, Roller Compacted	49	Earthfill, roller or machine compacted, includes equipment and labor	Cubic Yards	$4.42	2500	$11,050.00
Earthfill, Manually Compacted	50	Earthfill, manually compacted, includes equipment and labor	Cubic Yards	$5.73	29	$166.17
Hydraulic Excavator, 1 CY	931	Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included.	Hours	$111.83	10	$1,118.30
Hauling, bulk, highway truck	1615	Hauling of bulk earthfill, rockfill, waste or debris. One-way travel distance using fully loaded highway dump trucks (typically 16 CY or 20 TN capacity). Includes equipment and labor for truck only. Does not include cost for loading truck.	Cubic Yard Mile	$0.29	25000	$7,250.00
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	30	$901.50
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	30	$695.40
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	10	$269.00
Materials						
Aggregate, Sand, Graded, Washed	45	Sand, typical ASTM C33 gradation, includes materials, equipment and labor to transport and place	Cubic Yards	$38.81	3	$116.43
Pipe, PVC, 2 in., SCH 40	976	Materials: - 2 inch - PVC - SCH 40 - ASTM D1785	Feet	$1.58	60	$94.80
Pipe, PVC, 10 in., SCH 80	1351	Materials: - 10 inch - PVC - SCH 80 - ASTM D1785	Feet	$23.14	90	$2,082.60
Mobilization						
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	$70.11	1	$70.11
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: 410 - Grade Stabilization Structure

Scenario #6 - Plastic Pipe Drop, Riser Less than 18 inches

Scenario Description:

A full flow pipe drop (ie: riser and barrel) grade stabilization structure designed and constructed using plastic pipe without anti-seep collars. This is typically installed at the edge of field through an earthen berm to convey water from a higher elevation to a lower elevation with causing gully erosion. Payment rate is based upon the riser diameter in (inches) times the length of the pipe barrel in (feet). Installed to stabilized the grade and control erosion in natural or artificial channels, to prevent the formation or advancing of gullies, and to enhance environmental quality and reduce pollution hazards. Applied in areas where the concentration and flow velocity of water require structures to stabilize the grade in channels or to control gully erosion. Cost estimate is based upon 3 ft high 12" SDR 51, PVC riser with a 40 ft long 10 inch barrel (12 inches x 40' = 480 Diameter Inch - Foot. Disturbed areas are protected with permanent vegetative cover. Addresses resource concerns such as soil erosion-concentrated flow erosion and water quality degradation.

Before Situation:

The operator presently has gullies forming and/or worsening on the farmland and impacting the useable area and the downstream water quality. Erosion from the gullies is allowing soil and possibly nutrients to be transported to downstream receiving waters degrading water quality, causing soil loss, and reducing channel capacity.

After Situation:

Area is stabilized. The advancement and/or formation of gullies is stopped, soil from gullies no longer leaves the farm, useable farm area is increased, sedimentation and other pollution hazards are decreased, and water quality downstream is protected, and collection ditches need to be "mopped out" less often to mainain capacity. Any needed re-vegetation of disturbed areas use Critical Area Planting (342). Other associated practices such as; Pond (378), Dam (402), Fence (382), Channel Bed Stabilization (584), Dike (356), Grassed Waterway (412), Structure for Water Control (587), and Irrigation Canal or Lateral (320) will use the corresponding Standard(s) as appropriate.

Feature Measure: Riser Diameter (in) x Berrel Length

Scenario Unit: Diameter Inch Foot

Scenario Typical Size: 480.0

Scenario Total Cost: $812.65

Scenario Cost/Unit: $1.69

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Concrete, CIP, formless, non reinforced	36	Non reinforced concrete cast-in-placed without forms by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yards	$157.03	0.1	$15.70
Trenching, Earth, loam, 24 in. x 48 in.	54	Trenching, earth, loam, 24 inch wide x 48 inch depth, includes equipment and labor for trenching and backfilling	Feet	$2.74	40	$109.60
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	4	$92.72
Materials						
Pipe, PVC, dia. < 18 in., weight priced	1323	Polyvinyl Chloride (PVC) pressure rated pipe priced by the weight of the pipe materials for pipes with diameters less than 18 inch. Materials	Pound	$1.91	189	$360.99
Coupling, PVC, Tee, 12x10, SDR 51	2364	Materials: - Tee, 12 inch x 10 inch - PVC - SDR 51 - ASTM F2658	Each	$233.64	1	$233.64

Practice: 410 - Grade Stabilization Structure

Scenario #7 - Plastic Pipe Drop, Riser 18 inches and larger

Scenario Description:

A full flow pipe drop (ie: riser and barrel) grade stabilization structure designed and constructed using plastic pipe without anti-seep collars. This is typically installed at the edge of field through an earthen berm to convey water from a higher elevation to a lower elevation with causing gully erosion. Payment rate is based upon the riser diameter in (inches) times the length of the pipe barrel in (feet). Installed to stabilized the grade and control erosion in natural or artificial channels, to prevent the formation or advancing of gullies, and to enhance environmental quality and reduce pollution hazards. Applied in areas where the concentration and flow velocity of water require structures to stabilize the grade in channels or to control gully erosion. Cost estimate is based upon 3 ft high 18" SDR 51, PVC riser with a 40 ft long 15 inch barrel (18 inches x 40' = 720 Diameter Inch - Foot. Disturbed areas are protected with permanent vegetative cover. Addresses resource concerns such as soil erosion-concentrated flow erosion and water quality degradation.

Before Situation:

The operator presently has gullies forming and/or worsening on the farmland and impacting the useable area and the downstream water quality. Erosion from the gullies is allowing soil and possibly nutrients to be transported to downstream receiving waters degrading water quality, causing soil loss, and reducing channel capacity.

After Situation:

Area is stabilized. The advancement and/or formation of gullies is stopped, soil from gullies no longer leaves the farm, useable farm area is increased, sedimentation and other pollution hazards are decreased, and water quality downstream is protected, and collection ditches need to be "mopped out" less often to mainain capacity. Any needed re-vegetation of disturbed areas use Critical Area Planting (342). Other associated practices such as; Pond (378), Dam (402), Fence (382), Channel Bed Stabilization (584), Dike (356), Grassed Waterway (412), Structure for Water Control (587), and Irrigation Canal or Lateral (320) will use the corresponding Standard(s) as appropriate.

Feature Measure: Riser Diameter (in) x Berrel Length

Scenario Unit: Diameter Inch Foot

Scenario Typical Size: 720.0

Scenario Total Cost: $1,514.25

Scenario Cost/Unit: $2.10

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Concrete, CIP, formless, non reinforced	36	Non reinforced concrete cast-in-placed without forms by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yards	$157.03	0.1	$15.70
Trenching, Earth, loam, 24 in. x 48 in.	54	Trenching, earth, loam, 24 inch wide x 48 inch depth, includes equipment and labor for trenching and backfilling	Feet	$2.74	40	$109.60
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	4	$92.72
Materials						
Pipe, PVC, dia. < 18 in., weight priced	1323	Polyvinyl Chloride (PVC) pressure rated pipe priced by the weight of the pipe materials for pipes with diameters less than 18 inch. Materials	Pound	$1.91	288	$550.08
Pipe, PVC, dia. => 18 in., weight priced	1958	Polyvinyl Chloride (PVC) Pipe priced by the weight of the pipe materials for pipes with diameters equal to or greater than 18 inch. Materials only.	Pound	$0.76	43	$32.68
Coupling, PVC, Tee, 18x15, SDR 51	2365	Materials: - Tee, 18 inch x 15 inch - PVC - SDR 51 - ASTM F2658	Each	$713.47	1	$713.47

Practice: 410 - Grade Stabilization Structure

Scenario #8 - Low overfall Structure Less Than 36 inches

Scenario Description:

Install a pipe(all material types) under 36 inches in diameter, with a low overfall header, to convey water under roads or other barriers. A typical scenario would be an 18 inch diameter pipe, 40 feet in length. The work includes site preparation, acquiring a pipe, and altering the pipe to create a low overfall header. This alteration includes applying a cap or partial cap to the inlet end of the pipe and removing a portion of the top of the pipe from the inlet end such that a weir inlet is formed along the newly cut cap and extending horizontally down the sides of the pipe the length necessary to provide adequate weir capacity. Primary use locations are field outlets and sugarcane field cross drain outlets, where erosion can,has occur(ed), in a situation where overfall is low.

Before Situation:

Water flow needs to be conveyed under an access road, ditch or other barrier. Water must be conveyed in a controlled fashion.

After Situation:

Water is conveyed in a controlled manner. Associated practices could be Access Road (560), Animal Trails and Walkways (575), Critical Area Planting (342), Drainage Water Management (554), Irrigation Canal or Lateral (320), Irrigation Pipeline (430), Irrigation Reservoir (436), Irrigation System, Surface and Subsurface (443), Irrigation System, Tailwater Recovery (447), Irrigation Water Management (449), Lined Waterway or Outlet (468), Obstruction Removal (500), Pond (378), Stormwater Runoff Control (570), Surface Drain, Field Ditch (607), Surface Drain, Main or Lateral (608), and Trails and Walkways (568).

Feature Measure: Pipe Diameter (In) x Pipe Length (Ft

Scenario Unit: Diameter Inch Foot

Scenario Typical Size: 720.0

Scenario Total Cost: $2,851.40

Scenario Cost/Unit: $3.96

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Excavation, Common Earth, side cast, small equipment	48	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic Yards	$2.24	5	$11.20
Earthfill, Manually Compacted	50	Earthfill, manually compacted, includes equipment and labor	Cubic Yards	$5.73	20	$114.60
Portable Welder	1407	Portable field welder. Equipment only. Labor not included.	Hours	$19.98	2	$39.96
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	2	$60.10
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	3	$69.54
Materials						
Pipe, Steel, 18 in., Std Wt, USED	1358	Materials: - USED - 18 inch - Steel Std Wt	Feet	$57.18	40	$2,287.20
Steel, Plate, 3/8 in.	1375	Flat steel plate, 3/8 inch thickness. Materials only.	Square Feet	$14.91	1	$14.91
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 410 - Grade Stabilization Structure

Scenario #9 - Pipe Drop, Steel

Scenario Description:

A full flow pipe drop (ie: riser and barrel) grade stabilization structure designed and constructed with a metal anti-seep collar. This is typically a earthen dry dam structure with no permanent storage (water or sediment), however some structures may have some permanent pool / storage but do not have 35 years of sediment life. Payment rate is based upon the riser Diameter in inches times the length of the pipe barrel in (feet). Installed to stabilized the grade and control erosion in natural or artificial channels, to prevent the formation or advancing of gullies, and to enhance environmental quality and reduce pollution hazards. Applied in areas where the concentration and flow velocity of water require structures to stabilize the grade in channels or to control gully erosion. Cost estimate is based upon a smooth steel pipe drop structure with a 36", 6' tall riser and a 40' long 30" barrel (Riser Diameter x Barrel Length = 36 inches x 40ft = 1440 Inch-Feet). Disturbed areas are protected with permanent vegetative cover. Addresses resource concerns such as soil erosion-concentrated flow erosion and water quality degradation.

Before Situation:

The operator presently has gullies forming and/or worsening on the farmland and impacting the useable area and the downstream water quality. Erosion from the gullies is allowing soil and possibly nutrients to be transported to downstream receiving waters degrading water quality and causing soil loss.

After Situation:

Area is stabilized. The advancement and/or formation of gullies is stopped, soil from gullies no longer leaves the farm, useable farm area is increased, sedimentation and other pollution hazards are decreased, and water quality downstream is protected. Any needed re-vegetation of disturbed areas use Critical Area Planting (342). Other associated practices such as; Pond (378), Dam (402), Fence (382), Channel Bed Stabilization (584), Dike (356), Grassed Waterway (412), Structure for Water Control (587), and Irrigation Canal or Lateral (320) will use the corresponding Standard(s) as appropriate.

Feature Measure: Riser Diameter (In) x Barrel Length

Scenario Unit: Diameter Inch Foot

Scenario Typical Size: 1,440.0

Scenario Total Cost: $4,031.25

Scenario Cost/Unit: $2.80

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Earthfill, Roller Compacted	49	Earthfill, roller or machine compacted, includes equipment and labor	Cubic Yards	$4.42	100	$442.00
Earthfill, Manually Compacted	50	Earthfill, manually compacted, includes equipment and labor	Cubic Yards	$5.73	20	$114.60
Hydraulic Excavator, 1 CY	931	Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included.	Hours	$111.83	4	$447.32
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	11	$330.55
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	10	$231.80
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	4	$107.60
Materials						
Steel, Plate, 1/8 in.	1047	Flat Steel Plate, 1/8 inch thick, materials only.	Square Feet	$4.97	30	$149.10
Steel, Plate, 3/8 in.	1375	Flat steel plate, 3/8 inch thickness. Materials only.	Square Feet	$14.91	9	$134.19
Pipe, CMP, 30 in., 12 Gauge	1824	30 inch Corrugated Metal Pipe, Galvanized, Uncoated, 16 gage. Material cost only.	Feet	$31.72	40	$1,268.80
Pipe, CMP, 36 in., 12 Gauge	1825	36 inch Corrugated Metal Pipe, Galvanized, Uncoated, 16 gage. Material cost only.	Feet	$37.90	6	$227.40
Mobilization						
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	$70.11	1	$70.11
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: 410 - Grade Stabilization Structure

Scenario #11 - Rock Drop Structures

Scenario Description:

A Straight Drop structure constructed of rock riprap held in place by galvanized wire, such as, gabion baskets, fence panels, or "sausage" baskets. These structures are used to stabilized the grade and control erosion in natural or artificial channels, to prevent the formation or advancing of gullies, and to enhance environmental quality and reduce pollution hazards. Applied in areas where the concentration and flow velocity of water require structures to stabilize the grade in channels or to control gully erosion. Cost estimate is based upon a gabion wall structure with a drop of 3ft and weir length of 8ft (48 square feet). The unit of payment measurement is defined as weir length times drop in "feet". The drop (feet) is defined as the structure inlet crest elevation minus the control outlet elevation (ie: outlet apron elevation).Disturbed areas are protected with permanent vegetative cover. Addresses resource concerns such as soil erosion-concentrated flow erosion and water quality degradation.

Before Situation:

The operator presently has gullies forming and/or worsening on the farmland and impacting the useable area and the downstream water quality. Erosion from the gullies is allowing soil and possibly nutrients to be transported to downstream receiving waters degrading water quality and causing soil loss.

After Situation:

Area is stabilized. The advancement and/or formation of gullies is stopped, soil from gullies no longer leaves the farm, useable farm area is increased, sedimentation and other pollution hazards are decreased, and water quality downstream is protected. Any needed re-vegetation of disturbed areas use Critical Area Planting (342). Other associated practices such as; Pond (378), Dam (402), Fence (382), Channel Bed Stabilization (584), Dike (356), Grassed Waterway (412), Structure for Water Control (587), Subsurface Drain (606), and Underground Outlet (620) will use the corresponding Standard(s) as appropriate.

Feature Measure: Feet of Weir length times Drop Hei

Scenario Unit: Square Feet

Scenario Typical Size: 48.0

Scenario Total Cost: $3,226.02

Scenario Cost/Unit: $67.21

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Geotextile, woven	42	Woven Geotextile Fabric. Includes materials, equipment and labor	Square Yard	$1.18	23	$27.14
Excavation, Common Earth, side cast, small equipment	48	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic Yards	$2.24	7	$15.68
Earthfill, Roller Compacted	49	Earthfill, roller or machine compacted, includes equipment and labor	Cubic Yards	$4.42	40	$176.80
Hydraulic Excavator, 1 CY	931	Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included.	Hours	$111.83	5	$559.15
Tractor, agricultural, 210 HP	1201	Agricultural tractor with horsepower range of 190 to 240. Equipment and power unit costs. Labor not included.	Hours	$94.88	3	$284.64
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	10	$231.80
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	5	$134.50
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	10	$417.80
Materials						
Gabion basket or mat	1378	Gabion baskets or mats installed and filled on grade, includes materials, transport, equipment, and labor, does not include geotextile fabric.	Cubic Yards	$124.39	7	$870.73
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: 410 - Grade Stabilization Structure

Scenario #23 - Multiple Low Overfall Structures Less Than 36 inches

Scenario Description:

Install a pipe(all material types) under 36 inches in diameter, with a low overfall header, to convey water under roads or other barriers. A typical scenario would be an 18 inch diameter pipe, 40 feet in length. The work includes site preparation, acquiring a pipe, and altering the pipe to create a low overfall header. This alteration includes applying a cap or partial cap to the inlet end of the pipe and removing a portion of the top of the pipe from the inlet end such that a weir inlet is formed along the newly cut cap and extending horizontally down the sides of the pipe the length necessary to provide adequate weir capacity. Primary use locations are field outlets and sugarcane field cross drain outlets, where erosion can,has occur(ed), in a situation where overfall is low. When contract contains more than 5 of this type structure, use this scenario for number 6 and after.

Before Situation:

Water flow needs to be conveyed under an access road, ditch or other barrier. Water must be conveyed in a controlled fashion.

After Situation:

Water is conveyed in a controlled manner. Associated practices could be Access Road (560), Animal Trails and Walkways (575), Critical Area Planting (342), Drainage Water Management (554), Irrigation Canal or Lateral (320), Irrigation Pipeline (430), Irrigation Reservoir (436), Irrigation System, Surface and Subsurface (443), Irrigation System, Tailwater Recovery (447), Irrigation Water Management (449), Lined Waterway or Outlet (468), Obstruction Removal (500), Pond (378), Stormwater Runoff Control (570), Surface Drain, Field Ditch (607), Surface Drain, Main or Lateral (608), and Trails and Walkways (568).

Feature Measure: Each

Scenario Unit: Each

Scenario Typical Size: 1.0

Scenario Total Cost: $2,501.12

Scenario Cost/Unit: $2,501.12

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Excavation, Common Earth, side cast, small equipment	48	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic Yards	$2.24	5	$11.20
Earthfill, Manually Compacted	50	Earthfill, manually compacted, includes equipment and labor	Cubic Yards	$5.73	20	$114.60
Portable Welder	1407	Portable field welder. Equipment only. Labor not included.	Hours	$19.98	1	$19.98
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	1	$30.05
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	1	$23.18
Materials						
Pipe, Steel, 18 in., Std Wt, USED	1358	Materials: - USED - 18 inch - Steel Std Wt	Feet	$57.18	40	$2,287.20
Steel, Plate, 3/8 in.	1375	Flat steel plate, 3/8 inch thickness. Materials only.	Square Feet	$14.91	1	$14.91

Practice: 410 - Grade Stabilization Structure

Scenario #24 - Straight Pipe Less Than 30 inches Plastic Pipe (HDPE or PVC)

Scenario Description:

Install a new HDPE or PVC culvert under 30 inches in diameter to stabilize the grade and control erosion in natural or artificial channels, to prevent the formation or advancing of gullies, and to enhance environmental quality and reduce pollution hazards. Applied in areas where the concentration and flow velocity of water require structures to stabilize the grade in channels or to control gully erosion. A typical scenario would be an 24 inch diameter pipe, 40 feet in length. Work includes site preparation, acquiring and installing culvert pipe with gravel bedding and fill (compacted), and riprap protection of side slopes. Use (396) Aquatic Organism Passage when the primary intent is biological concerns, not hydrologic. Use (578) Stream Crossing for culverts = 30 inches or perennial flow.

Before Situation:

The operator presently has gullies forming and/or worsening on the farmland and impacting the useable area and the downstream water quality. Erosion from the gullies is allowing soil and possibly nutrients to be transported to downstream receiving waters degrading water quality and causing soil loss.

After Situation:

Water is conveyed in a controlled manner. Associated practices could be Access Road (560), Animal Trails and Walkways (575), Critical Area Planting (342), Drainage Water Management (554), Irrigation Canal or Lateral (320), Irrigation Pipeline (430), Irrigation Reservoir (436), Irrigation System, Surface and Subsurface (443), Irrigation System, Tailwater Recovery (447), Irrigation Water Management (449), Lined Waterway or Outlet (468), Obstruction Removal (500), Pond (378), Stormwater Runoff Control (570), Surface Drain, Field Ditch (607), Surface Drain, Main or Lateral (608), and Trails and Walkways (568).

Feature Measure: Pipe Diameter (In) x Pipe Length (Ft

Scenario Unit: Diameter Inch Foot

Scenario Typical Size: 960.0

Scenario Total Cost: $1,534.35

Scenario Cost/Unit: $1.60

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Excavation, Common Earth, side cast, small equipment	48	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic Yards	$2.24	5	$11.20
Earthfill, Manually Compacted	50	Earthfill, manually compacted, includes equipment and labor	Cubic Yards	$5.73	45	$257.85
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	10	$231.80
Materials						
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic Yards	$39.34	5	$196.70
Pipe, HDPE, CPT, Double Wall, Soil Tight, 24 in.	1246	Pipe, Corrugated HDPE Double Wall, 24 inch diameter with soil tight joints - AASHTO M294. Material cost only.	Feet	$20.92	40	$836.80

Practice: 410 - Grade Stabilization Structure

Scenario #25 - Straight Pipe Less Than 30 inches SSP

Scenario Description:

Install a new HDPE culvert under 30 inches in diameter to stabilized the grade and control erosion in natural or artificial channels, to prevent the formation or advancing of gullies, and to enhance environmental quality and reduce pollution hazards. Applied in areas where the concentration and flow velocity of water require structures to stabilize the grade in channels or to control gully erosion. A typical scenario would be an 24 inch diameter pipe, 40 feet in length. Work includes site preparation, acquiring and installing culvert pipe with gravel bedding and fill (compacted), and riprap protection of side slopes. Use (396) Aquatic Organism Passage when the primary intent is biological concerns, not hydrologic. Use (578) Stream Crossing for culverts ≥ 30 inches or perennial flow.

Before Situation:

The operator presently has gullies forming and/or worsening on the farmland and impacting the useable area and the downstream water quality. Erosion from the gullies is allowing soil and possibly nutrients to be transported to downstream receiving waters degrading water quality and causing soil loss.

After Situation:

Water is conveyed in a controlled manner. Associated practices could be Access Road (560), Animal Trails and Walkways (575), Critical Area Planting (342), Drainage Water Management (554), Irrigation Canal or Lateral (320), Irrigation Pipeline (430), Irrigation Reservoir (436), Irrigation System, Surface and Subsurface (443), Irrigation System, Tailwater Recovery (447), Irrigation Water Management (449), Lined Waterway or Outlet (468), Obstruction Removal (500), Pond (378), Stormwater Runoff Control (570), Surface Drain, Field Ditch (607), Surface Drain, Main or Lateral (608), and Trails and Walkways (568).

Feature Measure: Pipe Diameter (In) x Pipe Length (Ft

Scenario Unit: Diameter Inch Foot

Scenario Typical Size: 960.0

Scenario Total Cost: $4,012.69

Scenario Cost/Unit: $4.18

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Excavation, Common Earth, side cast, small equipment	48	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic Yards	$2.24	5	$11.20
Earthfill, Manually Compacted	50	Earthfill, manually compacted, includes equipment and labor	Cubic Yards	$5.73	45	$257.85
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	10	$231.80
Materials						
Rock Riprap, Placed with geotextile	44	Rock Riprap, placed with geotextile, includes materials, equipment and labor to transport and place	Cubic Yards	$103.28	2	$206.56
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic Yards	$39.34	5	$196.70
Pipe, Steel, 24 in., Std Wt, USED	1360	Materials: - USED - 24 inch - Steel Std Wt	Feet	$65.02	40	$2,600.80
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: 412 - Grassed Waterway

Scenario #1 - Base Waterway

Scenario Description:

Typical practice is 1200 ' long, 12' bottom, 8:1 side slopes, 1.5' depth, half excavation. A grass waterway that is a shaped or graded channel and is established with suitable vegetation to carry surface water at a non-erosive velocity to a stable outlet. This practice addresses Concentrated Flow Erosion (Classic Gully & Ephemeral Erosion) and Excessive Sediment in surface waters. Waterway area measured from top of bank to top of bank. Seeding area is 20% greater than waterway area to account for disturbed areas. Costs include excavation and associated work to construct the overall shape and grade of the waterway.

Before Situation:

The field has a small gulley which is cutting deeper into the field as time goes on, so it needs to be stopped or controlled. Excessive sedimentation and soil erosion as a result from ephemeral or classic gully erosion. Gully has formed in field as a result of excessive runoff and poor cropping techniques. Grassed waterway is also commonly installed to covey runoff from concentrated flows, terrarces, diversions, or water control structures or similar practices to a suitable, stable outlet.

After Situation:

Installed grassed waterway is 1200 ' long, 12' bottom, 8:1 side slopes, 1.5' depth. The practice is installed using a dozer. Use Critical Area Planting (342) for establishment of waterway vegetation. If erosion control blankets or mulching for seedbed establishment/protection are needed, use conservation practice Mulching (484). Drainage tile, if needed, will be installed accoring to Subsurface Drain (606). Outlets, if needed will be installed using Structure for Water Control (587). If inlet Structures are needed with the drainage tile, then those will be installed using Underground Outlet (620).

Feature Measure: Acre of Waterway

Scenario Unit: Acres

Scenario Typical Size: 1.0

Scenario Total Cost: $1,692.39

Scenario Cost/Unit: $1,692.39

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Excavation, common earth, large equipment, 50 ft	1222	Bulk excavation of common earth including sand and gravel with dozer >100 HP with average push distance of 50 feet. Includes equipment and labor.	Cubic Yards	$1.63	800	$1,304.00
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	4	$92.72
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	1	$41.78
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 420 - Wildlife Habitat Planting

Scenario #218 - Specialized Habitat Requirements on Non-Cropland, no Foregone Income

Scenario Description:

A wildlife habitat evaluation or plant community inventory indicates a potential to improve wildlife habitat by altering the current vegetation conditions (species diversity, richness, structure and pattern) by establishing herbaceous plants. This practice scenario applies to areas not in production (e.g. – fallow areas, forest understory, and non-cropped areas in and around crop fields). Control or suppression of a well-established existing stand of undesirable vegetation should have been completed prior to implementation of this practice scenario through successful implementation of other practice standards, including CPS 314 or CPS 315. This scenario, when appropriately installed, will address the inadequate wildlife habitat resource concern by planting a specialized and often diverse mix of seeds that is NOT readily available for purchase, in combination with minor seed bed preparation. Seed is not available from traditional agricultural vendors and requires making a special order. Cost of seed is high due to limited availability and plant materials selected are needed to meet specific habitat requirements or ecosystem functions. Other practices are planned and installed after planting to manage the habitat as needed.

Before Situation:

Vegetative habitat conditions (species diversity, richness, structure and pattern) do not meet planning criteria and do not have the potential to meet or exceed the minimum criteria through vegetative management activities alone. Current conditions and management are insufficient to address identified limiting habitat factor(s) or to increase planning criteria above a current planning criterion of at least 50% of the potential. Undesirable vegetation has been controlled or suppressed with the use of other conservation practice standards prior to implementation of this practice scenario.

After Situation:

Desired species have been planted and the Wildlife Habitat Planting criteria have been successfully implemented. The area will provide the identified habitat requirements for target species and will meet or exceed planning criteria for inadequate wildlife habitat.

Feature Measure: acres planted (per acre)

Scenario Unit: Acres

Scenario Typical Size: 5.0

Scenario Total Cost: $4,947.70

Scenario Cost/Unit: $989.54

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acres	$11.35	5	$56.75
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	5	$103.95
Labor						
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	2	$83.56
Materials						
Native Perennial Grasses, Legumes and/or Forbs Mix for Targeted Wildlife/Pollinator Habitat or Ecological Restoration, limited species availability.	2618	Diverse mix of native perennial grasses, legumes and forbs, less than 50% grasses, may include biennials and a small percentage of annual species for establishment purposes and/or if allowed by the CPS. This is a highly specialized mix composed of species required to meet specific wildlife/pollinator habitat or ecological requirements. Seed may have limited availability and be difficult to obtain, e.g. milkweed species. Restricted for use with Wildlife Habitat Planting (420) and Restoration of Rare or Declining Natural Communities (643). Includes materials and shipping.	Acres	$889.91	5	$4,449.55
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 420 - Wildlife Habitat Planting

Scenario #220 - High Species Diversity on Fallow or Non-Cropland, no Foregone Income

Scenario Description:

A wildlife habitat evaluation or plant community inventory indicates a potential to improve wildlife habitat by altering the current vegetation conditions (species diversity, richness, structure and pattern) by establishing herbaceous plants. This practice scenario applies to areas not in production (e.g. – fallow areas, forest understory, and non-cropped areas in and around crop fields). Control or suppression of a well-established existing stand of undesirable vegetation should have been completed prior to implementation of this practice scenario through successful implementation of other practice standards, including CPS 314 or CPS 315. This scenario, when appropriately installed, will address the inadequate wildlife habitat resource concern by planting a moderately diverse mix of seeds that is readily available for purchase from multiple vendors in combination with minor seed bed preparation. Seed is typically not available from traditional agricultural vendors and requires making a special order or ordering online. Other practices are planned and installed after planting to manage the habitat as needed.

Before Situation:

Vegetative habitat conditions (species diversity, richness, structure and pattern) do not meet planning criteria and do not have the potential to meet or exceed the minimum criteria through vegetative management activities alone. Current conditions and management are insufficient to address identified limiting habitat factor(s) or to increase planning criteria above a current planning criterion of at least 50% of the potential. Undesirable vegetation has been controlled or suppressed with the use of other conservation practice standards prior to implementation of this practice scenario.

After Situation:

Desired species have been planted and the Wildlife Habitat Planting criteria have been successfully implemented. The area will provide the identified habitat requirements for target species and will meet or exceed planning criteria for inadequate wildlife habitat.

Feature Measure: acres planted (per acre)

Scenario Unit: Acres

Scenario Typical Size: 5.0

Scenario Total Cost: $2,399.12

Scenario Cost/Unit: $479.82

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acres	$11.35	5	$56.75
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	5	$103.95
Labor						
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	2	$83.56
Materials						
Native Perennial Grasses, Legumes and/or Forb Mix for Targeted Wildlife/Pollinator Habitat or Ecological Restoration, moderate commercial availability	2619	Diverse mix of native perennial grasses, legumes and forbs, less than 50% grasses, may include biennials and a small percentage of annual species for establishment purposes and/or if allowed by the CPS. This is a mix composed of species required to meet specific wildlife/pollinator habitat or ecological requirements. Seed is moderately easy to purchase commercially. Includes materials and shipping.	Acres	$396.82	5	$1,984.10
Mobilization						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	1	$170.76

Practice: 420 - Wildlife Habitat Planting

Scenario #222 - Low Species Diversity on Cropland with Foregone Income

Scenario Description:

A wildlife habitat evaluation or plant community inventory indicates a potential to improve wildlife habitat by altering the current vegetation conditions (species diversity, richness, structure and pattern) and changing use (annual crop to permanent vegetation) by establishing herbaceous plants. This practice scenario applies to cropland currently in production. The inadequate wildlife habitat resource concern is met by planting a low diversity, low cost mix of readily available seeds in combination with minor seed bed preparation. Weed pressure is minimal due to current and past management. Control or suppression of existing undesirable vegetation is accomplished through a single herbicide treatment. Post-planting weed treatment, beyond normal practice maintenance if necessary, will be accomplished by applying additional practice standards as appropriate.

Before Situation:

Vegetative habitat conditions (species diversity, richness, structure and pattern) do not meet planning criteria and do not have the potential to meet or exceed the minimum criteria through vegetative management activities alone. Current conditions and management are insufficient to address identified limiting habitat factor(s) or to increase planning criteria above a current planning criterion of at least 50% of the potential.

After Situation:

The land is no longer in crop production. Desired species have been planted and the Wildlife Habitat Planting criteria have been successfully implemented. As a result, the site will meet or exceed planning criteria for inadequate wildlife habitat.

Feature Measure: acres planted (per acre)

Scenario Unit: Acres

Scenario Typical Size: 5.0

Scenario Total Cost: $2,944.04

Scenario Cost/Unit: $588.81

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acres	$11.35	5	$56.75
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$6.00	5	$30.00
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	5	$103.95
Foregone Income						
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acres	$287.72	5	$1,438.60
Labor						
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	4	$167.12
Materials						
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$8.98	5	$44.90
Native Perennial Grasses, Legumes and/or Forbs, Low Density	2753	A mix of native perennial grasses, legumes, and/or forbs, grasses typically greater than 50% of the mix, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Species typically easy to purchase. Includes material and shipping.	Acres	$172.37	5	$861.85
Mobilization						
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	$70.11	1	$70.11
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	1	$170.76

Practice: 420 - Wildlife Habitat Planting

Scenario #223 - Low Species Diversity on Non-Cropland, no Foregone Income

Scenario Description:

A wildlife habitat evaluation or plant community inventory indicates a potential to improve wildlife habitat by altering the current vegetation conditions (species diversity, richness, structure and pattern) by establishing herbaceous plants. This practice scenario applies to areas not in production (e.g. – fallow areas, forest understory, and non-cropped areas in and around crop fields). Control or suppression of a well-established existing stand of undesirable vegetation should have been completed prior to implementation of this practice scenario through successful implementation of other practice standards, including CPS 314 or CPS 315. This scenario, when appropriately installed, will address the inadequate wildlife habitat resource concern by planting a low diversity, low cost mix of readily available seeds in combination with minor seed bed preparation. Other practices are planned and installed after planting to manage the habitat as needed.

Before Situation:

Vegetative habitat conditions (species diversity, richness, structure and pattern) do not meet planning criteria and do not have the potential to meet or exceed the minimum criteria through vegetative management activities alone. Current conditions and management are insufficient to address identified limiting habitat factor(s) or to increase planning criteria above a current planning criterion of at least 50% of the potential. Undesirable vegetation has been controlled or suppressed with the use of other conservation practice standards prior to implementation of this practice scenario.

After Situation:

Desired species have been planted and the Wildlife Habitat Planting criteria have been successfully implemented. The area will provide the identified habitat requirements for target species and will meet or exceed planning criteria for inadequate wildlife habitat.

Feature Measure: acres planted (per acre)

Scenario Unit: Acres

Scenario Typical Size: 5.0

Scenario Total Cost: $1,276.87

Scenario Cost/Unit: $255.37

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acres	$11.35	5	$56.75
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	5	$103.95
Labor						
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	2	$83.56
Materials						
Native Perennial Grasses, Legumes and/or Forbs, Low Density	2753	A mix of native perennial grasses, legumes, and/or forbs, grasses typically greater than 50% of the mix, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Species typically easy to purchase. Includes material and shipping.	Acres	$172.37	5	$861.85
Mobilization						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	1	$170.76

Practice: 420 - Wildlife Habitat Planting

Scenario #224 - High Species Diversity on Cropland with Foregone Income

Scenario Description:

A wildlife habitat evaluation or plant community inventory indicates a potential to improve wildlife habitat by altering the current vegetation conditions (species diversity, richness, structure and pattern) and changing use (annual crop to permanent vegetation) by establishing herbaceous plants. This practice scenario applies to cropland currently in production. The inadequate wildlife habitat resource concern is met by planting a moderately diverse mix of seeds that is readily available for purchase from multiple vendors in combination with minor seed bed preparation. Seed is typically not available from traditional agricultural vendors and requires making a special order or ordering online. Weed pressure is minimal due to current and past management. Control or suppression of existing undesirable vegetation is accomplished through a single herbicide treatment. Post-planting weed treatment, beyond normal practice maintenance if necessary, will be accomplished by applying additional practice standards as appropriate.

Before Situation:

Vegetative habitat conditions (species diversity, richness, structure and pattern) do not meet planning criteria and do not have the potential to meet or exceed the minimum criteria through vegetative management activities alone. Current conditions and management are insufficient to address identified limiting habitat factor(s) or to increase planning criteria above a current planning criterion of at least 50% of the potential.

After Situation:

The land is no longer in crop production. Desired species have been planted and the Wildlife Habitat Planting criteria have been successfully implemented. As a result, the site will meet or exceed planning criteria for inadequate wildlife habitat.

Feature Measure: acres planted (per acre)

Scenario Unit: Acres

Scenario Typical Size: 5.0

Scenario Total Cost: $4,149.42

Scenario Cost/Unit: $829.88

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acres	$11.35	5	$56.75
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$6.00	5	$30.00
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	5	$103.95
Foregone Income						
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acres	$287.72	5	$1,438.60
Labor						
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	4	$167.12
Materials						
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$8.98	5	$44.90
Native Perennial Grasses, Legumes and/or Forb Mix for Targeted Wildlife/Pollinator Habitat or Ecological Restoration, moderate commercial availability	2619	Diverse mix of native perennial grasses, legumes and forbs, less than 50% grasses, may include biennials and a small percentage of annual species for establishment purposes and/or if allowed by the CPS. This is a mix composed of species required to meet specific wildlife/pollinator habitat or ecological requirements. Seed is moderately easy to purchase commercially. Includes materials and shipping.	Acres	$396.82	5	$1,984.10
Mobilization						
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	$70.11	1	$70.11
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 420 - Wildlife Habitat Planting

Scenario #225 - Specialized Habitat Requirements on Cropland with Foregone Income

Scenario Description:

A wildlife habitat evaluation or plant community inventory indicates a potential to improve wildlife habitat by altering the current vegetation conditions (species diversity, richness, structure and pattern) and changing use (annual crop to permanent vegetation) by establishing herbaceous plants. This practice scenario applies to cropland currently in production. The inadequate wildlife habitat resource concern is met by planting a specialized and often diverse mix of seeds that is NOT readily available for purchase, in combination with minor seed bed preparation. Seed is not available from traditional agricultural vendors and requires making a special order. Cost of seed is high due to limited availability and plant materials selected are needed to meet specific habitat requirements or ecosystem functions. Weed pressure is minimal due to current and past management. Control or suppression of existing undesirable vegetation is accomplished through a single herbicide treatment. Post-planting weed treatment, beyond normal practice maintenance if necessary, will be accomplished by applying additional practice standards as appropriate.

Before Situation:

Vegetative habitat conditions (species diversity, richness, structure and pattern) do not meet planning criteria and do not have the potential to meet or exceed the minimum criteria through vegetative management activities alone. Current conditions and management are insufficient to address identified limiting habitat factor(s) or to increase planning criteria above a current planning criterion of at least 50% of the potential.

After Situation:

The land is no longer in crop production. Desired species have been planted and the Wildlife Habitat Planting criteria have been successfully implemented. As a result, the site will meet or exceed planning criteria for inadequate wildlife habitat.

Feature Measure: acres planted (per acre)

Scenario Unit: Acres

Scenario Typical Size: 5.0

Scenario Total Cost: $6,531.74

Scenario Cost/Unit: $1,306.35

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acres	$11.35	5	$56.75
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$6.00	5	$30.00
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	5	$103.95
Foregone Income						
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acres	$287.72	5	$1,438.60
Labor						
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	4	$167.12
Materials						
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$8.98	5	$44.90
Native Perennial Grasses, Legumes and/or Forbs Mix for Targeted Wildlife/Pollinator Habitat or Ecological Restoration, limited species availability.	2618	Diverse mix of native perennial grasses, legumes and forbs, less than 50% grasses, may include biennials and a small percentage of annual species for establishment purposes and/or if allowed by the CPS. This is a highly specialized mix composed of species required to meet specific wildlife/pollinator habitat or ecological requirements. Seed may have limited availability and be difficult to obtain, e.g. milkweed species. Restricted for use with Wildlife Habitat Planting (420) and Restoration of Rare or Declining Natural Communities (643). Includes materials and shipping.	Acres	$889.91	5	$4,449.55
Mobilization						
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	$70.11	1	$70.11
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	1	$170.76

Practice: 422 - Hedgerow Planting

Scenario #1 - Pollinator Habitat

Scenario Description:

Where pollinator habitat is an additional wildlife habitat concern this scenario addresses the resource concern of inadequate fish and wildlife habitat. It provides both physical habitat by providing areas that are not disturbed by annual tillage and provides pollen and nector throughout the growing season by establishing a diverse mixture of flowering plants. Typically a mixture of 9 or more species is planted to improve diversity so that pollen and nector are avaiable as long as possible. Typical installation is in or at the edge of cropland or pasture. Typical installation involves tillage to prepare the site for planting. Flowering trees and shrubs adapted for local climatic and edaphic conditions are typically planted at eight - ten foot intervals (this will vary with species selection and density goals). Native grasses adapted to the local climatic and edaphic conditions will be drilled into the site at a rate that will achieve a minimum of 20 seeds per square foot. A locally adapted mixture of pollen and nectar producing plants will be drilled into the site. The species list in the component section of this scenario are strictly for deriving a cost. Species adapted to local climatic and edaphic conditions will be listed in the specification for the site. There is tremendous overlap between this practice and conservation practice 380 Windbreak/Shelterbelt establishment. The main difference is that conservation practice 380 is exclusively woody plants where practice 422 provides for the use of herbaceous materials. If a fence is needed to facilitate establishment use practice 382, Fence.

Before Situation:

Pollen and nector sources are lacking or are only availble for part of the growing season. Large cropland tracts lack undisturbed areas for ground nesting bees.

After Situation:

Flowering plants supply pollen and nector throughout the growing season. Undisturbed areas provide nesting sites for bees and other native pollinators.

Feature Measure: Length and width of Hedgerow

Scenario Unit: Feet

Scenario Typical Size: 660.0

Scenario Total Cost: $951.77

Scenario Cost/Unit: $1.44

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Tillage, Primary	946	Includes heavy disking (offset) or chisel plow. Includes equipment, power unit and labor costs.	Acres	$15.95	0.33	$5.26
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	0.33	$6.86
Tractor, agricultural, 120 HP	962	Agricultural tractor with horsepower range of 90 to 140. Equipment and power unit costs. Labor not included.	Hours	$51.52	2	$103.04
Hand tools, tree planting	1590	Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included.	Hours	$12.58	2	$25.16
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	2	$46.36
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	2	$50.62
Materials						
Shrub, Seedling, Medium	1507	Bare root shrub seedling, 18 to 36 inches tall; includes tropical containerized seedlings 10 to 20 cubic inches. Includes materials and shipping only.	Each	$0.83	166	$137.78
Tree, Hardwood, Seedling, Medium	1510	Bare root hardwood seedlings 18 to 36 inches tall; includes tropical containerized seedlings of 10 to 20 cubic inches. Includes materials and shipping only.	Each	$1.17	66	$77.22
Tree shelter, solid tube type, 3-1/4 in. x 36 in.	1561	3-1/4 inch x 36 inch tree tube for protection from animal damage. Materials only.	Each	$2.22	166	$368.52
Native Perennial Grasses, Legumes and/or Forb Mix for Targeted Wildlife/Pollinator Habitat or Ecological Restoration, moderate commercial availability	2619	Diverse mix of native perennial grasses, legumes and forbs, less than 50% grasses, may include biennials and a small percentage of annual species for establishment purposes and/or if allowed by the CPS. This is a mix composed of species required to meet specific wildlife/pollinator habitat or ecological requirements. Seed is moderately easy to purchase commercially. Includes materials and shipping.	Acres	$396.82	0.33	$130.95

Practice: 422 - Hedgerow Planting

Scenario #2 - Wildlife, Warm Season Grass

Scenario Description:

Typically installed in or at the edge of cropland or pasture this scenario is used to address the Inadequate Habitat for Fish and Wildlife resource concern. Specifically, the establishment of dense vegetation in a linear design can be used to provide for several habitat elements depending on the needs identified in the habitat assessment. This scenario can provide: corridors for habitat conectivity, food, and cover for wildlife depending on design and plant species selection. The 422 standard for wildlife criteria calls for a minimum of two species of native plants.Typical installation involves tillage to prepare the site for planting. Shrubs adapted for local climatic and edaphic conditions are typically plant at eight foot intervals (this will vary with species selection and density goals). A mix of at least 3 native warm season grasses and forbs adapted to the local climatic and edaphic conditions will be drilled into the site at a rate that will achieve a minimum of 20 seeds per square foot. The species list in the component section of this scenario are strictly for deriving a cost. Plant species adapted to the local climatic and edaphic conditions that address the resource concern will be stated in the specification for the site. There is tremendous overlap between this practice and conservation practice 380 Windbreak/Shelterbelt establishment. The main difference is that conservation practice 380 is exclusively woody plants where practice 422 provides for the use of herbaceous materials. If a fence is needed to facilitate establishment use practice 382, Fence.

Before Situation:

Habitat patches lack connectivity. Cover is inadequate to allow wildlife to exploit cropland food resources. Berries and mast are limited. Site not suited to conifer or hardwood trees or site lacking needed tree components.

After Situation:

Inadequate habitat for fish and wildlife is addressed for needs identified in the resource assessment. Habitat patches are connected by corridors of dense hedgerow vegetation. Food resources in crop fields are made availble by their proximity to hedgerow cover. Planting may include fruit and seed bearing species, improving food supply, depending on needs being addressed. Site not suited to conifer or hardwood trees or Site not lacking needed tree components.

Feature Measure: Length and width of Hedgerow

Scenario Unit: Feet

Scenario Typical Size: 660.0

Scenario Total Cost: $781.54

Scenario Cost/Unit: $1.18

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Tillage, Primary	946	Includes heavy disking (offset) or chisel plow. Includes equipment, power unit and labor costs.	Acres	$15.95	0.33	$5.26
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	0.33	$6.86
Tractor, agricultural, 120 HP	962	Agricultural tractor with horsepower range of 90 to 140. Equipment and power unit costs. Labor not included.	Hours	$51.52	2	$103.04
Hand tools, tree planting	1590	Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included.	Hours	$12.58	2	$25.16
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	2	$46.36
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	2	$50.62
Materials						
Shrub, Seedling, Medium	1507	Bare root shrub seedling, 18 to 36 inches tall; includes tropical containerized seedlings 10 to 20 cubic inches. Includes materials and shipping only.	Each	$0.83	166	$137.78
Tree shelter, solid tube type, 3-1/4 in. x 36 in.	1561	3-1/4 inch x 36 inch tree tube for protection from animal damage. Materials only.	Each	$2.22	166	$368.52
Native Perennial Grasses, Low Density	2750	Native perennial grasses, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Includes material and shipping.	Acres	$114.96	0.33	$37.94

Practice: 422 - Hedgerow Planting

Scenario #3 - Wildlife, Trees - Shrubs only

Scenario Description:

Typically installed in or at the edge of cropland or pasture this scenario is used to address the Inadequate Habitat for Fish and Wildlife resource concern. Specifically, the establishment of dense vegetation in a linear design can be used to provide for several habitat elements depending on the needs identified in the habitat assessment. This scenario can provide: corridors for habitat conectivity, food, and cover for wildlife depending on design and plant species selection. The 422 standard for wildlife criteria calls for a minimum of two species of native plants.Typical installation involves tillage to prepare the site for planting. 2 Trees and/or shrubs adapted for local climatic and edaphic conditions are typically plant at eight - ten foot intervals (this will vary with species selection and density goals). The species list in the component section of this scenario are strictly for deriving a cost. Plant species adapted to the local climatic and edaphic conditions that address the resource concern will be stated in the specification for the site. There is tremendous overlap between this practice and conservation practice 380 Windbreak/Shelterbelt establishment. The main difference is that conservation practice 380 is exclusively woody plants where practice 422 provides for the use of herbaceous materials. If a fence is needed to facilitate establishment use practice 382, Fence.

Before Situation:

Habitat patches lack connectivity. Cover is inadequate to allow wildlife to exploit cropland food resources. Berries and mast are limited.

After Situation:

Inadequate habitat for fish and wildlife is addressed for needs identified in the resource assessment. Habitat patches are connected by corridors of dense hedgerow vegetation. Food resources in crop fields are made availble by their proximity to hedgerow cover. Planting may include fruit and mast bearing species, improving food supply, depending on needs being addressed.

Feature Measure: Length and width of Hedgerow

Scenario Unit: Feet

Scenario Typical Size: 660.0

Scenario Total Cost: $747.82

Scenario Cost/Unit: $1.13

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Tillage, Primary	946	Includes heavy disking (offset) or chisel plow. Includes equipment, power unit and labor costs.	Acres	$15.95	1	$15.95
Tractor, agricultural, 120 HP	962	Agricultural tractor with horsepower range of 90 to 140. Equipment and power unit costs. Labor not included.	Hours	$51.52	1	$51.52
Hand tools, tree planting	1590	Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included.	Hours	$12.58	2	$25.16
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	2	$46.36
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	1	$25.31
Materials						
Shrub, Seedling, Medium	1507	Bare root shrub seedling, 18 to 36 inches tall; includes tropical containerized seedlings 10 to 20 cubic inches. Includes materials and shipping only.	Each	$0.83	166	$137.78
Tree, Hardwood, Seedling, Medium	1510	Bare root hardwood seedlings 18 to 36 inches tall; includes tropical containerized seedlings of 10 to 20 cubic inches. Includes materials and shipping only.	Each	$1.17	66	$77.22
Tree shelter, solid tube type, 3-1/4 in. x 36 in.	1561	3-1/4 inch x 36 inch tree tube for protection from animal damage. Materials only.	Each	$2.22	166	$368.52

Practice: 422 - Hedgerow Planting

Scenario #4 - Wildlife - Trees-Shrubs-NWSG

Scenario Description:

Typically installed in or at the edge of cropland or pasture this scenario is used to address the Inadequate Habitat for Fish and Wildlife resource concern. Specifically, the establishment of dense vegetation in a linear design can be used to provide for several habitat elements depending on the needs identified in the habitat assessment. This scenario can provide: corridors for habitat conectivity, food, and cover for wildlife depending on design and plant species selection. The 422 standard for wildlife criteria calls for a minimum of two species of native plants.Typical installation involves tillage to prepare the site for planting. 2 Trees and/or shrubs adapted for local climatic and edaphic conditions are typically plant at eight - ten foot intervals (this will vary with species selection and density goals). A mix of at least 3 native warm season grasses (NWSG) and forbs adapted to the local climatic and edaphic conditions will be drilled into the site at a rate that will achieve a minimum of 20 seeds per square foot. The species list in the component section of this scenario are strictly for deriving a cost. Plant species adapted to the local climatic and edaphic conditions that address the resource concern will be stated in the specification for the site. There is tremendous overlap between this practice and conservation practice 380 Windbreak/Shelterbelt establishment. The main difference is that conservation practice 380 is exclusively woody plants where practice 422 provides for the use of herbaceous materials. If a fence is needed to facilitate establishment use practice 382, Fence.

Before Situation:

Habitat patches lack connectivity. Cover is inadequate to allow wildlife to exploit cropland food resources. Berries and mast are limited.

After Situation:

Inadequate habitat for fish and wildlife is addressed for needs identified in the resource assessment. Habitat patches are connected by corridors of dense hedgerow vegetation. Food resources in crop fields are made availble by their proximity to hedgerow cover. Planting may include fruit and mast bearing species, improving food supply, depending on needs being addressed.

Feature Measure: Length and width of Hedgerow

Scenario Unit: Feet

Scenario Typical Size: 660.0

Scenario Total Cost: $858.76

Scenario Cost/Unit: $1.30

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Tillage, Primary	946	Includes heavy disking (offset) or chisel plow. Includes equipment, power unit and labor costs.	Acres	$15.95	0.33	$5.26
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	0.33	$6.86
Tractor, agricultural, 120 HP	962	Agricultural tractor with horsepower range of 90 to 140. Equipment and power unit costs. Labor not included.	Hours	$51.52	2	$103.04
Hand tools, tree planting	1590	Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included.	Hours	$12.58	2	$25.16
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	2	$46.36
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	2	$50.62
Materials						
Shrub, Seedling, Medium	1507	Bare root shrub seedling, 18 to 36 inches tall; includes tropical containerized seedlings 10 to 20 cubic inches. Includes materials and shipping only.	Each	$0.83	166	$137.78
Tree, Hardwood, Seedling, Medium	1510	Bare root hardwood seedlings 18 to 36 inches tall; includes tropical containerized seedlings of 10 to 20 cubic inches. Includes materials and shipping only.	Each	$1.17	66	$77.22
Tree shelter, solid tube type, 3-1/4 in. x 36 in.	1561	3-1/4 inch x 36 inch tree tube for protection from animal damage. Materials only.	Each	$2.22	166	$368.52
Native Perennial Grasses, Low Density	2750	Native perennial grasses, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Includes material and shipping.	Acres	$114.96	0.33	$37.94

Practice: 422 - Hedgerow Planting

Scenario #5 - Visual-Odor Screen

Scenario Description:

Where aesthetics and/or air quality is a resource concern, vegetative barriers are needed to provide visual and/or odor screens. This scenario also addresses the resource concern of inadequate fish and wildlife habitat. It provides both physical habitat by providing areas that are not disturbed by annual tillage and provides year round cover and seasonal foods by establishing a diverse mixture of plants. Typical installation is in or at the edge of ag fields, farm headquarters, and/or confined livestock facilities. Two offset rows of evergreen conifers are planted at 10 ft. intervals to provide a year round visual and/or odor screen. Flowering trees and shrubs adapted for local climatic and edaphic conditions are typically planted at eight foot intervals (this will vary with species selection and density goals). Species adapted to local climatic and edaphic conditions will be listed in the specification for the site. There is tremendous overlap between this practice and conservation practice 380 Windbreak/Shelterbelt establishment. The main difference is that conservation practice 380 is exclusively woody plants where practice 422 provides for the use of herbaceous materials if desired. If a fence is needed to facilitate establishment use practice 382, Fence.

Before Situation:

Line of Sight and/or unpleasant odors are unimpeded due to lack of protective vegetative cover. Wildlife have inadequate escape/roosting and feeding cover.

After Situation:

Year round protective cover provides visual and/or odor screens as well as wildlife escape/roosting habitat and seasonal foods.

Feature Measure: Length and width of Hedgerow

Scenario Unit: Feet

Scenario Typical Size: 660.0

Scenario Total Cost: $686.44

Scenario Cost/Unit: $1.04

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Tillage, Primary	946	Includes heavy disking (offset) or chisel plow. Includes equipment, power unit and labor costs.	Acres	$15.95	1	$15.95
Tractor, agricultural, 120 HP	962	Agricultural tractor with horsepower range of 90 to 140. Equipment and power unit costs. Labor not included.	Hours	$51.52	1	$51.52
Hand tools, tree planting	1590	Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included.	Hours	$12.58	2	$25.16
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	2	$46.36
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	1	$25.31
Materials						
Shrub, Seedling, Medium	1507	Bare root shrub seedling, 18 to 36 inches tall; includes tropical containerized seedlings 10 to 20 cubic inches. Includes materials and shipping only.	Each	$0.83	166	$137.78
Tree, Conifer, Seedling, Small	1512	Containerized conifer seedlings, 4 or 6 cubic inches; or bare root conifer seedlings 1+0 (one-year old seedlings grown in their original seedbed). Includes materials and shipping only.	Each	$0.12	132	$15.84
Tree shelter, solid tube type, 3-1/4 in. x 36 in.	1561	3-1/4 inch x 36 inch tree tube for protection from animal damage. Materials only.	Each	$2.22	166	$368.52

Practice: 430 - Irrigation Pipeline

Scenario #1 - PVC, Iron Pipe Size, Less Than 2in Micro

Scenario Description:

Description: Below ground installation of PVC (Iron Pipe Size) pipeline. PVC (IPS) is manufactured in sizes (nominal diameter) from ½-inch to 36-inch; typical practice sizes range from 2-inch to 24-inch; and typical scenario size is 1 ½-inch. Construct 260' of 1-inch, Class 125 (SDR-32.5), PVC pipeline with appurtenances, installed below ground with a minimum of 2 feet of ground cover. 260' of 1 ½ inch, Class 125 (SDR-32.5) PVC pipe weighs 0.227 lb/ft, or a total of 59.02 pounds. Appurtenances include: couplings, fittings, air vents, pressure relief valves, thrust blocks, risers, and inline valves, and are included in the cost of pipe material (additional 10% of pipe material quantity). Cost of appurtenances does not include flow meters or backflow preventers. Typical installation applies to soils with no special bedding requirements. Resource Concerns: Inefficient Use of Irrigation Water; Inefficient Energy Use. Associated Practices: 436 - Irrigation Reservoir; 441 - Irrigation System, Microirrigation; 442 - Irrigation System, Sprinkler; 443 - Irrigation System, Surface & Subsurface; 447 - Irrigation System, Tailwater Recovery; 533 - Pumping Plant; 634 - Waste Transfer.

Before Situation:

Pipeline needed to replace or supplement inefficient irrigation conveyance systems.

After Situation:

Pipeline installed to convey and/or distribute water to micro-irrigation systems, minimizing non-beneficial water use, reducing soil erosion, and/or reducing energy use.

Feature Measure: Length of Pipe

Scenario Unit: Feet

Scenario Typical Size: 260.0

Scenario Total Cost: $1,053.78

Scenario Cost/Unit: $4.05

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Trencher, 8 in.	936	Equipment and power unit costs. Labor not included.	Hours	$47.16	6	$282.96
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	6	$139.08
Materials						
Pipe, PVC, dia. < 18 in., weight priced	1323	Polyvinyl Chloride (PVC) pressure rated pipe priced by the weight of the pipe materials for pipes with diameters less than 18 inch. Materials	Pound	$1.91	64.9	$123.96
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: 430 - Irrigation Pipeline

Scenario #2 - PVC, Iron Pipe Size, 2in - less than 4in Micro

Scenario Description:

Description: Below ground installation of PVC (Iron Pipe Size) pipeline. PVC (IPS) is manufactured in sizes (nominal diameter) from ½-inch to 36-inch; typical practice sizes range from 2-inch to 24-inch; and typical scenario size is 3-inch. Construct 260 feet of 3-inch, Class 125 (SDR-32.5), PVC pipeline with appurtenances, installed below ground with a minimum of 2 feet of ground cover. The unit is weight of pipe material in pounds. 260 feet of 3-inch, Class 125 (SDR-32.5) PVC pipe weighs .730 lb/ft, or a total of 189.8 pounds. Appurtenances include: couplings, fittings, air vents, pressure relief valves, thrust blocks, risers, and inline valves, and are included in the cost of pipe material (additional 10% of pipe material quantity). Cost of appurtenances does not include flow meters or backflow preventers. Typical installation applies to soils with no special bedding requirements. Resource Concerns: Inefficient Use of Irrigation Water; Inefficient Energy Use. Associated Practices: 436 - Irrigation Reservoir; 441 - Irrigation System, Microirrigation; 442 - Irrigation System, Sprinkler; 443 - Irrigation System, Surface & Subsurface; 447 - Irrigation System, Tailwater Recovery; 533 - Pumping Plant; 634 - Waste Transfer.

Before Situation:

Pipeline needed to replace or supplement inefficient irrigation conveyance systems.

After Situation:

Pipeline installed to convey and/or distribute water to micro-irrigation systems, minimizing non-beneficial water use, reducing soil erosion, and/or reducing energy use.

Feature Measure: Length of Pipe

Scenario Unit: Feet

Scenario Typical Size: 260.0

Scenario Total Cost: $1,328.59

Scenario Cost/Unit: $5.11

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Trencher, 8 in.	936	Equipment and power unit costs. Labor not included.	Hours	$47.16	6	$282.96
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	6	$139.08
Materials						
Pipe, PVC, dia. < 18 in., weight priced	1323	Polyvinyl Chloride (PVC) pressure rated pipe priced by the weight of the pipe materials for pipes with diameters less than 18 inch. Materials	Pound	$1.91	208.78	$398.77
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: 430 - Irrigation Pipeline

Scenario #3 - PVC, Iron Pipe Size, 4in - 6in Micro

Scenario Description:

Description: Below ground installation of PVC (Iron Pipe Size) pipeline. PVC (IPS) is manufactured in sizes (nominal diameter) from ½-inch to 36-inch; typical practice sizes range from 2-inch to 24-inch; and typical scenario size is 5-inch. Construct 260 feet of 5-inch, Class 125 (SDR-32.5), PVC pipeline with appurtenances, installed below ground with a minimum of 2 feet of ground cover. The unit is weight of pipe material in pounds. 260 feet of 5-inch, Class 125 (SDR-32.5) PVC pipe weighs 1.810 lb/ft, or a total of 470.6 pounds. Appurtenances include: couplings, fittings, air vents, pressure relief valves, thrust blocks, risers, and inline valves, and are included in the cost of pipe material (additional 10% of pipe material quantity). Cost of appurtenances does not include flow meters or backflow preventers. Typical installation applies to soils with no special bedding requirements. Resource Concerns: Inefficient Use of Irrigation Water; Inefficient Energy Use. Associated Practices: 436 - Irrigation Reservoir; 441 - Irrigation System, Microirrigation; 442 - Irrigation System, Sprinkler; 443 - Irrigation System, Surface & Subsurface; 447 - Irrigation System, Tailwater Recovery; 533 - Pumping Plant; 634 - Waste Transfer.

Before Situation:

Pipeline needed to replace or supplement inefficient irrigation conveyance systems.

After Situation:

Pipeline installed to convey and/or distribute water to micro-irrigation systems, minimizing non-beneficial water use, reducing soil erosion, and/or reducing energy use.

Feature Measure: Length of Pipe

Scenario Unit: Feet

Scenario Typical Size: 260.0

Scenario Total Cost: $1,918.55

Scenario Cost/Unit: $7.38

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Trencher, 8 in.	936	Equipment and power unit costs. Labor not included.	Hours	$47.16	6	$282.96
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	6	$139.08
Materials						
Pipe, PVC, dia. < 18 in., weight priced	1323	Polyvinyl Chloride (PVC) pressure rated pipe priced by the weight of the pipe materials for pipes with diameters less than 18 inch. Materials	Pound	$1.91	517.66	$988.73
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: 430 - Irrigation Pipeline

Scenario #4 - PVC, Iron Pipe Size, 8in Micro

Scenario Description:

Description: Below ground installation of PVC (Iron Pipe Size) pipeline. PVC (IPS) is manufactured in sizes (nominal diameter) from ½-inch to 36-inch; typical practice sizes range from 2-inch to 24-inch; and typical scenario size is 8-inch. Construct 260 feet of 8-inch, Class 125 (SDR-32.5), PVC pipeline with appurtenances, installed below ground with a minimum of 2 feet of ground cover. The unit is weight of pipe material in pounds. 260 feet of 8-inch, Class 125 (SDR-32.5) PVC pipe weighs 4.348 lb/ft, or a total of 1130.5 pounds. Appurtenances include: couplings, fittings, air vents, pressure relief valves, thrust blocks, risers, and inline valves, and are included in the cost of pipe material (additional 10% of pipe material quantity). Cost of appurtenances does not include flow meters or backflow preventers. Typical installation applies to soils with no special bedding requirements. Resource Concerns: Inefficient Use of Irrigation Water; Inefficient Energy Use. Associated Practices: 436 - Irrigation Reservoir; 441 - Irrigation System, Microirrigation; 442 - Irrigation System, Sprinkler; 443 - Irrigation System, Surface & Subsurface; 447 - Irrigation System, Tailwater Recovery; 533 - Pumping Plant; 634 - Waste Transfer.

Before Situation:

Pipeline needed to replace or supplement inefficient irrigation conveyance systems.

After Situation:

Pipeline installed to convey and/or distribute water to micro-irrigation systems, minimizing non-beneficial water use, reducing soil erosion, and/or reducing energy use.

Feature Measure: Length of Pipe

Scenario Unit: Feet

Scenario Typical Size: 260.0

Scenario Total Cost: $3,404.15

Scenario Cost/Unit: $13.09

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Trenching, Earth, 12 in. x 48 in.	53	Trenching, earth, 12 inch wide x 48 inch depth, includes equipment and labor for trenching and backfilling	Feet	$1.47	260	$382.20
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	6	$139.08
Materials						
Pipe, PVC, dia. < 18 in., weight priced	1323	Polyvinyl Chloride (PVC) pressure rated pipe priced by the weight of the pipe materials for pipes with diameters less than 18 inch. Materials	Pound	$1.91	1243.5	$2,375.09
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: 430 - Irrigation Pipeline

Scenario #5 - PVC, Iron Pipe Size, 6in - 8in Sprinkler

Scenario Description:

Description: Below ground installation of PVC (Iron Pipe Size) pipeline. PVC (IPS) is manufactured in sizes (nominal diameter) from ½-inch to 36-inch; typical practice sizes range from 2-inch to 24-inch; and typical scenario size is 6-inch. Construct 360 feet of 8-inch, Class 160 (SDR-26), PVC pipeline with appurtenances, installed below ground with a minimum of 2 feet of ground cover. The unit is weight of pipe material in pounds. 360 feet of 8-inch, Class 160 (SDR-26) PVC pipe weighs 5.401 lb/ft, or a total of 1944.4 pounds. Appurtenances include: couplings, fittings, air vents, pressure relief valves, thrust blocks, risers, and inline valves, and are included in the cost of pipe material (additional 10% of pipe material quantity). Cost of appurtenances does not include flow meters or backflow preventers. Typical installation applies to soils with no special bedding requirements. Resource Concerns: Inefficient Use of Irrigation Water; Inefficient Energy Use. Associated Practices: 436 - Irrigation Reservoir; 441 - Irrigation System, Microirrigation; 442 - Irrigation System, Sprinkler; 443 - Irrigation System, Surface & Subsurface; 447 - Irrigation System, Tailwater Recovery; 533 - Pumping Plant; 634 - Waste Transfer.

Before Situation:

Pipeline needed to replace or supplement inefficient irrigation conveyance systems.

After Situation:

Pipeline installed to convey and/or distribute water to Sprinkler-irrigation systems, minimizing non-beneficial water use, reducing soil erosion, and/or reducing energy use.

Feature Measure: Length of Pipe

Scenario Unit: Feet

Scenario Typical Size: 360.0

Scenario Total Cost: $5,330.71

Scenario Cost/Unit: $14.81

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Trenching, Earth, 12 in. x 48 in.	53	Trenching, earth, 12 inch wide x 48 inch depth, includes equipment and labor for trenching and backfilling	Feet	$1.47	360	$529.20
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	9	$208.62
Materials						
Pipe, PVC, dia. < 18 in., weight priced	1323	Polyvinyl Chloride (PVC) pressure rated pipe priced by the weight of the pipe materials for pipes with diameters less than 18 inch. Materials	Pound	$1.91	2138.8	$4,085.11
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: 430 - Irrigation Pipeline

Scenario #6 - PVC, Iron Pipe Size, 10in Sprinkler

Scenario Description:

Description: Below ground installation of PVC (Iron Pipe Size) pipeline. PVC (IPS) is manufactured in sizes (nominal diameter) from ½-inch to 36-inch; typical practice sizes range from 2-inch to 24-inch; and typical scenario size is 6-inch. Construct 360 feet of 10-inch, Class 160 (SDR-26), PVC pipeline with appurtenances, installed below ground with a minimum of 2 feet of ground cover. The unit is weight of pipe material in pounds. 360 feet of 10-inch, Class 160 (SDR-26) PVC pipe weighs 8.376 lb/ft, or a total of 3015.4 pounds. Appurtenances include: couplings, fittings, air vents, pressure relief valves, thrust blocks, risers, and inline valves, and are included in the cost of pipe material (additional 10% of pipe material quantity). Cost of appurtenances does not include flow meters or backflow preventers. Typical installation applies to soils with no special bedding requirements. Resource Concerns: Inefficient Use of Irrigation Water; Inefficient Energy Use. Associated Practices: 436 - Irrigation Reservoir; 441 - Irrigation System, Microirrigation; 442 - Irrigation System, Sprinkler; 443 - Irrigation System, Surface & Subsurface; 447 - Irrigation System, Tailwater Recovery; 533 - Pumping Plant; 634 - Waste Transfer.

Before Situation:

Pipeline needed to replace or supplement inefficient irrigation conveyance systems.

After Situation:

Pipeline installed to convey and/or distribute water to Sprinkler-irrigation systems, minimizing non-beneficial water use, reducing soil erosion, and/or reducing energy use.

Feature Measure: Length of Pipe

Scenario Unit: Feet

Scenario Typical Size: 360.0

Scenario Total Cost: $7,580.88

Scenario Cost/Unit: $21.06

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Trenching, Earth, 12 in. x 48 in.	53	Trenching, earth, 12 inch wide x 48 inch depth, includes equipment and labor for trenching and backfilling	Feet	$1.47	360	$529.20
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	9	$208.62
Materials						
Pipe, PVC, dia. < 18 in., weight priced	1323	Polyvinyl Chloride (PVC) pressure rated pipe priced by the weight of the pipe materials for pipes with diameters less than 18 inch. Materials	Pound	$1.91	3316.9	$6,335.28
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: 430 - Irrigation Pipeline

Scenario #7 - PVC, Plastic Irrigation Pipe, less than or equal to 10in

Scenario Description:

Description: Below ground installation of PVC (Plastic Irrigation Pipe) pipeline. PVC (PIP) is manufactured in sizes (nominal diameter) from 4-inch to 27-inch; typical practice sizes range from 4-inch to 24-inch; and typical scenario size is 8-inch. Construct 1/4 mile (1,320 feet) of 8-inch, Class 50 (SDR-81.0), PVC PIP with appurtenances, installed below ground with a minimum of 2 feet of ground cover. The unit is weight of pipe in pounds. 1,320 feet of 8-inch, Class 50 (SDR-81.0) PVC PIP weighs 2.515 lb/ft, or a total of 3319.8 pounds. Appurtenances include: couplings, fittings, air vents, pressure relief valves, thrust blocks, risers, and inline valves, and are included in the cost of pipe material (additional 10% of pipe material quantity). Cost of appurtenances does not include flow meters or backflow preventers. Typical installation applies to soils with no special bedding requirements. Resource Concerns: Inefficient Use of Irrigation Water; Inefficient Energy Use. Associated Practices: 436 - Irrigation Reservoir; 441 - Irrigation System, Microirrigation; 442 - Irrigation System, Sprinkler; 443 - Irrigation System, Surface & Subsurface; 447 - Irrigation System, Tailwater Recovery; 533 - Pumping Plant; 634 - Waste Transfer.

Before Situation:

Pipeline needed to replace or supplement inefficient irrigation conveyance systems.

After Situation:

Pipeline installed to convey and/or distribute water to irrigation systems or reservoirs, minimizing non-beneficial water use, reducing soil erosion, and/or reducing energy use.

Feature Measure: Length of pipe

Scenario Unit: Feet

Scenario Typical Size: 1,320.0

Scenario Total Cost: $10,535.76

Scenario Cost/Unit: $7.98

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Trenching, Earth, 12 in. x 48 in.	53	Trenching, earth, 12 inch wide x 48 inch depth, includes equipment and labor for trenching and backfilling	Feet	$1.47	1320	$1,940.40
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	48	$1,112.64
Materials						
Pipe, PVC, dia. < 18 in., weight priced	1323	Polyvinyl Chloride (PVC) pressure rated pipe priced by the weight of the pipe materials for pipes with diameters less than 18 inch. Materials	Pound	$1.91	3651.8	$6,974.94
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: 430 - Irrigation Pipeline

Scenario #8 - PVC, Plastic Irrigation Pipe, 12in

Scenario Description:

Description: Below ground installation of PVC (Plastic Irrigation Pipe) pipeline. PVC (PIP) is manufactured in sizes (nominal diameter) from 4-inch to 27-inch; typical practice sizes range from 4-inch to 24-inch; and typical scenario size is 12-inch. Construct 1/4 mile (1,320 feet) of 12-inch, Class 80 (SDR-51.0) , PVC PIP with appurtenances, installed below ground with a minimum of 2 feet of ground cover. The unit is weight of pipe in pounds. 1,320 feet of 12-inch, Class 80 (SDR-51.0) PVC PIP weighs 5.654 lb/ft, or a total of 7,463 pounds. Appurtenances include: couplings, fittings, air vents, pressure relief valves, thrust blocks, risers, and inline valves, and are included in the cost of pipe material (additional 10% of pipe material quantity). Cost of appurtenances does not include flow meters or backflow preventers. Typical installation applies to soils with no special bedding requirements. Resource Concerns: Inefficient Use of Irrigation Water; Inefficient Energy Use. Associated Practices: 436 - Irrigation Reservoir; 441 - Irrigation System, Microirrigation; 442 - Irrigation System, Sprinkler; 443 - Irrigation System, Surface & Subsurface; 447 - Irrigation System, Tailwater Recovery; 533 - Pumping Plant; 634 - Waste Transfer.

Before Situation:

Pipeline needed to replace or supplement inefficient irrigation conveyance systems.

After Situation:

Pipeline installed to convey and/or distribute water to irrigation systems or reservoirs, minimizing non-beneficial water use, reducing soil erosion, and/or reducing energy use.

Feature Measure: Length of pipe

Scenario Unit: Feet

Scenario Typical Size: 1,320.0

Scenario Total Cost: $20,916.41

Scenario Cost/Unit: $15.85

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Trenching, Earth, loam, 24 in. x 48 in.	54	Trenching, earth, loam, 24 inch wide x 48 inch depth, includes equipment and labor for trenching and backfilling	Feet	$2.74	1320	$3,616.80
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	48	$1,112.64
Materials						
Pipe, PVC, dia. < 18 in., weight priced	1323	Polyvinyl Chloride (PVC) pressure rated pipe priced by the weight of the pipe materials for pipes with diameters less than 18 inch. Materials	Pound	$1.91	8209	$15,679.19
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: 430 - Irrigation Pipeline

Scenario #9 - PVC, Plastic Irrigation Pipe, 15in

Scenario Description:

Description: Below ground installation of PVC (Plastic Irrigation Pipe) pipeline. PVC (PIP) is manufactured in sizes (nominal diameter) from 4-inch to 27-inch; typical practice sizes range from 4-inch to 24-inch; and typical scenario size is 15-inch. Construct 1/4 mile (1,320 feet) of 15-inch, Class 80 (SDR-51.0) , PVC PIP with appurtenances, installed below ground with a minimum of 2 feet of ground cover. The unit is weight of pipe in pounds. 1,320 feet of 15-inch, Class 80 (SDR-51.0) PVC PIP weighs 8.874 lb/ft, or a total of 11,713.7 pounds. Appurtenances include: couplings, fittings, air vents, pressure relief valves, thrust blocks, risers, and inline valves, and are included in the cost of pipe material (additional 10% of pipe material quantity). Cost of appurtenances does not include flow meters or backflow preventers. Typical installation applies to soils with no special bedding requirements. Resource Concerns: Inefficient Use of Irrigation Water; Inefficient Energy Use. Associated Practices: 436 - Irrigation Reservoir; 441 - Irrigation System, Microirrigation; 442 - Irrigation System, Sprinkler; 443 - Irrigation System, Surface & Subsurface; 447 - Irrigation System, Tailwater Recovery; 533 - Pumping Plant; 634 - Waste Transfer.

Before Situation:

Pipeline needed to replace or supplement inefficient irrigation conveyance systems.

After Situation:

Pipeline installed to convey and/or distribute water to irrigation systems or reservoirs, minimizing non-beneficial water use, reducing soil erosion, and/or reducing energy use.

Feature Measure: Length of pipe

Scenario Unit: Feet

Scenario Typical Size: 1,320.0

Scenario Total Cost: $29,847.57

Scenario Cost/Unit: $22.61

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Trenching, Earth, loam, 24 in. x 48 in.	54	Trenching, earth, loam, 24 inch wide x 48 inch depth, includes equipment and labor for trenching and backfilling	Feet	$2.74	1320	$3,616.80
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	48	$1,112.64
Materials						
Pipe, PVC, dia. < 18 in., weight priced	1323	Polyvinyl Chloride (PVC) pressure rated pipe priced by the weight of the pipe materials for pipes with diameters less than 18 inch. Materials	Pound	$1.91	12885	$24,610.35
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: 430 - Irrigation Pipeline

Scenario #10 - PVC, Plastic Irrigation Pipe, 18in

Scenario Description:

Description: Below ground installation of PVC (Plastic Irrigation Pipe) pipeline. PVC (PIP) is manufactured in sizes (nominal diameter) from 4-inch to 27-inch; typical practice sizes range from 4-inch to 24-inch; and typical scenario size is 18-inch. Construct 1/4 mile (1,320 feet) of 18-inch, Class 80 (SDR-51.0) , PVC PIP with appurtenances, installed below ground with a minimum of 3 feet of ground cover. The unit is weight of pipe in pounds. 1,320 feet of 18-inch, Class 80 (SDR-51.0) PVC PIP weighs 13.67 lb/ft, or a total of 18,044.40 pounds. Appurtenances include: couplings, fittings, air vents, pressure relief valves, thrust blocks, risers, and inline valves, and are included in the cost of pipe material (additional 10% of pipe material quantity). Cost of appurtenances does not include flow meters or backflow preventers. Typical installation applies to soils with no special bedding requirements. Resource Concerns: Inefficient Use of Irrigation Water; Inefficient Energy Use. Associated Practices: 436 - Irrigation Reservoir; 441 - Irrigation System, Microirrigation; 442 - Irrigation System, Sprinkler; 443 - Irrigation System, Surface & Subsurface; 447 - Irrigation System, Tailwater Recovery; 533 - Pumping Plant; 634 - Waste Transfer.

Before Situation:

Pipeline needed to replace or supplement inefficient irrigation conveyance systems.

After Situation:

Pipeline installed to convey and/or distribute water to irrigation systems or reservoirs, minimizing non-beneficial water use, reducing soil erosion, and/or reducing energy use.

Feature Measure: Length of pipe

Scenario Unit: Feet

Scenario Typical Size: 1,320.0

Scenario Total Cost: $43,148.81

Scenario Cost/Unit: $32.69

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Trenching, Earth, loam, 24 in. x 48 in.	54	Trenching, earth, loam, 24 inch wide x 48 inch depth, includes equipment and labor for trenching and backfilling	Feet	$2.74	1320	$3,616.80
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	48	$1,112.64
Materials						
Pipe, PVC, dia. < 18 in., weight priced	1323	Polyvinyl Chloride (PVC) pressure rated pipe priced by the weight of the pipe materials for pipes with diameters less than 18 inch. Materials	Pound	$1.91	19849	$37,911.59
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: 430 - Irrigation Pipeline

Scenario #11 - PVC, Plastic Irrigation Pipe, 21in or Greater

Scenario Description:

Description: Below ground installation of PVC (Plastic Irrigation Pipe) pipeline. PVC (PIP) is manufactured in sizes (nominal diameter) from 4-inch to 27-inch; typical practice sizes range from 4-inch to 24-inch; and typical scenario size is 21-inch. Construct 1/4 mile (1,320 feet) of 21-inch, Class 80 (SDR-51.0), PVC PIP with appurtenances, installed below ground with a minimum of 2 feet of ground cover. The unit is weight of pipe in pounds. 1,320 feet of 21-inch, Class 80 (SDR-51.0) PVC PIP weighs 19.01 lb/ft, or a total of 25,009 pounds. Appurtenances include: couplings, fittings, air vents, pressure relief valves, thrust blocks, risers, and inline valves, and are included in the cost of pipe material (additional 10% of pipe material quantity). Cost of appurtenances does not include flow meters or backflow preventers. Typical installation applies to soils with no special bedding requirements. Resource Concerns: Inefficient Use of Irrigation Water; Inefficient Energy Use. Associated Practices: 436 - Irrigation Reservoir; 441 - Irrigation System, Microirrigation; 442 - Irrigation System, Sprinkler; 443 - Irrigation System, Surface & Subsurface; 447 - Irrigation System, Tailwater Recovery; 533 - Pumping Plant; 634 - Waste Transfer.

Before Situation:

Pipeline needed to replace or supplement inefficient irrigation conveyance systems.

After Situation:

Pipeline installed to convey and/or distribute water to irrigation systems or reservoirs, minimizing non-beneficial water use, reducing soil erosion, and/or reducing energy use.

Feature Measure: Length of pipe

Scenario Unit: Feet

Scenario Typical Size: 1,320.0

Scenario Total Cost: $61,082.52

Scenario Cost/Unit: $46.27

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Trenching, Earth, loam, 24 in. x 48 in.	54	Trenching, earth, loam, 24 inch wide x 48 inch depth, includes equipment and labor for trenching and backfilling	Feet	$2.74	1320	$3,616.80
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	48	$1,112.64
Materials						
Pipe, steel, smooth wall, galvanized, weight priced	1381	Steel manufactured into galvanized smooth wall pipe	Pound	$2.03	27510	$55,845.30
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: 430 - Irrigation Pipeline

Scenario #12 - Steel, IPS, Stream or Road Crossing Sleeve

Scenario Description:

Description: Steel (Iron Pipe Size) sleeve for PVC underground pipeline, either crossing a stream or crossing a county, city, state road. Steel (IPS) is manufactured in sizes (nominal diameter) from ½-inch to 36-inch; typical practice sizes range from 2-inch to 18-inch; and typical scenario size is 18-inch. Construct 60 ft of 18-inch, Schedule 10, Galvanized Steel Pipe across a stream as a sleeve for a PVC underground pipeline. The unit is the weight of pipe material in pounds. 60 feet of 18-inch, Schedule 10, Galvanized Steel Pipe weighs 47.39 lb/ft, for total of 2843.4 pounds. Typical installation applies to soils with no special bedding requirements. Resource Concerns: Inefficient Use of Irrigation Water; Inefficient Energy Use. Associated Practices: 436 - Irrigation Reservoir; 441 - Irrigation System, Microirrigation; 442 - Irrigation System, Sprinkler; 443 - Irrigation System, Surface & Subsurface; 447 - Irrigation System, Tailwater Recovery; 533 - Pumping Plant; 634 - Waste Transfer.

Before Situation:

Pipeline needed to replace or supplement inefficient irrigation conveyance systems.

After Situation:

Pipeline section needed to cross a stream or a road that is needing a steel sleeve for protection installed to convey and/or distribute water to irrigation systems or reservoirs, minimizing non-beneficial water use, reducing soil erosion, and/or reducing energy use.

Feature Measure: Length of Pipe

Scenario Unit: Feet

Scenario Typical Size: 60.0

Scenario Total Cost: $6,889.98

Scenario Cost/Unit: $114.83

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Backhoe, 80 HP	926	Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$31.57	4	$126.28
Dozer, 80 HP	929	Track mounted Dozer with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$54.51	4	$218.04
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	2	$47.48
Portable Welder	1407	Portable field welder. Equipment only. Labor not included.	Hours	$19.98	4	$79.92
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	4	$120.20
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	4	$107.60
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	4	$107.60
Materials						
Pipe, smooth steel, weight priced	1325	Smooth Steel pipe priced by the weight of the pipe materials. Materials only.	Pound	$2.05	2843.4	$5,828.97
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 430 - Irrigation Pipeline

Scenario #13 - Steel, IPS, RoadXing Sleeve with Boring

Scenario Description:

Description: Steel (Iron Pipe Size) sleeve for PVC underground pipeline. Steel (IPS) is manufactured in sizes (nominal diameter) from ½-inch to 36-inch; typical practice sizes range from 2-inch to 18-inch; and typical scenario size is 18-inch. Bore across a county road, state highway or interstate with 60 ft of 18-inch, Schedule 10, Galvanized Steel Pipe as a sleeve for a PVC underground pipeline. The unit is the weight of pipe material in pounds. 60 feet of 18-inch, Schedule 10, Galvanized Steel Pipe weighs 47.39 lb/ft, for total of 2843.4 pounds. Typical installation applies to soils with no special bedding requirements. Resource Concerns: Inefficient Use of Irrigation Water; Inefficient Energy Use. Associated Practices: 436 - Irrigation Reservoir; 441 - Irrigation System, Microirrigation; 442 - Irrigation System, Sprinkler; 443 - Irrigation System, Surface & Subsurface; 447 - Irrigation System, Tailwater Recovery; 533 - Pumping Plant; 634 - Waste Transfer.

Before Situation:

Pipeline needed to replace or supplement inefficient irrigation conveyance systems.

After Situation:

Pipeline installed to convey and/or distribute water to irrigation systems or reservoirs, minimizing non-beneficial water use, reducing soil erosion, and/or reducing energy use.

Feature Measure: Length of Pipe

Scenario Unit: Feet

Scenario Typical Size: 60.0

Scenario Total Cost: $13,135.94

Scenario Cost/Unit: $218.93

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Backhoe, 80 HP	926	Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$31.57	6	$189.42
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	2	$47.48
Horizontal Boring, Greater Than 3 in. diameter	1132	Includes equipment, labor and setup.	Feet	$105.91	60	$6,354.60
Portable Welder	1407	Portable field welder. Equipment only. Labor not included.	Hours	$19.98	6	$119.88
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	6	$180.30
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	6	$161.40
Materials						
Pipe, smooth steel, weight priced	1325	Smooth Steel pipe priced by the weight of the pipe materials. Materials only.	Pound	$2.05	2843.4	$5,828.97
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 430 - Irrigation Pipeline

Scenario #14 - Stand Pipe, Steel, IPS

Scenario Description:

Description: New or replacement of Steel (Iron Pipe Size) stand or manifold. Steel (IPS) is manufactured in sizes (nominal diameter) from ½-inch to 36-inch; typical practice sizes range from 16-inch to 36-inch; and typical scenario size is 30-inch. Fabricate and install 8 ft of 30-inch, Schedule 10, Galvanized Steel Pipe stand/manifold at a well, relift pump or within a pipeline . The unit is the weight of pipe material in pounds. 8 feet of 30-inch, Schedule 10, Galvanized Steel Pipe weighs 98.93 lb/ft, for total of 791.4 pounds. Appurtenances include: fittings, air vents, and pressure relief valves, and are included in the cost of pipe material (additional 10% of pipe material quantity). Resource Concerns: Inefficient Use of Irrigation Water; Inefficient Energy Use. Associated Practices: 436 - Irrigation Reservoir; 441 - Irrigation System, Microirrigation; 442 - Irrigation System, Sprinkler; 443 - Irrigation System, Surface & Subsurface; 447 - Irrigation System, Tailwater Recovery; 533 - Pumping Plant; 634 - Waste Transfer.

Before Situation:

An old undersizes stand pipe/manifold in need of replacing or no stand pipe/manifold currently in place.

After Situation:

Stand pipe/Manifold installed either at a well, relift or at a junction of several underground pipelines.

Feature Measure: Length of Pipe

Scenario Unit: Feet

Scenario Typical Size: 8.0

Scenario Total Cost: $2,761.50

Scenario Cost/Unit: $345.19

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Backhoe, 80 HP	926	Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$31.57	6	$189.42
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	2	$47.48
Portable Welder	1407	Portable field welder. Equipment only. Labor not included.	Hours	$19.98	6	$119.88
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	6	$180.30
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	6	$161.40
Materials						
Steel, Plate, 1/8 in.	1047	Flat Steel Plate, 1/8 inch thick, materials only.	Square Feet	$4.97	4.91	$24.40
Pipe, smooth steel, weight priced	1325	Smooth Steel pipe priced by the weight of the pipe materials. Materials only.	Pound	$2.05	870.6	$1,784.73
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 430 - Irrigation Pipeline

Scenario #15 - Dog Leg, Steel, IPS

Scenario Description:

Description: New or replacement of Steel (Iron Pipe Size) stand or manifold. Steel (IPS) is manufactured in sizes (nominal diameter) from ½-inch to 36-inch; typical practice sizes range from 10-inch to 18-inch; and typical scenario size is 12-inch. Fabricate and install 12 ft of 12-inch, Schedule 10, Galvanized Steel Pipe dogleg/z pipe at a well or relift pump. The unit is the weight of pipe material in pounds. 12 feet of 12-inch, Schedule 10, Galvanized Steel Pipe weighs 24.16 lb/ft, for total of 289.9 pounds. Appurtenances include: fittings, air vents, and pressure relief valves, and are included in the cost of pipe material (additional 10% of pipe material quantity). Resource Concerns: Inefficient Use of Irrigation Water; Inefficient Energy Use. Associated Practices: 436 - Irrigation Reservoir; 441 - Irrigation System, Microirrigation; 442 - Irrigation System, Sprinkler; 443 - Irrigation System, Surface & Subsurface; 447 - Irrigation System, Tailwater Recovery; 533 - Pumping Plant; 634 - Waste Transfer.

Before Situation:

Irrigation Water is supplied from a well or pump that is either too small, old or in a depleted ground water area and an alternative irrigation sources is needed to supply water to the crops.

After Situation:

A new irrigation pump is being installed and a transition of a dogleg (Z pipe) is needed to connect the pump to existing or new undergroud pipe.

Feature Measure: Length of Pipe

Scenario Unit: Feet

Scenario Typical Size: 18.0

Scenario Total Cost: $1,933.09

Scenario Cost/Unit: $107.39

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Backhoe, 80 HP	926	Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$31.57	6	$189.42
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	2	$47.48
Portable Welder	1407	Portable field welder. Equipment only. Labor not included.	Hours	$19.98	6	$119.88
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	6	$180.30
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	6	$161.40
Materials						
Pipe, smooth steel, weight priced	1325	Smooth Steel pipe priced by the weight of the pipe materials. Materials only.	Pound	$2.05	478.4	$980.72
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 430 - Irrigation Pipeline

Scenario #16 - Dog Leg, PVC, IPS

Scenario Description:

Description: New or replacement of PVC (Iron Pipe Size) dogleg. PVC (IPS) is manufactured in sizes (nominal diameter) from ½-inch to 36-inch; typical practice sizes range from 10-inch to 18-inch; and typical scenario size is 12-inch. Fabricate and install 25 ft of 12-inch, Schedule 40, PVC IPS dogleg/z pipe at a well or relift pump. The unit is the weight of pipe material in pounds. 25 feet of 12-inch, Schedule 40, PVC weighs 10.110 lb/ft, for total of 252.75 pounds. Appurtenances include: fittings, air vents, and pressure relief valves, and are included in the cost of pipe material (additional 10% of pipe material quantity). Resource Concerns: Inefficient Use of Irrigation Water; Inefficient Energy Use. Associated Practices: 436 - Irrigation Reservoir; 441 - Irrigation System, Microirrigation; 442 - Irrigation System, Sprinkler; 443 - Irrigation System, Surface & Subsurface; 447 - Irrigation System, Tailwater Recovery; 533 - Pumping Plant; 634 - Waste Transfer.

Before Situation:

Irrigation Water is supplied from a well or pump that is either too small, old or in a depleted ground water area and an alternative irrigation sources is needed to supply water to the crops.

After Situation:

A new irrigation pump is being installed and a transition of a dogleg (Z pipe) is needed to connect the pump to existing or new undergroud pipe.

Feature Measure: Length of Pipe

Scenario Unit: Feet

Scenario Typical Size: 25.0

Scenario Total Cost: $1,278.19

Scenario Cost/Unit: $51.13

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Backhoe, 80 HP	926	Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$31.57	6	$189.42
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	6	$142.44
Labor						
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	6	$161.40
Materials						
Pipe, PVC, dia. < 18 in., weight priced	1323	Polyvinyl Chloride (PVC) pressure rated pipe priced by the weight of the pipe materials for pipes with diameters less than 18 inch. Materials	Pound	$1.91	278.03	$531.04
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 430 - Irrigation Pipeline

Scenario #17 - Intake or Res Discharge, Steel, IPS

Scenario Description:

Description: New Steel (Iron Pipe Size) pipe either directly discharging from a pump or from a stand pipe into an above ground reservoir or dual intake pipe for an above gorund reservoir with tailwater pit design or for relift pump in an overly tall embankment. Steel (IPS) is manufactured in sizes (nominal diameter) from ½-inch to 36-inch; typical practice sizes range from 10-inch to 18-inch; and typical scenario size is 12-inch. Fabricate and install 12 ft of 12-inch, "USED" Steel pipe. The unit is the length of pipe material in feet. Appurtenances include: fittings, air vents, and pressure relief valves, and are included in the cost of pipe material (additional 10% of pipe material quantity). Resource Concerns: Inefficient Use of Irrigation Water; Inefficient Energy Use. Associated Practices: 436 - Irrigation Reservoir; 441 - Irrigation System, Microirrigation; 442 - Irrigation System, Sprinkler; 443 - Irrigation System, Surface & Subsurface; 447 - Irrigation System, Tailwater Recovery; 533 - Pumping Plant; 634 - Waste Transfer.

Before Situation:

Irrigation Water is supplied from a well or pump that is either too small, old or in a depleted ground water area and an alternative irrigation sources is needed to supply water to the crops.

After Situation:

A pump is installed that will capture excess irrgation and rainfall and lift it into an embankment reservoir. A steel pipe is needed to convey this water directly from the pump or from the stand pipe and discharge it into the embankment reservoir.

Feature Measure: Length of Pipe

Scenario Unit: Feet

Scenario Typical Size: 100.0

Scenario Total Cost: $3,798.37

Scenario Cost/Unit: $37.98

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Backhoe, 80 HP	926	Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$31.57	4	$126.28
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	2	$47.48
Portable Welder	1407	Portable field welder. Equipment only. Labor not included.	Hours	$19.98	4	$79.92
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	4	$120.20
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	4	$107.60
Materials						
Pipe, Steel, 12 in., Std Wt, USED	1356	Materials: - USED - 12 inch - Steel Std Wt	Feet	$30.63	100	$3,063.00
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 436 - Irrigation Reservoir

Scenario #3 - Delta Embankment Reservoir

Scenario Description:

This is a very large embankment reservoir with a 18" diameter drain pipe through the embankment controlled by a canal-type gate. It is designed to accumulate, store, and deliver water by gravity to an open ditch or non-pressurized pipeline, in excess of 5 cfs. It will have a top width of 12ft and centerline length of embankment of 5,280 feet. Average fill of 10 feet and the side slopes will be no steeper than 3 H to 1 V inside and out. It will be built with approximately 105,000 cubic yards of on-site material. It will have a maximum water depth of 8 feet with 2 feet of freeboard and no auxiliary spillway. Volume is approximately 320 ac-ft (104,500,000 gallons). Critical Area Planting and Mulching is required. Resource Concern: Insufficient Water - Inefficient use of irrigation water. Associated Practices: 521 - Pond Sealing or Lining (various); 320 - Irrigation Canal or Lateral; 430 - Irrigation Pipeline; 428 - Irrigation Ditch Lining; 533 - Pumping Plant; 440 series - Irrigation Systems; 447 - Irrigation System, Tailwater Recovery; 378 - Pond; 484 - Mulching; and 342 - Critical Area Planting.

Before Situation:

Current system relies on an intermittent or low-flow rate water source. This results in untimely and/or inefficient water application.

After Situation:

The rectangular reservoir will be built on a relatively flat site and be used to accumulate and store water for timely application through an irrigation system. The water source could be a stream or an irrigation district canal.

Feature Measure: Volume of Compacted Earthfill

Scenario Unit: Cubic Yards

Scenario Typical Size: 105,000.0

Scenario Total Cost: $193,917.80

Scenario Cost/Unit: $1.85

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Dozer, 200 HP	928	Track mounted Dozer with horsepower range of 160 to 250. Equipment and power unit costs. Labor not included.	Hours	$204.12	30	$6,123.60
Hydraulic Excavator, 2 CY	932	Track mounted hydraulic excavator with bucket capacity range of 1.5 to 2.5 CY. Equipment and power unit costs. Labor not included.	Hours	$126.60	4	$506.40
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	2	$47.48
Stripping and stockpiling, topsoil	1199	Stripping and stockpiling of topsoil adjacent to stripping area. Includes equipment and labor.	Cubic Yards	$0.92	12907	$11,874.44
Tractor, agricultural, 360 HP	1205	Agricultural tractor with horsepower range of 340 to 390. Equipment and power unit costs. Labor not included.	Hours	$141.45	630	$89,113.50
Scraper, pull, 15 CY	1207	Pull type earthmoving scraper with 15 CY capacity. Does not include pulling equipment or labor. Add Tractor or Dozer, 260 HP typically required for single scraper.	Hours	$24.02	630	$15,132.60
Portable Welder	1407	Portable field welder. Equipment only. Labor not included.	Hours	$19.98	8	$159.84
Scraper, pull, 18 CY	2093	Pull type earthmoving scraper with 18 CY capacity. Does not include pulling equipment or labor. Add Tractor or Dozer, 260 HP typically required for single scraper.	Hours	$24.02	630	$15,132.60
Foregone Income						
FI, Rice	1974	Rice is Primary Crop	Acres	$423.13	40	$16,925.20
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	8	$240.40
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	16	$370.88
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	630	$16,947.00
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	4	$107.60
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	15	$403.50

Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	16	$668.48
Materials						
Pipe, Steel, 18 in., Std Wt	1366	Materials: - 18 inch - Steel Std Wt	Feet	$145.75	100	$14,575.00
Screw gate, cast iron, 18 in. diameter, 10/0 head	1917	18 inch diameter cast iron screw (canal) gate rated at 10 seating head 0 feet unseating head. Materials only.	Each	$1,176.39	1	$1,176.39
Catwalk, metal	1918	Metal pedestrian walk way giving access to the valve on a structure, typically 3 ft. wide with railing. Materials only.	Feet	$83.18	50	$4,159.00
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 436 - Irrigation Reservoir

Scenario #4 - Delta Embankment Reservoir with Hauling

Scenario Description:

This is a very large embankment reservoir with a 18" diameter drain pipe through the embankment controlled by a canal-type gate. It is designed to accumulate, store, and deliver water by gravity to an open ditch or non-pressurized pipeline, in excess of 5 cfs. It will have a top width of 12ft and centerline length of embankment of 5,280 feet. Average fill of 10 feet and the side slopes will be no steeper than 3 H to 1 V inside and out. It will be built with approximately 105,000 cubic yards of on-site material. It will have a maximum water depth of 8 feet with 2 feet of freeboard and no auxiliary spillway. Volume is approximately 320 ac-ft (104,500,000 gallons). Critical Area Planting and Mulching is required. Resource Concern: Insufficient Water - Inefficient use of irrigation water. Associated Practices: 521 - Pond Sealing or Lining (various); 320 - Irrigation Canal or Lateral; 430 - Irrigation Pipeline; 428 - Irrigation Ditch Lining; 533 - Pumping Plant; 440 series - Irrigation Systems; 447 - Irrigation System, Tailwater Recovery; 378 - Pond; 484 - Mulching; and 342 - Critical Area Planting.

Before Situation:

Current system relies on an intermittent or low-flow rate water source. This results in untimely and/or inefficient water application.

After Situation:

The rectangular reservoir will be built on a relatively flat site and be used to accumulate and store water for timely application through an irrigation system. The water source could be a stream or an irrigation district canal.

Feature Measure: Volume of Compacted Earthfill

Scenario Unit: Cubic Yards

Scenario Typical Size: 105,000.0

Scenario Total Cost: $219,061.85

Scenario Cost/Unit: $2.09

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Dozer, 80 HP	929	Track mounted Dozer with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$54.51	15	$817.65
Hydraulic Excavator, 2 CY	932	Track mounted hydraulic excavator with bucket capacity range of 1.5 to 2.5 CY. Equipment and power unit costs. Labor not included.	Hours	$126.60	4	$506.40
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	2	$47.48
Stripping and stockpiling, topsoil	1199	Stripping and stockpiling of topsoil adjacent to stripping area. Includes equipment and labor.	Cubic Yards	$0.92	12907	$11,874.44
Tractor, agricultural, 360 HP	1205	Agricultural tractor with horsepower range of 340 to 390. Equipment and power unit costs. Labor not included.	Hours	$141.45	630	$89,113.50
Scraper, pull, 15 CY	1207	Pull type earthmoving scraper with 15 CY capacity. Does not include pulling equipment or labor. Add Tractor or Dozer, 260 HP typically required for single scraper.	Hours	$24.02	630	$15,132.60
Portable Welder	1407	Portable field welder. Equipment only. Labor not included.	Hours	$19.98	8	$159.84
Hauling, bulk, highway truck	1615	Hauling of bulk earthfill, rockfill, waste or debris. One-way travel distance using fully loaded highway dump trucks (typically 16 CY or 20 TN capacity). Includes equipment and labor for truck only. Does not include cost for loading truck.	Cubic Yard Mile	$0.29	105000	$30,450.00
Scraper, pull, 18 CY	2093	Pull type earthmoving scraper with 18 CY capacity. Does not include pulling equipment or labor. Add Tractor or Dozer, 260 HP typically required for single scraper.	Hours	$24.02	630	$15,132.60
Foregone Income						
FI, Rice	1974	Rice is Primary Crop	Acres	$423.13	40	$16,925.20
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	8	$240.40
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	16	$370.88
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	15	$403.50
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	4	$107.60

Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	630	$16,947.00
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	16	$668.48
Materials						
Pipe, Steel, 18 in., Std Wt	1366	Materials: - 18 inch - Steel Std Wt	Feet	$145.75	100	$14,575.00
Screw gate, cast iron, 18 in. diameter, 10/0 head	1917	18 inch diameter cast iron screw (canal) gate rated at 10 seating head 0 feet unseating head. Materials only.	Each	$1,176.39	1	$1,176.39
Catwalk, metal	1918	Metal pedestrian walk way giving access to the valve on a structure, typically 3 ft. wide with railing. Materials only.	Feet	$83.18	50	$4,159.00
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 436 - Irrigation Reservoir

Scenario #7 - Steel Tank

Scenario Description:

A 20,000 Gallon, above ground, enclosed fabricated Steel or bottomless Corrugated Metal (with plastic liner and cover) tank with fittings, is installed on 6" of well compacted drain rock support pad with sand padding (CM tank), to store water from a reliable source for irrigation of an area less than 5 acres. The scenario assumes the typical dimensions of the tank are 24 feet in diameter and 6 feet tall. The scenario also assumes a 28 feet diameter gravel base pad to extend a minimum of 2 feet past the base of tank for adequate foundation support. This cost estimate scenario is for cost of the tank and pad only and does not include the cost for pumps, pipe, or fittings for the pipeline. Resource Concern: Insufficient Water - Inefficient use of irrigation water. Associated Practices: 430 - Irrigation Pipeline; 441 - Irrigation System, Microirrigation; 442 - Irrigation System, Sprinkler; 533 - Pumping Plant; 447 - Irrigation System, Tailwater Recovery.

Before Situation:

Insufficient volume of water to complete an irrigation cycle at the required flow rate.

After Situation:

An above ground, enclosed fabricated steel or bottomless corrugated metal tank (with plastic liner and cover), capable of withstanding the elements, is used to accumulate and store water between irrigation cycles for a small irrigation system. This allows for an improved flow rate and timing of water application. Sources of water could be a well, a domestic water system, a very large roof area, a water ram , or a pump drawing water from a stream.

Feature Measure: Volume of Tank Storage

Scenario Unit: Gallons

Scenario Typical Size: 20,000.0

Scenario Total Cost: $17,652.49

Scenario Cost/Unit: $0.88

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Skidsteer, 80 HP	933	Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$59.94	10	$599.40
Plate compactor	1915	Manually guided vibratroy plate compactor. Equipment only.	Hours	$4.29	16	$68.64
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	80	$1,854.40
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	16	$430.40
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	40	$1,671.20
Materials						
Aggregate, Sand, Graded, Washed	45	Sand, typical ASTM C33 gradation, includes materials, equipment and labor to transport and place	Cubic Yards	$38.81	8	$310.48
Aggregate, Gravel, Ungraded, Quarry Run	1099	Includes materials, equipment and labor	Cubic Yards	$29.80	12	$357.60
Tank, Corrugated Metal Storage, 20,000 gallon	1920	20,000 gallon capacity enclosed corrugated Metal Storage tank. Includes delivery to the site and anchoring material.	Each	$11,712.37	1	$11,712.37
Mobilization						
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	$70.11	2	$140.22
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: 436 - Irrigation Reservoir

Scenario #8 - Plastic Tank

Scenario Description:

A 3,000 Gallon, above-ground, High Density Polyethylene plastic enclosed tank, is installed on 6" of well-compacted drain rock or a 4" thick reinforced concrete support pad, to store water from a reliable source for irrigation of an area less than one acre. The scenario assumes the typical dimensions of the tank are 102" in diameter and 93" tall. The scenario also assumes a 126" diameter gravel base or concrete pad to extend a minimum of 12" past the base of tank for adequate foundation support. This cost estimate scenario is for cost of the tank and pad only and does not include estimate for pumps, pipe, or connecting fittings. Resource Concern: Insufficient Water - Inefficient use of irrigation water. Associated Practices: 430 - Irrigation Pipeline; 441 - Irrigation System, Microirrigation; 442 - Irrigation System, Sprinkler; 533 - Pumping Plant; 447 - Irrigation System, Tailwater Recovery.

Before Situation:

Insufficient volume of water to complete an irrigation cycle at the required flow rate.

After Situation:

An above-ground plastic tank, constructed to withstand the elements, is used to accumulate and store water between irrigation cycles for a very small irrigation system. This allows for an improved flow rate and timing of water application. Sources of water could be a well, a domestic water system, a large roof area, a water ram , or a pump drawing water from a stream.

Feature Measure: Volume of Tank Storage

Scenario Unit: Gallons

Scenario Typical Size: 3,000.0

Scenario Total Cost: $4,756.04

Scenario Cost/Unit: $1.59

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Skidsteer, 80 HP	933	Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$59.94	6	$359.64
Plate compactor	1915	Manually guided vibratroy plate compactor. Equipment only.	Hours	$4.29	4	$17.16
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	32	$741.76
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	6	$161.40
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	16	$668.48
Materials						
Tank, Poly Enclosed Storage, >1,000	1075	Water storage tanks. Includes materials and shipping only.	Gallons	$0.70	3000	$2,100.00
Aggregate, Gravel, Ungraded, Quarry Run	1099	Includes materials, equipment and labor	Cubic Yards	$29.80	2	$59.60
Mobilization						
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	$70.11	2	$140.22
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: 436 - Irrigation Reservoir

Scenario #9 - Fiberglass Tank

Scenario Description:

A 10,000 Gallon above ground, enclosed, fiberglass tank, is installed on 6" of well compacted drain rock support pad. The tank is used to store water from a reliable source for irrigation of areas less than 3 acres. The scenario assumes the typical dimensions of the tank are 15 feet in diameter and 8 feet tall. The scenario also assumes a 19 feet diameter gravel base pad to extend a minimum of 2 feet past the base of tank for adequate foundation support. This cost estimate scenario is for cost of the tank and pad only and does not include estimate for pumps, pipe, fittings for the pipeline, or catchment area. Resource Concern: Insufficient Water - Inefficient use of irrigation water. Associated Practices: 430 - Irrigation Pipeline; 441 - Irrigation System, Microirrigation; 442 - Irrigation System, Sprinkler; 533 - Pumping Plant; 447 - Irrigation System, Tailwater Recovery.

Before Situation:

Insufficient volume of water to complete an irrigation cycle at the required flow rate.

After Situation:

A large fiberglass enclosed tank, capable of withstanding the elements, is used to accumulate and store water between irrigation cycles for a very small irrigation system. This allows for an improved flow rate and timing of water application and better efficiency. Sources of water could be a well, a domestic water system, a very large roof area, a water ram , or a pump drawing water from a stream.

Feature Measure: Volume of Tank Storage

Scenario Unit: Gallons

Scenario Typical Size: 10,000.0

Scenario Total Cost: $13,189.67

Scenario Cost/Unit: $1.32

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Skidsteer, 80 HP	933	Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$59.94	8	$479.52
Plate compactor	1915	Manually guided vibratroy plate compactor. Equipment only.	Hours	$4.29	4	$17.16
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	40	$927.20
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	8	$215.20
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	24	$1,002.72
Materials						
Aggregate, Gravel, Ungraded, Quarry Run	1099	Includes materials, equipment and labor	Cubic Yards	$29.80	6	$178.80
Tank, Fiberglass Enclosed Storage, 10,000 gallon	1919	10,000 gallon capacity enclosed fiberglass water storage tank. Includes tank anchoring materials and delivery.	Each	$9,721.07	1	$9,721.07
Mobilization						
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	$70.11	2	$140.22
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: 441 - Irrigation System, Microirrigation

Scenario #1 - Subsurface Drip Irrigation

Scenario Description:

A subsurface drip irrigation system (SDI) with a lateral spacing between 37-59 inches. This buried drip irrigation system utilizes a thinwall dripperline or tape with inline emitters at a uniform spacing for the system laterals. The dripperline or tape is normally installed by being plowed in approx 10-14 inches deep with a chisel shank type plow equipped with tape reels. This type of drip irrigation system utilizes a buried supply manifold with automated zone control valves and a buried flush manifold with manual flush valves. This permanent micro-irrigation system includes an automated filter station, flow meter, backflow prevention device, automated control box or timer, the thinwall dipperline or tape for laterals, both a supply and a flushing manifold and numerous types of water control valves. This is an all-inclusive system starting with the filter station including all required system components out to the flush valves. The water supply line from the water source to the filter station is an irrigation pipeline (430) and is not included as part of this system Resource Concerns: Insufficient Water - Inefficient use of irrigation water, Degraded Plant Condition - Undesirable plant productivity and health, Water Quality Degradation - Excessive sediment in surface waters, and Inefficient Energy Use - Equipment and facilities. Associated Practices: 533-Pumping Plant, 449- Irrigation Water Management, 430 - Irrigation Pipeline, 610 - Salinity & Sodic Soil Management, 328-Conservation Crop Rotation, and 590 Nutrient Management.

Before Situation:

Typical before irrigation situation would normally be an existing inefficient surface or sprinkler irrigation system on a cropland or hayland field. The existing irrigation system would experience poor, non-uniform irrigation applications and significant water losses affecting both water quantity and water quality

After Situation:

A typical practice would be the installation of a subsurface drip irrigation system (SDI) on a 60 acre cropland or hayland field. The system lateral (thinwall dripperline or tape) spacing would 40 inches. This highly efficient SDI (buried) irrigation system provides irrigation water directly to the plant root zone eliminating application losses resulting in a very high water application efficiency and properly designed these SDI systems are capable of very uniform water applications. Typical field size is 60 acres.

Feature Measure: Acres in System

Scenario Unit: Acres

Scenario Typical Size: 60.0

Scenario Total Cost: $130,683.73

Scenario Cost/Unit: $2,178.06

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Micro Irrigation, chemical injection equipment	1987	Chemical Injector Pump, plus chemigation check valve, injector ports, and appurtenances, Installation included.	Each	$1,960.46	1	$1,960.46
Materials						
Pipe, PVC, dia. < 18 in., weight priced	1323	Polyvinyl Chloride (PVC) pressure rated pipe priced by the weight of the pipe materials for pipes with diameters less than 18 inch. Materials	Pound	$1.91	4800	$9,168.00
Flow Meter, with Electronic Index	1452	10 inch Turbine Irrigation flow meter, with Electronic Index, Rate and Volume, permanently installed. Materials only.	Each	$2,966.60	1	$2,966.60
Micro Irrigation, Media Filter, 30 to 48 in. Dia. tank, Equipped for Automatic Flush	1482	Sand or media filter for Micro irrigation system. Includes plumbing, connections and automatic controller. Unit is complete and installed. Unit price per filter, not per filter station.	Each	$5,476.32	3	$16,428.96
Micro Irrigation, screen filter, => 100 gpm	1484	Screen filter for Micro irrigation system with 100 gpm or greater capacity. Includes plumbing, connections and automatic controller. Unit is complete and installed. Unit price per filter, not per filter station.	Each	$825.89	1	$825.89
Micro Irrigation, control valves and timers	1485	Automatic controller and timer, to turn on and off the sets for micro irrigation, installation and valves. Based on control unit, not number of valves controlled.	Each	$440.86	1	$440.86
Micro Irrigation, buried drip tape	2521	Tape that is installed underground for sub-surface drip irrigation, includes installation, and connections to the supply and flushing laterals. Tape is a minimum of 10 mil thick thick and has emitters built in. Includes labor and instalation.	Feet	$0.12	824108	$98,892.96

Practice: 441 - Irrigation System, Microirrigation

Scenario #2 - Surface PE Orchard or Vineyard

Scenario Description:

A micro-irrigation system, utilizing surface PE tubing (can be placed on trelis or above ground) with emitters (emitters are already installed in the pipe or will be purchased to be installed in the field into the pipe) to provide irrigation for vineyards and orchards grown in a grid pattern. The typical system is a permanent system, installed on a 60 acre field on the ground surface. The field has a tree spacing of 50 feet x 50 feet. PE tubing is laid on each side of the tree row. Lateral lengths are 630 feet and there are 156 laterals. This system utilizes emitters at each plant as the water application device. This system typically includes a filter system, PE tubing laterals, PVC manifolds, and submains, valves, fittings, emitters, etc. This practice applies to systems designed to discharge < 60 gal/hr at each individual lateral discharge point. Does not include Pump, Power source, Water source (well or reservoir). Resource Concerns: Insufficient Water - Inefficient use of irrigation water, Degraded Plant Condition - Undesirable plant productivity and health, Water Quality Degradation - Excessive sediment in surface waters, and Inefficient Energy Use - Equipment and facilities. Associated Practices: 533-Pumping Plant, 449- Irrigation Water Management, 430 - Irrigation Pipeline, 587 - Structure for Water Control, 610 - Salinity & Sodic Soil Management, 328-Conservation Crop Rotation, and 590 Nutrient Management.

Before Situation:

A field has an inefficient surface flood irrigation system causing irrigation water loss that impacts water quality and water quantity.

After Situation:

A surface placed microirrigation system is utilized to provide highly efficient irrigation to an vineyard. Water applications are reduced and runoff eliminated. Offsite water quality is improved, and on site water use is reduced.

Feature Measure: Acres in System

Scenario Unit: Acres

Scenario Typical Size: 60.0

Scenario Total Cost: $75,156.13

Scenario Cost/Unit: $1,252.60

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Trenching, Earth, 12 in. x 48 in.	53	Trenching, earth, 12 inch wide x 48 inch depth, includes equipment and labor for trenching and backfilling	Feet	$1.47	8100	$11,907.00
Micro Irrigation, chemical injection equipment	1987	Chemical Injector Pump, plus chemigation check valve, injector ports, and appurtenances, Installation included.	Each	$1,960.46	1	$1,960.46
Materials						
Pipe, PVC, dia. < 18 in., weight priced	1323	Polyvinyl Chloride (PVC) pressure rated pipe priced by the weight of the pipe materials for pipes with diameters less than 18 inch. Materials	Pound	$1.91	2592	$4,950.72
Flow Meter, with Electronic Index	1452	10 inch Turbine Irrigation flow meter, with Electronic Index, Rate and Volume, permanently installed. Materials only.	Each	$2,966.60	1	$2,966.60
Micro Irrigation, Media Filter, 30 to 48 in. Dia. tank, Equipped for Automatic Flush	1482	Sand or media filter for Micro irrigation system. Includes plumbing, connections and automatic controller. Unit is complete and installed. Unit price per filter, not per filter station.	Each	$5,476.32	3	$16,428.96
Micro Irrigation, screen filter, => 100 gpm	1484	Screen filter for Micro irrigation system with 100 gpm or greater capacity. Includes plumbing, connections and automatic controller. Unit is complete and installed. Unit price per filter, not per filter station.	Each	$825.89	1	$825.89
Micro Irrigation, control valves and timers	1485	Automatic controller and timer, to turn on and off the sets for micro irrigation, installation and valves. Based on control unit, not number of valves controlled.	Each	$440.86	1	$440.86
Micro Irrigation, surface drip tubing	1488	Tubing is installed above ground for surface drip irrigation, includes installation, and connections to the supply and flushing laterals. Tubing has emitters built in.	Feet	$0.33	108108	$35,675.64

Practice: 441 - Irrigation System, Microirrigation

Scenario #3 - Surface Tape <5 acres

Scenario Description:

A micro-irrigation system using drip tape or similar type micro-irrigation material placed on the soil surface for vegetables or field crops. Spacing of drip tape or similar type micro irrigation material is based on soil type or row alignment but will typically vary from 18" to 36". This system typically includes a filter system, PE manifolds fittings, drip tape, etc. This practice applies to systems designed to discharge < 60 gal/hr at each individual discharge point. Does not include Pump, power source, water source. Surface placed drip tape will not meet the 441 practice life and will normally need replacement every year. After first installation drip tape will be replaced as operation and maintenance issue as required for proper operation of the system. Resource Concerns: Insufficient Water - Inefficient use of irrigation water, Degraded Plant Condition - Undesirable plant productivity and health, Water Quality Degradation - Excessive sediment in surface waters, and Inefficient Energy Use - Equipment and Facilities. Associated Practices: 533-Pumping Plant, 449-Irrigation Water Management, 430 - Irrigation Pipeline, 610 - Salinity & Sodic Soil Management, 328-Conservation Crop Rotation, 590 Nutrient Management, and 595-Itegrated Pest Management.

Before Situation:

A typical before irrigation situation would normally be an existing inefficient sprinkler or surface irrigation system for vegetable or other crop production system. The existing irrigation system would experience poor, nonuniform irrigation applicatons and significant water losses affecting both water quantity and water quality.

After Situation:

A surface placed microirrigation system is utilized to provide highly efficient irrigation to a field. Water applications are reduced and runoff eliminated. Offsite water quality is improved, and on site water use is reduced. Drip tape will be replaced as operation and maintenance issue as required for proper operation of the system. A typical scenario consists of a 1 acre irrigated field with lateral spacing of 2 feet.

Feature Measure: Acres in System

Scenario Unit: Acres

Scenario Typical Size: 1.0

Scenario Total Cost: $1,883.35

Scenario Cost/Unit: $1,883.35

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	4	$92.72
Materials						
Pipe, HDPE, smooth wall, weight priced	1379	High Density Polyethylene (HDPE) compound manufactured into smooth wall pipe. Materials only.	Pound	$3.00	49	$147.00
Micro Irrigation, surface drip tape	2522	Tape is installed above ground for surface drip irrigation on annual crops, includes installation, and connections to the supply and flushing laterals. Tape is a minimum of 10 mil thick and has emitters built in.	Feet	$0.10	10920	$1,092.00
Micro Irrigation, screen or disc filter, < 3 inch	2524	Micro Irrigation, small manual flush screen or disc filter, <3 inch nominal size. Includes materials only.	Each	$210.11	1	$210.11
Mobilization						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	2	$341.52

Practice: 441 - Irrigation System, Microirrigation

Scenario #4 - Surface Tape > 5 acres

Scenario Description:

A micro-irrigation system using drip tape or similar type micro-irrigation material placed on the soil surface for vegetables or field crops. Spacing of drip tape or similar type micro irrigation material is based on soil type or row alignment but will typically vary from 18" to 36". This system typically includes a filter system, PE manifolds fittings, drip tape, etc. This practice applies to systems designed to discharge < 60 gal/hr at each individual discharge point. Does not include Pump, power source, water source. Surface placed drip tape will not meet the 441 practice life and will normally need replacement every year. After first installation drip tape will be replaced as operation and maintenance issue as required for proper operation of the system. Resource Concerns: Insufficient Water - Inefficient use of irrigation water, Degraded Plant Condition - Undesirable plant productivity and health, Water Quality Degradation - Excessive sediment in surface waters, and Inefficient Energy Use - Equipment and Facilities. Associated Practices: 533-Pumping Plant, 449-Irrigation Water Management, 430 - Irrigation Pipeline, 610 - Salinity & Sodic Soil Management, 328-Conservation Crop Rotation, 590 Nutrient Management, and 595-Itegrated Pest Management.

Before Situation:

A typical before irrigation situation would normally be an existing inefficient sprinkler or surface irrigation system for vegetable or other crop production system. The existing irrigation system would experience poor, nonuniform irrigation applicatons and significant water losses affecting both water quantity and water quality.

After Situation:

A surface placed microirrigation system is utilized to provide highly efficient irrigation to a field. Water applications are reduced and runoff eliminated. Offsite water quality is improved, and on site water use is reduced. Drip tape will be replaced as operation and maintenance issue as required for proper operation of the system. A typical scenario consists of a 20 acre irrigated field with lateral spacing of 2 feet.

Feature Measure: Acres in System

Scenario Unit: Acres

Scenario Typical Size: 20.0

Scenario Total Cost: $41,334.83

Scenario Cost/Unit: $2,066.74

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Trenching, Earth, 12 in. x 48 in.	53	Trenching, earth, 12 inch wide x 48 inch depth, includes equipment and labor for trenching and backfilling	Feet	$1.47	1320	$1,940.40
Micro Irrigation, chemical injection equipment	1987	Chemical Injector Pump, plus chemigation check valve, injector ports, and appurtenances, Installation included.	Each	$1,960.46	1	$1,960.46
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	32	$741.76
Materials						
Pipe, PVC, 3 in., SCH 40	977	Materials: - 3 inch - PVC - SCH 40 - ASTM D1785	Feet	$3.27	1320	$4,316.40
Valve, Air Vacuum Release, Manual	1041	Materials for <2 inch Manual Air/Vacuum Relief Valve	Each	$33.18	2	$66.36
Micro Irrigation, control valves and timers	1485	Automatic controller and timer, to turn on and off the sets for micro irrigation, installation and valves. Based on control unit, not number of valves controlled.	Each	$440.86	2	$881.72
Ball Valve, 4 in.	1726	4 inch ball valve, metal body. Materials only.	Each	$369.86	6	$2,219.16
Water Meter, Microirrigation, <= 2 inch, with Volume Totalizer	2437	Microirrigation water meter less than or equal to 2 inch diameter, with volume totalizer. Includes materials only.	Each	$452.72	1	$452.72
Micro Irrigation, Media Filter, 12 to 24 inch Dia. tank, Equipped for Auto Flush	2466	Sand or media filter for Micro irrigation system. Includes filter, plumbing, connections and automatic controller. Unit is complete and installed. Unit is each Filter in a filter station that normally includes 2 or more filters.	Each	$3,911.50	4	$15,646.00
Pressure Regulator	2468	Materials for pressure regulator less than or equal to 2 inch diameter.	Each	$36.49	4	$145.96
Micro Irrigation, surface drip tape	2522	Tape is installed above ground for surface drip irrigation on annual crops, includes installation, and connections to the supply and flushing laterals. Tape is a minimum of 10 mil thick and has emitters built in.	Feet	$0.10	127100	$12,710.00
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 441 - Irrigation System, Microirrigation

Scenario #6 - Hoop House System

Scenario Description:

A micro-irrigation system, utilizing surface PE tubing (can be placed on trelis or above ground) with emitters to provide irrigation for specialty crop grown in hoop houses. The typical system is a permanent system, installed in a 30' x 96' house with 24" rows with emitters on 12" spacing. This system typically includes a filter system, PE tubing laterals, PVC manifolds, and submains, valves, fittings, emitters, etc. This practice applies to systems designed to discharge < 60 gal/hr at each individual lateral discharge point. Does not include Pump, Power source, Water source (well or reservoir). Resource Concerns: Insufficient Water - Inefficient use of irrigation water, Degraded Plant Condition - Undesirable plant productivity and health, Water Quality Degradation - Excessive sediment in surface waters, and Inefficient Energy Use - Equipment and facilities. Associated Practices: 533-Pumping Plant, 449- Irrigation Water Management, 430 - Irrigation Pipeline, 610 - Salinity & Sodic Soil Management, 328-Conservation Crop Rotation, and 590 Nutrient Management.

Before Situation:

Irrigation of hoop house crops is done using manual irrigation methods such as a garden hose or water pail. Requires a great amount of time and many times plants are over watered in areas and underwaterd in others. Inefficient use of irrigation water is a concern.

After Situation:

A micro irrigation system is in place that provides uniform water distribution throughout the house so that all crops will receive adaquete and timely irrigation water.

Feature Measure: Area of house

Scenario Unit: Square Feet

Scenario Typical Size: 2,880.0

Scenario Total Cost: $414.32

Scenario Cost/Unit: $0.14

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	4	$92.72
Materials						
Micro Irrigation, screen filter, < 100 gpm	1617	Screen filter for Micro Irrigation used in small systems. Includes filter. No controls are included or needed.	Each	$91.20	1	$91.20
Micro Irrigation, drip irrigation system, small scale	2170	An above ground, small scale, micro-irrigation system. Includes miniature emitters, tubes, or applicators placed along a water delivery line. Includes materials and shipping only.	Square Feet	$0.08	2880	$230.40

Practice: 442 - Sprinkler System

Scenario #5 - Traveling Gun System, < 2 inch Hose

Scenario Description:

A portable small gun system used to apply irrigation water on small fields. A small traveling gun irrigation system is installed to apply water uniformly and at an acceptable application rate operated under pressure to effectively irrigate less than 3 acres. The irrigation system is installed with all necessary appurtenances. Resource concerns: Soil Erosion (Concentrated flow erosion, e.g. overflowing waste storage) and Water Quality Degradation (Excess nutrients in surface and ground waters, Excessive salts in surface and ground waters, Excess pathogens and chemicals from liquid manure) Associated Practices: Irrigation Pipeline (430), Pumping Plant (533), Irrigation Water Management (449), Conservation Crop Rotation (328), Cover Crop (340), Nutrient Management (590), Waste Utilization (633), Manure Transfer (634)

Before Situation:

An existing traveling gun on a 5 acre field is inefficient and is not applying water uniformly or not at an acceptable application rate. Excess applied water causes irrigation induced erosion, runoff and deep percolation. The runoff and deep percolation degrade the receiving waters.

After Situation:

A small traveling gun irrigation system is installed to irrigate 5 acres based on the determined spacing needs. Irrigation is applied efficiently and uniformly to maintain adequate soil water for plant growth without causing excessive water loss, erosion, or water quality degradation The irrigation system is installed with all necessary appurtenances.

Feature Measure: Number of Traveling Gun Systems

Scenario Unit: Each

Scenario Typical Size: 1.0

Scenario Total Cost: $12,572.54

Scenario Cost/Unit: $12,572.54

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Materials						
Irrigation, Traveling Gun System with <= 2 in. Nominal size hose, and appurtenances light duty	1478	Irrigation, Traveling Gun System with <= 2 inch Nominal size hose with appurtenances. This includes the sprinkler gun, traveler cart, hard hose, reel, connections, controls, and installation. Normal hose length 500'	Inch Diameter	$6,286.27	2	$12,572.54

Practice: 442 - Sprinkler System

Scenario #6 - Traveling Gun System, 2 to 3 inch Hose

Scenario Description:

A portable big gun system used to apply waste water from animal feeding operations. This traveling big gun unit includes a sprinkler, towable cart, 1000’ or more of PE hard hose, a self propelled reel that moves the sprinkler toward the reel during operation. The reel attaches to a mainline with appropriately designed towpath width. The scenario describes an irrigation system that is typical to confined animal feeding operations. Resource concerns: Soil Erosion (Concentrated flow erosion, e.g. overflowing waste storage) and Water Quality Degradation (Excess nutrients in surface and ground waters, Excessive salts in surface and ground waters, Excess pathogens and chemicals from liquid manure) Associated Practices: Irrigation Pipeline (430), Pumping Plant (533), Irrigation Water Management (449), Conservation Crop Rotation (328), Cover Crop (340), Nutrient Management (590), Waste Utilization (633), Manure Transfer (634)

Before Situation:

A confined, animal operation has a waste management system that exceeds its capacity, or a operation that does not have a waste management system in place. The inefficiency of the existing system or the lack of a waste management system has an impact on the soil and water quality. Animal waste runs off and degrades the receiving waters.

After Situation:

The big gun applies animal manure in an appropriate quantity and location that eliminates both runoff of the manure and deep percolation of excess nutrients, salts, and pathogens. The big gun system is typically located on 50 acres or less of hay/pasture land, or 100 acres or less of cropland. The system includes a large irrigation gun with 1” to 1½” orifice mounted onto a movable cart. 1000’ or more flexible 3” PE pipe is attached to the cart on one end and a large reel on the other end. The reel serves as storage are for the pipe as the cart moves back to the reel. The reel is turned by a small engine which gradually pulls the flexible pipe and cart back to the reel/base.

Feature Measure: Number of Traveling Gun Systems

Scenario Unit: Each

Scenario Typical Size: 1.0

Scenario Total Cost: $24,706.74

Scenario Cost/Unit: $24,706.74

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Materials						
Irrigation, Traveling Gun System, > 2 to 3 inch Nominal size hose	1479	Irrigation, Traveling Gun System with 2.3 to 3 inch Nominal size hose with appurtenances. This includes the sprinkler gun, traveler cart, hard hose, reel, connections, controls, and installation. Normal hose length 1000'.	Inch Diameter	$8,235.58	3	$24,706.74

Practice: 442 - Sprinkler System

Scenario #7 - Traveling Gun System, greater than 3 inch Hose

Scenario Description:

A portable big gun system used to apply waste water from animal feeding operations. This traveling big gun unit includes a sprinkler, towable cart, 1200' or more of PE hard hose, a self propelled reel that moves the sprinkler toward the reel during operation. The reel attaches to a mainline with appropriately designed towpath width. The scenario describes an irrigation system that is typical to confined animal feeding operations. Resource concerns: Soil Erosion (Concentrated flow erosion, e.g. overflowing waste storage) and Water Quality Degradation (Excess nutrients in surface and ground waters, Excessive salts in surface and ground waters, Excess pathogens and chemicals from liquid manure) Associated Practices: Irrigation Pipeline (430), Pumping Plant (533), Irrigation Water Management (449), Conservation Crop Rotation (328), Cover Crop (340), Nutrient Management (590), Waste Utilization (633), Manure Transfer (634)

Before Situation:

A confined, animal operation has a waste management system that exceeds its capacity, or a operation that does not have a waste management system in place. The inefficiency of the existing system or the lack of a waste management system has an impact on the soil and water quality. Animal waste runs off and degrades the receiving waters.

After Situation:

The big gun applies animal manure in an appropriate quantity and location that eliminates both runoff of the manure and deep percolation of excess nutrients, salts, and pathogens. The big gun system is typically located on 50 acres or less of hay/pasture land, or 100 acres or less of cropland. The system includes a large irrigation gun with 1" to 1½" orifice mounted onto a movable cart. 1200' or more flexible 4" PE pipe is attached to the cart on one end and a large reel on the other end. The reel serves as storage are for the pipe as the cart moves back to the reel. The reel is turned by a small engine which gradually pulls the flexible pipe and cart back to the reel/base.

Feature Measure: Number of Traveling Gun Systems

Scenario Unit: Each

Scenario Typical Size: 1.0

Scenario Total Cost: $42,581.91

Scenario Cost/Unit: $42,581.91

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Materials						
Irrigation, Traveling Gun System, > 3 inch Nominal size hose	1762	Irrigation, Traveling Gun System with > 3 inch Nominal size hose with appurtenances. This includes the sprinkler gun, traveler cart, hard hose, reel, connections, controls, and installation. Normal hose length 1300'	Each	$42,581.91	1	$42,581.91

Practice: 442 - Sprinkler System

Scenario #9 - Renovation of Existing Sprinkler System

Scenario Description:

Center Pivot and Linear Move sprinkler systems are used in large crop fields with fairly regular field borders and flat topography. The scenario involves changing nozzles on center pivot or lateral move irrigation systems to low-pressure systems to improve efficiency of water use and reduce energy use. This scenario is intended for cropland areas where the objective is water conservation. A typical scenario assumes a 1300 LF span, including end booms renozzled with low-pressure nozzles. Resource concerns include: Soil Erosion (Concentrated flow erosion e.g. irrigation induced), Insufficient Water (Inefficient use of irrigation water), Water Quality Degradation (Excess nutrients in surface and ground waters, Excessive salts in surface and ground waters, Excess pathogens and chemicals from manure, bio-solids or compost applications), Inefficient Energy Use (Equipment and facilities e.g. pumping) Associated Practices: Irrigation Pipeline (430), Pumping Plant (533), Irrigation Water Management (449)

Before Situation:

A center pivot or lateral move system has high pressure sprinklers. The nozzles are worn and water is applied non-uniformly. Water runs off the field and degrades the receiving waters. Deep percolation in some parts of the field degrades the ground water quality. The runoff from the field causes soil erosion. The high pressure requirement for the system requires excess energy use.

After Situation:

A Center Pivot or Linear Move sprinkler system with a span of 1300 linear feet is re-nozzled with low-pressure nozzles. The irrigation water is applied efficiently and uniformly to maintain adequate soil moisture for optimum plant growth. Runoff and deep percolation are eliminated, and the surface and ground water is no longer degraded. The irrigation induced soil erosion caused by runoff is also eliminated. The lower pressure requirements of the sprinklers reduces the energy used by the pump.

Feature Measure: Length of Lateral Retrofitted

Scenario Unit: Feet

Scenario Typical Size: 1,300.0

Scenario Total Cost: $8,460.22

Scenario Cost/Unit: $6.51

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Materials						
Irrigation, Sprinkler Package, Renozzle or Retrofit, with drops and pressure regulators	1480	Sprinkler Package - Rennovation including sprinkler nozzle addition, and/or replacement, including new pressure regulators and drops.	Feet	$6.40	1300	$8,320.00
Mobilization						
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	$70.11	2	$140.22

Practice: 442 - Sprinkler System

Scenario #33 - Renovation of Existing Sprinkler System- Alternating Drops

Scenario Description:

Center Pivot and Linear Move sprinkler systems are used in large crop fields with fairly regular field borders and flat topography. The scenario involves changing nozzles on center pivot or lateral move irrigation systems to re-nozzled, low-pressure systems to improve efficiency of water use and reduce energy use. This scenario is intended for cropland areas where the objective is water conservation. A typical scenario assumes a 1300 LF span, including end booms renozzled with low-pressure nozzles and drops, with drops mounted on trusses and alternating sides of the pivot. Resource concerns include: Soil Erosion (Concentrated flow erosion e.g. irrigation induced), Insufficient Water (Inefficient use of irrigation water), Water Quality Degradation (Excess nutrients in surface and ground waters, Excessive salts in surface and ground waters, Excess pathogens and chemicals from manure, bio-solids or compost applications), Inefficient Energy Use (Equipment and facilities e.g. pumping) Associated Practices: Irrigation Pipeline (430), Pumping Plant (533), Irrigation Water Management (449)

Before Situation:

A center pivot or lateral move system has high pressure sprinklers. The nozzles are worn and water is applied non-uniformly. Water runs off the field and degrades the receiving waters. Deep percolation in some parts of the field degrades the ground water quality. The runoff from the field causes soil erosion. The high pressure requirement for the system requires excess energy use.

After Situation:

A Center Pivot or Linear Move sprinkler system with a span of 1300 linear feet is re-nozzled with low-pressure nozzles and drops mounted on trusses and alternating sides of the system. The irrigation water is applied efficiently and uniformly to maintain adequate soil moisture for optimum plant growth. Runoff and deep percolation are eliminated, and the surface and ground water is no longer degraded. The irrigation induced soil erosion caused by runoff is also eliminated. The lower pressure requirements of the sprinklers reduces the energy used by the pump and alternating drops reduce instantaneous application rates.

Feature Measure: Length of Lateral Retrofitted

Scenario Unit: Linear Feet

Scenario Typical Size: 1,300.0

Scenario Total Cost: $10,985.22

Scenario Cost/Unit: $8.45

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Aerial lift, telescoping bucket	1893	Aerial lift, bucket truck or cherry picker, typical 40' boom. Equipment only.	Hours	$37.86	16	$605.76
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	32	$741.76
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	32	$809.92
Materials						
Irrigation, Sprinkler Package, Renozzle or Retrofit, with drops and pressure regulators	1480	Sprinkler Package - Rennovation including sprinkler nozzle addition, and/or replacement, including new pressure regulators and drops.	Feet	$6.40	1300	$8,320.00
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: 443 - Irrigation System, Surface and Subsurface

Scenario #1 - Surge Valve & Controller

Scenario Description:

This scenario would typically include installation and utilization of a 10-inch surge valve with automated controller (including all appurtenances) and installation labor needed to convert from a conventional surface irrigated system to a surge irrigation system. Typical field size is 80 acres. The surge valve will be used with PVC Gated Pipe or PE Gated Tubing to convey and distribute irrigation water to alternating irrigation sets in a timed surge cycle that results in a reduced surging irrigation application. The surging action increases rate of advance along set length, reduces deep percolation at upper end of field, increases uniformity of application along row length, and on lower intake soils can significantly reduce runoff losses. The result is improved irrigation efficiency, reduced leaching and erosion losses, and conserved energy. This scenario does not include gated pipe or associated practices. Units have been changed to inches to allow one to scale up or down the size of the valve. Resource Concerns: Insufficient Water - Inefficient use of irrigation water, and Degraded Plant Condition - Undesirable plant productivity and health, Water Quality Degradation- Excess nutrients in surface and ground waters, Water Quality Degradation - Excessive sediment in surface waters, and Inefficient Energy Use - Equipment and facilities Associated Practices: 464-Irrigation Land leveling, 533-Pumping Plant, 449- Irrigation Water Management, 430 - Irrigation Pipeline, 328-Conservation Crop Rotation, and 590 Nutrient Management.

Before Situation:

Unacceptable irrigation application uniformity along existing surface irrigation system furrow or border length caused by excessive run length or soil infiltration rate when operated with continuous inflow on existing system. System is over irrigated in attempt to adequately irrigate low end of field.

After Situation:

A surge surface irrigation system is in place. After implementation, distribution uniformity and irrigation efficiency is improved, by reducing irrigation application volume and deep percolation losses. Runoff reductions, reduced energy use, and air quality improvements can also result.

Feature Measure: Number of Surge Valves

Scenario Unit: Inch

Scenario Typical Size: 10.0

Scenario Total Cost: $2,670.55

Scenario Cost/Unit: $267.06

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	2	$46.36
Materials						
Surge Valve And Controller	1477	Surge Valve and Controller, with appurtenances. Material cost includes valve, controller, all appurtenances, and mobilization.	Each	$2,624.19	1	$2,624.19

Practice: 443 - Irrigation System, Surface and Subsurface

Scenario #4 - Poly Irrigation Tubing

Scenario Description:

This practice includes installation of thin wall Polyethylene (PE) irrigation tubing with 2½-inch gates, or gated pipe installed in shallow above ground trenches to replace above ground canals used to deliver water to individual basins within a contour levee or basin surface irrigation system. The typical scenario will use 1,320 feet of 15-inch, 10 mil, PE irrigation tubing (a 1,320-foot roll weighs 250 pounds) with 100 2½-inch gates spaced approximately 13 feet apart, installed in shallow above ground trenches to replace above ground canals used to deliver water to individual basins within a 40-acre irrigated field. Resource Concerns: Insufficient Water - Inefficient use of irrigation water, and Degraded Plant Condition - Undesirable plant productivity and health, Water Quality Degradation- Excess nutrients in surface and ground waters, Water Quality Degradation - Excessive sediment in surface waters, and Inefficient Energy Use - Equipment and facilities Associated Practices: 464-Irrigation Land leveling, 533-Pumping Plant, 449- Irrigation Water Management, 430 - Irrigation Pipeline, 328-Conservation Crop Rotation, and 590-Nutrient Management.

Before Situation:

Typical before situation would include a contour levee or basin surface irrigation system. Irrigation water is delivered to individual basins in a 40-acre rice field split into paddies using irrigation canals and field ditches.

After Situation:

After implementation irrigation efficiency is improved, while reducing irrigation application volume, runoff, evaporation losses, and cold water damage to crops. Reduced energy use and air quality improvements can also result.

Feature Measure: Length of Pipe

Scenario Unit: Feet

Scenario Typical Size: 1,320.0

Scenario Total Cost: $825.80

Scenario Cost/Unit: $0.63

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	10	$231.80
Materials						
Pipe, PE, collapsible, weight priced	1385	Polyethylene (PE) compound manufactured into collapsible tubing	Pound	$1.54	250	$385.00
Flap gate, plastic, 2 1/2 in.	1424	2 1/2 inch plastic flap gate for poly irrigation tubing. Materials only.	Each	$2.09	100	$209.00

Practice: 447 - Irrigation and Drainage Tailwater Recovery

Scenario #1 - Delta Tail Water Pit

Scenario Description:

A recovery pit is constructed to temperaryily store the excess irrigation water and create a pumping pool so that the excess water can be recovered and reused. Typical pit size is trapezoidal ditch with 14ft bottom x 10ft depth x 1750 ft length with 2:1 side slopes. The total yardage of earthwork is 22,037 cy. Construction is typically done with either tractors and pans or with dozer and excavator. Resource concerns that will be addressed: Excess/Insufficient Water - inefficient use of irrigation water; Water Quality Degradation - excessive sediments in surface waters; Water Quality Degradation - Excess nutrients in surface and ground water; Degradation Plant Condition - undesirable plant productivity and health. Associated practices: 533 - Pumping Plants; 410 - Grade Stabilization Structure; 587 - Structure for water control; 449 - Irrigation Water Management; 436 - Irrigation Reservoir

Before Situation:

Excess irrigation water collects at lower ends of field and backs up into crops and causes plant stress or causes erosion and travels off farm in a drainage ditch causing water quality issues in lower watersheds. Excess irrigation water and runoff during the off season is not capture and unavailable for use.

After Situation:

Excess irrigation water is collected and directed into a recovery system where the water can be recycled and reused for irrigation. Sedimentation has a chance to settle out of the water allowing for less sediment to travel down stream. All runoff has an opportunity to be collected.

Feature Measure: Excavated Material

Scenario Unit: Cubic Yards

Scenario Typical Size: 22,307.0

Scenario Total Cost: $32,702.78

Scenario Cost/Unit: $1.47

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Excavation, common earth, side cast, large equipment	1227	Bulk excavation and side casting of common earth with hydraulic excavator with less greater than 1 CY capacity. Includes equipment and labor.	Cubic Yards	$1.44	22037	$31,733.28
Mobilization						
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$484.75	2	$969.50

Practice: 447 - Irrigation and Drainage Tailwater Recovery

Scenario #2 - Tailwater Collection Structure

Scenario Description:

A collection structure designed and constructed to efficiently direct excess tailwater from a field and deliver into a tailwater recovery ditch or tailwater recovery pit. Typical installation will be a flashboard riser or drop inlet structure placed at edge of field through an earthen berm to direct tailwater into tailwater recovery system. Resource concern(s): Water quality, inefficient use of water. Cost estimate based on 18" weir and 55' long, 15" diameter barrel.

Before Situation:

During irrigation, tailwater exits the field in an uncontrolled manner and is being lost downstream and cannot be recovered for future use.

After Situation:

Tailwater is collected through structure at a prescribed location and directed into tailwater recovery system for re-use. Other associated practices may include Irrigation reservoir (436), DeltaTailwater Pit (447), Surface Drain, Main or Lateral (608), Surface Drain, Field Ditch (607)

Feature Measure: weir dia (in) x barrel length (ft)

Scenario Unit: Inch-Foot

Scenario Typical Size: 990.0

Scenario Total Cost: $3,618.76

Scenario Cost/Unit: $3.66

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Earthfill, Roller Compacted	49	Earthfill, roller or machine compacted, includes equipment and labor	Cubic Yards	$4.42	100	$442.00
Earthfill, Manually Compacted	50	Earthfill, manually compacted, includes equipment and labor	Cubic Yards	$5.73	20	$114.60
Hydraulic Excavator, 1 CY	931	Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included.	Hours	$111.83	2	$223.66
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	3	$90.15
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	6	$139.08
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	2	$53.80
Materials						
Steel, Angle, 2 1/2 in. x 2 1/2 in. x 1/4 in.	1372	Materials: Angle, 2 1/2 inch x 2 1/2 inch x 1/4 inch. Meets ASTM A36	Feet	$3.99	10	$39.90
Pipe, PVC, 18 in., SCH 40	1373	Materials: - 18 inch - PVC - SCH 40 - ASTM D1785	Feet	$45.29	4	$181.16
Lumber, planks, posts and timbers, treated	1609	Treated dimension lumber with nominal thickness greater than 2 inches. Includes lumber and fasteners. Does not include labor.	Board Feet	$3.37	32	$107.84
Pipe, PVC, 15 in., SDR 41, PIP	1718	Materials: - 15 inch - PVC - SDR 41 100 psi - gasketed PIP ASTM D2241	Feet	$21.62	55	$1,189.10
Coupling, PVC, Tee, 18x15, SDR 51	2365	Materials: - Tee, 18 inch x 15 inch - PVC - SDR 51 - ASTM F2658	Each	$713.47	1	$713.47
Mobilization						
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	$70.11	1	$70.11
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 449 - Irrigation Water Management

Scenario #1 - Basic IWM 30 acres or less

Scenario Description:

A low Intensity irrigation water management system for producers using a checkbook method (crop grown, soil moisture conditions prior to irrigation, dates of irrigation start and stop, depths of irrigation applied, duration of irrigations, and amount of rainfall). For a typical scenario, soil moisture is determined by the feel method, volumes of irrigation water are based on energy or water district bills, records are kept on paper copies, and calculations are made by hand. Phaucet Program could be used where poly pipe is utilized. Resource Concerns: Insufficient Water Supply-Inefficient use of irrigation water; Degraded Plant Condition-Undesirable plant productivity and health, and Inefficient Energy Use-Equipment and facilities. Associated Practices: 441-Irrigation System Microirrigation, 442-Irrigation System Sprinkler, 443-Irrigation System Surface and Subsurface, 433-Irrigation Water Measurement, 434-Soil Moisture Measurement, 433- Irrigation Flow Measurement.

Before Situation:

The irrigator decides when to irrigate based on general crop or soil appearance or limited soil moisture monitoring. System run times are based on past apparent success. The typical irrigated field is a 30 acre corn field with a surface irrigation system.

After Situation:

Irrigations are scheduled based on measured crop water requirements. Records are used to evaluate results of past irrigation events and influence future irrigations. The irrigator keeps records of soil moisture, crop water use, rainfall amounts and irrigation timing and amounts. At the end of the irrigation season all the data has been reviewed and evaluated. Improvements planned for the next season have been determined.

Feature Measure: Irrigated Area Managed

Scenario Unit: Acres

Scenario Typical Size: 30.0

Scenario Total Cost: $1,002.72

Scenario Cost/Unit: $33.42

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	24	$1,002.72

Practice: 449 - Irrigation Water Management

Scenario #2 - Basic IWM more than 30 acres

Scenario Description:

A low Intensity irrigation water management system for producers using a checkbook method (crop grown, soil moisture conditions prior to irrigation, dates of irrigation start and stop, depths of irrigation applied, duration of irrigations, and amount of rainfall). For a typical scenario, soil moisture is determined by the feel method, volumes of irrigation water are based on energy or water district bills, records are kept on paper copies, and calculations are made by hand. Phaucet Program could be used where poly pipe is utilized. Resource Concerns: Insufficient Water Supply-Inefficient use of irrigation water; Degraded Plant Condition-Undesirable plant productivity and health, and Inefficient Energy Use-Equipment and facilities. Associated Practices: 441-Irrigation System Microirrigation, 442-Irrigation System Sprinkler, 443-Irrigation System Surface and Subsurface, 433-Irrigation Water Measurement, 434-Soil Moisture Measurement, 433- Irrigation Flow Measurement.

Before Situation:

The irrigator decides when to irrigate based on general crop or soil appearance or limited soil moisture monitoring. System run times are based on past apparent success. The typical irrigated field is a 125 acre corn field with a sprinkler irrigation system.

After Situation:

Irrigations are scheduled based on measured crop water requirements. Records are used to evaluate results of past irrigation events and influence future irrigations. The irrigator keeps records of soil moisture, crop water use, rainfall amounts and irrigation timing and amounts. At the end of the irrigation season all the data has been reviewed and evaluated. Improvements planned for the next season have been determined.

Feature Measure: Irrigated Area Managed

Scenario Unit: Acres

Scenario Typical Size: 125.0

Scenario Total Cost: $1,522.40

Scenario Cost/Unit: $12.18

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	8	$185.44
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	32	$1,336.96

Practice: 449 - Irrigation Water Management

Scenario #3 - Intermediate IWM 30 acres or less

Scenario Description:

A medium intensity irrigation water management system for producers using a checkbook method (crop grown, soil moisture conditions prior to irrigation, dates of irrigation start and stop, depths of irrigation applied, duration of irrigations, and amount of rainfall). The use of programs such as Phaucet or Pipe Planner for poly pipe will be use for improving of irrigation application. For a typical scenario, soil moisture is determined by in-field moisture sensors with manual downloads. Irrigation amounts are recorded from a flow meter near the pump. Records are input manually into an irrigation scheduling computer program. Resource Concerns: Insufficient Water Supply-Inefficient use of irrigation water; Degraded Plant Condition-Undesirable plant productivity and health, and Inefficient Energy Use-Equipment and facilities. Associated Practices: 441-Irrigation System Microirrigation, 442-Irrigation System Sprinkler, 443-Irrigation System Surface and Subsurface, 433-Irrigation Water Measurement, 434-Soil Moisture Measurement, 433- Irrigation Flow Measurement.

Before Situation:

The farmer decides when to irrigate based on general crop or soil appearance or limited soil moisture monitoring. System run times are based on past apparent success. The typical irrigated field is a 30 acre corn field with a surface irrigation system.

After Situation:

Irrigations are scheduled based on measured crop water requirements. Records are used to evaluate results of past irrigation events and influence future irrigations. The irrigator keeps records of soil moisture, crop water use, rainfall amounts and irrigation timing and amounts. At the end of the irrigation season all the data has been reviewed and evaluated. Improvements planned for the next season have been determined.

Feature Measure: Irrigated Area Managed

Scenario Unit: Acres

Scenario Typical Size: 30.0

Scenario Total Cost: $1,336.96

Scenario Cost/Unit: $44.57

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	32	$1,336.96

Practice: 449 - Irrigation Water Management

Scenario #4 - Intermediate IWM more than 30 acres

Scenario Description:

A medium intensity irrigation water management system for producers using a checkbook method (crop grown, soil moisture conditions prior to irrigation, dates of irrigation start and stop, depths of irrigation applied, duration of irrigations, and amount of rainfall). The use of programs such as Phaucet or Pipe Planner for poly pipe will be use for improving of irrigation application. For a typical scenario, soil moisture is determined by in field moisture sensors with manual downloads. Irrigation amounts are recorded from a flow meter near the pump. Records are input manually into an irrigation scheduling computer program. Resource Concerns: Insufficient Water Supply-Inefficient use of irrigation water; Degraded Plant Condition-Undesirable plant productivity and health, and Inefficient Energy Use-Equipment and facilities. Associated Practices: 441-Irrigation System Microirrigation, 442-Irrigation System Sprinkler, 443-Irrigation System Surface and Subsurface, 433-Irrigation Water Measurement, 434-Soil Moisture Measurement, 433- Irrigation Flow Measurement.

Before Situation:

The farmer decides when to irrigate based on general crop or soil appearance or limited soil moisture monitoring. System run times are based on past apparent success. The typical irrigated field is a 125 acre corn field with a sprinkler irrigation system.

After Situation:

Irrigations are scheduled based on measured crop water requirements. Records are used to evaluate results of past irrigation events and influence future irrigations. The irrigator keeps records of soil moisture, crop water use, rainfall amounts and irrigation timing and amounts. At the end of the irrigation season all the data has been reviewed and evaluated. Improvements planned for the next season have been determined.

Feature Measure: Irrigated Area Managed

Scenario Unit: Acres

Scenario Typical Size: 125.0

Scenario Total Cost: $1,949.36

Scenario Cost/Unit: $15.59

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	12	$278.16
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	40	$1,671.20

Practice: 449 - Irrigation Water Management

Scenario #5 - Advanced IWM 30 acres or less

Scenario Description:

A high intensity irrigation water management system for producers using a checkbook method with advanced methods of determining irrigation water applied, and estimating crop evapotranspiration, monitoring field soil moisture, or monitoring crop temperature stress. The use of programs such as Phaucet or Pipe Planner for poly pipe will be use for improving of irrigation application. Typical methods include flow measurement, daily record keeping, and use of real-time evapotranspiration estimates (such as those provided dedicated weather stations) and/or soil moisture sensors with automated data logging to monitor field soil moisture content and/or crop temperature. For this scenario, soil moisture is determined by automated soil moisture monitoring stations equiped with telemetry data. Irrigation amounts are recorded from a flow meter near the pump. Telemetry data is automatically sent to a computer with irrigation software. Irrigator also receives real time data via mobile phone applications. Some data such as total water applied may be entered into computer software manually. Resource Concerns: Insufficient Water Supply-Inefficient use of irrigation water; Degraded Plant Condition-Undesirable plant productivity and health, and Inefficient Energy Use-Equipment and facilities. Associated Practices: 441-Irrigation System Microirrigation, 442-Irrigation System Sprinkler, 443-Irrigation System Surface and Subsurface, 433-Irrigation Water Measurement, 434-Soil Moisture Measurement, 433- Irrigation Flow Measurement.

Before Situation:

The farmer decides when to irrigate based on general crop or soil appearance or limited soil moisture monitoring. System run times are based on past apparent success. The typical irrigated field is a 30 acre corn field with a surface irrigation system.

After Situation:

Irrigations are scheduled based on measured crop water requirements. Records are used to evaluate results of past irrigation events and influence future irrigations. The irrigator keeps records of soil moisture, crop water use, rainfall amounts and irrigation timing and amounts. At the end of the irrigation season all the data has been reviewed and evaluated. Improvements planned for the next season have been determined.

Feature Measure: Irrigated Area Managed

Scenario Unit: Acres

Scenario Typical Size: 30.0

Scenario Total Cost: $1,671.20

Scenario Cost/Unit: $55.71

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	40	$1,671.20

Practice: 449 - Irrigation Water Management

Scenario #6 - Advanced IWM more than 30 acres

Scenario Description:

A high intensity irrigation water management system for producers using a checkbook method with advanced methods of determining irrigation water applied, and estimating crop evapotranspiration, monitoring field soil moisture, or monitoring crop temperature stress. The use of programs such as Phaucet or Pipe Planner for poly pipe will be use for improving of irrigation application. Typical methods include flow measurement, daily record keeping, and use of real-time evapotranspiration estimates (such as those provided dedicated weather stations) and/or soil moisture sensors with automated data logging to monitor field soil moisture content and/or crop temperature. For this scenario, soil moisture is determined by automated soil moisture monitoring stations equiped with telemetry data. Irrigation amounts are recorded from a flow meter near the pump. Telemetry data is automatically sent to a computer with irrigation software. Irrigator also receives real time data via mobile phone applications. Some data such as total water applied may be entered into computer software manually. Resource Concerns: Insufficient Water Supply-Inefficient use of irrigation water; Degraded Plant Condition-Undesirable plant productivity and health, and Inefficient Energy Use-Equipment and facilities. Associated Practices: 441-Irrigation System Microirrigation, 442-Irrigation System Sprinkler, 443-Irrigation System Surface and Subsurface, 433-Irrigation Water Measurement, 434-Soil Moisture Measurement, 433- Irrigation Flow Measurement.

Before Situation:

The farmer decides when to irrigate based on general crop or soil appearance or limited soil moisture monitoring. System run times are based on past apparent success. The typical irrigated field is a 125 acre corn field with sprinkler irrigation.

After Situation:

Irrigations are scheduled based on measured crop water requirements. Records are used to evaluate results of past irrigation events and influence future irrigations. The irrigator keeps records of soil moisture, crop water use, rainfall amounts and irrigation timing and amounts. At the end of the irrigation season all the data has been reviewed and evaluated. Improvements planned for the next season have been determined.

Feature Measure: Irrigated Area Managed

Scenario Unit: Acres

Scenario Typical Size: 125.0

Scenario Total Cost: $2,376.32

Scenario Cost/Unit: $19.01

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	16	$370.88
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	48	$2,005.44

Practice: 449 - Irrigation Water Management

Scenario #7 - IWM Device_YR1

Scenario Description:

This practice includes the installation of an Irrrigation Water Management device such as soil moisture sensors(tensiometers, gyp blocks, capacitance sensors etc), atmometers, water level sensors, etc, that are installed and read to determine various information to be used by the cooperator in improving irrigater management. This level of instrumentation requires manual reading. Note: flowmeter (587) and surge valve (443) are separate practices and are not to be used as an IWM device under this practice. The installation includes the purchase of IWM device, installation of equipment, and labor to install and read sensors or device. Typical Scenario involves installation of resistance sensor blocks in a 80 acre field of irrigated cropland. In typical scenario, producer periodically monitors soil moisture sensors during the growing season. Meters used to read sensors may be portable. Resource Concerns: Insufficient Water - Inefficient use of irrigation water, and Degraded Plant Condition - Undesirable plant productivity and health, and Inefficient Energy Use - Equipment and facilities. Associated Practices: 449- Irrigation Water Management, 587-Structure for water Control, 328-Conservation Crop Rotation, and 590-Nutrient Management.

Before Situation:

In the typical scenario, producer uses manual methods to evaluate parameter, such as feel method to estimate soil moisture for scheduling irrigation.

After Situation:

In typical scenario, producer uses instrumentation in lieu of manual methods and has installed four sensors at each monitoring site to a depth of four feet with one sensor representing each foot of depth. Producer uses periodic soil moisture measurements to schedule irrigation resulting in improved irrigation water managment and reduced energy use.

Feature Measure: Number of Measuring Sites

Scenario Unit: Each

Scenario Typical Size: 2.0

Scenario Total Cost: $2,737.50

Scenario Cost/Unit: $1,368.75

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	8	$185.44
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	32	$1,336.96
Materials						
Weather Station, Basic	314	Basic Weather Station which collects and records recording rainfall, humidity, barometric pressure, wind speed, and temperature to a home weather console. Includes materials only.	Each	$239.91	1	$239.91
Soil Moisture Meter	1455	Soil Moisture Sensor Reader. Equipment only.	Each	$256.01	1	$256.01
Soil Moisture Sensor	1456	Soil moisture resistance sensor with 10 foot cables. Equipment only.	Each	$72.37	8	$578.96
Mobilization						
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	$70.11	2	$140.22

Practice: 449 - Irrigation Water Management

Scenario #8 - IWM Device with Data Recorder_YR1

Scenario Description:

This practice includes the installation of an Irrrigation Water Management device such as soil moisture sensors(tensiometers, gyp blocks, capacitance sensors etc), atmometers, water level sensors, etc, with built-in data recording capability that are installed and read by datalogger/laptop to determine various information to be used by the cooperator in improving irrigater management. Note: flowmeter (587) and surge valve (443) are separate practices and are not to be used as an IWM device under this practice. The practice installation includes the purchase of IWM device, installation equipment (probe or auger), and a data logger to log continuous parameter data that can be downloaded to a personal computer and associated graphing software. Typical Scenario involves installation of resistance sensor blocks in a 80 acre field of irrigated cropland. Producer periodically monitors soil moisture sensors during the growing season. Resource Concerns: Insufficient Water - Inefficient use of irrigation water, and Degraded Plant Condition - Undesirable plant productivity and health, and Inefficient Energy Use - Equipment and facilities. Associated Practices: 449- Irrigation Water Management, 587-Structure for water Control, 328-Conservation Crop Rotation, and 590-Nutrient Management.

Before Situation:

In the typical scenario, producer uses manual methods to evaluate parameter, such as feel method to estimate soil moisture for scheduling irrigation.

After Situation:

In typical scenario, producer uses recording instrumentation in lieu of manual methods and has installed four sensors at each monitoring site to a depth of four feet with one sensor representing each foot of depth. Producer periodically downloads continuously recorded soil moisture measurements that are used to schedule irrigation more effectively resulting in improved irrigation water managment and reduced energy use.

Feature Measure: Number of Measuring Sites

Scenario Unit: Each

Scenario Typical Size: 2.0

Scenario Total Cost: $4,272.81

Scenario Cost/Unit: $2,136.41

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	12	$278.16
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	40	$1,671.20
Materials						
Weather Station, Basic	314	Basic Weather Station which collects and records recording rainfall, humidity, barometric pressure, wind speed, and temperature to a home weather console. Includes materials only.	Each	$239.91	1	$239.91
Data Logger	1453	Data Logger W/Graphic Output for water management. Materials only.	Each	$682.18	2	$1,364.36
Soil Moisture Sensor	1456	Soil moisture resistance sensor with 10 foot cables. Equipment only.	Each	$72.37	8	$578.96
Mobilization						
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	$70.11	2	$140.22

Practice: 449 - Irrigation Water Management

Scenario #9 - IWM Device w. Telemetry_YR1

Scenario Description:

This practice includes the installation of an Irrrigation Water Management device such as soil moisture sensors(tensiometers, gyp blocks, capacitance sensors etc), atmometers, water level sensors, etc, with a telemetry system to transmit continuous parameter data that can be utilized on tablets, smartphones, laptops, or personal computer and associated graphing software to evaluate various parameters to be used by the cooperator in improving irrigation water management in real time. Note: flowmeter (587) and surge valve (443) are separate practices and are not to be used as an IWM device under this practice. The practice installation includes the purchase of IWM device, installation equipment (probe or auger), and a telemetry system to transmit continuous parameter data that can be utilized on an electronic device (tablet, smartphone, laptop, pc) and associated graphing software. Typical Scenario involves installation of resistance sensor blocks in a 80 acre field of irrigated cropland. Producer periodically monitors soil moisture sensors during the growing season. Resource Concerns: Insufficient Water - Inefficient use of irrigation water, and Degraded Plant Condition - Undesirable plant productivity and health, and Inefficient Energy Use - Equipment and facilities. Associated Practices: 449- Irrigation Water Management, 587-Structure for water Control, 328-Conservation Crop Rotation, and 590-Nutrient Management.

Before Situation:

In the typical scenario, producer uses manual methods to evaluate parameter, such as feel method to estimate soil moisture for scheduling irrigation.

After Situation:

In typical scenario, producer uses instrumentation with real-time, continuous telemetry in lieu of manual methods and has installed four sensors at each monitoring site to a depth of four feet with one sensor representing each foot of depth. Producer utilizes continuously transmitted soil moisture measurements in analysis software that are used to schedule irrigation more effectively resulting in improved irrigation water managment and reduced energy use.

Feature Measure: Number of Sensors in field

Scenario Unit: Each

Scenario Typical Size: 2.0

Scenario Total Cost: $4,861.34

Scenario Cost/Unit: $2,430.67

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	16	$370.88
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	48	$2,005.44
Materials						
Weather Station, Basic	314	Basic Weather Station which collects and records recording rainfall, humidity, barometric pressure, wind speed, and temperature to a home weather console. Includes materials only.	Each	$239.91	1	$239.91
Data Logger with Telemetry System	1454	Data Logger W/Graphic Output for water management and telemetry - data communication device with power supply in a weather proof enclosure. Equipment only.	Each	$1,525.93	1	$1,525.93
Soil Moisture Sensor	1456	Soil moisture resistance sensor with 10 foot cables. Equipment only.	Each	$72.37	8	$578.96
Mobilization						
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	$70.11	2	$140.22

Practice: 449 - Irrigation Water Management

Scenario #10 - Rice Intermittent Flood All Season

Scenario Description:

Managing water levels in rice fields for the entire growing season to minimize greenhouse gas production according to an irrigation water management plan developed in cooperation with university and/or water district personnel. Typical irrigation water management will include managing water levels in the field to “dry down” between full flood conditions to a saturated soil condition prior to re-flooding the field. Records are kept for flooding operations. Irrigation return flows will be reduced also, decreasing groundwater demand and decreasing exports improving water quality. Energy use should alos be reduced. Resource Concerns: Excessive Greenhouse Gas – CH4 (methane); Excessive Greenhouse Gas – CO2 (carbon dioxide) or Excessive Greenhouse Gas – N2O (nitrous oxide). Insufficient Water Supply-Inefficient use of irrigation water; and Inefficient Energy Use-Equipment and facilities. Associated Practices: 410 - Grade Stablization Structure; 430 - Irrigation Pipeline; 464 - Irrigation Land Leveling; 443 - Irrigation System, Surface and Subsurface; 587-Structure for water Control; and 590-Nutrient Management.

Before Situation:

Farmer maintains continuous flood on rice fields during the growing season. Significant greenhouse gases are produced. Water and nutrients are lost if rainfall occurs during the growing season.

After Situation:

Farmer floods fields and allows the fields to “dry-down” until little of no water is standing in the field but the soil is maintained in a saturated condition. The fields are then re-flooded and the cycle is repeated throughout the growing season. Greenhouse gas production is reduced. Water and nutrients are conserved.

Feature Measure: Irrigated Acres Managed

Scenario Unit: Acres

Scenario Typical Size: 40.0

Scenario Total Cost: $1,628.63

Scenario Cost/Unit: $40.72

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	25	$751.25
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	21	$877.38

Practice: 450 - Anionic Polyacrylamide (PAM) Application

Scenario #1 - PAM Application

Scenario Description:

Control of irrigation induced erosion (typically in furrow irrigated fields) through the direct application of water-soluble Polyacrylamide (PAM) into the irrigation water supply (1 to 3 ounce sprinkled at 3-5 ft furrow inlet or metered at 10 ppm directly into the head ditch). PAM comes in granular, liquid oil emulsion, tablet, and block forms. This typical application is for an 80-acre furrow irrigated row crop field, with one PAM application (1-1.5 lb/ac, creating a 10 ppm concentration of the granular PAM in the head ditch metered via large fish feeder) at first irrigation followed by two additional applications (reduced rates of 0.5-1 lb/ac, or about 1-5 ppm in the inflow water) after cultivations. Resource Concern: Soil erosion. Associated Practices: 443-Irrigation System, Surface and Subsurface, 449-Irrigation Water Management.

Before Situation:

Irrigated lands susceptible to irrigation-induced erosion, excluding peat soils, and where the sodium adsorption ratio (SAR) of irrigation water is less than 15.

After Situation:

Erosion is minimized in furrow irrigated field.

Feature Measure: Weight of PAM Applied

Scenario Unit: Pound

Scenario Typical Size: 240.0

Scenario Total Cost: $1,394.16

Scenario Cost/Unit: $5.81

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	12	$278.16
Materials						
Anionic Polyacrylamide (PAM)	1279	Water Soluble PAM, granular bulk, for mixing with irrigation water. Includes materials and shipping only.	Pound	$4.65	240	$1,116.00

Practice: 464 - Irrigation Land Leveling

Scenario #1 - Irrigation Land Leveling with stockpiling

Scenario Description:

This scenario will level 40 acres of irrigated crop land surface to enhance uniform irrigation efficiency using dirt pans/ carry-all/ pan-scraper equipment and includes stripping and stockpiling. The typical volume of earth moved is 100 to 500 cubic yards per acre. Resource concern: Excess/insufficient water- Inefficient use of irrigation water. Associated Practices: 433- Irrigation system, Surface and Subsurface, 607- Surface Drain, Field Ditch; 388 Irrigation Field Ditch; 449- Irrigation Water Management; or 578- Structure of Water Control

Before Situation:

Irregular field surface reduces uniformity of surface application and thus irrigation efficiency by localized ponding and/ or excess runoff/ run-on.

After Situation:

Cropland will be reshaped to provide uniform distribution of irrigation water in order to promote irrigation efficiencies. Stockpiling assists in retaining soil quality in leveled field

Feature Measure: Volume of Earth Moved

Scenario Unit: Cubic Yards

Scenario Typical Size: 14,000.0

Scenario Total Cost: $25,277.31

Scenario Cost/Unit: $1.81

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	4	$94.96
Stripping and stockpiling, topsoil	1199	Stripping and stockpiling of topsoil adjacent to stripping area. Includes equipment and labor.	Cubic Yards	$0.92	2800	$2,576.00
Tractor, agricultural, 510 HP	2090	Agricultural tractor with horsepower range of 490 to 540. Equipment and power unit costs. Labor not included.	Hours	$177.49	85	$15,086.65
Scraper, pull, 18 CY	2093	Pull type earthmoving scraper with 18 CY capacity. Does not include pulling equipment or labor. Add Tractor or Dozer, 260 HP typically required for single scraper.	Hours	$24.02	170	$4,083.40
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	6	$180.30
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	85	$2,286.50
Mobilization						
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$484.75	2	$969.50

Practice: 468 - Lined Waterway or Outlet

Scenario #1 - Turf Reinforced Matting

Scenario Description:

Install 300 ' long by 15' wide by 1.5' deep trapezoidal or parabolic shaped waterway lined with Turf Reinforced Matting (TRM). 1/2 the channel is excavated. Excess excavation is spoiled in the immediate area. TRM is installed over 100% of the width of the waterway to prevent scour and aid in waterway establishment. Cost include excavation, spoiling of excess material, and furnishing and installing TRM. Lined waterway width is measured from top of bank to top of bank.

Before Situation:

Excessive sedimentation and soil erosion as a result of ephemeral or classic gully erosion. Velocities are generally too high or saturated soil conditions make it difficult to establish a grassed waterway.

After Situation:

TRM lined waterway is 300 ' long by 15' wide by 1.5' deep. The practice is installed using a hydraulic excavator. TRM is installed by laborers. Associated practices are Subsurface Drain (606), Underground Outlet (620), Structure for Water Control (587), and Critical Area Seeding (342).

Feature Measure: Square Foot of Waterway

Scenario Unit: Square Feet

Scenario Typical Size: 4,500.0

Scenario Total Cost: $6,119.67

Scenario Cost/Unit: $1.36

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Excavation, Common Earth, side cast, small equipment	48	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic Yards	$2.24	90	$201.60
Foregone Income						
FI, Soybeans Irrigated	1962	Irrigated Soybeans is Primary Crop	Acres	$273.21	0.1	$27.32
Labor						
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	2	$83.56
Materials						
Turf reinforcement mat	1212	Synthetic turf reinforcement mat with staple anchoring. Includes materials, equipment and labor.	Square Yard	$10.38	535	$5,553.30
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 468 - Lined Waterway or Outlet

Scenario #2 - Rock Lined - 12 inch

Scenario Description:

Install 300 ' long by 15' wide by 1.5' deep trapezoidal or parabolic shaped waterway lined with riprap (D100 = 9", Velocity ~ 8 ft/sec). 1/2 the channel is excavated, before excavation for riprap. Excess excavation is spoiled in the immediate area. Riprap is installed over 100% of the width of the waterway to prevent scour. Cost include excavation, spoiling of excess material, geotextile underlayment and installing 9" Rock Riprap. Lined waterway width is measured from top of bank to top of bank.

Before Situation:

Excessive sedimentation and soil erosion as a result of ephemeral or classic gully erosion. Velocities are generally too high or saturated soil conditions make it difficult to establish a grassed waterway.

After Situation:

Rock lined waterway is 300 ' long by 15' wide by 1.5' deep. Waterway is excavated and rock is placed using a hydraulic excavator. Geotextile underlayment is installed by laborers. Associated practices are Subsurface Drain (606), Underground Outlet (620), Structure for Water Control (587), and Critical Area Seeding (342).

Feature Measure: Square Foot of Waterway

Scenario Unit: Square Feet

Scenario Typical Size: 4,500.0

Scenario Total Cost: $22,244.33

Scenario Cost/Unit: $4.94

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Excavation, Common Earth, side cast, small equipment	48	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic Yards	$2.24	295	$660.80
Foregone Income						
FI, Soybeans Irrigated	1962	Irrigated Soybeans is Primary Crop	Acres	$273.21	0.1	$27.32
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	2	$46.36
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	2	$83.56
Materials						
Rock Riprap, Placed with geotextile	44	Rock Riprap, placed with geotextile, includes materials, equipment and labor to transport and place	Cubic Yards	$103.28	205	$21,172.40
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 468 - Lined Waterway or Outlet

Scenario #3 - Rock Lined - 24 inch

Scenario Description:

Install 300 ' long by 15' wide by 1.5' deep trapezoidal or parabolic shaped waterway lined with riprap (D100 = 18", Velocity ~ 11 ft/sec). 1/2 the channel is excavated, before excavation for riprap. Excess excavation is spoiled in the immediate area. Riprap is installed over 100% of the width of the waterway to prevent scour. Cost include excavation, spoiling of excess material, geotextile underlayment and installing 18" Rock Riprap. Lined waterway width is measured from top of bank to top of bank.

Before Situation:

Excessive sedimentation and soil erosion as a result of ephemeral or classic gully erosion. Velocities are generally too high or saturated soil conditions make it difficult to establish a grassed waterway.

After Situation:

Rock lined waterway is 300 ' long by 15' wide by 1.5' deep. Waterway is excavated and rock is placed using a hydraulic excavator. Geotextile underlayment is installed by laborers. Associated practices are Subsurface Drain (606), Underground Outlet (620), Structure for Water Control (587), and Critical Area Seeding (342).

Feature Measure: Square Foot of Waterway

Scenario Unit: Square Feet

Scenario Typical Size: 4,500.0

Scenario Total Cost: $49,679.53

Scenario Cost/Unit: $11.04

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Excavation, Common Earth, side cast, small equipment	48	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic Yards	$2.24	555	$1,243.20
Foregone Income						
FI, Soybeans Irrigated	1962	Irrigated Soybeans is Primary Crop	Acres	$273.21	0.1	$27.32
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	2	$46.36
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	2	$83.56
Materials						
Rock Riprap, Placed with geotextile	44	Rock Riprap, placed with geotextile, includes materials, equipment and labor to transport and place	Cubic Yards	$103.28	465	$48,025.20
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 468 - Lined Waterway or Outlet

Scenario #4 - Concrete

Scenario Description:

Install 300 ' long by 15' wide by 1.5' deep trapezoidal or parabolic shaped waterway lined with concrete. 1/2 the channel is excavated, before excavation for concrete and subgrade material. Excess excavation is spoiled in the immediate area. Concrete is installed over 100% of the width of the waterway to prevent scour. Cost include excavation, spoiling of excess material, 6" of clean sand or gravel subgrade, and 5" reinforced concrete slab. Lined waterway width is measured from top of bank to top of bank.

Before Situation:

Excessive sedimentation and soil erosion as a result of ephemeral or classic gully erosion. Velocities are generally too high or saturated soil conditions make it difficult to establish a grassed waterway. Usually installed in locations where rock or other lining materials are not readily available.

After Situation:

Concrete lined waterway is 300 ' long by 15' wide by 1.5' deep. Waterway is excavated using a hydraulic excavator. Concrete slab is placed on 6" of clean sand or #57 stone. Concrete is placed, graded and screeded by laborers. Associated practices are Subsurface Drain (606), Underground Outlet (620), Structure for Water Control (587), and Critical Area Seeding (342).

Feature Measure: Square Foot of Waterway

Scenario Unit: Square Feet

Scenario Typical Size: 4,500.0

Scenario Total Cost: $30,566.53

Scenario Cost/Unit: $6.79

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Concrete, CIP, slab on grade, reinforced	37	Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yards	$315.01	80	$25,200.80
Excavation, Common Earth, side cast, small equipment	48	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic Yards	$2.24	280	$627.20
Foregone Income						
FI, Soybeans Irrigated	1962	Irrigated Soybeans is Primary Crop	Acres	$273.21	0.1	$27.32
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	2	$46.36
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	2	$83.56
Materials						
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic Yards	$39.34	110	$4,327.40
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 468 - Lined Waterway or Outlet

Scenario #5 - Membrane

Scenario Description:

Install 300 ' long by 15' wide by 1.5' deep trapezoidal or parabolic shaped waterway lined with a synthetic membrane. 1/2 the channel is excavated. Excess excavation is spoiled in the immediate area. Membrane is installed over 100% of the width of the waterway to prevent scour. Cost include excavation, spoiling of excess material, and furnishing and installing synthetic membrane and geotextile underlayment. Lined waterway width is measured from top of bank to top of bank.

Before Situation:

Excessive sedimentation and soil erosion as a result of ephemeral or classic gully erosion. Velocities are generally too high or saturated soil conditions make it difficult to establish a grassed waterway. Usually installed in locations where rock or other lining materials are not readily available.

After Situation:

Membrane lined waterway is 300 ' long by 15' wide by 1.5' deep. The practice is installed using a hydraulic excavator. Membrane liner and geotextile underlayment is installed by laborers. Associated practices are Subsurface Drain (606), Underground Outlet (620), Structure for Water Control (587), and Critical Area Seeding (342).

Feature Measure: Square Foot of Waterway

Scenario Unit: Square Feet

Scenario Typical Size: 4,500.0

Scenario Total Cost: $32,627.83

Scenario Cost/Unit: $7.25

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Geotextile, woven	42	Woven Geotextile Fabric. Includes materials, equipment and labor	Square Yard	$1.18	535	$631.30
Excavation, Common Earth, side cast, small equipment	48	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic Yards	$2.24	90	$201.60
Foregone Income						
FI, Soybeans Irrigated	1962	Irrigated Soybeans is Primary Crop	Acres	$273.21	0.1	$27.32
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	12	$278.16
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	2	$83.56
Materials						
Synthetic Liner, 40 mil	1387	Synthetic 40 mil HDPE, LLDPE, EPDM, etc membrane liner material. Includes materials and shipping only.	Square Yard	$6.49	4800	$31,152.00
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 468 - Lined Waterway or Outlet

Scenario #6 - Concrete Block

Scenario Description:

Install 36' long (including inlet and outlet aprons) by 15' wide by 1.5' deep trapezoidal shaped waterway or chute lined with concrete blocks. 1/2 the channel is excavated. Excess excavation is spoiled in the immediate area. 8"x8"x16" standard concrete blocks are installed over 100% of the width of the waterway/chute to prevent scour. Cost include excavation, spoiling of excess material, 3" stone subgrade, geotextile and furnishing and installing standard concrete blocks. Lined waterway width is measured from top of bank to top of bank.

Before Situation:

Excessive sedimentation and soil erosion as a result of ephemeral or classic gully erosion. Velocities are generally too high or saturated soil conditions make it difficult to establish a grassed waterway. Usually installed in locations where rock or other lining materials are not readily available.

After Situation:

Conccrete block lined waterway or chute is 36 ' long by 15' wide by 1.5' deep. Chute is installed on a 3 to 1 slope. The practice is installed using a hydraulic excavator. Geotextile and concrete blocks are installed by laborers. Associated practices are Subsurface Drain (606), Underground Outlet (620), Structure for Water Control (587), and Critical Area Seeding (342).

Feature Measure: Square Foot of Waterway

Scenario Unit: Square Feet

Scenario Typical Size: 540.0

Scenario Total Cost: $3,111.32

Scenario Cost/Unit: $5.76

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Geotextile, woven	42	Woven Geotextile Fabric. Includes materials, equipment and labor	Square Yard	$1.18	65	$76.70
Excavation, Common Earth, side cast, small equipment	48	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic Yards	$2.24	32	$71.68
Foregone Income						
FI, Soybeans Irrigated	1962	Irrigated Soybeans is Primary Crop	Acres	$273.21	0.01	$2.73
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	24	$556.32
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	2	$83.56
Materials						
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic Yards	$39.34	6	$236.04
Block, concrete	253	Concrete block, hollow, normal weight, 3500 psi. Includes both full and partial sizes. Material only	Each	$2.86	640	$1,830.40
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 472 - Access Control

Scenario #1 - Cave Gate

Scenario Description:
Installing a barred metal gate to exclude human access to sensitive cave species in a karst area. Access control is needed to treat the wildlife resource concern.

Before Situation:
The cave is currently unprotected from human access, and bats are susceptible to white nose syndrone infection. T&E bat species could easily be impacted by this fungus.

After Situation:
Sensitive cave species are protected from human traffic and fungal infection.

Feature Measure: A 165 sq ft metal gate with bars 5.7

Scenario Unit: Square Feet

Scenario Typical Size: 165.0

Scenario Total Cost: $14,932.53

Scenario Cost/Unit: $90.50

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	35	$1,051.75
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	16	$370.88
Materials						
Bat Gate	1129	Bat Gate Assembly, Includes materials, equipment and labor.	Square Feet	$80.06	165	$13,209.90
Mobilization						
Mobilization, Material, distance > 50 miles	1043	Mobilization cost of materials for special cases where the distance from the supplier delivery point to the job site exceeds 50 miles. The costs for shipping by UPS or bulk freight shipping to a location within 50 miles of the job site have already been included in the component price.	Dollars	$1.00	300	$300.00

Practice: 472 - Access Control

Scenario #7 - Trails/Roads Access Control

Scenario Description:

Restricting access to the use of forest/farm roads and trails by the use of a gate and limited fencing. Resource concerns include Undesirable plant productivity and health, Concentrated flow erosion, Soil compaction, Excessive sediment in surface waters, and Wildlife habitat degradation.

Before Situation:

Roads are damaged or misused, illegal activities occur and/or forest resources are at risk. Extensive amount of fencing (other than that needed to restrict access at the site of ingress) is not included in this scenario, but instead will be planned and installed with the Fence practice (382).

After Situation:

Roads are protected, illegal activities are stopped and/or forest resources are secure.

Feature Measure: Number

Scenario Unit: Each

Scenario Typical Size: 1.0

Scenario Total Cost: $663.55

Scenario Cost/Unit: $663.55

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Auger, Post driver attachment	934	Auger or post driver attachment to a tractor or skidsteer. Does not include power unit. Labor not included.	Hours	$12.82	2	$25.64
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	4	$94.96
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hours	$22.62	4	$90.48
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	4	$92.72
Materials						
Post, Wood, CCA treated, 3-4 in. x 7 ft.	9	Wood Post, Line 3-4 inch dia. X 7 ft., CCA Treated. Includes materials and shipping only.	Each	$8.06	4	$32.24
Post, Wood, CCA treated, 6 in. x 8 ft.	12	Wood Post, End 6 inch dia. X 8 ft., CCA Treated. Includes materials and shipping only.	Each	$18.55	4	$74.20
Gate, Pipe, 12 ft.	1057	6 rail tube gate, 16 gauge. Includes materials and shipping only.	Each	$206.61	1	$206.61
Concrete mix, bag	1226	Pre-mixed dry concrete mix in 60 pound bag. Materials only.	Each	$4.67	10	$46.70

Practice: 484 - Mulching

Scenario #2 - Erosion Control Blanket

Scenario Description:

Installation of erosion control blanket on critical areas with steep slopes, grassed waterways or diversions.. Blanket is typically made of coconut coir, wood fiber, straw and is typically covered on both sides with polypropylene netting. Used to help control erosion and establish vegetative cover.

Before Situation:

There are areas of concentrated flow or very steep eroding areas needing a high level of erosion protection. Soil erosion is a concern and there is little to no vegetation.

After Situation:

The erosion control blanket is placed on concentrated flow or steep areas and secured with ground stables. Soil erosion is minimized and vegetative cover is established.

Feature Measure: Area Covered by Mulch

Scenario Unit: Square Feet

Scenario Typical Size: 5,000.0

Scenario Total Cost: $951.34

Scenario Cost/Unit: $0.19

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	8	$185.44
Materials						
Erosion Control Blanket, biodegradable	1213	Biodegradable erosion control blanket, typically a composite of natural fibers with reinforcing polymer netting. Materials and shipping only.	Square Yard	$1.38	555	$765.90

Practice: 484 - Mulching

Scenario #3 - Synthetic Material

Scenario Description:

Installation of geotextile, biodegradable plastic, polyethylene plastic, or other state approved synthetic mulch to conserve soil moisture, moderate soil temperature, and provide erosion control. Payment based on actual area covered by mulching material.

Before Situation:

Site conditions very. Typically scenarios include annual and perennial specialty crops. Water quantity and soil moisture is a concern.

After Situation:

Synthetic mulch is applied in rows with a mulch layer or by other mechanized means. Soil moisture is conserved and energy use associated with irrigation is decreased.

Feature Measure: Area Covered by Mulch

Scenario Unit: Acres

Scenario Typical Size: 1.0

Scenario Total Cost: $1,967.89

Scenario Cost/Unit: $1,967.89

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hours	$22.62	1.5	$33.93
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	2	$46.36
Materials						
Mulch, polyethylene plastic, 1.0 mil	1303	1.0 mil polyethylene plastic mulch, with anchoring. Includes materials and shipping only.	Square Yard	$0.39	4840	$1,887.60

Practice: 484 - Mulching

Scenario #4 - Tree and Shrub

Scenario Description:

Barrier fabric or other suitable natural or synthetic mulch is installed with a new tree and shrub planting to support establishment. Typically used during the installation of conservation practices. Rate is per tree/shrub and assumes 1 square yard of barrier fabric and 5 staples/tree.

Before Situation:

Site conditions vary. Typical scenario is an installation of 100 native trees and shrubs to enhance wildlife habitat. Sites are often remote and trees may not be planted in rows, requiring each tree to be mulched individually

After Situation:

Barrier fabric squares are installed with 5 sod staples each, around individual trees and shrubs to aid establishment. Soil moisture conserved to aid tree/shrub growth establishment.

Feature Measure: Number of Trees Mulched

Scenario Unit: Each

Scenario Typical Size: 100.0

Scenario Total Cost: $118.00

Scenario Cost/Unit: $1.18

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Geotextile, woven	42	Woven Geotextile Fabric. Includes materials, equipment and labor	Square Yard	$1.18	100	$118.00

Practice: 484 - Mulching

Scenario #63 - Natural Material - Partial Coverage

Scenario Description:

Application of straw mulch or other other state approved natural material (such as wood chips, compost, or hay) to reduce erosion, moderate soil temperature and suppress weeds. Typically used to provide partial coverage (either in-row or between rows) to suppress weeds. Payment based on total acres mulched, assuming 3-5 ft. swatch and 10-12 ft. row spacing.

Before Situation:

Site conditions vary. Typically scenarios include new tree and shrub plantings, irrigated orchards or vineyards, or annual and perennial specialty crops. Water quantity and soil moisture is a concern.

After Situation:

Implementation Requirements are preprared according to the 484 Mulching Standard and implemented. Straw or other natural mulch is applied in rows by hand or by mechanized means. Soil moisture is conserved, energy use associated with irrigation is decreased, and weed growth is suppressed.

Feature Measure: Total Acres Mulched

Scenario Unit: Acres

Scenario Typical Size: 10.0

Scenario Total Cost: $385.77

Scenario Cost/Unit: $38.58

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hours	$22.62	5	$113.10
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	5	$126.55
Materials						
Straw	1237	Small grain straw (non organic and certified organic). Includes materials only.	Ton	$73.06	2	$146.12

Practice: 484 - Mulching

Scenario #64 - Natural Material - Full Coverage

Scenario Description:

Application of straw mulch or other other state approved natural material to reduce erosion and facilitate the establishment of vegetative cover. Mulch provides full coverage and is typically used with critical area planting. Assumes 2 tons of straw mulch per acre

Before Situation:

Typical scenario ranges from a 0.1 to 1.0 acre disturbed site around a newly constructed structural practice. The potential for soil erosion is high and mulch is needed to stabilize the soil and facilitate the establishment of vegetative cover.

After Situation:

Implementation Requirements are preprared according to the 484 Mulching Standard and implemented. Straw mulch has been applied to areas needing mulch. Erosion and sedimentation is reduced, water and soil quality is protected, and vegetative cover is established.

Feature Measure: Area Covered by Mulch

Scenario Unit: Acres

Scenario Typical Size: 1.0

Scenario Total Cost: $389.79

Scenario Cost/Unit: $389.79

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	0.5	$11.87
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	10	$231.80
Materials						
Straw	1237	Small grain straw (non organic and certified organic). Includes materials only.	Ton	$73.06	2	$146.12

Practice: 490 - Tree/Shrub Site Preparation

Scenario #1 - Chemical - Ground Application on Open Field

Scenario Description:

This practice involves the use of various herbicides applied using ground-based machinery (farming equipment) in order to remove undesirable vegetation and improve site conditions for establishing trees and/or shrubs. Typical sites include abandoned fields, pastures, rangelands, or agricultural fields. This practice is typically used to address the following resource concerns: degraded plant condition - undesirable plant productivity and health and inadequate structure and composition. Treatment can be done before or after planting.

Before Situation:

Undesirable vegetation is present on the site including herbaceous plants and woody vegetation. Noxious and invasive species may also be present on the site. If left uncontrolled, undesirable vegetation will inhibit successful establishment of target species of trees and/or shrubs.

After Situation:

Undesirable vegetation has been treated using appropriate herbicides, reducing competition for target trees and/or shrubs. Site conditions are favorable for successful establishment of trees and/or shrubs.

Feature Measure: Area of Treatment

Scenario Unit: Acres

Scenario Typical Size: 40.0

Scenario Total Cost: $2,755.73

Scenario Cost/Unit: $68.89

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Chemical, precision application	949	Chemical application performed by light bar/GPS navigation system. Includes equipment, power unit and labor costs.	Acres	$7.70	40	$308.00
Labor						
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	8	$334.24
Materials						
Herbicide, Surfactant	1095	Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$1.81	40	$72.40
Herbicide, Sulfometuron methyl & Hexazinone	1282	Broad spectrum herbicide for residual weed control for christmas trees and other trees. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$44.68	40	$1,787.20
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 490 - Tree/Shrub Site Preparation

Scenario #2 - Chemical - Ground Band Spray

Scenario Description:

This practice involves the use of various herbicides applied using ground-based machinery (farming equipment & ATV's) in order to remove undesirable vegetation and improve site conditions for establishing trees and/or shrubs by spraying strips and not the whole tract. (Whole field is counted, but approximately one third of the fiield is treated). Typical sites include abandoned fields, pastures, rangelands, or agricultural fields. This practice is typically used to address the following resource concerns: degraded plant condition - undesirable plant productivity and health and inadequate structure and composition. Treatment can be done before or after planting.

Before Situation:

Undesirable vegetation is present on the site including herbaceous plants and woody vegetation. Noxious and invasive species may also be present on the site. If left uncontrolled, undesirable vegetation will inhibit successful establishment of target species of trees and/or shrubs.

After Situation:

Undesirable vegetation has been treated using appropriate herbicides, reducing competition for target trees and/or shrubs in strips (usually 2 ft on each side of planted row). Site conditions are favorable for successful establishment of trees and/or shrubs.

Feature Measure: Area of Treatment

Scenario Unit: Acres

Scenario Typical Size: 40.0

Scenario Total Cost: $1,537.65

Scenario Cost/Unit: $38.44

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hours	$18.07	8	$144.56
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	8	$185.44
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	8	$334.24
Materials						
Herbicide, Imazapyr	336	Pre and post-emergent, non-selective herbicide for control of undesirable vegetation in non-crop areas. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$39.97	13	$519.61
Herbicide, Sulfometuron & metsulfuron	344	A residual sulfonylurea herbicide that kills broadleaf weeds and some annual grasses. It is a systemic compound with foliar and soil activity. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$12.27	13	$159.51
Herbicide, Surfactant	1095	Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$1.81	13	$23.53
Mobilization						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	1	$170.76

Practice: 490 - Tree/Shrub Site Preparation

Scenario #3 - Chemical - Ground Application on Harvested Forest

Scenario Description:

This practice involves the use of various herbicides applied using ground-based machinery (dozers or skidders and NOT typical farm equipment) in order to remove undesirable vegetation and improve site conditions for establishing trees and/or shrubs. Typical sites include forestland that was recently harvested. This practice is typically used to address the following resource concerns: degraded plant condition - undesirable plant productivity and health and inadequate structure and composition. Treatment can be done before or after planting.

Before Situation:

Undesirable vegetation is present on the site including herbaceous plants and woody vegetation. Noxious and invasive species may also be present on the site. If left uncontrolled, undesirable vegetation will inhibit successful establishment of target species of trees and/or shrubs.

After Situation:

Undesirable vegetation has been treated using appropriate herbicides, reducing competition for target trees and/or shrubs. Site conditions are favorable for successful establishment of trees and/or shrubs.

Feature Measure: Area of Treatment

Scenario Unit: Acres

Scenario Typical Size: 40.0

Scenario Total Cost: $6,893.15

Scenario Cost/Unit: $172.33

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Chemical, ground application, forested land	1313	Chemical application performed by ground equipment where trees and terrain impede passage of wide boom sprayers. Utilizes forestry application methods that include heavy equipment such as skidders. Includes material, equipment, power unit and labor costs.	Acres	$109.45	40	$4,378.00
Materials						
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$8.98	40	$359.20
Herbicide, Imazapyr	336	Pre and post-emergent, non-selective herbicide for control of undesirable vegetation in non-crop areas. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$39.97	40	$1,598.80
Herbicide, Surfactant	1095	Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$1.81	40	$72.40
Mobilization						
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$484.75	1	$484.75

Practice: 490 - Tree/Shrub Site Preparation

Scenario #4 - Chemical - Aerial Application

Scenario Description:

This practice involves the use of herbicides applied by helicoptor in order to remove undesirable vegetation and improve site conditions for establishing trees and/or shrubs. This typical scenraio includes open land such as abandoned fields, pastures or forestlands that were recently harvested. This practice is typically used to address the following resource concerns: degraded plant condition - undesirable plant productivity and health and inadequate structure and composition. Treatment can be done before or after planting.

Before Situation:

Undesirable vegetation is present on the site including herbaceous plants and woody competition. Noxious and invasive species may also be present on the site. If left uncontrolled, undesirable vegetation will inhibit successful establishment of target species of trees and/or shrubs.

After Situation:

Undesirable vegetation has been treated using appropriate herbicides, reducing competition for target trees and/or shrubs. Site conditions are favorable for successful establishment of trees and/or shrubs.

Feature Measure: Area of Treatment

Scenario Unit: Acres

Scenario Typical Size: 40.0

Scenario Total Cost: $3,989.04

Scenario Cost/Unit: $99.73

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Chemical, aerial application, helicopter	1991	Chemical application performed by helicopter on forest only. Includes equipment, mobilization, and labor.	Acres	$40.61	40	$1,624.40
Labor						
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	8	$334.24
Materials						
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$8.98	40	$359.20
Herbicide, Imazapyr	336	Pre and post-emergent, non-selective herbicide for control of undesirable vegetation in non-crop areas. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$39.97	40	$1,598.80
Herbicide, Surfactant	1095	Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$1.81	40	$72.40

Practice: 490 - Tree/Shrub Site Preparation

Scenario #5 - Chemical - Hand Application

Scenario Description:

This practice involves the use of various herbicides applied using backpack sprayer or similar equipment, and hack-n-squirt for tree control, in order to remove undesirable vegetation and improve site conditions for establishing trees and/or shrubs. Typical sites include lands such as old fields, pastures, rangelands, agricultural fields, previous forestlands that have been abandoned and are now covered with a mixture of grasses, forbs, shrubs and some remnant trees. Resource concerns are: degraded plant condition - undesirable plant productivity and health and inadequate structure and composition. Treatment can be done before or after planting.

Before Situation:

Undesirable vegetation, including woody and herbaceous plants, occupy 100 % of the on the site. Noxious and invasive species may also be present on the site. If left uncontrolled, undesirable vegetation will inhibit successful establishment of target species of trees and/or shrubs.

After Situation:

Undesirable vegetation has been treated using appropriate herbicides, reducing competition for target trees and/or shrubs. Site conditions are favorable for successful establishment of trees and/or shrubs.

Feature Measure: area of treatment

Scenario Unit: Acres

Scenario Typical Size: 10.0

Scenario Total Cost: $2,080.98

Scenario Cost/Unit: $208.10

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Chemical, spot treatment, single stem application	964	Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included.	Hours	$68.31	24	$1,639.44
Labor						
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	8	$334.24
Materials						
Herbicide, 2,4-D + Dica	331	Broadleaf herbicide labeled for cropland and pasture. Refer to WIN-PST for product names and active ingredients. Materials and shipping.	Acres	$10.73	10	$107.30

Practice: 490 - Tree/Shrub Site Preparation

Scenario #6 - Mechanical - Heavy, shearing and windrowing

Scenario Description:

This practice involves the use of heavy machinery (usually bull dozers & not typical farming equipment) to treat an area in order to improve site conditions for establishing trees and/or shrubs. Usually vegetation and/or debries is sheared and raked or pushed to form piles or windrows. Typical sites include trees and brush cover that is not appropriate to the site or does not provide the desired condition for the landowner. This practice is typically used to address the following resource concerns: degraded plant condition - undesirable plant productivity and health and inadequate structure and composition and soil quality degredation - soil erosion - sheet and rill. Treatment must be done before planting.

Before Situation:

The site is dominated by undesirable vegetation including herbaceous plants and significant amounts of woody vegetation (trees and brush) occupying the site. There is also a significant component of woody debris on site. Noxious and invasive species may also be present on the site. Adequate planter access is impossible with existing conditions. If left untreated, seedlings can not be planted properly at the proper density. Existing competition will cause poor survival or reduced growth of trees/shrubs to be established on the site.

After Situation:

Undesirable vegetation has been removed using mechanical methods reducing competition for target trees and/or shrubs. Woody debris has been removed to facilitate tree/shrub planting operations. Site conditions are favorable for successful establishment of trees and/or shrubs.

Feature Measure: Area of Treatment

Scenario Unit: Acres

Scenario Typical Size: 40.0

Scenario Total Cost: $14,923.90

Scenario Cost/Unit: $373.10

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Heavy mechanical site prep, shearing, V-blade, K-G blading	1314	Mechanical operations that shear trees and vegetation. Requires heavy equipment such as dozers, Includes equipment, power unit and labor costs.	Acres	$165.54	40	$6,621.60
Heavy mechanical site prep, raking	1317	Mechanical operations that pushing and raking trees and vegetation. Requires heavy equipment such as dozers. Includes equipment, power unit and labor costs.	Acres	$162.43	40	$6,497.20
Labor						
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	20	$835.60
Mobilization						
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$484.75	2	$969.50

Practice: 490 - Tree/Shrub Site Preparation

Scenario #7 - Mechanical-Ripping/chopping

Scenario Description:

This practice involves the use of heavy machinery (usually bull dozers & not typical farming equipment) to rip/cut/lift underground root systems to improve site conditions for establishing trees and/or shrubs. Typical sites include trees and brush cover that is not appropriate to the site or does not provide the desired condition for the landowner. This practice is typically used to address the following resource concerns: degraded plant condition - undesirable plant productivity and health and inadequate structure and composition and soil quality degredation - soil erosion - sheet and rill. Treatment must be done before planting.

Before Situation:

Undesirable vegetation is present on the site including herbaceous plants and sparse woody competition. Noxious and invasive species may also be present on the site. If left uncontrolled, undesirable vegetation will inhibit successful establishment of target species of trees and/or shrubs. Soils are compacted as a result of harvesting heavy equipment activities or other land uses.

After Situation:

Undesirable vegetation has been knocked down with heavy tillage equipment used to breakup and lift root systems, breakup compaction (<18" deep), thus enhancing the conditions for planting and survival of trees and/or shrubs. Soil compaction has been alleviated, allowing penetration of moisture and allowing roots to grow properly. Site conditions are favorable for successful establishment of trees and/or shrubs.

Feature Measure: Area of Treatment

Scenario Unit: Acres

Scenario Typical Size: 40.0

Scenario Total Cost: $6,139.79

Scenario Cost/Unit: $153.49

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Heavy mechanical site prep, drum chopping	1316	Mechanical operations that pushing trees and vegetation and crushing them with a water filled roller chopper. Requires heavy equipment such as dozers. Includes equipment, power unit and labor costs.	Acres	$133.02	40	$5,320.80
Labor						
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	8	$334.24
Mobilization						
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$484.75	1	$484.75

Practice: 490 - Tree/Shrub Site Preparation

Scenario #8 - Mechanical-Dragging

Scenario Description:

This practice involves the use of heavy machinery (usually bull dozers or log skidders with a heavy drag) to knock down existing vegetation to improve site conditions for establishing trees and/or shrubs. Typical sites include trees and brush cover that is not appropriate to the site or does not provide the desired condition for the landowner. This practice is typically used to address the following resource concerns: degraded plant condition - undesirable plant productivity and health and inadequate structure and composition and soil quality degredation - soil erosion - sheet and rill. Treatment must be done before planting.

Before Situation:

Undesirable vegetation is present on the site including herbaceous plants and sparse woody competition. Noxious and invasive species may also be present on the site. If left uncontrolled, undesirable vegetation will inhibit successful establishment of target species of trees and/or shrubs.

After Situation:

Undesirable vegetation has been knocked down, thus enhancing the conditions for planting and survival of trees and/or shrubs. Site conditions are favorable for successful establishment of trees and/or shrubs.

Feature Measure: Area of Treatment

Scenario Unit: Acres

Scenario Typical Size: 40.0

Scenario Total Cost: $3,936.19

Scenario Cost/Unit: $98.40

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Site Preparation, Mechanical	944	Aerator, rolling drum chopper, etc. Includes equipment, power unit and labor costs.	Acres	$77.93	40	$3,117.20
Labor						
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	8	$334.24
Mobilization						
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$484.75	1	$484.75

Practice: 490 - Tree/Shrub Site Preparation

Scenario #9 - Mechanical - Light, Mow/Disk

Scenario Description:

This practice involves the use of light/moderate machinery(typcially tractors used in normal farming operations) to clear above ground vegetation (disk or bush hog) in order to improve site conditions for establishing trees and/or shrubs. Typical sites include abandoned fields, pastures, rangelands, or agricultural fields. This following resource concerns: soil quality degredation - compaction, soil erosion - sheet and rill, and degraded plant condition - undesirable plant productivity and health and inadequate structure and composition. Treatment can be done before or after planting.

Before Situation:

Undesirable vegetation is present on the site including herbaceous plants and sparse woody competition. Noxious and invasive species may also be present on the site. If left uncontrolled, undesirable vegetation will inhibit successful establishment of target species of trees and/or shrubs.

After Situation:

Undesirable vegetation has been removed using a bush hog and/or disk to cut and/or knock down existing vegetation, thus enhancing the conditions for planting and survival of trees and/or shrubs. Site conditions are favorable for successful establishment of trees and/or shrubs.

Feature Measure: Area of Treatment

Scenario Unit: Acres

Scenario Typical Size: 40.0

Scenario Total Cost: $1,757.09

Scenario Cost/Unit: $43.93

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Mower, Bush Hog	940	Equipment and power unit costs. Labor not included.	Hours	$49.85	20	$997.00
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	20	$506.20
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 490 - Tree/Shrub Site Preparation

Scenario #10 - Mechanical - Light ripping

Scenario Description:

This practice involves the use of light/moderate machinery(typcially tractors used in normal farming operations) to subsoil (open field rip) in order to improve site conditions for establishing trees and/or shrubs. Typical sites include abandoned fields, pastures, rangelands, or agricultural fields. This following resource concerns: soil quality degredation - compaction, soil erosion - sheet and rill, and degraded plant condition - undesirable plant productivity and health and inadequate structure and composition. Treatment must be done before planting.

Before Situation:

Undesirable vegetation is present on the site including herbaceous plants and sparse woody competition. Noxious and invasive species may also be present on the site. If left uncontrolled, undesirable vegetation will inhibit successful establishment of target species of trees and/or shrubs. Soils are compacted as a result of harvesting heavy equipment activities or other land uses.

After Situation:

Soil compaction has been alleviated by using a farm tractor pulling ripper to breakup plow pans (<18" deep), thus enhancing the conditions for planting and survival of trees and/or shrubs by allowing penetration of moisture and roots to grow properly. Site conditions are favorable for successful establishment of trees and/or shrubs.

Feature Measure: Area of Treatment

Scenario Unit: Acres

Scenario Typical Size: 40.0

Scenario Total Cost: $1,420.53

Scenario Cost/Unit: $35.51

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Ripper or subsoiler, 16 to 36 inch depth	1235	Deep ripper or subsoiler, (16-36 inches depth) includes tillage implement, power unit and labor.	Acres	$20.81	40	$832.40
Labor						
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	8	$334.24
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 511 - Forage Harvest Management

Scenario #2 - Phosphorus Mining

Scenario Description:

Harvesting forages to remove excess phosphorus from hay fields (30-acre fields harvested three times a year). Forage must be removed through hay or green chop. Fields cannot be grazed or hay fed on the acreage. Fields that have a phosphorus loading in excess of 500 lbs of P/acre qualify for funding. Litter cannot be applied, commercial nutrients will be used to supply other forage needs. Resource concerns that will be addressed include soil quality and water quality.

Before Situation:

Forage harvest is normally by grazing. Excess Phosphorus build up (greater than 500 lbs.) in soil due to manure application. Phosphorus remains in the field through the continued cycle of adding additional phosphorus through manure application. Phosphorus that is taken up by plants is re-deposited on the land through the digestion of anaimals grazing.

After Situation:

Phosphorus is removed from the field through the harvesting and removal of forage, no grazing allowed. Forage is utilized off the farm or on areas with out a Phosphorus build up. The end result is needed nutrients are supplied for forage growth (N and K) based on Soil Test recommendations with out adding additional phosphorus to the soil. Existing soil phosphorus content is reduced by removing forage from the field. Grazing oppertunities are reduced and water quality is improved as well as forage quality.

Feature Measure: Reduced Phosphorus in Soil

Scenario Unit: Acres

Scenario Typical Size: 30.0

Scenario Total Cost: $1,521.80

Scenario Cost/Unit: $50.73

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Foregone Income						
FI, Grazing AUMs	2079	Grazing is the Primary Land Use	Animal Unit Month	$19.44	30	$583.20
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	28	$841.40
Materials						
Nitrogen (N), Urea	71	Price per pound of N supplied by Urea. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.48	150	$72.00
Potassium, K2O	74	K2O supplied by Muriate Of Potash. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.42	60	$25.20

Practice: 512 - Pasture and Hay Planting

Scenario #1 - Native Perennial Grass (1 species)

Scenario Description:

Establish or reseed adapted perennial native grasses to improve or maintain livestock/wildlife nutrition and health, extend the length of the grazing season, and provide soil cover to reduce erosion. Used for either conventional or no-till seeding of native grasses for pasture, hayland, and wildlife openings. This practice may be utilized for organic or regular production. This scenario assumes fertilizer, seed, equipment and labor for seed bed prep, tillage, seeding ,and spreading.

Before Situation:

Poorly managed/degraded pasture land or cropland being converted to pasture and/or hay.

After Situation:

Suitable species are established to improve forage quality and quantity and reduce soil erosion on cropland ,hayland, pasture, and/or biomass production.

Feature Measure: Acres of Forage and Biomass Planti

Scenario Unit: Acres

Scenario Typical Size: 30.0

Scenario Total Cost: $11,002.13

Scenario Cost/Unit: $366.74

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$6.00	30	$180.00
Fertilizer, ground application, dry bulk	950	Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$7.35	30	$220.50
Lime application	953	Lime application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$8.51	30	$255.30
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	30	$623.70
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	8	$185.44
Materials						
Phosphorus, P2O5	73	Price per pound of P2O5 supplied by Superphosphate. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.58	1500	$870.00
Potassium, K2O	74	K2O supplied by Muriate Of Potash. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.42	1500	$630.00
Lime, ENM	75	Fertilizer: Limestone Spread on field.	Ton	$63.05	60	$3,783.00
Test, Soil Test, Standard	299	Includes materials, shiping, labor, and equipment costs.	Each	$12.70	1	$12.70
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$8.98	30	$269.40
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$8.98	30	$269.40
Native Perennial Grasses, Low Density	2750	Native perennial grasses, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Includes material and shipping.	Acres	$114.96	30	$3,448.80
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 512 - Pasture and Hay Planting

Scenario #3 - Native Perennial 2 or more species

Scenario Description:

Establish or reseed with 2 or more adapted perennial native warm season grasses to improve or maintain livestock/wildlife nutrition and health, extend the length of the grazing season, and provide soil cover to reduce erosion. Used for either conventional or no-till seeding of perennial native warm season grasses for pasture, hayland, and wildlife openings. This practice may be utilized for organic or regular production. This scenario assumes fertilizer, seed, equipment and labor for seed bed prep, tillage, seeding ,and spreading.

Before Situation:

Existing stand of perennial grasses or monoculture or no grasses present. Resource concerns may include undesireable plant productivity and health, inadequate feed and forage for livestock, soil erosion and soil quality.

After Situation:

Suitable NWSG species are established to improve forage quality and quantity and reduce soil erosion on cropland, hayland, pasture and/or biomass production.

Feature Measure: Acres of Forage and Biomass Planti

Scenario Unit: Acres

Scenario Typical Size: 30.0

Scenario Total Cost: $11,122.13

Scenario Cost/Unit: $370.74

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acres	$11.35	30	$340.50
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$6.00	30	$180.00
Lime application	953	Lime application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$8.51	30	$255.30
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	30	$623.70
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	8	$185.44
Materials						
Phosphorus, P2O5	73	Price per pound of P2O5 supplied by Superphosphate. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.58	1500	$870.00
Potassium, K2O	74	K2O supplied by Muriate Of Potash. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.42	1500	$630.00
Lime, ENM	75	Fertilizer: Limestone Spread on field.	Ton	$63.05	60	$3,783.00
Test, Soil Test, Standard	299	Includes materials, shiping, labor, and equipment costs.	Each	$12.70	1	$12.70
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$8.98	30	$269.40
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$8.98	30	$269.40
Native Perennial Grasses, Low Density	2750	Native perennial grasses, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Includes material and shipping.	Acres	$114.96	30	$3,448.80
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 512 - Pasture and Hay Planting

Scenario #5 - Introduced Cool Season Grasses

Scenario Description:

Establish or reseed adapted perennial introduced cool season grasses and legumes to improve or maintain livestock/wildlife nutrition and health, extend the length of the grazing season, and provide soil cover to reduce erosion. Used for either conventional or no-till seeding of perennial introduced cool season grasses for pasture, hayland, and wildlife openings. This practice may be utilized for organic or regular production. This scenario assumes fertilizer, seed, equipment and labor for seed bed prep, tillage, seeding ,and spreading.

Before Situation:

Poor or nonexistent stand of grass species. Resource concerns may include undesireable plant productivity and health, inadequate feed and forage for livestock, soil erosion and soil quality.

After Situation:

Suitable species are established to improve forage quality and quantity and reduce soil erosion on cropland ,hayland, pasture, and/or biomass production.

Feature Measure: Acres of Forgage and Biomass Plant

Scenario Unit: Acres

Scenario Typical Size: 30.0

Scenario Total Cost: $9,113.63

Scenario Cost/Unit: $303.79

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acres	$11.35	30	$340.50
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$6.00	30	$180.00
Fertilizer, ground application, dry bulk	950	Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$7.35	30	$220.50
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	30	$623.70
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	8	$185.44
Materials						
Nitrogen (N), Ammonium Nitrate	69	Price per pound of N supplied by Ammonium Nitrate. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.59	1200	$708.00
Phosphorus, P2O5	73	Price per pound of P2O5 supplied by Superphosphate. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.58	1500	$870.00
Potassium, K2O	74	K2O supplied by Muriate Of Potash. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.42	1500	$630.00
Lime, ENM	75	Fertilizer: Limestone Spread on field.	Ton	$63.05	60	$3,783.00
Test, Soil Test, Standard	299	Includes materials, shiping, labor, and equipment costs.	Each	$12.70	1	$12.70
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$8.98	30	$269.40
Introduced Perennial Grasses, Legumes and/or Forbs, Low Density	2747	Introduced perennial grasses, legumes, and/or forbs, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Includes material and shipping.	Acres	$34.55	30	$1,036.50
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 512 - Pasture and Hay Planting

Scenario #7 - Introduced Warm Season Grasses

Scenario Description:

Establish or reseed adapted introduced warm season grasses to improve or maintain livestock/wildlife nutrition and health, extend the length of the grazing season, and provide soil cover to reduce erosion. Used for either conventional or no-till seeding of perennial introduced warm season grasses for pasture, hayland, and wildlife openings. This practice may be utilized for organic or regular production. This scenario assumes fertilizer, seed, equipment and labor for seed bed prep, tillage, seeding ,and spreading.

Before Situation:

Existing stand of perennial grasses or monoculture or no grasses present. Resource concerns may include undesireable plant productivity and health, inadequate feed and forage for livestock, soil erosion and soil quality.

After Situation:

Suitable species are established to improve forage quality and quantity and reduce soil erosionon cropland ,hayland, pasture, and/or biomass production.

Feature Measure: Acres of Forgage and Biomass Plant

Scenario Unit: Acres

Scenario Typical Size: 30.0

Scenario Total Cost: $9,113.63

Scenario Cost/Unit: $303.79

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acres	$11.35	30	$340.50
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$6.00	30	$180.00
Fertilizer, ground application, dry bulk	950	Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$7.35	30	$220.50
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	30	$623.70
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	8	$185.44
Materials						
Nitrogen (N), Ammonium Nitrate	69	Price per pound of N supplied by Ammonium Nitrate. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.59	1200	$708.00
Phosphorus, P2O5	73	Price per pound of P2O5 supplied by Superphosphate. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.58	1500	$870.00
Potassium, K2O	74	K2O supplied by Muriate Of Potash. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.42	1500	$630.00
Lime, ENM	75	Fertilizer: Limestone Spread on field.	Ton	$63.05	60	$3,783.00
Test, Soil Test, Standard	299	Includes materials, shiping, labor, and equipment costs.	Each	$12.70	1	$12.70
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$8.98	30	$269.40
Introduced Perennial Grasses, Legumes and/or Forbs, Low Density	2747	Introduced perennial grasses, legumes, and/or forbs, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Includes material and shipping.	Acres	$34.55	30	$1,036.50
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 512 - Pasture and Hay Planting

Scenario #9 - Sprigging

Scenario Description:

Sprigging new grasses with sprigging application for the purpose of providing forage, increasing plant diversity, soil quality and fertility, and plant health. This practice may be utilized for organic or regular production. This scenario assumes fertilizer, sprigs, equipment and labor for seed bed prep, tillage, sprigging ,and spreading.

Before Situation:

Poor or nonexistent stand of grass species. Resource concerns may include undesireable plant productivity and health, inadequate feed and forage for livestock, soil erosion and soil quality.

After Situation:

Suitable species are established to improve forage quality and quantity and reduce soil erosion on cropland ,hayland, pasture, and/or biomass production.

Feature Measure: Acres of Forage and Biomass Planti

Scenario Unit: Acres

Scenario Typical Size: 30.0

Scenario Total Cost: $11,941.43

Scenario Cost/Unit: $398.05

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acres	$11.35	30	$340.50
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$6.00	30	$180.00
Fertilizer, ground application, dry bulk	950	Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$7.35	30	$220.50
Ground sprigging	1101	Includes costs for equipment, power unit and labor.	Acres	$60.70	30	$1,821.00
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	8	$185.44
Materials						
Nitrogen (N), Ammonium Nitrate	69	Price per pound of N supplied by Ammonium Nitrate. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.59	1200	$708.00
Phosphorus, P2O5	73	Price per pound of P2O5 supplied by Superphosphate. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.58	1500	$870.00
Potassium, K2O	74	K2O supplied by Muriate Of Potash. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.42	1500	$630.00
Lime, ENM	75	Fertilizer: Limestone Spread on field.	Ton	$63.05	60	$3,783.00
Test, Soil Test, Standard	299	Includes materials, shiping, labor, and equipment costs.	Each	$12.70	1	$12.70
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$8.98	30	$269.40
Perennial Grass Sprigs or Rhizomes, acre	2323	Perennial grasses used across a large area using vegetative propagules including sprigs or rhizomes. Includes materials and shipping.	Acres	$88.90	30	$2,667.00
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 512 - Pasture and Hay Planting

Scenario #43 - Overseeding Legumes

Scenario Description:

Establishment of legumes for the purpose of increasing plant diversity, soil quality and fertility, and plant health and enhancing the quality of forage. This practice may be utilized for organic or regular production. This scenario assumes fertilizer, seed, equipment and labor for seed bed prep, tillage, seeding ,and spreading.

Before Situation:

Existing stand of perennial grasses or monoculture with no legumes present .

After Situation:

Legumes will be maintained through proper grazing management and improve plant diversity and soil quality.

Feature Measure: Acres of Forgage and Biomass Plant

Scenario Unit: Acres

Scenario Typical Size: 30.0

Scenario Total Cost: $7,099.73

Scenario Cost/Unit: $236.66

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acres	$11.35	30	$340.50
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$6.00	30	$180.00
Fertilizer, ground application, dry bulk	950	Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$7.35	30	$220.50
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	30	$623.70
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	8	$185.44
Materials						
Phosphorus, P2O5	73	Price per pound of P2O5 supplied by Superphosphate. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.58	1500	$870.00
Potassium, K2O	74	K2O supplied by Muriate Of Potash. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.42	1500	$630.00
Lime, ENM	75	Fertilizer: Limestone Spread on field.	Ton	$63.05	60	$3,783.00
Test, Soil Test, Standard	299	Includes materials, shiping, labor, and equipment costs.	Each	$12.70	1	$12.70
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 516 - Livestock Pipeline

Scenario #1 - PVC IPS Less than 1.5 inches

Scenario Description:

Description: Below ground installation of PVC (Iron Pipe Size) pipeline. PVC (IPS) is manufactured in sizes (nominal diameter) from ½-inch to 36-inch; typical practice sizes range from 1-inch to 4-inch; and typical scenario size is 1-inch. Construct 1,320 feet of 1-inch, Schedule 40, PVC Pipeline with appurtenances, installed below ground with a minimum 1.5 feet of ground cover. The scenario unit is weight of pipe material in pounds. 1,320 feet of 1-inch, Schedule 40, PVC pipe weighs 0.240 lb/ft, or a total of 317 pounds. Appurtenances include: couplings, fittings, thrust blocks, gate valves (2), air release valves (2), drain valve (1), and pressure relief valve (1), and are included in the cost of pipe material (additional 10% of pipe material quantity). Revegetation is not included. Resource Concerns: Inadequate Livestock Water, Inefficient Energy Use. Associated Practices: Critical Area Planting (342), Pumping Plant (533), Watering Facility (614), and Water Harvesting Catchment (636).

Before Situation:

Water supplies need to be conveyed through pipelines for use by livestock or wildlife.

After Situation:

Pipeline(s) convey and/or distribute water to storage and/or watering facilities, for use by livestock or wildlife.

Feature Measure: Length of Pipe

Scenario Unit: Feet

Scenario Typical Size: 1,320.0

Scenario Total Cost: $3,391.02

Scenario Cost/Unit: $2.57

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Trenching, Earth, 12 in. x 48 in.	53	Trenching, earth, 12 inch wide x 48 inch depth, includes equipment and labor for trenching and backfilling	Feet	$1.47	1320	$1,940.40
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	12	$278.16
Materials						
Pipe, PVC, dia. < 18 in., weight priced	1323	Polyvinyl Chloride (PVC) pressure rated pipe priced by the weight of the pipe materials for pipes with diameters less than 18 inch. Materials	Pound	$1.91	348	$664.68
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: 516 - Livestock Pipeline

Scenario #2 - PVC IPS 1.5 inches - 2.5 inches

Scenario Description:

Description: Below ground installation of PVC (Iron Pipe Size) pipeline. PVC (IPS) is manufactured in sizes (nominal diameter) from ½-inch to 36-inch; typical practice sizes range from 1-inch to 4-inch; and typical scenario size is 1½-inch. Construct 1,320 feet of 1½-inch, Schedule 40, PVC Pipeline with appurtenances, installed below ground with a minimum 1.5 feet of ground cover. The scenario unit is weight of pipe material in pounds. 1,320 feet of 1½-inch, Schedule 40, PVC pipe weighs 0.501 lb/ft, or a total of 661 pounds. Appurtenances include: couplings, fittings, thrust blocks, gate valves (2), air release valves (2), drain valve (1), and pressure relief valve (1), and are included in the cost of pipe material (additional 10% of pipe material quantity). Revegetation is not included. Resource Concerns: Inadequate Livestock Water, Inefficient Energy Use. Associated Practices: Critical Area Planting (342), Pumping Plant (533), Watering Facility (614), and Water Harvesting Catchment (636).

Before Situation:

Water supplies need to be conveyed through pipelines for use by livestock or wildlife.

After Situation:

Pipeline(s) convey and/or distribute water to storage and/or watering facilities, for use by livestock or wildlife.

Feature Measure: Length of Pipe

Scenario Unit: Feet

Scenario Typical Size: 1,320.0

Scenario Total Cost: $4,114.91

Scenario Cost/Unit: $3.12

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Trenching, Earth, 12 in. x 48 in.	53	Trenching, earth, 12 inch wide x 48 inch depth, includes equipment and labor for trenching and backfilling	Feet	$1.47	1320	$1,940.40
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	12	$278.16
Materials						
Pipe, PVC, dia. < 18 in., weight priced	1323	Polyvinyl Chloride (PVC) pressure rated pipe priced by the weight of the pipe materials for pipes with diameters less than 18 inch. Materials	Pound	$1.91	727	$1,388.57
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: 516 - Livestock Pipeline

Scenario #3 - PVC IPS 3 inches and greater

Scenario Description:

Description: Below ground installation of PVC (Iron Pipe Size) pipeline. PVC (IPS) is manufactured in sizes (nominal diameter) from ½-inch to 36-inch; typical practice sizes range from 1-inch to 4-inch; and typical scenario size is 3-inch. Construct 1,320 feet of 3-inch, Schedule 40, PVC Pipeline with appurtenances, installed below ground with a minimum 1.5 feet of ground cover. The scenario unit is weight of pipe material in pounds. 1,320 feet of 3-inch, Schedule 40, PVC pipe weighs 1.390 lb/ft, or a total of 1,835 pounds. Appurtenances include: couplings, fittings, thrust blocks, gate valves (2), air release valves (2), drain valve (1), and pressure relief valve (1), and are included in the cost of pipe material (additional 10% of pipe material quantity). Revegetation is not included. Resource Concerns: Inadequate Livestock Water, Inefficient Energy Use. Associated Practices: Critical Area Planting (342), Pumping Plant (533), Watering Facility (614), and Water Harvesting Catchment (636).

Before Situation:

Water supplies need to be conveyed through pipelines for use by livestock or wildlife.

After Situation:

Pipeline(s) convey and/or distribute water to storage and/or watering facilities, for use by livestock or wildlife.

Feature Measure: Length of Pipe

Scenario Unit: Feet

Scenario Typical Size: 1,320.0

Scenario Total Cost: $6,766.16

Scenario Cost/Unit: $5.13

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Trenching, Earth, 12 in. x 48 in.	53	Trenching, earth, 12 inch wide x 48 inch depth, includes equipment and labor for trenching and backfilling	Feet	$1.47	1320	$1,940.40
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	20	$463.60
Materials						
Pipe, PVC, dia. < 18 in., weight priced	1323	Polyvinyl Chloride (PVC) pressure rated pipe priced by the weight of the pipe materials for pipes with diameters less than 18 inch. Materials	Pound	$1.91	2018	$3,854.38
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: 516 - Livestock Pipeline

Scenario #4 - Subsurface HDPE 1.5in or less

Scenario Description:

Description: Below ground installation of HDPE (Iron Pipe Size & Tubing) pipeline. HDPE (IPS &Tubing) is manufactured in sizes (nominal diameter) from ½-inch to 24-inch; typical practice sizes range from 1-inch to 2-inch. This Scenario is based on 1/4 mile (1,320 feet) of 1½-inch, Class 200 (SDR-9.0, PE4708), HDPE Pipeline with appurtenances, installed below ground with a minimum 1.5 feet of ground cover. The scenario unit is Length of pipe material in feet. Appurtenances include: fittings, anchors, thrust blocks, gate valves (2), air release valves (2), drain valve (1), and pressure relief valve (1), and are included in the cost of pipe material (additional 10% of pipe material quantity). Revegetation is not included. Resource Concerns: Inadequate Livestock Water, Inefficient Energy Use. Associated Practices: Critical Area Planting (342), Pumping Plant (533), Watering Facility (614), and Water Harvesting Catchment (636).

Before Situation:

Water supplies need to be conveyed through pipelines for use by livestock or wildlife.

After Situation:

Pipeline(s) convey and/or distribute water to storage and/or watering facilities, for use by livestock or wildlife.

Feature Measure: Length of Pipe

Scenario Unit: Feet

Scenario Typical Size: 1,320.0

Scenario Total Cost: $4,376.06

Scenario Cost/Unit: $3.32

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Trenching, Pipeline Plowing	1096	Includes equipment and labor for plowing small diameter lines in common earth (< 3 inch)	Feet	$1.05	1320	$1,386.00
Fuser for HDPE Pipe	1383	Fusing machine for 1 to 12 inch diameter HDPE pipe joints. Equipment costs only. Does not include labor.	Hours	$21.98	8	$175.84
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	8	$185.44
Materials						
Pipe, HDPE, smooth wall, weight priced	1379	High Density Polyethylene (HDPE) compound manufactured into smooth wall pipe. Materials only.	Pound	$3.00	707	$2,121.00
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: 516 - Livestock Pipeline

Scenario #5 - Subsurface HDPE Greater than 1.5in

Scenario Description:

Description: Below ground installation of HDPE (Iron Pipe Size & Tubing) pipeline. HDPE (IPS &Tubing) is manufactured in sizes (nominal diameter) from ½-inch to 24-inch; typical practice sizes range from 1-inch to 2-inch. This Scenario is based on 1/4 mile (1,320 feet) of 2-inch, Class 200 (SDR-9.0, PE4708), HDPE Pipeline with appurtenances, installed below ground with a minimum 1.5 feet of ground cover. The scenario unit is Length of pipe material in feet. Appurtenances include: fittings, anchors, thrust blocks, gate valves (2), air release valves (2), drain valve (1), and pressure relief valve (1), and are included in the cost of pipe material (additional 10% of pipe material quantity). Revegetation is not included. Resource Concerns: Inadequate Livestock Water, Inefficient Energy Use. Associated Practices: Critical Area Planting (342), Pumping Plant (533), Watering Facility (614), and Water Harvesting Catchment (636).

Before Situation:

Water supplies need to be conveyed through pipelines for use by livestock or wildlife.

After Situation:

Pipeline(s) convey and/or distribute water to storage and/or watering facilities, for use by livestock or wildlife.

Feature Measure: Length of Pipe

Scenario Unit: Feet

Scenario Typical Size: 1,320.0

Scenario Total Cost: $5,579.06

Scenario Cost/Unit: $4.23

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Trenching, Pipeline Plowing	1096	Includes equipment and labor for plowing small diameter lines in common earth (< 3 inch)	Feet	$1.05	1320	$1,386.00
Fuser for HDPE Pipe	1383	Fusing machine for 1 to 12 inch diameter HDPE pipe joints. Equipment costs only. Does not include labor.	Hours	$21.98	8	$175.84
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	8	$185.44
Materials						
Pipe, HDPE, smooth wall, weight priced	1379	High Density Polyethylene (HDPE) compound manufactured into smooth wall pipe. Materials only.	Pound	$3.00	1108	$3,324.00
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: 516 - Livestock Pipeline

Scenario #6 - Surface HDPE (Iron Pipe Size & Tubing)

Scenario Description:

Description: on-ground surface installation of HDPE (Iron Pipe Size & Tubing) pipeline. HDPE (IPS & Tubing) is manufactured in sizes (nominal diameter) from ½-inch to 24-inch; typical practice sizes range from 1-inch to 4-inch; and typical scenario size is 1¼-inch. Construct 400 feet of 1¼-inch, Class 200 (SDR-9.0, PE4708), HDPE Pipeline with appurtenances, installed on the ground surface. Typical size range of pipe installed: 1-inch to 4-inch. The scenario unit is weight of pipe material in pounds. 400 feet of 1¼-inch, Class 200 (SDR-9.0, PE4708), HDPE pipe weighs 0.362 lb/ft, or a total of 145 pounds. Appurtenances include: couplings, fittings, anchors, gate valves (1), air release valves (1), and pressure relief valve (1), and are included in the cost of pipe material (additional 5% of pipe material quantity). Revegetation is not included. Resource Concerns: Inadequate Livestock Water, Inefficient Energy Use. Associated Practices: Critical Area Planting (342), Pumping Plant (533), Watering Facility (614), and Water Harvesting Catchment (636).

Before Situation:

Water supplies need to be conveyed through pipelines for use by livestock or wildlife.

After Situation:

Pipeline(s) convey and/or distribute water to storage and/or watering facilities, for use by livestock or wildlife.

Feature Measure: Length of Pipe

Scenario Unit: Feet

Scenario Typical Size: 400.0

Scenario Total Cost: $732.90

Scenario Cost/Unit: $1.83

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Fuser for HDPE Pipe	1383	Fusing machine for 1 to 12 inch diameter HDPE pipe joints. Equipment costs only. Does not include labor.	Hours	$21.98	2	$43.96
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	4	$92.72
Materials						
Pipe, HDPE, smooth wall, weight priced	1379	High Density Polyethylene (HDPE) compound manufactured into smooth wall pipe. Materials only.	Pound	$3.00	152	$456.00
Mobilization						
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	$70.11	2	$140.22

Practice: 520 - Pond Sealing or Lining, Compacted Soil Treatment

Scenario #75 - Soil Dispersant - Uncovered

Scenario Description:

Construction of a compacted soil liner, treated with a soil dispersant, to reduce seepage from ponds or waste storage impoundment structures. Practice implementation includes incorporation of the dispersant with the soil liner under proper moisture conditions and compaction to the designed liner thickness. Practice implementation may require filter compatibility with the subgrade (graded filter or geotextile). Associated practice PS378, PS313.

Before Situation:

In-place soils at site exhibit seepage rates in excess of acceptable limits. Soils are suitable for treatment with dispersants.

After Situation:

Water conservation and environmental protection provided by limiting seepage losses from ponds or waste storage impoundments.

Feature Measure: Volume of Liner Material

Scenario Unit: Cubic Yards

Scenario Typical Size: 1,613.0

Scenario Total Cost: $11,571.96

Scenario Cost/Unit: $7.17

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Earthfill, Roller Compacted	49	Earthfill, roller or machine compacted, includes equipment and labor	Cubic Yards	$4.42	1613	$7,129.46
Tractor, agricultural, 120 HP	962	Agricultural tractor with horsepower range of 90 to 140. Equipment and power unit costs. Labor not included.	Hours	$51.52	6	$309.12
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	8	$202.48
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	8	$334.24
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	2	$186.08
Materials						
Soil Dispersant	1490	Soil Amendment (tetrasodium pyrophosphate (TSPP), sodium tripolyphosphate (STPP), or soda ash or approved equivalent)	Ton	$483.26	6.53	$3,155.69
Mobilization						
Mobilization, Material, distance > 50 miles	1043	Mobilization cost of materials for special cases where the distance from the supplier delivery point to the job site exceeds 50 miles. The costs for shipping by UPS or bulk freight shipping to a location within 50 miles of the job site have already been included in the component price.	Dollars	$1.00	1	$1.00
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 520 - Pond Sealing or Lining, Compacted Soil Treatment

Scenario #79 - Material haul < 1 mile

Scenario Description:

Construction of a compacted soil liner, treated with compacted clay, to reduce seepage from ponds or waste storage impoundment structures. Practice implementation includes compaction of the soil liner under proper moisture conditions to the designed liner thickness, and soil cover to protect the finished liner. Material haul < 1 mile. Associated practices include PS378, PS313, & other waste water impoundments.

Before Situation:

In-place soils at site exhibit seepage rates in excess of acceptable limits. An adequate quantity of soil suitable for constructing a clay liner without amendments is available at an econical haul distance. Material haul < 1 mile.

After Situation:

Water conservation and environmental protection provided by limiting seepage losses from ponds or waste storage impoundments.

Feature Measure: Volume of Liner Material (including

Scenario Unit: Cubic Yards

Scenario Typical Size: 2,420.0

Scenario Total Cost: $26,363.01

Scenario Cost/Unit: $10.89

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Earthfill, Roller Compacted	49	Earthfill, roller or machine compacted, includes equipment and labor	Cubic Yards	$4.42	2420	$10,696.40
Excavation, clay, large equipment, 1500 ft	1217	Bulk excavation of clay with scrapers with average haul distance of 1500 feet. Includes equipment and labor.	Cubic Yards	$5.92	1613	$9,548.96
Excavation, common earth, large equipment, 150 ft	1223	Bulk excavation of common earth including sand and gravel with dozer >100 HP with average push distance of 150 feet. Includes equipment and labor.	Cubic Yards	$3.85	807	$3,106.95
Labor						
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	14	$1,302.56
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$484.75	3	$1,454.25

Practice: 521 - Pond Sealing or Lining, Geomembrane or Geosynthetic Clay Liner

Scenario #4 - Flexible Membrane - Covered with liner drainage or venting

Scenario Description:

Installation of a flexible geosynthetic membrane liner to reduce seepage from ponds or waste storage impoundment structures. Practice implementation includes 1 foot of soil cover for liner protection, a geotextile or soil cushion to protect liner from subgrade damage, and liner drainage or venting. Associated practices include PS378 Pond, PS313 Waste Storage Facility.

Before Situation:

In-place soils at site exhibit seepage rates in excess of acceptable limits.

After Situation:

Water conservation and enviromental protection provided by limiting seepage losses from ponds or waste storage impoundments.

Feature Measure: Surface area of Liner Material (incl

Scenario Unit: Square Yard

Scenario Typical Size: 2,420.0

Scenario Total Cost: $41,990.22

Scenario Cost/Unit: $17.35

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Geotextile, woven	42	Woven Geotextile Fabric. Includes materials, equipment and labor	Square Yard	$1.18	2420	$2,855.60
Earthfill, Roller Compacted	49	Earthfill, roller or machine compacted, includes equipment and labor	Cubic Yards	$4.42	807	$3,566.94
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	40	$1,202.00
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	32	$2,977.28
Materials						
Synthetic Liner, 40 mil	1387	Synthetic 40 mil HDPE, LLDPE, EPDM, etc membrane liner material. Includes materials and shipping only.	Square Yard	$6.49	2420	$15,705.80
Geonet	1778	Geosynthetic drainage liner, typically HDPE of 300 mil thickness. Includes materials and shipping only.	Square Yard	$6.48	2420	$15,681.60
Mobilization						
Mobilization, Material, distance > 50 miles	1043	Mobilization cost of materials for special cases where the distance from the supplier delivery point to the job site exceeds 50 miles. The costs for shipping by UPS or bulk freight shipping to a location within 50 miles of the job site have already been included in the component price.	Dollars	$1.00	1	$1.00

Practice: 527 - Sinkhole Treatment

Scenario #5 - Circular Opening

Scenario Description:

Installing a sinkhole protection cap on a circular sinkhole with a vertical opening. The area around a sinkhole may be unstable and slippage or subsidence may occur. Sinkholes present fall hazards to people and livestock. Sinkholes are direct conduits to groundwater. Nutrient or chemical laden runoff may flow directly into sinkholes polluting groundwater. Sinkholes are routinely used for waste pits by landowners. Critical Area Planting (342), Fence (382), Vertical Drain (630), Obstruction Removal (500) & Filter Strips (393) may be associated practices for this scenario.

Before Situation:

Open sinkhole poses threat to people, livestock, & wildlife. Absence of buffer allows nutrients and chemicals to flow into the open sinkhole untreated. Trash & Debris have accumulated in the sinkhole from years of use as a waste pit. Typical Sinkhole treated is 30' Dia & 8' depth

After Situation:

Debris removed and properly disposed of off site. The sinkhole protection cap installation resolves the safety issue for people, livestock, & wildlife. The sinkhole is filled with porous material so as not to disrupt the hydrology of the karst system while filtering runoff.

Feature Measure: SF of opening

Scenario Unit: Square Feet

Scenario Typical Size: 1,000.0

Scenario Total Cost: $9,692.36

Scenario Cost/Unit: $9.69

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Concrete, CIP, formed reinforced	38	Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yards	$415.80	10	$4,158.00
Geotextile, woven	42	Woven Geotextile Fabric. Includes materials, equipment and labor	Square Yard	$1.18	140	$165.20
Excavation, Common Earth, side cast, small equipment	48	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic Yards	$2.24	130	$291.20
Earthfill, Dumped and Spread	51	Earthfill, dumped and spread without compaction effort, includes equipment and labor	Cubic Yards	$3.61	70	$252.70
Dozer, 80 HP	929	Track mounted Dozer with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$54.51	4	$218.04
Hydraulic Excavator, 1 CY	931	Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included.	Hours	$111.83	10	$1,118.30
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	4	$92.72
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	14	$376.60
Materials						
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic Yards	$39.34	36	$1,416.24
Rock Riprap, graded, angular, material and shipping	1200	Graded Rock Riprap for all gradation ranges. Includes materials and delivery only.	Ton	$38.20	18	$687.60
Straw	1237	Small grain straw (non organic and certified organic). Includes materials only.	Ton	$73.06	6	$438.36
Pipe, PVC, Schedule 80, Perforated	1408	Materials: 12 inch Diameter schedule 80 perforated pvc pipe - ASTM D1785	Feet	$47.74	10	$477.40

Practice: 528 - Prescribed Grazing

Scenario #7 - Medium Intensity 3-7 Day Rotation Frequency

Scenario Description:

Design and implementation of a grazing system that will enhance pasture condition and ecosystem function as well as optimize efficiency and economic return through monitoring (ex:photo points, stubble height after grazing, etc) & record keeping. Livestock graze each pasture from three (3) to seven (7) days in rotation. Rotation is based on monitoring livestock demand and supply.

Before Situation:

Current grazing system exhibits undesirable and inefficient use of forage plants and such use has a negative impact on pasture condition, as well as soil and water resources. Inefficient use results in overgrazing, spot grazing, livestock trailing, concentration areas, uncontrolled access to streams and ponds, ephemeral erosion, gully erosion, streambank erosion. Stocking rates are higher than the current level of production and efficiency of use can support without management changes. There is currently no monitoring plan in place to evaluate change on the landscape.

After Situation:

Typical scenario based on a grazing system consisting of a 30 animal unit cow/calf operation (including bull(s), calves and replacement females) on 80 acres. Scenario results in an increase (above the low intensity option) in labor required to complete the following activities: farm labor to mow or clip pastures; monitor and measure forage growth; complete record keeping; analyze plant growth and animal performance; and make decisions or other management techniques. Management techniques reduce the use of supplemental feed, control weeds, and reduce energy requirements. Prescribed grazing system is designed to protect the health and vigor of the plant communities that are in place. Livestock are managed in a way that enhances pasture condition and function through protection of sensitive areas and efficient harvest of forage resources. Runoff, sediment and nutrient loss are reduced by improving plant density, diversity and percent cover. Grazing system success is evaluated through short term monitoring and maintaining grazing stop height requirements. Acquisition of technical knowledge needed to effectively implement prescribed grazing. Costs and activities are typical for conventional and organic producers. Associated Practices: (511) Forage Harvest Management, (512) Forage and Biomass Planting, (590) Nutrient Management, (595) Integrated Pest Management, (561) Heavy Use Area Protection, (382) Fence, (614) Watering Facility, (378) Pond, (642) Water Well, (314) Brush Management, (315) Herbaceous Weed Control, (338) Prescribed Burning.

Feature Measure: <Unknown>

Scenario Unit: Acres

Scenario Typical Size: 80.0

Scenario Total Cost: $3,268.86

Scenario Cost/Unit: $40.86

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Acquisition of Technical Knowledge						
Training, Workshops	294	Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants.	Each	$100.83	1	$100.83
Equipment Installation						
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hours	$18.07	20	$361.40
Rangeland/grassland field monitoring kit	967	Miscellaneous tools needed to complete rangeland/grassland monitoring. Materials may include camera, clippers, plot frame, scale, tape measure, etc. Includes materials and shipping only.	Each	$50.73	1	$50.73
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	30	$901.50
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	80	$1,854.40

Practice: 528 - Prescribed Grazing

Scenario #8 - High Intensity <3 Day Rotation Frequency

Scenario Description:

Design and implementation of a grazing system that will enhance pasture condition and ecosystem function as well as optimize efficiency and economic return through monitoring (ex:photo points, stubble height after grazing, etc) & record keeping. Livestock graze each pature/paddock from no more than three (3) days in rotation. Rotation is based on monitoring livestock demand and supply.

Before Situation:

Current grazing system exhibits undesirable and inefficient use of forage plants and such use has a negative impact on pasture condition, as well as soil and water resources. Inefficient use results in overgrazing, spot grazing, livestock trailing, concentration areas, uncontrolled access to streams and ponds, ephemeral erosion, gully erosion, streambank erosion. Stocking rates are higher than the current level of production and efficiency of use can support without management changes. There is currently no monitoring plan in place to evaluate change on the landscape.

After Situation:

Typical scenario based on a grazing system consisting of a 30 animal unit cow/calf operation (including bull(s), calves and replacement females) on 60 acres. Scenario results in an increase (above the medium intensity option) in labor required to complete the following activities: farm labor to mow or clip pastures; monitor stop grazing heights and measure forage growth; complete record keeping; analyze plant growth and animal performance; and make decisions or other management techniques. Management techniques reduce the use of supplemental feed, control weeds, and reduce energy requirements. Prescribed grazing system is designed to protect the health and vigor of the plant communities that are in place. Livestock are managed in a way that enhances pasture condition and function through protection of sensitive areas and efficient harvest of forage resources. Runoff, sediment and nutrient loss are reduced by improving plant density, diversity and percent cover. Grazing system success is evaluated through short term monitoring and maintaining grazing stop height requirements. Acquisition of technical knowledge needed to effectively implement prescribed grazing. Costs and activities are typical for conventional and organic producers. Associated Practices: (511) Forage Harvest Management, (512) Forage and Biomass Planting, (590) Nutrient Management, (595) Integrated Pest Management, (561) Heavy Use Area Protection, (382) Fence, (614) Watering Facility, (378) Pond, (642) Water Well, (314) Brush Management, (315) Herbaceous Weed Control, (338) Prescribed Burning.

Feature Measure: <Unknown>

Scenario Unit: Acres

Scenario Typical Size: 60.0

Scenario Total Cost: $4,363.91

Scenario Cost/Unit: $72.73

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Acquisition of Technical Knowledge						
Training, Workshops	294	Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants.	Each	$100.83	1	$100.83
Equipment Installation						
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hours	$18.07	30	$542.10
Rangeland/grassland field monitoring kit	967	Miscellaneous tools needed to complete rangeland/grassland monitoring. Materials may include camera, clippers, plot frame, scale, tape measure, etc. Includes materials and shipping only.	Each	$50.73	1	$50.73
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	45	$1,352.25
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	100	$2,318.00

Practice: 528 - Prescribed Grazing

Scenario #9 - Pasture Deferment - Long Term

Scenario Description:

Defer the pasture for 210 days and up to a growing season to provide rest to specific plants such as native grasses. The rest is needed to provide long-term rest to specific plants that would typically decline in plant health, vigor, and availability due to overgrazing. The importance of long-term deferment is critical to the long term success of the plants and meeting the desired life span.

Before Situation:

The producer will typically graze the plants before they have sufficient time to become established. Therefore, any plants that emerges will be susceptible to early grazing pressure and possibly overgrazing. Existing herbacesous vegetation will compete against the desired plants and become dominant. The lack of cover reduces the wildlife habitat. No monitoring or record keeping is currently being completed. Plants not adapted or suited, inadequate wildlife cover, soil erosion, and inadequate plant productivity and vigor are common resource concerns.

After Situation:

Scenario describes activities completed to restrict grazing for a defined period during the normal grazing period to provide rest to targeted plants. Activities include moving livestock to alternate locations, sampling and analyzing pasture condition, recordkeeping. Forgone Income used represents the acreage of usable forage not utilized during the deferment period as a proportion of the grazing season. Typical size of 120 acre pasture operation with 30 animal units where 50% of the acreage (or 60 acres) is defered from grazing for 210 days. Costs and activities are typical for conventional and organic producers. Associated Practices: (511) Forage Harvest Management, (512) Forage and Biomass Planting, (590) Nutrient Management, (595) Integrated Pest Management, (561) Heavy Use Area Protection, (382) Fence, (614) Watering Facility, (378) Pond, (642) Water Well, (314) Brush Management, (315) Herbaceous Weed Control, (338) Prescribed Burning.

Feature Measure: <Unknown>

Scenario Unit: Acres

Scenario Typical Size: 60.0

Scenario Total Cost: $3,217.49

Scenario Cost/Unit: $53.62

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	8	$189.92
Trucking, moving livestock to new paddock	961	Livestock transportation costs to implement a grazing rotation using a gooseneck trailer 6 ft. 8 inch x 24 feet. Includes equipment, power unit and labor costs.	Mile	$3.04	50	$152.00
Rangeland/grassland field monitoring kit	967	Miscellaneous tools needed to complete rangeland/grassland monitoring. Materials may include camera, clippers, plot frame, scale, tape measure, etc. Includes materials and shipping only.	Each	$50.73	1	$50.73
Foregone Income						
FI, Grazing AUMs	2079	Grazing is the Primary Land Use	Animal Unit Month	$19.44	101.5	$1,973.16
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	16	$480.80
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	16	$370.88

Practice: 533 - Pumping Plant

Scenario #1 - Electric-Powered Pump Less than or Equal to 5 HP , no pressure tank

Scenario Description:

A 2.5 Hp submersible electric-powered pump is installed in a well or structure; or a close-coupled 2.5 Hp electric-powered centrifugal pump is mounted on a platform. It is used for watering livestock as part of a prescribed grazing system; or for pressurizing a small irrigation system; or for transferring liquid waste in a waste transfer system. Resource Concerns: Livestock Production Limitation - Inadequate livestock water; Water Quality degradation - Excess nutrients in surface and ground waters; Insufficient water - Inefficient use of irrigation water. Associated Practices include: 374 - Farmstead Energy Improvement; 430 - Irrigation Pipeline; 441 - Irrigation System, Microirrigation; 449 - Irrigation Water Management; 516 - Livestock Pipeline; 313 - Waste Storage Facility; 634 - Waste Transfer; and 614 - Watering Facility.

Before Situation:

Livestock: The present gravity flow system is inadequate to provide the proper flow rate for a prescribed grazing system. Irrigation: Available water is at an insufficient pressure to allow for even distribution of water. Waste Transfer: Contaminated water needs to be moved to a containment facility.

After Situation:

Livestock: Water is transferred at a sufficient rate and pressure to meet the requirements of a prescribed grazing system. Irrigation: A properly designed pump is installed to improve irrigation efficiency and reduce energy usage. Waste Transfer: Liquid wastes that have been collected through a waste transfer system are now efficiently transferred to an appropriate treatment or storage facility.

Feature Measure: Pump Power Requirement

Scenario Unit: Brake Horse Power

Scenario Typical Size: 2.5

Scenario Total Cost: $3,810.57

Scenario Cost/Unit: $1,524.23

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Concrete, CIP, slab on grade, reinforced	37	Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yards	$315.01	1	$315.01
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	1	$23.74
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	6	$139.08
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	6	$250.68
Materials						
Pump, <= 5 HP, pump and motor, fixed cost portion	1009	Fixed cost portion of a pump less than or equal to 5 HP pump and motor. This portion is the base cost and is not dependent on horsepower. The total cost of any pump will include this fixed cost plus a variable cost portion. Includes the motor and controls for materials and shipping only.	Each	$1,075.23	2.5	$2,688.08
Pump, <= 5 HP, pump and motor, variable cost portion	1010	Variable cost portion of a pump less than or equal to 5 HP pump and motor. This portion is dependent on the total horsepower for the pump. The total cost of any pump will include this variable cost plus the fixed cost portion. Includes the motor and controls for materials and shipping only.	Horsepower	$393.98	1	$393.98

Practice: 533 - Pumping Plant

Scenario #2 - Electric-Powered Pump Less than or Equal to 5 HP, with pressure tank

Scenario Description:

A 1 Hp submersible electric-powered pump is installed in a well or structure; or a close-coupled 1 Hp electric-powered centrifugal pump is mounted on a platform. It is used for watering livestock as part of a prescribed grazing system; or for pressurizing a small irrigation system. Resource Concerns: Livestock Production Limitation - Inadequate livestock water; Insufficient water - Inefficient use of irrigation water. Associated Practices include: 374 - Farmstead Energy Improvement; 430 - Irrigation Pipeline; 441 - Irrigation System, Microirrigation; 449 - Irrigation Water Management; 516 - Livestock Pipeline.

Before Situation:

Livestock: The present gravity flow system is inadequate to provide the proper flow rate for a prescribed grazing system. Irrigation: Available water is at an insufficient pressure to allow for even distribution of water.

After Situation:

Livestock: Water is transferred at a sufficient rate and pressure to meet the requirements of a prescribed grazing system. Irrigation: A properly designed pump is installed to improve irrigation efficiency and reduce energy usage.

Feature Measure: Pump Power Requirement

Scenario Unit: Brake Horse Power

Scenario Typical Size: 1.0

Scenario Total Cost: $2,362.06

Scenario Cost/Unit: $2,362.06

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Concrete, CIP, slab on grade, reinforced	37	Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yards	$315.01	0.25	$78.75
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	2	$47.48
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	6	$139.08
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	6	$250.68
Materials						
Pump, <= 5 HP, pump and motor, fixed cost portion	1009	Fixed cost portion of a pump less than or equal to 5 HP pump and motor. This portion is the base cost and is not dependent on horsepower. The total cost of any pump will include this fixed cost plus a variable cost portion. Includes the motor and controls for materials and shipping only.	Each	$1,075.23	1	$1,075.23
Pump, <= 5 HP, pump and motor, variable cost portion	1010	Variable cost portion of a pump less than or equal to 5 HP pump and motor. This portion is dependent on the total horsepower for the pump. The total cost of any pump will include this variable cost plus the fixed cost portion. Includes the motor and controls for materials and shipping only.	Horsepower	$393.98	1	$393.98
Pressure Tank, 40 gallon	1038	Pressure Tank, 40 gallon. Includes materials and shipping only.	Each	$376.86	1	$376.86

Practice: 533 - Pumping Plant

Scenario #3 - Electric-Powered Pump >5 HP<=30 hp, with L-pipe

Scenario Description:

This is a close-coupled, 3-phase, 20 Hp electric-powered mixed-flow pump mounted in a steel L-pipe for large microirrigation (1,000 gpm and 30 psi) system or a large-sized surface irrigation system (1,200 gpm) or a medium-sized (1,000 gpm and 25 psi) waste transfer system. . The pump lifts water out of a stream, bayou, or tailwater pit through a discharge pipe into an irrigation reservoir directly or irrigation pipeline with either a dog-leg or closed stand pipe connection. Resource Concerns: Water Quality degradation - Excess nutrients in surface and ground waters; Insufficient water - Inefficient use of irrigation water. Associated Practices include: 374 - Farmstead Energy Improvement; 430 - Irrigation Pipeline; 441 - Irrigation System, Microirrigation; 442 - Irrigation System, Sprinkler; 449 - Irrigation Water Management; 313 - Waste Storage Facility; and 634 - Waste Transfer.

Before Situation:

Irrigation: An existing irrigation system employs an inefficient, improperly sized pump that prevents efficient water application resulting in water loss and high energy use or is currently using ground water wells as irrigation supply.

After Situation:

Irrigation: A properly designed and efficient pumping plant is installed, reducing energy use and improving irrigation efficiency.

Feature Measure: Pump Power Requirement

Scenario Unit: Brake Horse Power

Scenario Typical Size: 20.0

Scenario Total Cost: $23,455.06

Scenario Cost/Unit: $1,172.75

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Concrete, CIP, slab on grade, reinforced	37	Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yards	$315.01	2	$630.02
Hydraulic Excavator, 1 CY	931	Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included.	Hours	$111.83	8	$894.64
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	56	$1,329.44
Portable Welder	1407	Portable field welder. Equipment only. Labor not included.	Hours	$19.98	16	$319.68
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	8	$240.40
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	56	$1,298.08
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	8	$215.20
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	56	$2,339.68
Materials						
Pump, > 5 HP to 30 HP, pump and motor, fixed cost portion	1011	Fixed cost portion of a pump between 5 and 30 HP, including the pump and motor. This portion is a base cost for the pump and is not dependent on horsepower. The total cost will include this fixed cost plus a variable cost portion. Includes material and shipping only.	Each	$2,636.65	1	$2,636.65
Pump, > 5 HP to 30 HP, pump and motor, variable cost portion	1012	Variable cost portion of a pump between 5 and 30 HP, including the pump and motor. This portion is dependent on the total horsepower for the pump. The total cost will include this variable cost plus a fixed cost portion. Includes material and shipping only.	Horsepower	$209.92	20	$4,198.40
Pipe, Steel, 12 in., Std Wt, USED	1356	Materials: - USED - 12 inch - Steel Std Wt	Feet	$30.63	20	$612.60
Pipe, Steel, 20 in., Std Wt, USED	1359	Materials: - USED - 20 inch - Steel Std Wt	Feet	$60.57	40	$2,422.80
Pipe, Steel, 24 in., Std Wt, USED	1360	Materials: - USED - 24 inch - Steel Std Wt	Feet	$65.02	14	$910.28
Swing Check Valve, metal, 12 in.	2082	12 inch swing check valve for back flow prevention, ductile iron metal body with flange mount and lever shaft. Materials and shipping only.	Each	$5,153.30	1	$5,153.30
Mobilization						

Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 533 - Pumping Plant

Scenario #4 - Electric-Powered Pump >30 hp <=75, with L-pipe

Scenario Description:

This is a close-coupled, 3-phase, 50 Hp electric-powered mixed-flow pump mounted in a steel L-pipe for large microirrigation (2,000 gpm and 30 psi) system or a very large-sized surface irrigation system (3,000 gpm) or a large-sized (2,000 gpm and 25 psi) waste transfer system. The pump lifts water out of a stream, bayou, or tailwater pit through a discharge pipe into an irrigation reservoir directly or irrigation pipeline with either a dog-leg or closed stand pipe connection. This is a close-coupled, 3-phase, 50 Hp electric-powered centrifugal pump mounted on a platform for pressurizing a large-sized 1,000 gpm and 50 psi) sprinkler or very large microirrigation (2,000 gpm and 30 psi) system or a very large-sized surface irrigation system (3,000 gpm) or a large-sized (2,000 gpm and 25 psi) waste transfer system. Resource Concerns: Water Quality degradation - Excess nutrients in surface and ground waters; Insufficient water - Inefficient use of irrigation water. Associated Practices include: 374 - Farmstead Energy Improvement; 430 - Irrigation Pipeline; 441 - Irrigation System, Microirrigation; 442 - Irrigation System, Sprinkler; 449 - Irrigation Water Management; 313 - Waste Storage Facility; and 634 - Waste Transfer.

Before Situation:

Irrigation: An existing irrigation system employs an inefficient, improperly sized pump that prevents efficient water application resulting in water loss and high energy use or is currently using ground water wells as irrigation supply.

After Situation:

A properly designed and efficient pumping plant is installed, reducing energy use and improving irrigation efficiency

Feature Measure: Pump Power Requirement

Scenario Unit: Horsepower

Scenario Typical Size: 50.0

Scenario Total Cost: $37,876.01

Scenario Cost/Unit: $757.52

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Concrete, CIP, slab on grade, reinforced	37	Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yards	$315.01	2	$630.02
Hydraulic Excavator, 1 CY	931	Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included.	Hours	$111.83	16	$1,789.28
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	56	$1,329.44
Portable Welder	1407	Portable field welder. Equipment only. Labor not included.	Hours	$19.98	16	$319.68
Crane, truck mounted, hydraulic, 12 ton	1734	12 ton capacity truck mounted hydraulic crane. Equipment cost only.	Hours	$63.90	16	$1,022.40
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	56	$1,682.80
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	16	$370.88
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	24	$645.60
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	56	$2,339.68
Materials						
Pump, > 30 HP, pump and motor, fixed cost portion	1013	Fixed cost portion of a pump greater than 30 HP, including the pump and motor. This portion is a base cost for the pump and is not dependent on horsepower. The total cost will include this fixed cost plus a variable cost portion. Includes material and shipping only.	Each	$3,455.11	1	$3,455.11
Pump, >30 HP, Pump and motor, variable cost portion	1014	Variable cost portion of a pump greater than 30 HP, including the pump and motor. This portion is dependent on the total horsepower for the pump. The total cost will include this variable cost plus a fixed cost portion. Includes material and shipping only.	Horsepower	$205.86	50	$10,293.00
Pipe, Steel, 16 in., Std Wt, USED	1357	Materials: - USED - 16 inch - Steel Std Wt	Feet	$53.29	20	$1,065.80
Pipe, Steel, 24 in., Std Wt, USED	1360	Materials: - USED - 24 inch - Steel Std Wt	Feet	$65.02	40	$2,600.80

Pipe, Steel, 30 in., Std Wt, USED	1361	Materials: - USED - 30 inch - Steel Std Wt	Feet	$103.01	14	$1,442.14
Swing Check Valve, metal, 16 in.	2084	16 inch swing check valve for back flow prevention, ductile iron metal body with flange mount and lever shaft. Materials and shipping only.	Each	$8,635.49	1	$8,635.49
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 533 - Pumping Plant

Scenario #5 - Electric-Powered Pump >75 HP, with L-Pipe

Scenario Description:

This is a close-coupled, 3-phase, 100 Hp electric-powered mixed-flow pump mounted in a steel L-pipe for a very large-sized surface irrigation system (5,000 gpm) . The pump lifts water out of a stream, bayou, or tailwater pit through a discharge pipe into an irrigation reservoir directly or irrigation pipeline with either a dog-leg or closed stand pipe connection. Resource Concerns: Water Quality degradation - Excess nutrients in surface and ground waters; Insufficient water - Inefficient use of irrigation water. Associated Practices include: 374 - Farmstead Energy Improvement; 430 - Irrigation Pipeline; 441 - Irrigation System, Microirrigation; 442 - Irrigation System, Sprinkler; 449 - Irrigation Water Management; 313 - Waste Storage Facility; and 634 - Waste Transfer.

Before Situation:

Irrigation: An existing irrigation system employs an inefficient, improperly sized pump that prevents efficient water application resulting in water loss and high energy use or is currently using ground water wells as irrigation supply.

After Situation:

Irrigation: A properly designed and efficient pumping plant is installed, reducing energy use and improving irrigation efficiency.

Feature Measure: Pump Power Requirement

Scenario Unit: Brake Horse Power

Scenario Typical Size: 100.0

Scenario Total Cost: $62,767.00

Scenario Cost/Unit: $627.67

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Concrete, CIP, slab on grade, reinforced	37	Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yards	$315.01	4	$1,260.04
Hydraulic Excavator, 1 CY	931	Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included.	Hours	$111.83	8	$894.64
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	56	$1,329.44
Portable Welder	1407	Portable field welder. Equipment only. Labor not included.	Hours	$19.98	16	$319.68
Crane, truck mounted, hydraulic, 12 ton	1734	12 ton capacity truck mounted hydraulic crane. Equipment cost only.	Hours	$63.90	16	$1,022.40
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	12	$360.60
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	56	$1,298.08
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	12	$322.80
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	56	$2,339.68
Materials						
Pump, > 30 HP, pump and motor, fixed cost portion	1013	Fixed cost portion of a pump greater than 30 HP, including the pump and motor. This portion is a base cost for the pump and is not dependent on horsepower. The total cost will include this fixed cost plus a variable cost portion. Includes material and shipping only.	Each	$3,455.11	1	$3,455.11
Pump, >30 HP, Pump and motor, variable cost portion	1014	Variable cost portion of a pump greater than 30 HP, including the pump and motor. This portion is dependent on the total horsepower for the pump. The total cost will include this variable cost plus a fixed cost portion. Includes material and shipping only.	Horsepower	$205.86	100	$20,586.00
Pipe, Steel, 20 in., Std Wt, USED	1359	Materials: - USED - 20 inch - Steel Std Wt	Feet	$60.57	20	$1,211.40
Pipe, Steel, 36 in., Std Wt, USED	1362	Materials: - USED - 36 inch - Steel Std Wt	Feet	$145.73	50	$7,286.50
Pipe, Steel, 42 in., Std Wt, USED	1363	Materials: - USED - 42 inch - Steel Std Wt	Feet	$211.33	14	$2,958.62
Swing Check Valve, metal, 20 in.	2086	20 inch swing check valve for back flow prevention, ductile iron metal body with flange mount and lever shaft. Materials and shipping only.	Each	$17,868.12	1	$17,868.12

Mobilization

Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 533 - Pumping Plant

Scenario #6 - Electric-Powered Pump >5 HP<=30 hp

Scenario Description:

This is a close-coupled, 3-phase, 20 Hp electric-powered centrifugal pump mounted on a platform for pressurizing a medium-sized (500 gpm and 50 psi) sprinkler or large microirrigation (1,000 gpm and 30 psi) system or a large-sized surface irrigation system (1,500 gpm) or a medium-sized (1,000 gpm and 25 psi) waste transfer system. Resource Concerns: Water Quality degradation - Excess nutrients in surface and ground waters; Insufficient water - Inefficient use of irrigation water. Associated Practices include: 374 - Farmstead Energy Improvement; 430 - Irrigation Pipeline; 441 - Irrigation System, Microirrigation; 442 - Irrigation System, Sprinkler; 449 - Irrigation Water Management; 313 - Waste Storage Facility; and 634 - Waste Transfer.

Before Situation:

Irrigation: An existing irrigation system employs an inefficient, improperly sized pump that prevents efficient water application resulting in water loss and high energy use.

After Situation:

Irrigation: A properly designed and efficient pumping plant is installed, reducing energy use and improving irrigation efficiency.

Feature Measure: Pump Power Requirement

Scenario Unit: Brake Horse Power

Scenario Typical Size: 20.0

Scenario Total Cost: $13,394.32

Scenario Cost/Unit: $669.72

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Concrete, CIP, slab on grade, reinforced	37	Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yards	$315.01	2	$630.02
Backhoe, 80 HP	926	Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$31.57	8	$252.56
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	56	$1,329.44
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	8	$240.40
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	56	$1,298.08
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	8	$215.20
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	56	$2,339.68
Materials						
Pump, > 5 HP to 30 HP, pump and motor, fixed cost portion	1011	Fixed cost portion of a pump between 5 and 30 HP, including the pump and motor. This portion is a base cost for the pump and is not dependent on horsepower. The total cost will include this fixed cost plus a variable cost portion. Includes material and shipping only.	Each	$2,636.65	1	$2,636.65
Pump, > 5 HP to 30 HP, pump and motor, variable cost portion	1012	Variable cost portion of a pump between 5 and 30 HP, including the pump and motor. This portion is dependent on the total horsepower for the pump. The total cost will include this variable cost plus a fixed cost portion. Includes material and shipping only.	Horsepower	$209.92	20	$4,198.40
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 533 - Pumping Plant

Scenario #7 - Electric-Powered Pump >30 hp <=75

Scenario Description:

This is a close-coupled, 3-phase, 50 Hp electric-powered centrifugal pump mounted on a platform for pressurizing a large-sized 1,000 gpm and 50 psi) sprinkler or very large microirrigation (2,000 gpm and 30 psi) system or a very large-sized surface irrigation system (3,000 gpm) or a large-sized (2,000 gpm and 25 psi) waste transfer system. Resource Concerns: Water Quality degradation - Excess nutrients in surface and ground waters; Insufficient water - Inefficient use of irrigation water. Associated Practices include: 374 - Farmstead Energy Improvement; 430 - Irrigation Pipeline; 441 - Irrigation System, Microirrigation; 442 - Irrigation System, Sprinkler; 449 - Irrigation Water Management; 313 - Waste Storage Facility; and 634 - Waste Transfer.

Before Situation:

Irrigation: An existing irrigation system employs an inefficient, improperly sized pump that prevents efficient water application resulting in water loss and high energy use.

After Situation:

A properly designed and efficient pumping plant is installed, reducing energy use and improving irrigation efficiency

Feature Measure: <Unknown>

Scenario Unit: Horsepower

Scenario Typical Size: 50.0

Scenario Total Cost: $21,505.54

Scenario Cost/Unit: $430.11

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Concrete, CIP, slab on grade, reinforced	37	Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yards	$315.01	2	$630.02
Backhoe, 80 HP	926	Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$31.57	16	$505.12
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	56	$1,329.44
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	56	$1,682.80
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	16	$370.88
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	24	$645.60
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	56	$2,339.68
Materials						
Pump, > 30 HP, pump and motor, fixed cost portion	1013	Fixed cost portion of a pump greater than 30 HP, including the pump and motor. This portion is a base cost for the pump and is not dependent on horsepower. The total cost will include this fixed cost plus a variable cost portion. Includes material and shipping only.	Each	$3,455.11	1	$3,455.11
Pump, >30 HP, Pump and motor, variable cost portion	1014	Variable cost portion of a pump greater than 30 HP, including the pump and motor. This portion is dependent on the total horsepower for the pump. The total cost will include this variable cost plus a fixed cost portion. Includes material and shipping only.	Horsepower	$205.86	50	$10,293.00
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 533 - Pumping Plant

Scenario #8 - Electric-Powered Pump >75hp

Scenario Description:

This is a close-coupled, 3-phase, 100 Hp electric-powered centrifugal pump mounted on a platform for pressurizing a medium-sized (500 gpm and 50 psi) sprinkler or large microirrigation (1,000 gpm and 30 psi) system or a large-sized surface irrigation system (1,500 gpm) or a medium-sized (1,000 gpm and 25 psi) waste transfer system. Resource Concerns: Water Quality degradation - Excess nutrients in surface and ground waters; Insufficient water - Inefficient use of irrigation water. Associated Practices include: 374 - Farmstead Energy Improvement; 430 - Irrigation Pipeline; 441 - Irrigation System, Microirrigation; 442 - Irrigation System, Sprinkler; 449 - Irrigation Water Management; 313 - Waste Storage Facility; and 634 - Waste Transfer.

Before Situation:

Irrigation: An existing irrigation system employs an inefficient, improperly sized pump that prevents efficient water application resulting in water loss and high energy use.

After Situation:

Irrigation: A properly designed and efficient pumping plant is installed, reducing energy use and improving irrigation efficiency.

Feature Measure: Pump Power Requirement

Scenario Unit: Brake Horse Power

Scenario Typical Size: 100.0

Scenario Total Cost: $31,458.20

Scenario Cost/Unit: $314.58

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Concrete, CIP, slab on grade, reinforced	37	Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yards	$315.01	4	$1,260.04
Backhoe, 80 HP	926	Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$31.57	8	$252.56
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	56	$1,329.44
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	12	$360.60
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	56	$1,298.08
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	12	$322.80
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	56	$2,339.68
Materials						
Pump, > 30 HP, pump and motor, fixed cost portion	1013	Fixed cost portion of a pump greater than 30 HP, including the pump and motor. This portion is a base cost for the pump and is not dependent on horsepower. The total cost will include this fixed cost plus a variable cost portion. Includes material and shipping only.	Each	$3,455.11	1	$3,455.11
Pump, >30 HP, Pump and motor, variable cost portion	1014	Variable cost portion of a pump greater than 30 HP, including the pump and motor. This portion is dependent on the total horsepower for the pump. The total cost will include this variable cost plus a fixed cost portion. Includes material and shipping only.	Horsepower	$205.86	100	$20,586.00
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 533 - Pumping Plant

Scenario #9 - Variable Frequency Drive

Scenario Description:

This is an installation of electrical and electronic components designed to vary the frequency of the voltage to an electric motor and thus the ability to vary the speed of the motor. This directly affects pressure and flowrate. This also could give the operator the flexibility to operate several systems separately or at the same time. Resource concerns: Insufficient water - Inefficient use of irrigation water; Inefficient energy use - Equipment and facilities and Farming/ranching practices and field operations. Associated Practices: 374 - Farmstead Energy Improvement; 430 - Irrigation Pipeline; 441 - Irrigation System, Microirrigation; 449 - Irrigation Water Management; 516 - Livestock Pipeline; and 614 - Watering Facility.

Before Situation:

Standard electrical connection from electrical utility to pump motor. No capability to match pump output pressure and/or flowrate to field(s) need(s). Result is over/under pressure(s) and/or flow rate(s), possible hydraulic anomalies, energy loss, and or inefficient water application in the irrigation system.

After Situation:

VFD Modifications are implemented at the pump site to allow for varying the speed of a 40 Hp electric motor to match the pressure and flow requirements for a center pivot irrigation system.

Feature Measure: Pump Power Requirement

Scenario Unit: Brake Horse Power

Scenario Typical Size: 50.0

Scenario Total Cost: $5,834.50

Scenario Cost/Unit: $116.69

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Materials						
Variable Speed Drive, 50 HP	1288	Variable speed drive for 50 Horsepower electric motor. Does not include motor. Materials only.	Horsepower	$116.69	50	$5,834.50

Practice: 533 - Pumping Plant

Scenario #10 - Internal Combustion-Powered Pump less than or equal to 50 HP with L-pipe

Scenario Description:

The typical scenario supports installation of a pump in an existing irrigation system or installation of a new pump on cropland with a 30 BHP pump. Size of pump is determined by required GPM and pressure derived from a design for specific irrigation system on cropland. The combination of higher solids content and volume require a larger horse power pump. This liquid manure pump is used to transfer semi-solid manure from a small reception pit located either below a barnyard or at the end of a free-stall barn or scrape alley. Resource Concerns: Water Quality degradation - Excess nutrients in surface and ground waters; Insufficient water - Inefficient use of irrigation water. Associated Practices include: 374 - Farmstead Energy Improvement; 430 - Irrigation Pipeline; 441 - Irrigation System, Microirrigation; 449 - Irrigation Water Management; 313 - Waste Storage Facility; 634 - Waste Transfer; 436 - Irrigation Reservoir; and 447 - Irrigation System, Tailwater Recovery; and 614 - Watering Facility.

Before Situation:

Irrigation: Either an existing irrigation system employs an inefficient, improperly-sized pump that leads to inefficient water delivery resulting in high energy costs, or Waste Transfer: various types of semi-solid or liquid waste at the headquarters is uncollected causing surface and ground water issues.

After Situation:

Irrigation Setting: For irrigation system, a properly designed pump is installed, reducing water and energy usage. or Waste Transfer Setting: For semi-solid or liquid waste, wastes that have been collected through a waste transfer system are now efficiently transferred to appropriate treatment or storage facilities or crop application. Due to topography, gravity transfer is not possible and a properly sized pump is needed to transfer waste as part of a waste transfer system.

Feature Measure: Pump Power Requirement

Scenario Unit: Brake Horse Power

Scenario Typical Size: 30.0

Scenario Total Cost: $32,496.33

Scenario Cost/Unit: $1,083.21

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Concrete, CIP, slab on grade, reinforced	37	Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yards	$315.01	0.25	$78.75
Dozer, 140 HP	927	Track mounted Dozer with horsepower range of 125 to 160. Equipment and power unit costs. Labor not included.	Hours	$97.92	8	$783.36
Hydraulic Excavator, 1 CY	931	Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included.	Hours	$111.83	8	$894.64
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	2	$47.48
Portable Welder	1407	Portable field welder. Equipment only. Labor not included.	Hours	$19.98	8	$159.84
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	4	$120.20
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	4	$92.72
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	16	$430.40
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	4	$167.12
Materials						
Pump, < 50 HP, Pump & ICE power unit	1027	Materials, labor, controls: < 50 HP Pump & ICE power unit	Horsepower	$667.26	30	$20,017.80
Pipe, Steel, 24 in., Std Wt, USED	1360	Materials: - USED - 24 inch - Steel Std Wt	Feet	$65.02	40	$2,600.80
Pipe, Steel, 30 in., Std Wt, USED	1361	Materials: - USED - 30 inch - Steel Std Wt	Feet	$103.01	14	$1,442.14
Swing Check Valve, metal, 12 in.	2082	12 inch swing check valve for back flow prevention, ductile iron metal body with flange mount and lever shaft. Materials and shipping only.	Each	$5,153.30	1	$5,153.30
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: 533 - Pumping Plant

Scenario #11 - Internal Combustion-Powered Pump greater than 50 to 70 HP, with L-pipe

Scenario Description:

The typical scenario supports installation of a pump in an existing irrigation system or installation of a new pump on cropland with a 60 BHP pump. Size of pump is determined by required GPM and pressure derived from a design for specific irrigation system on cropland. The combination of higher solids content and volume require a larger horse power pump. This liquid manure pump is used to transfer semi-solid manure from a small reception pit located either below a barnyard or at the end of a free-stall barn or scrape alley. Resource Concerns: Water Quality degradation - Excess nutrients in surface and ground waters; Insufficient water - Inefficient use of irrigation water. Associated Practices include: 374 - Farmstead Energy Improvement; 430 - Irrigation Pipeline; 441 - Irrigation System, Microirrigation; 449 - Irrigation Water Management; 313 - Waste Storage Facility; 634 - Waste Transfer; 436 - Irrigation Reservoir; and 447 - Irrigation System, Tailwater Recovery; and 614 - Watering Facility.

Before Situation:

Irrigation: Either an existing irrigation system employs an inefficient, improperly-sized pump that leads to inefficient water delivery resulting in high energy costs, or Waste Transfer: various types of semi-solid or liquid waste at the headquarters is uncollected causing surface and ground water issues.

After Situation:

Irrigation Setting: For irrigation system, a properly designed pump is installed, reducing water and energy usage. Waste Transfer Setting: For semi-solid or liquid waste, wastes that have been collected through a waste transfer system are now efficiently transferred to appropriate treatment or storage facilities or crop application. Due to topography, gravity transfer is not possible and a properly sized pump is needed to transfer waste as part of a waste transfer system.

Feature Measure: Pump Power Requirement

Scenario Unit: Brake Horse Power

Scenario Typical Size: 60.0

Scenario Total Cost: $62,857.75

Scenario Cost/Unit: $1,047.63

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Concrete, CIP, slab on grade, reinforced	37	Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yards	$315.01	1	$315.01
Backhoe, 80 HP	926	Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$31.57	8	$252.56
Dozer, 140 HP	927	Track mounted Dozer with horsepower range of 125 to 160. Equipment and power unit costs. Labor not included.	Hours	$97.92	4	$391.68
Hydraulic Excavator, 1 CY	931	Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included.	Hours	$111.83	8	$894.64
Portable Welder	1407	Portable field welder. Equipment only. Labor not included.	Hours	$19.98	8	$159.84
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	16	$480.80
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	32	$741.76
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	16	$430.40
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	16	$668.48
Materials						
Pump, > 50 to 70 HP, Pump & ICE power unit	1028	Materials, labor, controls: > 50 to 70 HP Pump & ICE power unit	Horsepower	$777.35	60	$46,641.00
Pipe, Steel, 24 in., Std Wt, USED	1360	Materials: - USED - 24 inch - Steel Std Wt	Feet	$65.02	40	$2,600.80
Pipe, Steel, 30 in., Std Wt, USED	1361	Materials: - USED - 30 inch - Steel Std Wt	Feet	$103.01	14	$1,442.14
Swing Check Valve, metal, 14 in.	2083	14 inch swing check valve for back flow prevention, ductile iron metal body with flange mount and lever shaft. Materials and shipping only.	Each	$7,330.86	1	$7,330.86
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: 533 - Pumping Plant

Scenario #12 - Internal Combustion-Powered Pump greater than 70 HP, with L-pipe

Scenario Description:

The typical scenario supports replacement of a pump in an existing irrigation system or installation of a new pump on cropland that is 80 BHP pump or larger. Size of pump is determined by required GPM and pressure derived from a design for specific irrigation system on cropland. Scenario could also be used for a pump for silage leachate, barnyard runoff, and milk house waste (as part of a waste transfer system) at farm headquarters. Resource Concerns: Water Quality degradation - Excess nutrients in surface and ground waters; Insufficient water - Inefficient use of irrigation water. Associated Practices include: 374 - Farmstead Energy Improvement; 430 - Irrigation Pipeline; 441 - Irrigation System, Microirrigation; 449 - Irrigation Water Management; 313 - Waste Storage Facility; 634 - Waste Transfer; and 614 - Watering Facility.

Before Situation:

Irrigation: Either an existing irrigation system employs an inefficient, improperly-sized pump that leads to inefficient water delivery resulting in high energy costs, or Waste Transfer: various types of semi-solid or liquid waste at the headquarters is uncollected causing surface and ground water issues.

After Situation:

Irrigation Setting: For irrigation system, a properly designed pump is installed, reducing water and energy usage. Waste Transfer Setting: For semi-solid or liquid waste, wastes that have been collected through a waste transfer system are now efficiently transferred to appropriate treatment or storage facilities or crop application. Due to topography, gravity transfer is not possible and a properly sized pump is needed to transfer waste as part of a waste transfer system.

Feature Measure: Pump Power Requirement

Scenario Unit: Brake Horse Power

Scenario Typical Size: 80.0

Scenario Total Cost: $72,255.87

Scenario Cost/Unit: $903.20

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Concrete, CIP, slab on grade, reinforced	37	Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yards	$315.01	2	$630.02
Dozer, 80 HP	929	Track mounted Dozer with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$54.51	8	$436.08
Hydraulic Excavator, 1 CY	931	Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included.	Hours	$111.83	8	$894.64
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	6	$142.44
Portable Welder	1407	Portable field welder. Equipment only. Labor not included.	Hours	$19.98	8	$159.84
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	8	$240.40
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	48	$1,112.64
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	8	$215.20
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	24	$1,002.72
Materials						
Pump, > 70 HP, Pump & ICE power unit	1029	Materials, labor, controls: > 70 HP Pump & ICE power unit	Horsepower	$637.18	80	$50,974.40
Pipe, Steel, 18 in., Std Wt, USED	1358	Materials: - USED - 18 inch - Steel Std Wt	Feet	$57.18	20	$1,143.60
Pipe, Steel, 30 in., Std Wt, USED	1361	Materials: - USED - 30 inch - Steel Std Wt	Feet	$103.01	40	$4,120.40
Pipe, Steel, 36 in., Std Wt, USED	1362	Materials: - USED - 36 inch - Steel Std Wt	Feet	$145.73	14	$2,040.22
Swing Check Valve, metal, 16 in.	2084	16 inch swing check valve for back flow prevention, ductile iron metal body with flange mount and lever shaft. Materials and shipping only.	Each	$8,635.49	1	$8,635.49
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: 533 - Pumping Plant

Scenario #13 - Internal Combustion-Powered Well Pump 50 HP and less, no L-pipe

Scenario Description:

The typical scenario supports installation of a pump in an existing irrigation system or installation of a new pump on cropland with a 30 BHP pump. Size of pump is determined by required GPM and pressure derived from a design for specific irrigation system on cropland. The combination of higher solids content and volume require a larger horse power pump. This liquid manure pump is used to transfer semi-solid manure from a small reception pit located either below a barnyard or at the end of a free-stall barn or scrape alley. Resource Concerns: Water Quality degradation - Excess nutrients in surface and ground waters; Insufficient water - Inefficient use of irrigation water. Associated Practices include: 374 - Farmstead Energy Improvement; 430 - Irrigation Pipeline; 441 - Irrigation System, Microirrigation; 449 - Irrigation Water Management; 313 - Waste Storage Facility; 634 - Waste Transfer; 436 - Irrigation Reservoir; and 447 - Irrigation System, Tailwater Recovery; and 614 - Watering Facility.

Before Situation:

Irrigation: Either an existing irrigation system employs an inefficient, improperly-sized pump that leads to inefficient water delivery resulting in high energy costs, or Waste Transfer: various types of semi-solid or liquid waste at the headquarters is uncollected causing surface and ground water issues.

After Situation:

Irrigation Setting: For irrigation system, a properly designed pump is installed, reducing water and energy usage. or Waste Transfer Setting: For semi-solid or liquid waste, wastes that have been collected through a waste transfer system are now efficiently transferred to appropriate treatment or storage facilities or crop application. Due to topography, gravity transfer is not possible and a properly sized pump is needed to transfer waste as part of a waste transfer system.

Feature Measure: Pump Power Requirement

Scenario Unit: Brake Horse Power

Scenario Typical Size: 30.0

Scenario Total Cost: $23,053.95

Scenario Cost/Unit: $768.47

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Concrete, CIP, slab on grade, reinforced	37	Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yards	$315.01	1	$315.01
Backhoe, 80 HP	926	Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$31.57	8	$252.56
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	4	$94.96
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	8	$240.40
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	32	$741.76
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	8	$215.20
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	16	$668.48
Materials						
Pump, < 50 HP, Pump & ICE power unit	1027	Materials, labor, controls: < 50 HP Pump & ICE power unit	Horsepower	$667.26	30	$20,017.80
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: 533 - Pumping Plant

Scenario #14 - Internal Combustion-Powered Well Pump Greater than 50 to 70 HP, no L-pipe

Scenario Description:

The typical scenario supports installation of a well pump in an existing irrigation system or installation of a new well pump on cropland with a 60 BHP pump. Size of pump is determined by required GPM and pressure derived from a design for specific irrigation system on cropland. The combination of higher solids content and volume require a larger horse power pump. This liquid manure pump is used to transfer semi-solid manure from a small reception pit located either below a barnyard or at the end of a free-stall barn or scrape alley. The well will be drilled using 642 Water Well. Resource Concerns: Water Quality degradation - Excess nutrients in surface and ground waters; Insufficient water - Inefficient use of irrigation water. Associated Practices include: 374 - Farmstead Energy Improvement; 430 - Irrigation Pipeline; 441 - Irrigation System, Microirrigation; 449 - Irrigation Water Management; 313 - Waste Storage Facility; 634 - Waste Transfer; 436 - Irrigation Reservoir; and 447 - Irrigation System, Tailwater Recovery; and 614 - Watering Facility.

Before Situation:

Irrigation: Either an existing irrigation system employs an inefficient, improperly-sized pump that leads to inefficient water delivery resulting in high energy costs, or Waste Transfer: various types of semi-solid or liquid waste at the headquarters is uncollected causing surface and ground water issues.

After Situation:

Irrigation Setting: For irrigation system, a properly designed pump is installed, reducing water and energy usage. Waste Transfer Setting: For semi-solid or liquid waste, wastes that have been collected through a waste transfer system are now efficiently transferred to appropriate treatment or storage facilities or crop application. Due to topography, gravity transfer is not possible and a properly sized pump is needed to transfer waste as part of a waste transfer system.

Feature Measure: Pump Power Requirement

Scenario Unit: Brake Horse Power

Scenario Typical Size: 60.0

Scenario Total Cost: $49,677.15

Scenario Cost/Unit: $827.95

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Concrete, CIP, slab on grade, reinforced	37	Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yards	$315.01	1	$315.01
Backhoe, 80 HP	926	Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$31.57	8	$252.56
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	4	$94.96
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	8	$240.40
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	32	$741.76
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	8	$215.20
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	16	$668.48
Materials						
Pump, > 50 to 70 HP, Pump & ICE power unit	1028	Materials, labor, controls: > 50 to 70 HP Pump & ICE power unit	Horsepower	$777.35	60	$46,641.00
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: 533 - Pumping Plant

Scenario #15 - Internal Combustion-Powered Well Pump Greater than 70 HP, no L-pipe

Scenario Description:

The typical scenario supports replacement of a pump in an existing irrigation system or installation of a new pump on cropland that is 80 BHP pump or larger. Size of pump is determined by required GPM and pressure derived from a design for specific irrigation system on cropland. Scenario could also be used for a pump for silage leachate, barnyard runoff, and milk house waste (as part of a waste transfer system) at farm headquarters. Resource Concerns: Water Quality degradation - Excess nutrients in surface and ground waters; Insufficient water - Inefficient use of irrigation water. Associated Practices include: 374 - Farmstead Energy Improvement; 430 - Irrigation Pipeline; 441 - Irrigation System, Microirrigation; 449 - Irrigation Water Management; 313 - Waste Storage Facility; 634 - Waste Transfer; and 614 - Watering Facility.

Before Situation:

Irrigation: Either an existing irrigation system employs an inefficient, improperly-sized pump that leads to inefficient water delivery resulting in high energy costs, or Waste Transfer: various types of semi-solid or liquid waste at the headquarters is uncollected causing surface and ground water issues.

After Situation:

Irrigation Setting: For irrigation system, a properly designed pump is installed, reducing water and energy usage. Waste Transfer Setting: For semi-solid or liquid waste, wastes that have been collected through a waste transfer system are now efficiently transferred to appropriate treatment or storage facilities or crop application. Due to topography, gravity transfer is not possible and a properly sized pump is needed to transfer waste as part of a waste transfer system.

Feature Measure: Pump Power Requirement

Scenario Unit: Brake Horse Power

Scenario Typical Size: 100.0

Scenario Total Cost: $67,821.76

Scenario Cost/Unit: $678.22

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Concrete, CIP, slab on grade, reinforced	37	Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yards	$315.01	2	$630.02
Backhoe, 80 HP	926	Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$31.57	8	$252.56
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	6	$142.44
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	8	$240.40
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	48	$1,112.64
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	8	$215.20
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	24	$1,002.72
Materials						
Pump, > 70 HP, Pump & ICE power unit	1029	Materials, labor, controls: > 70 HP Pump & ICE power unit	Horsepower	$637.18	100	$63,718.00
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: 533 - Pumping Plant

Scenario #16 - Tractor Power Take Off (PTO) Pump

Scenario Description:

This scenario involves a PTO driven pump to either transfer water for an irrigation system from a Pond - 378 (includes backflow prevention as appropriate) to cropland or; to transfer semi-solid/ liquid manure (as part of a waste transfer system) at the farm headquarters from a Waste Storage Facility - 313, to an irrigation system or waste treatment facility. In both cases, a PTO driven pump is selected because the landowner has equipment available to supply power to the pump. Electricity is not readily available and/or a stationary engine is not a practical alternative. Resource Concerns: Water Quality degradation - Excess nutrients in surface and ground waters; Insufficient water - Inefficient use of irrigation water. Associated Practices include: 430 - Irrigation Pipeline; 442 - Irrigation System, Sprinkler; 449 - Irrigation Water Management; 590 - Nutrient Management; 378 - Pond; 313 - Waste Storage Facility; and 634 - Waste Transfer.

Before Situation:

Irrigation Setting: An existing surface irrigation system employs an inefficient, improperly sized pump that leads to inefficient water delivery resulting in high energy costs; Waste Transfer Setting: various types of semi-solid or liquid waste at the headquarters are uncollected causing surface and ground water issues. A transfer method for waste is needed. Due to topography, gravity transfer is not possible and a properly sized pump is needed to transfer waste as part of a waste transfer system.

After Situation:

Irrigation Setting: A properly designed PTO-driven pump is installed, to transfer water to an Irrigation Pipeline (430) or Irrigation Canal or Lateral (320). Waste Transfer Setting: Wastes that have been collected through a waste transfer system are now efficiently transferred from a Waste Storage Facility (313) to an appropriate treatment facility or to an irrigation system. The pump typically will move 2,000 gallons per minute and is portable so that it can be used at several locations.

Feature Measure: Pump Power Requirement

Scenario Unit: Brake Horse Power

Scenario Typical Size: 60.0

Scenario Total Cost: $10,180.02

Scenario Cost/Unit: $169.67

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Concrete, CIP, slab on grade, reinforced	37	Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yards	$315.01	2	$630.02
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	16	$379.84
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	16	$370.88
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	16	$668.48
Materials						
Pump, Ag Water PTO, 1,000 GPM	1923	Materials, labor, controls: Ag Water PTO Pump 1,000 GPM - 8 in.	Each	$8,130.80	1	$8,130.80

Practice: 533 - Pumping Plant

Scenario #18 - Photovoltaic-Powered Pump, <4 kW

Scenario Description:

The typical scenario assumes installation of a submersible solar-powered pump in a well or a live stream. The installation includes the pump, wiring, drop pipe, solar panels, mounts, inverter, and all appurtenances. Note: It is generally not advisable to use a storage battery for a number of reasons. A storage tank is generally the most efficient method to store energy. Grazing - Livestock exclusion from surface water will result in improved surface water quality and reduced erosion. Irrigation - energy consumption will be reduced and the increased pressure and flow rates will improve irrigation efficiency. Resource Concerns: Insufficient stockwater. Associated Practices include: 374 - Farmstead Energy Improvement; 382 - Fence; 430 - Irrigation Pipeline; 436 - Irrigation Reservoir; 516 - Livestock Pipeline; 561 - Heavy Use Area Protection; and, 614 - Watering Facility.

Before Situation:

Livestock: Inadequate supply or location of water for a prescribed grazing system. Eroded stream banks and degraded water quality due to livestock access to stream. Cattle are not well-distributed because of remote water location. Irrigation: Pressure and flow rate is insufficient for uniform irrigation.

After Situation:

The typical scenario assumes installation of 1 kilowatt of photovoltaic (PV) panels, capable of operating a 1 horsepower solar-powered submersible pump in a well or other water source (Notes: 1) A PV panel is rated under standard and ideal conditions which will most likely not be replicated in the field; 2) 1 Horsepower is defined as 0.746 kilowatts.. The installation includes the pump, wiring, pipeline in the well, solar panels, frame mounts, controller, and all appurtenances. Water will be pumped to an existing storage tank at a higher elevation from which it will be used to pressurize the Livestock Pipeline (516) or Irrigation Pipeline (430). Grazing - Livestock exclusion from surface water will result in improved surface water quality and reduced erosion. Grazing has potential to be well distributed. Irrigation: Improved pressure and flow rate will improve irrigation efficiency.

Feature Measure: Pumping plant photovoltaic power

Scenario Unit: Kilowatt

Scenario Typical Size: 1.0

Scenario Total Cost: $7,724.88

Scenario Cost/Unit: $7,724.88

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	16	$379.84
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	16	$370.88
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	16	$668.48
Materials						
Solar Pumping System, Fixed Cost Portion	2495	Fixed cost portion of a solar powered pumping system. This portion is a base cost for a complete system including the photovoltaic panels, pumping plant, support braces, electric controllers, service drop, etc., and is not dependant on KiloWatt. The total cost will include this fixed cost plus a variable cost portion. Includes the cost of materials only.	Each	$3,555.53	1	$3,555.53
Solar Pumping System, Variable Cost Portion	2496	Variable cost portion of a solar powered pumping system. This portion IS dependent upon the total kilowatts of the photovoltaic panels, but also includes the pumping plant, support braces, electric controllers, service drop, etc. The total cost will include this variable cost plus a fixed cost portion. Includes the cost of materials only.	Kilowatt	$2,750.15	1	$2,750.15

Practice: 533 - Pumping Plant

Scenario #19 - Pump Conversion to Low Pressure

Scenario Description:

This scenario involves converting an existing pump which is set up to operate any high pressure system to a pump set up to operate a low pressure system, when the existing high pressure system is being converted to low pressure system. Resource Concerns: Excess/Insufficent Water - Inefficient Use of Irrigation Water & Water Quality Degragation; Energy Conservation Associated Practices: 449 - Irrigation Water Management, 442 - Irrigation System, Sprinkler

Before Situation:

An existing irrigation pump is operating a high pressure center pivot system and needs to be converted to a low pressure pump to efficiently operate a center pivot system converted to low pressure.

After Situation:

The existing high pressure pump is pulled and stages are removed in order to reduce the pressure which the pump will produce, this will cause a more energy efficient system and a system which is more efficiently distributing water.

Feature Measure: conversion of pump

Scenario Unit: Each

Scenario Typical Size: 1.0

Scenario Total Cost: $5,028.82

Scenario Cost/Unit: $5,028.82

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Crane, truck mounted, hydraulic, 12 ton	1734	12 ton capacity truck mounted hydraulic crane. Equipment cost only.	Hours	$63.90	6	$383.40
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	6	$139.08
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	2	$83.56
Materials						
Pump, Bowl replacement, 30 to 100 HP	1984	Includes all material and shop labor to replace/service the entire set of bowls for a vertical turbine pump, install new bowls as necessary, and all appurtenances and materials to connect to the existing well column. Typical of 100 to 300 feet of column depth, 400 to 800 gpm discharge at 30 to 50 psi. Does not include labor and equipment to remove and install the assembled pump from the well.	Horsepower	$78.30	50	$3,915.00
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: 533 - Pumping Plant

Scenario #20 - Basic Pump Automation

Scenario Description:

Typical: a diesel or electrical pump is set up with basic capabilities to shut off the pump based upon time, water levels, or other sensor or deviceto prevent excess run-time and unecessary pumping. Resource Concerns: Excess/Insufficent Water - Inefficient Use of Irrigation Water & Water Quality Degragation Associated Practices: 449 - Irrigation Water Management

Before Situation:

Pumps are manually stopped. Oil, fuel, and water level in reservoir/tailwater pit are manually read. Requires a person to physically be on site to maniputate the pump and to take readings. Excess irrigation water is allowed to run off the crops and farmland when situations occur where farm labor is unable to operate the pump when irrigation is needed or needs have been met.

After Situation:

Pump has an automatic pump stop based upon a timer, water level sensor or other device. This prevents the landowner from being physically at the site when sufficient water is available or not for irrigation. Crops are supplied the required water needs and excess is not allowed to leave the farm, thus preventing damage to the pumping system, increased labor of the overall farm operation and increasing effiency, preventing sediment loss, reducing turbidity, over saturation of the plants, water quality turbity or excess water use in critical ground water areas.

Feature Measure: automation of a pump cut-off

Scenario Unit: Each

Scenario Typical Size: 1.0

Scenario Total Cost: $552.85

Scenario Cost/Unit: $552.85

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	2	$47.48
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	8	$185.44
Materials						
Switches and Controls, programmable controller	1193	Programmable logic controller (with or without wireless telecommunications) commonly used to control pumps and irrigation systems	Each	$319.93	1	$319.93

Practice: 533 - Pumping Plant

Scenario #21 - Intermediate Pump Automation

Scenario Description:

Typical: a diesel or electrical pump is set up with a intermediate automation component that controls the pump via remote access in order to prevent excess run-time and unecessary pumping. Resource Concerns: Excess/Insufficent Water - Inefficient Use of Irrigation Water & Water Quality Degragation Associated Practices: 449 - Irrigation Water Management

Before Situation:

Pumps are manually stopped. Oil, fuel, and water level in reservoir/tailwater pit are manually read. Requires a person to physically be on site to maniputate the pump and to take readings. Excess irrigation water is allowed to run off the crops and farmland when situations occur where farm labor is unable to operate the pump when irrigation is needed or needs have been met.

After Situation:

By use of a smartphone or tablet, the pump can be remoted started or stopped. Alerts can be sent to operator of interruptions in the system or can be preset to shut off at specified time. This prevents the landowner from being physically at the site when sufficient water is available or not for irrigation. Crops are supplied the required water needs and excess is not allowed to leave the farm, thus preventing damage to the pumping system, increased labor of the overall farm operation and increasing effiency, preventing sediment loss, reducing turbidity, over saturation of the plants, water quality turbity or excess water use in critical ground water areas.

Feature Measure: automation of a pump start and st

Scenario Unit: Each

Scenario Typical Size: 1.0

Scenario Total Cost: $2,922.95

Scenario Cost/Unit: $2,922.95

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	4	$92.72
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	4	$372.16
Materials						
Switches and Controls, temp sensors	1192	Temperature and soil moisture sensors installed as part of an electronic monitoring (with or without wireless telecommunications) commonly used to control pumps and irrigation systems	Each	$611.15	1	$611.15
Switches and Controls, programmable controller	1193	Programmable logic controller (with or without wireless telecommunications) commonly used to control pumps and irrigation systems	Each	$319.93	1	$319.93
Switches and Controls, Wi-Fi system and software	1194	Software with built-in cellular or Wi-Fi communication commonly used to control pumps and irrigation systems	Each	$799.83	1	$799.83
Switches and Controls, radio system	1195	Output radio, field transmitter, and receiver commonly used to control pumps and irrigation systems	Each	$469.35	1	$469.35
Safety Camera on Automated Pump	2474	Waterproof outdoor wireless IP Network security camera with housing. Includes materials only.	Each	$222.48	1	$222.48
Engine/Fuel Tank Sensor	2487	Transducer and sensors to monitor the oil pressure, oil and water temperatures, fuel flow meter with digital pulse output and fuel levels in a tank. Includes the conduit and cabling.	Each	$35.33	1	$35.33

Practice: 533 - Pumping Plant

Scenario #22 - Advanced Pump Automation

Scenario Description:

Typical Scenario: a diesel pump is set up with automation including telemetry capabilities to operate the pump while recording important data such as the fuel levels, the temperature, oil levels, water levels in the reservoir or tailwater pit or both, and rainfall at the site. This data is collected and obtainable by the producers from any location. An electic power unit may use a different set of sensors (e.g. grid versus fuel tank, VFD) in the specific application, but the basic purpose, intent, and goals remain the same. Resource Concerns: Excess/Insufficent Water - Inefficient Use of Irrigation Water & Water Quality Degragation Associated Practices: 449 - Irrigation Water Management

Before Situation:

Pumps are manually started. Oil, fuel, and water level in reservoir/tailwater pit are manually read. Requires a person to physically be on site to maniputate the pump and to take readings. Excess irrigation water is allowed to run off the crops and farmland when situations occur where farm labor is unable to operate the pump when irrigation is needed or needs have been met.

After Situation:

Pump has an automatic pump start/stop remotely controlled from any location based on the information relayed from water availability or unavailibility. This prevents the landowner from being physically at the site when sufficient water is available or not for irrigation. Crops are supplied the required water needs and excess is not allowed to leave the farm, thus preventing damage to the pumping system, increased labor of the overall farm operation and increasing effiency, preventing sediment loss, reducing turbidity, over saturation of the plants, water quality turbity or excess water use in critical ground water areas.

Feature Measure: automation of a pump

Scenario Unit: Each

Scenario Typical Size: 1.0

Scenario Total Cost: $6,291.36

Scenario Cost/Unit: $6,291.36

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	4	$94.96
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	4	$120.20
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	4	$92.72
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	4	$372.16
Materials						
Solar Panels, fixed cost portion	1031	Fixed cost portion of the Solar Panels. This portion is a base cost for all Solar Panels and is not dependant on KiloWatt. The total cost of any Solar Panels will include this fixed cost plus a variable cost portion. The completed Solar Panels will include all materials (electrical, controllers, service drops and etc). This cost will include material, labor and equipment.	Each	$261.66	1	$261.66
Solar Panels, variable cost portion	1135	Variable cost portion of the Solar Panels. This portion IS dependent on the total Kilowatt for the Solar Panels. The total cost of any Solar Panels will include this variable cost plus the fixed cost portion. The completed Solar Panels will include all materials (electrical, controllers, and service drop, etc). This cost will include material, labor and equipment.	Kilowatt	$2,731.32	0.5	$1,365.66
Switches and Controls, temp sensors	1192	Temperature and soil moisture sensors installed as part of an electronic monitoring (with or without wireless telecommunications) commonly used to control pumps and irrigation systems	Each	$611.15	1	$611.15
Switches and Controls, programmable controller	1193	Programmable logic controller (with or without wireless telecommunications) commonly used to control pumps and irrigation systems	Each	$319.93	1	$319.93
Switches and Controls, Wi-Fi system and software	1194	Software with built-in cellular or Wi-Fi communication commonly used to control pumps and irrigation systems	Each	$799.83	1	$799.83
Switches and Controls, radio system	1195	Output radio, field transmitter, and receiver commonly used to control pumps and irrigation systems	Each	$469.35	1	$469.35

Data Logger with Telemetry System	1454	Data Logger W/Graphic Output for water management and telemetry - data communication device with power supply in a weather proof enclosure. Equipment only.	Each	$1,525.93	1	$1,525.93
Safety Camera on Automated Pump	2474	Waterproof outdoor wireless IP Network security camera with housing. Includes materials only.	Each	$222.48	1	$222.48
Engine/Fuel Tank Sensor	2487	Transducer and sensors to monitor the oil pressure, oil and water temperatures, fuel flow meter with digital pulse output and fuel levels in a tank. Includes the conduit and cabling.	Each	$35.33	1	$35.33

Practice: 533 - Pumping Plant

Scenario #23 - Pump without power unit, with L-pipe

Scenario Description:

The typical scenario supports installation of a pump and support typically used with pumping from a tailwater recovery channel or reservoir on cropland with a 35 BHP pump without a power unit (3000gpm x 30 ft)/(3960*.65) = 35 BHP. Size (BHP) of pump is determined by required GPM and pressure derived from a design for specific irrigation system on cropland. Typical scenario is 3000 gpm with 30 ft of head (lift, line friction, pressure, etc). Also may apply to a pump for wastewater. Cooperator has existing motor, will rent motor, or buy used motor. Resource Concerns: Water Quality degradation - Excess nutrients in surface and ground waters; Insufficient water - Inefficient use of irrigation water. Associated Practices include: 374 - Farmstead Energy Improvement; 430 - Irrigation Pipeline; 441 - Irrigation System, Microirrigation; 449 - Irrigation Water Management; 313 - Waste Storage Facility; 634 - Waste Transfer; 436 - Irrigation Reservoir; and 447 - Irrigation System, Tailwater Recovery; and 614 - Watering Facility.

Before Situation:

Irrigation: Implementation of a tailwater recovery system or on-farm storage system requires a transfer pump w/o a power plant. Either an existing irrigation system employs an inefficient, improperly-sized pump that leads to inefficient water delivery resulting in high energy costs, or Waste Transfer: various types of semi-solid or liquid waste at the headquarters is uncollected causing surface and ground water issues.

After Situation:

Irrigation Setting: For irrigation system, a properly designed pump is installed, reducing water and energy usage and allowing proper utilization of captured water. or Waste Transfer Setting: For semi-solid or liquid waste, wastes that have been collected through a waste transfer system are now efficiently transferred to appropriate treatment or storage facilities or crop application. Due to topography, gravity transfer is not possible and a properly sized pump is needed to transfer waste as part of a waste transfer system.

Feature Measure: Pump Power Requirement

Scenario Unit: Brake Horse Power

Scenario Typical Size: 35.0

Scenario Total Cost: $18,953.13

Scenario Cost/Unit: $541.52

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Concrete, CIP, slab on grade, reinforced	37	Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yards	$315.01	0.25	$78.75
Hydraulic Excavator, 2 CY	932	Track mounted hydraulic excavator with bucket capacity range of 1.5 to 2.5 CY. Equipment and power unit costs. Labor not included.	Hours	$126.60	8	$1,012.80
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	2	$47.48
Portable Welder	1407	Portable field welder. Equipment only. Labor not included.	Hours	$19.98	8	$159.84
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	4	$92.72
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	16	$430.40
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	4	$167.12
Materials						
Pipe, Steel, 24 in., Std Wt, USED	1360	Materials: - USED - 24 inch - Steel Std Wt	Feet	$65.02	40	$2,600.80
Pipe, Steel, 30 in., Std Wt, USED	1361	Materials: - USED - 30 inch - Steel Std Wt	Feet	$103.01	14	$1,442.14
Swing Check Valve, metal, 12 in.	2082	12 inch swing check valve for back flow prevention, ductile iron metal body with flange mount and lever shaft. Materials and shipping only.	Each	$5,153.30	1	$5,153.30
Pump, 40-80 hp axial flow/mixed flow	2215	Propeller pump to handle 10,000 - 20,000gpm axial flow/ mixed flow; 12 in. - 24 in. discharge, head (<20' to 25'), propeller type pump. Materials and shipping only.	Gallons per Minute	$2.42	3000	$7,260.00
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: 558 - Roof Runoff Structure

Scenario #2 - Trench Drain

Scenario Description:

A roof runoff structure, consisting of a trench filled with rock, with a polyethylene, corrugated, perforated drain tile installed in trench bottom. Used to keep roof clean water runoff uncontaminated and provide a stable outlet to ground surface. Environmental/design considerations, for example – snow loads, or a building without proper structural support needed for gutters dictate the use of a trench drain. Facilitates waste management and protects the environment by minimizing clean water additions to waste systems and addresses water quality concerns. Associated practices include Waste Storage Facility (313), Composting Facility (317), Heavy Use Area Protection (561), Underground Outlet (620), and Diversion (362).

Before Situation:

Applicable where: (1) a roof runoff management facility is included in an overall plan for an overall plan for a waste management system; (2) roof runoff needs to be diverted away from structures or contaminated areas; (3) there is a need to collect, control, and transport runoff from roofs to a stable outlet.

After Situation:

A 2' deep by 3' wide by 200 long deep rock filled, tile drained trench and outlet system servicing the portion of the building roof that would otherwise drain into a waste management system or create erosion.

Feature Measure: Linear Length of Roof to be Draine

Scenario Unit: Feet

Scenario Typical Size: 200.0

Scenario Total Cost: $2,534.20

Scenario Cost/Unit: $12.67

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Geotextile, woven	42	Woven Geotextile Fabric. Includes materials, equipment and labor	Square Yard	$1.18	222	$261.96
Excavation, Common Earth, side cast, small equipment	48	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic Yards	$2.24	44	$98.56
Materials						
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic Yards	$39.34	44	$1,730.96
Pipe, HDPE, 4 in., PCPT, Single Wall	1270	Pipe, Corrugated Plastic Tubing, Single Wall, Perforated, 4 inch diameter - ASTM F405. Material cost only.	Feet	$0.46	220	$101.20
Mobilization						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	2	$341.52

Practice: 558 - Roof Runoff Structure

Scenario #4 - Roof Gutter and Downspouts_Alum

Scenario Description:

A roof runoff structure, consisting of gutter(s), downspout(s), and appropriate outlet facilities. Used to keep roof clean water runoff uncontaminated and provide a stable outlet to ground surface. Facilitates waste management and protects environment by minimizing clean water additions to waste systems and addresses water quality concerns. Associated practices include Waste Storage Facility (313), Composting Facility (317), Heavy Use Area Protection (561), Watering Facility (614), Underground Outlet (620), Diversion (362), and any relevant irrigation practices.

Before Situation:

Applicable where: (1) a roof runoff management facility is included in an overall plan for an overall plan for a waste management system; (2) roof runoff needs to be diverted away from structures or contaminated areas; (3) there is a need to collect, control, and transport runoff from roofs to a stable outlet.

After Situation:

A gutter, downspout, and outlet system servicing the portion of the building roof that would otherwise drain into a waste management system or create erosion. Roof line of 200 ft serviced with gutter, downspouts, and appurtances.

Feature Measure: Linear Length of Roof to be Guttere

Scenario Unit: Feet

Scenario Typical Size: 300.0

Scenario Total Cost: $6,599.00

Scenario Cost/Unit: $22.00

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	36	$834.48
Materials						
Pipe, PVC, 8 in., SCH 40	981	Materials: - 8 inch - PVC - SCH 40 - ASTM D1785	Feet	$12.35	100	$1,235.00
Pipe, PVC, 8 in., SDR 41	985	Materials: - 8 inch - PVC - SDR 41 100 psi - ASTM D2241	Feet	$8.16	50	$408.00
Gutter, Aluminum, Medium	1690	Aluminum gutter, 7 to 9 in. width with hangers. Materials only.	Feet	$12.60	300	$3,780.00
Mobilization						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	2	$341.52

Practice: 560 - Access Road

Scenario #3 - Rehabilitation of existing earth road in dry, level terrain

Scenario Description:

Repair and rehabilitation of compacted earth road in existing alignment in dry, level terrain. The extent of construction work over an existing alignment is assumed to average 20% of the work for a new installation. A properly constructed, well defined access road will address resource concerns related with compaction, emissions of fugitive dust, and excessive sediment in surface water. It also improves the plant productivity, vigor and health and substantially reduces the chance of wild fire hazards. Short term air quality deterioration may result if proper dust control measures are not implemented during the practice installation. Costs include excavation, shaping, grading, and all equipment, labor and incidental materials necessary to install the practice.

Before Situation:

An agricultural enterprise with an existing access road which is beyond its useful lifespan, can no longer be used as intended without rehabilitation. If left in its current condition , it will result in continued compaction, excessive sediment in surface water and emissions of fugitive dusts. This scenario is applicable where the resource activity areas with an existing but dilapidated access road consist of relatively dry and level terrain lands.

After Situation:

The damaged portions of the road will be repaired to a full 14 feet width at the top, mostly in embankment less than 3 feet in height, (average 2 ft), typical side slopes 2:1. A properly repaired access road will greatly reduce or eliminate compaction in land use areas where it is harmful, reduce emissions of fugitive dust and also reduce excessive sediment in surface water by reducing uncontrolled sediment transport and improving drainage of irrigated lands. Planned grades will include all dips and water bars. If clearing and grubbing of land in the alignment area is required, use Land Clearing (460). Pipe culverts installed as part of access road should be covered by either Structures for Water Control (587) or Stream Crossings (578) depending on the type of structure. Earthfill embankment above the culvert structure would still be covered by this Practice. Diversions constructed as part of access road should be covered by Diversion (362). When seeding or revegetation is required, use Critical Area Planting (342). Dust control must be addressed under Dust Control on Unpaved Roads and Surfaces (373).

Feature Measure: Length of Roadway

Scenario Unit: Feet

Scenario Typical Size: 1,000.0

Scenario Total Cost: $2,722.49

Scenario Cost/Unit: $2.72

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Earthfill, Roller Compacted	49	Earthfill, roller or machine compacted, includes equipment and labor	Cubic Yards	$4.42	270	$1,193.40
Earthfill, Dumped and Spread	51	Earthfill, dumped and spread without compaction effort, includes equipment and labor	Cubic Yards	$3.61	270	$974.70
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	10	$300.50
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 560 - Access Road

Scenario #4 - Rehabilitation of existing gravel road in wet, level terrain

Scenario Description:

Repair and rehabilitation of gravel road with min. 6 inch thick compacted gravel surface on existing alignment in wet, level terrain. The extent of construction work over an existing alignment is assumed to average 20% of the work for a new installation. A properly constructed, well defined access road will address resource concerns related with compaction, emissions of fugitive dust, and excessive sediment in surface water. It also improves the plant productivity, vigor and health and substantially reduces the chance of wild fire hazards. Short term air quality deterioration may result if proper dust control measures are not implemented during the practice installation. Costs include excavation, shaping, grading, and all equipment, labor and incidental materials necessary to install the practice.

Before Situation:

An agricultural enterprise with an existing access road which is beyond its useful lifespan, can no longer be used as intended without rehabilitation. If left in its current condition , it will result in continued compaction, excessive sediment in surface water and emissions of fugitive dusts. This scenario is applicable where the resource activity areas with an existing but dilapidated access road consist of relatively wet and swampy but level terrain lands.

After Situation:

The damaged portions of the road will be repaired to a full 14 feet width with a 6" gravel surface at the top, mostly in embankment less than 3 feet in height, (average 2 ft), typical side slopes 2:1. A properly repaired access road will greatly reduce or eliminate compaction in land use areas where it is harmful, reduce emissions of fugitive dust and also reduce excessive sediment in surface water by reducing uncontrolled sediment transport and improving drainage of irrigated lands. Planned grades will include all dips and water bars. If clearing and grubbing of land in the alignment area is required, use Land Clearing (460). Pipe culverts installed as part of access road should be covered by either Structures for Water Control (587) or Stream Crossings (578) depending on the type of structure. Earthfill embankment above the culvert structure would still be covered by this Practice. Diversions constructed as part of access road should be covered by Diversion (362). When seeding or revegetation is required, use Critical Area Planting (342). Dust control must be addressed under Dust Control on Unpaved Roads and Surfaces (373).

Feature Measure: Length of Roadway

Scenario Unit: Feet

Scenario Typical Size: 1,000.0

Scenario Total Cost: $4,801.37

Scenario Cost/Unit: $4.80

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Geotextile, woven	42	Woven Geotextile Fabric. Includes materials, equipment and labor	Square Yard	$1.18	400	$472.00
Earthfill, Roller Compacted	49	Earthfill, roller or machine compacted, includes equipment and labor	Cubic Yards	$4.42	266	$1,175.72
Earthfill, Dumped and Spread	51	Earthfill, dumped and spread without compaction effort, includes equipment and labor	Cubic Yards	$3.61	266	$960.26
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	10	$300.50
Materials						
Aggregate, Gravel, Ungraded, Quarry Run	1099	Includes materials, equipment and labor	Cubic Yards	$29.80	55	$1,639.00
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 561 - Heavy Use Area Protection

Scenario #1 - Reinforced Concrete with sand or gravel foundation

Scenario Description:

The stabilization of areas around facilities that are frequently and intensively used by people, animals or vehicles by surfacing with reinforced concrete on a sand or gravel foundation to provide a stable, non-eroding surface. Installation includes all materials, equipment, and labor to install this practice, The stabilized area will address the resource concerns soil erosion and water quality degradation.

Before Situation:

This practice applies to agricultural, urban, recreational and other frequently and/or intensively used areas requiring treatment to address soil erosion and water quality degradation.

After Situation:

The stabilized area is surfaced with approximately 630 square feet of approximately 8 cubic yards of welded wire mesh reinforced concrete with 8 cubic yards of sand or gravel foundation material for surfacing areas around facilities that are frequently and intensively used by people, animals or vehicles and will address soil erosion and water quality degradation. All needed roads must use Access Road (560). Any needed treatment of stream crossings must use Stream Crossing (578). Any needed vegetation of disturbed areas must use Critical Area Planting (342). Provisions to collect, store, utilize, and or treat contaminated runoff must use Sediment Basin (350), Waste Storage Facility (313), or Waste Treatment (629) as appropriate. To reduce the potential for air quality problems from particulate matter associated with heavy use areas, consider the use of Windbreak/Shelterbelt Establishment (380) or Herbaceous Wind Barriers (603).

Feature Measure: Area

Scenario Unit: Square Feet

Scenario Typical Size: 630.0

Scenario Total Cost: $3,093.41

Scenario Cost/Unit: $4.91

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Concrete, CIP, slab on grade, reinforced	37	Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yards	$315.01	8	$2,520.08
Excavation, Common Earth, side cast, small equipment	48	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic Yards	$2.24	4	$8.96
Materials						
Aggregate, Sand, Graded, Washed	45	Sand, typical ASTM C33 gradation, includes materials, equipment and labor to transport and place	Cubic Yards	$38.81	8	$310.48
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 561 - Heavy Use Area Protection

Scenario #2 - Rock/Gravel on Geotextile, 6 inch thick, for small areas

Scenario Description:

The stabilization of areas around facilities that are frequently and intensively used by people, animals or vehicles by surfacing with rock and or gravel on a geotextile fabric foundation to provide a stable, non-eroding surface. Total Contracted area is less approximately 225 Square feet, or 4 Cubic yards, and is therefore not able to purchase aggregate directly from a quarry. The material is instead purchased from other sources, such as, a Redi-mix plant where the landowner is not able to take advantage of the economy of scale a larger enduser could. The cost estimate is based upon the installation of one heavy use area protection area of 15 ft x 15 ft x 6 inches deep around one watering facilities. Associated practices in addition to Watering Facility (614) may include Waste Storage Facility (313), Stream Crossing (578) and others. The stabilized area will address the resource concerns of soil erosion and water quality degradation.

Before Situation:

A producer of an agricultural has areas of gully and/or rill erosion caused by heavy and frequent use by livestock or machine traffic. The area is denuded of vegetation and not capable of sustaining growth.

After Situation:

The stabilized area is surfaced with approximately 225 square feet of rock, (6" deep) and or gravel on approximately 25 square yards of geotextile fabric foundation material for surfacing areas around facilities that are frequently and intensively used by people, animals or vehicles and will address soil erosion and water quality degradation. All needed roads must use Access Road (560). Any needed treatment of stream crossings must use Stream Crossing (578). Any needed vegetation of disturbed areas must use Critical Area Planting (342). Provisions to collect, store, utilize, and or treat contaminated runoff must use Sediment Basin (350), Waste Storage Facility (313), or Waste Treatment (629) as appropriate. To reduce the potential for air quality problems from particulate matter associated with heavy use areas, consider the use of Windbreak/Shelterbelt Establishment (380) or Herbaceous Wind Barriers (603).

Feature Measure: Area of Rock and or Gravel

Scenario Unit: Square Feet

Scenario Typical Size: 225.0

Scenario Total Cost: $546.33

Scenario Cost/Unit: $2.43

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Geotextile, woven	42	Woven Geotextile Fabric. Includes materials, equipment and labor	Square Yard	$1.18	25	$29.50
Backhoe, 80 HP	926	Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$31.57	2	$63.14
Materials						
Aggregate, Gravel, Graded, < 5Tons	2358	Washed and unwashed gravel less than 5 Tons. Includes materials and local delivery within 20 miles of quarry.	Ton	$39.96	5	$199.80
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 561 - Heavy Use Area Protection

Scenario #4 - Rock/Gravel , NO Geotextile

Scenario Description:

The stabilization of areas around facilities that are frequently and intensively used by people, animals or vehicles by surfacing with rock and or gravel on a geotextile fabric foundation to provide a stable, non-eroding surface. Installation includes all materials, equipment, and labor to install this practice, The stabilized area will address the resource concerns of soil erosion and water quality degradation.

Before Situation:

This practice applies to agricultural, urban, recreational and other frequently and/or intensively used areas requiring treatment to address soil erosion and water quality degradation.

After Situation:

The stabilized area is surfaced with approximately 784 square feet of rock and or gravel, 8 inches thick for surfacing areas around facilities that are frequently and intensively used by people, animals or vehicles and will address soil erosion and water quality degradation. All needed roads must use Access Road (560). Any needed treatment of stream crossings must use Stream Crossing (578). Any needed vegetation of disturbed areas must use Critical Area Planting (342). Provisions to collect, store, utilize, and or treat contaminated runoff must use Sediment Basin (350), Waste Storage Facility (313), or Waste Treatment (629) as appropriate. To reduce the potential for air quality problems from particulate matter associated with heavy use areas, consider the use of Windbreak/Shelterbelt Establishment (380) or Herbaceous Wind Barriers (603).

Feature Measure: Area of Rock and or Gravel

Scenario Unit: Square Feet

Scenario Typical Size: 784.0

Scenario Total Cost: $1,408.93

Scenario Cost/Unit: $1.80

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Earthfill, Dumped and Spread	51	Earthfill, dumped and spread without compaction effort, includes equipment and labor	Cubic Yards	$3.61	14.52	$52.42
Skidsteer, 80 HP	933	Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$59.94	4	$239.76
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	4	$101.24
Materials						
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic Yards	$39.34	19.36	$761.62
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 561 - Heavy Use Area Protection

Scenario #5 - Rock-Select Onsite Stone on Geotextile

Scenario Description:

The stabilization of areas around facilities that are frequently and intensively used by people, animals or vehicles by surfacing with well graded Select Onsite gravel having a maximum size of 4 inches, on a geotextile fabric foundation to provide a stable, non-eroding surface. Installation includes all materials, equipment, and labor to install this practice, The stabilized area will address the resource concerns of soil erosion and water quality degradation.

Before Situation:

This practice applies to agricultural, urban, recreational and other frequently and/or intensively used areas requiring treatment to address soil erosion and water quality degradation.

After Situation:

The stabilized area is surfaced with approximately 630 square feet of rock and or gravel on approximately 70 square yards of geotextile fabric foundation material for surfacing areas around facilities that are frequently and intensively used by people, animals or vehicles and will address soil erosion and water quality degradation. All needed roads must use Access Road (560). Any needed treatment of stream crossings must use Stream Crossing (578). Any needed vegetation of disturbed areas must use Critical Area Planting (342). Provisions to collect, store, utilize, and or treat contaminated runoff must use Sediment Basin (350), Waste Storage Facility (313), or Waste Treatment (629) as appropriate. To reduce the potential for air quality problems from particulate matter associated with heavy use areas, consider the use of Windbreak/Shelterbelt Establishment (380) or Herbaceous Wind Barriers (603).

Feature Measure: Area of Rock and or Gravel

Scenario Unit: Square Feet

Scenario Typical Size: 630.0

Scenario Total Cost: $394.00

Scenario Cost/Unit: $0.63

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Geotextile, woven	42	Woven Geotextile Fabric. Includes materials, equipment and labor	Square Yard	$1.18	70	$82.60
Excavation, Common Earth, side cast, small equipment	48	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic Yards	$2.24	12	$26.88
Backhoe, 80 HP	926	Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$31.57	2	$63.14
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	2	$50.62
Mobilization						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	1	$170.76

Practice: 561 - Heavy Use Area Protection

Scenario #6 - Rock/Gravel-GeoCell-Geotextile

Scenario Description:

The stabilization of areas around facilities that are frequently and intensively used by people, animals or vehicles by surfacing with rock and or gravel in a cellular containment grid on a geotextile fabric foundation to provide a stable, non-eroding surface. Installation includes all materials, equipment, and labor to install this practice. The stabilized area will address the resource concerns of soil erosion and water quality degradation.

Before Situation:

This practice applies to agricultural, urban, recreational and other frequently and/or intensively used areas requiring treatment to address soil erosion and water quality degradation.

After Situation:

The stabilized area is surfaced with approximately 630 square feet of rock and or gravel in approximately 70 square yards of cellular containment grid on approximately 70 square yards of geotextile fabric foundation material for surfacing areas around facilities that are frequently and intensively used by people, animals or vehicles and will address soil erosion and water quality degradation. All needed roads must use Access Road (560). Any needed treatment of stream crossings must use Stream Crossing (578). Any needed vegetation of disturbed areas must use Critical Area Planting (342). Provisions to collect, store, utilize, and or treat contaminated runoff must use Sediment Basin (350), Waste Storage Facility (313), or Waste Treatment (629) as appropriate. To reduce the potential for air quality problems from particulate matter associated with heavy use areas, consider the use of Windbreak/Shelterbelt Establishment (380) or Herbaceous Wind Barriers (603).

Feature Measure: Area of Rock and or Gravel

Scenario Unit: Square Feet

Scenario Typical Size: 630.0

Scenario Total Cost: $2,090.97

Scenario Cost/Unit: $3.32

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Geotextile, woven	42	Woven Geotextile Fabric. Includes materials, equipment and labor	Square Yard	$1.18	70	$82.60
Excavation, Common Earth, side cast, small equipment	48	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic Yards	$2.24	4	$8.96
Materials						
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic Yards	$39.34	8	$314.72
GeoCell, 4 inch	1054	4-inch thick cellular confinement system, three-dimensional, expandable panels made from high-density polyethylene (HDPE), polyester or another polymer material. Includes materials, labor and equipment for the geocell only, does not include backfill	Square Yard	$20.44	70	$1,430.80
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 561 - Heavy Use Area Protection

Scenario #8 - Fly Ash on Geotextile

Scenario Description:

The stabilization of areas around facilities that are frequently and intensively used by people, animals or vehicles by surfacing with Fly Ash on a geotextile fabric foundation to provide a stable, non-eroding surface. Installation includes all materials, equipment, and labor to install this practice. The stabilized area will address the resource concerns of soil erosion and water quality degradation.

Before Situation:

This practice applies to agricultural, urban, recreational and other frequently and/or intensively used areas requiring treatment to address soil erosion and water quality degradation.

After Situation:

The stabilized area is surfaced with approximately 630 square feet of Fly Ash on approximately 70 square yards of geotextile fabric foundation material for surfacing areas around facilities that are frequently and intensively used by people, animals or vehicles and will address soil erosion and water quality degradation. All needed roads must use Access Road (560). Any needed treatment of stream crossings must use Stream Crossing (578). Any needed vegetation of disturbed areas must use Critical Area Planting (342). Provisions to collect, store, utilize, and or treat contaminated runoff must use Sediment Basin (350), Waste Storage Facility (313), or Waste Treatment (629) as appropriate. To reduce the potential for air quality problems from particulate matter associated with heavy use areas, consider the use of Windbreak/Shelterbelt Establishment (380) or Herbaceous Wind Barriers (603).

Feature Measure: Area of Fly Ash

Scenario Unit: Square Feet

Scenario Typical Size: 630.0

Scenario Total Cost: $1,454.58

Scenario Cost/Unit: $2.31

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Excavation, Common Earth, side cast, small equipment	48	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic Yards	$2.24	19	$42.56
Dozer, 140 HP	927	Track mounted Dozer with horsepower range of 125 to 160. Equipment and power unit costs. Labor not included.	Hours	$97.92	4	$391.68
Labor						
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	4	$107.60
Materials						
Fly Ash, BAB	52	Fly Ash, Bottom Ash Blend, includes material and delivery	Cubic Yards	$22.15	19	$420.85
Mobilization						
Mobilization, Material, distance > 50 miles	1043	Mobilization cost of materials for special cases where the distance from the supplier delivery point to the job site exceeds 50 miles. The costs for shipping by UPS or bulk freight shipping to a location within 50 miles of the job site have already been included in the component price.	Dollars	$1.00	238	$238.00
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 561 - Heavy Use Area Protection

Scenario #9 - Rock/Gravel on Geotextile, 8 inch Thick

Scenario Description:

The stabilization of areas around facilities that are frequently and intensively used by people, animals or vehicles by surfacing with rock and or gravel on a geotextile fabric foundation to provide a stable, non-eroding surface. Installation includes all materials, equipment, and labor to install this practice, The stabilized area will address the resource concerns of soil erosion and water quality degradation.

Before Situation:

This practice applies to agricultural, urban, recreational and other frequently and/or intensively used areas requiring treatment to address soil erosion and water quality degradation.

After Situation:

The stabilized area is surfaced with approximately 630 square feet of rock (8" deep) and or gravel on approximately 70 square yards of geotextile fabric foundation material for surfacing areas around facilities that are frequently and intensively used by people, animals or vehicles and will address soil erosion and water quality degradation. All needed roads must use Access Road (560). Any needed treatment of stream crossings must use Stream Crossing (578). Any needed vegetation of disturbed areas must use Critical Area Planting (342). Provisions to collect, store, utilize, and or treat contaminated runoff must use Sediment Basin (350), Waste Storage Facility (313), or Waste Treatment (629) as appropriate. To reduce the potential for air quality problems from particulate matter associated with heavy use areas, consider the use of Windbreak/Shelterbelt Establishment (380) or Herbaceous Wind Barriers (603).

Feature Measure: Area of Rock and or Gravel

Scenario Unit: Square Feet

Scenario Typical Size: 630.0

Scenario Total Cost: $1,001.77

Scenario Cost/Unit: $1.59

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Geotextile, woven	42	Woven Geotextile Fabric. Includes materials, equipment and labor	Square Yard	$1.18	70	$82.60
Excavation, Common Earth, side cast, small equipment	48	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic Yards	$2.24	16	$35.84
Materials						
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic Yards	$39.34	16	$629.44
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 574 - Spring Development

Scenario #1 - Spring Development - Concrete Cutoff

Scenario Description:

Develop a water source from a natural spring or seep (i.e., spring development) to provide water for livestock and/or wildlife needs. This typical scenario includes excavating and exposing the water source at the spring/seep (typically on a hillside), constructing a water collection structure by installing a 50 ft long, 1.5 inch SCH40 PVC hand perforated pipe enclosed in a sand/gravel envelope overlaid by 2 ft wide filter fabric (50 ft long) and behind a concrete cutoff wall (6 inch x 4 ft height x 25 ft long) to retain water. Water is directed (via 20 ft long, 1.5 inch PVC) to a spring box (48 inch diameter x 6 ft long CMP) that is located at the cutoff wall or below the wall, equipped with a watertight lid and two outlets. One outlet serves as overflow pipe to account for occasions where inflow exceeds outflow. The collection system is commonly composed of a single or a network of perforated 4 inch diameter drainage pipe placed in an excavated collection trench that runs across the slope. The outflow pipe from the spring box can be directed to buried large storage (not included), and to a watering facility (not included) for use Resource Concern: Livestock production limitation - Inadequate livestock water. Associated Practices: 516-Livestock Pipeline; 614-Watering Facility; 382-Fence; Critical Area Planting (342).

Before Situation:

Livestock operation with inadequate fresh water for livestock and an on-site undeveloped spring/seep.

After Situation:

Spring development system provides adequate water for the intended use. The system typically runs all year long in most zones.

Feature Measure: Number of Developments

Scenario Unit: Each

Scenario Typical Size: 1.0

Scenario Total Cost: $3,674.30

Scenario Cost/Unit: $3,674.30

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Concrete, CIP, formed reinforced	38	Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yards	$415.80	2	$831.60
Geotextile, woven	42	Woven Geotextile Fabric. Includes materials, equipment and labor	Square Yard	$1.18	11	$12.98
Backhoe, 80 HP	926	Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$31.57	16	$505.12
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	32	$741.76
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	16	$404.96
Materials						
Aggregate, Sand, Graded, Washed	45	Sand, typical ASTM C33 gradation, includes materials, equipment and labor to transport and place	Cubic Yards	$38.81	2	$77.62
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic Yards	$39.34	2	$78.68
Pipe, PVC, 1 1/2 in., SCH 40	975	Materials: - 1 1/2 inch - PVC - SCH 40 - ASTM D1785	Feet	$1.19	70	$83.30
Pipe, CMP, 48 in., 14 Gauge	1280	48 inch Corrugated Metal Pipe, Galvanized, Uncoated, 14 gage. Material cost only.	Feet	$37.13	6	$222.78
Spring Collection Box Cover, steel, 4 ft. diameter	1281	4 foot diameter x 1/4 inch thick Steel lid with handle for spring collection box. Materials and fabrication.	Each	$207.72	1	$207.72
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: 574 - Spring Development

Scenario #2 - Spring Development - Clay Cutoff

Scenario Description:

Develop a water source from a natural spring or seep (i.e., spring development) to provide water for livestock and/or wildlife needs. This typical scenario includes excavating and exposing the water source at the spring/seep (typically on a hillside), constructing a water collection structure by installing a Spring Box (fabricated from a 48 inch diamenter x 4ft long CMP) that is located upstream from a 25 ft long arced compacted clay cut-off berm located to retain water. The excavation is 25 ft x 8 ft with average depth of 3 ft. Gravel or sand drainfill is used to backfill in the excavation and around the spring box. The drainfill is protected along the sides and top from soil intrusion with filter fabric. A 6 inch layer of topsoil is placed on top of the filter fabric. The spring box is perferated along the the sides and upstream side, equipped with a watertight lid and and is plumbed such that sand or other debris will collect in the bottom. The outflow pipe from the spring box can be directed to buried large storage (not included), and to a watering facility (not included) for use. An overflow pipe may be installed for occasions where inflow exceeds outflow. Resource Concern: Livestock production limitation - Inadequate livestock water. Associated Practices: 516-Livestock Pipeline; 614-Watering Facility; 382-Fence; Critical Area Planting (342).

Before Situation:

Livestock operation with inadequate fresh water for livestock and an on-site undeveloped spring/seep.

After Situation:

Spring development system provides adequate water for the intended use. The system typically runs all year long in most zones.

Feature Measure: Number of Developments

Scenario Unit: Each

Scenario Typical Size: 1.0

Scenario Total Cost: $2,248.73

Scenario Cost/Unit: $2,248.73

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Geotextile, woven	42	Woven Geotextile Fabric. Includes materials, equipment and labor	Square Yard	$1.18	20	$23.60
Backhoe, 80 HP	926	Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$31.57	11	$347.27
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	20	$463.60
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	10	$253.10
Materials						
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic Yards	$39.34	5	$196.70
Pipe, PVC, 1 1/2 in., SCH 40	975	Materials: - 1 1/2 inch - PVC - SCH 40 - ASTM D1785	Feet	$1.19	22	$26.18
Pipe, CMP, 48 in., 14 Gauge	1280	48 inch Corrugated Metal Pipe, Galvanized, Uncoated, 14 gage. Material cost only.	Feet	$37.13	6	$222.78
Spring Collection Box Cover, steel, 4 ft. diameter	1281	4 foot diameter x 1/4 inch thick Steel lid with handle for spring collection box. Materials and fabrication.	Each	$207.72	1	$207.72
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: 576 - Livestock Shelter Structure

Scenario #1 - Portable Shade Structure

Scenario Description:

A flexible membrane or fabric-like roof placed on a steel or wood portable frame used to promote animal health where prescribed grazing practices have limited livestock access to shade. Cost estimate is based upon a 25 ft x 40 ft portable structure. Associated practices include Fence (382), Prescribed Grazing (528), and Watering Facility (614).

Before Situation:

Livestock are being managed using a prescribed grazing plan resulting in a lack of shade during the summer months. The livestock are stressed and eat less frequently.

After Situation:

Livestock shade structures are rotated and sized according to NRCS plans and specifications. Livestock access to water, shade, and forage are dispersed to decrease animal stress and promote a better grazing and nutrient spreading.

Feature Measure: Area of Roof Frame

Scenario Unit: Square Feet

Scenario Typical Size: 1,000.0

Scenario Total Cost: $4,696.85

Scenario Cost/Unit: $4.70

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	8	$189.92
Portable Welder	1407	Portable field welder. Equipment only. Labor not included.	Hours	$19.98	16	$319.68
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	16	$480.80
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	8	$185.44
Materials						
Pipe, PVC, 2 in., SCH 40	976	Materials: - 2 inch - PVC - SCH 40 - ASTM D1785	Feet	$1.58	25	$39.50
Steel, Plate, 3/16 in.	1048	Flat Steel Plate, 3/16 inch thick, materials only.	Square Feet	$7.46	2	$14.92
Pipe, Steel, 1 1/4 in., SCH 40	1103	Materials: - 1 1/4 inch - Steel SCH 40	Feet	$4.67	94	$438.98
Pipe, Steel, 2 in., SCH 40	1105	Materials: - 2 inch - Steel SCH 40	Feet	$7.50	185	$1,387.50
Synthetic Liner, 60 mil	2109	Synthetic 60 mil HDPE, LLDPE, EPDM, etc. membrane liner material. Includes materials and shipping only.	Square Feet	$1.57	1000	$1,570.00
Mobilization						
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	$70.11	1	$70.11

Practice: 578 - Stream Crossing

Scenario #2 - Hard armored low water crossing

Scenario Description:

Stabilize the bottom and slope of a stream channel using rock riprap or cast in place concrete. The typical scenario includes site preparation, dewatering, acquiring and installing gravel or geotextile with rock riprap or cast in place concrete on channel bottom and approaches. Final travel surface shall be the rocks or concrete. If a different travel surface is needed, refer to another appropriate standard for the surfacing. The cost estimate is based on a typical stream that has 30 foot bottom width and approaches. Width is 14 feet for a total area as 420sf. Use (396) Aquatic Organism Passage instead, when the primary intent is biological concerns, not hydrologic.

Before Situation:

Water flow could not cross access road or trail without erosion; or access road or trail could not cross channel.

After Situation:

Stream flow is not impeded and a stable base exists for equipment, people and/or animals to cross. Associated practices could be (342) Critical Area Planting, (560) Access Road, (575) Animal Trails and Walkways, (566) Recreational Trails and Walkways, (500) Obstruction Removal, or (584) Channel Stabilization.

Feature Measure: Crossing dimensions

Scenario Unit: Square Feet

Scenario Typical Size: 420.0

Scenario Total Cost: $2,348.27

Scenario Cost/Unit: $5.59

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Truck, dump, 12 CY	1215	Dump truck for moving bulk material. Typically capacity is 16 ton or 12 cubic yards. Includes equipment only.	Hours	$77.81	2	$155.62
Excavation, common earth, side cast, large equipment	1227	Bulk excavation and side casting of common earth with hydraulic excavator with less greater than 1 CY capacity. Includes equipment and labor.	Cubic Yards	$1.44	18	$25.92
Labor						
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	2	$53.80
Materials						
Rock Riprap, Placed with geotextile	44	Rock Riprap, placed with geotextile, includes materials, equipment and labor to transport and place	Cubic Yards	$103.28	18	$1,859.04
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 578 - Stream Crossing

Scenario #3 - Culvert installation

Scenario Description:

Install a new culvert. Work may include dewatering, site preparation and removing any old crossing, acquiring and installing culvert pipe with gravel bedding and fill (compacted), and building headwalls. If a different travel surface is needed, refer to another appropriate standard for the surfacing. Cost estimate is based on a 30 inch Culvert installation with <75 cy of fill needed and < 2 yds rock riprap for headwalls. Pipe is 40 feet long. Use (396) Aquatic Organism Passage instead, when the primary intent is biological concerns, not hydrologic. Use (587) Structure for Water Control instead, for ditch cross culverts and other intermittent flows.

Before Situation:

Water flow could not cross access road or trail without erosion; or access road or trail could not cross channel.

After Situation:

Access road and water flow are able to cross each other in a stable manner. Stream flow is not impeded and a stable base exists for equipment, people and/or animals to cross. Associated practices could be (342) Critical Area Planting, (560) Access Road, (575) Animal Trails and Walkways, (566) Recreational Trails and Walkways, (500) Obstruction Removal, or (584) Channel Stabilization.

Feature Measure: Culvert

Scenario Unit: Diameter Inch Foot

Scenario Typical Size: 1,200.0

Scenario Total Cost: $4,528.38

Scenario Cost/Unit: $3.77

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Earthfill, Manually Compacted	50	Earthfill, manually compacted, includes equipment and labor	Cubic Yards	$5.73	3	$17.19
Hydraulic Excavator, 1 CY	931	Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included.	Hours	$111.83	10	$1,118.30
Materials						
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic Yards	$39.34	50	$1,967.00
Pipe, HDPE, CPT, Double Wall, Soil Tight, 30 in.	1247	Pipe, Corrugated HDPE Double Wall, 30 inch diameter with soil tight joints - AASHTO M294. Material cost only.	Feet	$29.30	40	$1,172.00
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 578 - Stream Crossing

Scenario #4 - Low water crossing using prefabricated products

Scenario Description:

To install a stable crossing medium on channel bottom and approatches. Medium includes but not limited to precast concrete blocks, geocells, pavers, and gabions. If a different travel surface is needed, refer to another appropriate standard for the surfacing. This cost estimate is based on a typical stream that has a 30 foot bottom width and approaches. Width is 14 feet for a total area as 420sf. Use (396) Aquatic Organism Passage instead, when the primary intent is biological concerns, not hydrologic.

Before Situation:

Water flow could not cross access road or trail without erosion; or access road or trail could not cross channel.

After Situation:

Access road and waterflow are able to cross each other in a stable manner.Stream flow is not impeded and a stable base exists for equipment, people and/or animals to cross. Associated practices could be (342) Critical Area Planting, (560) Access Road, (575) Animal Trails and Walkways, (566) Recreational Trails and Walkways, (500) Obstruction Removal, or (584) Channel Stabilization.

Feature Measure: low water crossing

Scenario Unit: Square Feet

Scenario Typical Size: 420.0

Scenario Total Cost: $3,125.52

Scenario Cost/Unit: $7.44

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Truck, dump, 12 CY	1215	Dump truck for moving bulk material. Typically capacity is 16 ton or 12 cubic yards. Includes equipment only.	Hours	$77.81	2	$155.62
Excavation, common earth, side cast, large equipment	1227	Bulk excavation and side casting of common earth with hydraulic excavator with less greater than 1 CY capacity. Includes equipment and labor.	Cubic Yards	$1.44	18	$25.92
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	40	$927.20
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	2	$53.80
Materials						
Aggregate, Sand, Graded, Washed	45	Sand, typical ASTM C33 gradation, includes materials, equipment and labor to transport and place	Cubic Yards	$38.81	6	$232.86
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic Yards	$39.34	18	$708.12
GeoCell, 4 inch	1054	4-inch thick cellular confinement system, three-dimensional, expandable panels made from high-density polyethylene (HDPE), polyester or another polymer material. Includes materials, labor and equipment for the geocell only, does not include backfill	Square Yard	$20.44	50	$1,022.00

Practice: 578 - Stream Crossing

Scenario #5 - Steam Crossing, Concrete Bottom

Scenario Description:

Stabilize the bottom and slope of a stream channel using cast in place concrete with gravel approaches. This scenario includes site preparation, dewatering, acquiring and installing gravel or geotextile with gravel and cast in place concrete on channel bottom and approaches. Final travel surface shall be the rocks above normal highwater mark and concrete below the normal highwater mark. If a different travel surface is needed, refer to another appropriate standard for the surfacing. Typical stream used for cost estimate has 30 linear feet of concrete (bottom width and approaches) with 10 foot gravel approaches on either side above the normal highwater mark. Width is 14 feet for a total area as 420sf. Use (396) Aquatic Organism Passage instead, when the primary intent is biological concerns, not hydrologic.

Before Situation:

An unimproved stream crossing has rill and gully erosion causing excessive sediments and excess nutrient potential. Erosion is made worse by vehicle traffic through the stream or rutting has progressed to the point that access to the field on the other side is no longer possible. Stream flow/velocity during storm events is such that culverts or a less ridgid ford type crossing is not anticipated to last its design life. Access is difficult to the field across the stream and water quality is negatively impacted.

After Situation:

Stream flow is not impeded and a stable base exists for equipment, people and/or animals to cross. Associated practices could be (342) Critical Area Planting, (560) Access Road, (575) Animal Trails and Walkways, (566) Recreational Trails and Walkways, (500) Obstruction Removal, or (584) Channel Stabilization.

Feature Measure: Crossing dimensions

Scenario Unit: Square Feet

Scenario Typical Size: 420.0

Scenario Total Cost: $6,964.28

Scenario Cost/Unit: $16.58

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Concrete, CIP, slab on grade, reinforced	37	Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yards	$315.01	18	$5,670.18
Truck, dump, 12 CY	1215	Dump truck for moving bulk material. Typically capacity is 16 ton or 12 cubic yards. Includes equipment only.	Hours	$77.81	2	$155.62
Excavation, common earth, wet, side cast, large equipment	1228	Bulk excavation and side casting of wet common earth with hydraulic excavator or dragline with greater than 1 CY capacity. Includes equipment and labor.	Cubic Yards	$4.37	50	$218.50
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	16	$370.88
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	2	$53.80
Materials						
Aggregate, Sand, Graded, Washed	45	Sand, typical ASTM C33 gradation, includes materials, equipment and labor to transport and place	Cubic Yards	$38.81	5	$194.05
Geotextile, non-woven, heavy weight	1210	Non-woven greater than 8 ounce/square yard geotextile with staple anchoring. Materials and shipping only.	Square Yard	$1.48	32	$47.36
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 578 - Stream Crossing

Scenario #17 - Bridge

Scenario Description:

Install a bridge to allow stream flows to cross under access road or animal trail. Bridge opening determined by sizing for storm event dictated in standard. Scenario includes dewatering, abutments, girders, decking. Work consists of site preparation, dewatering, acquiring and installing abuttments, girders, decking with necessary hardware, backfilling abuttments, and armoring with geotextile and riprap. Riprap and geotextile are used to stabilize and protect abutments as needed. Scenario based on cast in place concrete abutments, steel girders, and timber deck. Travel surface shall be wooden deck surface. If a different travel surface is needed, refer to another appropriate standard for the surfacing. Span is less than 14 feet. Load is H-20. Width is 14 feet including curbs. Abutments are <= 6 feet. Use (396) Aquatic Organism Passage instead, when the primary intent is biological concerns, not hydrologic.

Before Situation:

Water flow could not cross access road or trail without erosion; or access road or trail could not cross channel.

After Situation:

Access and waterflow are able to cross each other in a stable manner.Stream flow is not impeded and a stable base exists for equipment, people and/or animals to cross. Associated practices could be (342) Critical Area Planting, (560) Access Road, (575) Animal Trails and Walkways, (566) Recreational Trails and Walkways, (500) Obstruction Removal, or (584) Channel Stabilization.

Feature Measure: square footage of bridge deck

Scenario Unit: Square Feet

Scenario Typical Size: 252.0

Scenario Total Cost: $16,306.11

Scenario Cost/Unit: $64.71

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Truck, dump, 12 CY	1215	Dump truck for moving bulk material. Typically capacity is 16 ton or 12 cubic yards. Includes equipment only.	Hours	$77.81	8	$622.48
Excavation, common earth, side cast, large equipment	1227	Bulk excavation and side casting of common earth with hydraulic excavator with less greater than 1 CY capacity. Includes equipment and labor.	Cubic Yards	$1.44	75	$108.00
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	80	$2,404.00
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	8	$215.20
Materials						
Rock Riprap, Placed with geotextile	44	Rock Riprap, placed with geotextile, includes materials, equipment and labor to transport and place	Cubic Yards	$103.28	20	$2,065.60
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic Yards	$39.34	20	$786.80
Dimension Lumber, untreated	1045	Untreated dimension lumber with nominal thickness equal or less than 2 inches. Includes lumber and fasteners.	Board Feet	$1.69	2000	$3,380.00
Block, pre-cast concrete, modular	1496	Pre-cast concrete blocks, typically 2ft x 2ft x 6ft , includes installation and delivery.	Cubic Yards	$111.83	18	$2,012.94
Steel, structural steel members	1779	Structural steel, includes materials and fabrication.	Pound	$1.38	3000	$4,140.00
Floating Turbidity Curtain, Permeable, 4 ft.	2351	Floating permeable vinyl curtain with chain or cable weight and all necessary anchoring required for installation in flowing streams or rivers. Does not include labor for installation or removal. Includes materials and shipping only.	Feet	$15.86	20	$317.20
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 580 - Streambank and Shoreline Protection

Scenario #1 - Vegetative

Scenario Description:

Protection of streambanks consisting of conventional plantings of vegetation to stabilize and protect against scour and erosion. The purpose of this practice is to maintain, improve, or restore physical, chemical, and biological functions of a stream to provide diverse aquatic communities to improve habitat for desired aquatic species. Payment cost include shaping bank, critical area vegetation and erosion control fabric; a 6-foot high bank at 3(H):1(V) slope for 1000 linear feet (0.46 acres) is used for estimation purposes. Resource Concerns: Soil Erosion - Excessive Bank Erosion from Streams, Shoreline and Water Conveyance Channels; Water Quality Degradation - Excessive Sediment in Surface Waters; Water Quality Degradation - Elevated Water Temperature; Excess/Insufficient Water - Excessive Sediment in Surface Waters; Inadequate Habitat for Fish and Wildlife- Habitat Degradation. Associated Practices include: 560 - Access Road; 342 - Critical Area Planting; 382 - Fence; 391 - Riparian Forest Buffer; 390 - Riparian Herbaceous Cover; 395 - Stream Habitat Improvement and Management; 614 - Watering Facility; 484-Mulching; and 570-Stormwater Runoff Control

Before Situation:

A stream bisects the agricultural property and has had all of the woody vegetation removed due to overgrazing or human manipulation; the stream has marginally degraded streambanks that are unstable and show signs of active erosion. Soil Erosion: The streambank is unstable. Water Quality Degradation: The sediment load has increased in the stream resulting in elevated water temperatures. Excess/Insufficient Water: The excessive sediment load has reduced the water conveyance capacity, storage capacity and flow within the stream. Inadequate Habitat for Fish and Wildlife: The deficiencies in the stream's habitat limit survival, growth, reproduction, and/or diversity of aquatic organisms within the stream.

After Situation:

The streambank is stable against further erosion and encourages natural sediment transport and deposition. Loss of riparian areas and sediment load is reduced in the stream. For Soil Erosion: The streambank is stable. For Water Quality Degradation: The sediment load has decreased in the stream resulting in improved aquatic habitat. For Excess/Insufficient Water: The water conveyance capacity, storage capacity and flow within the stream has been stabilized. For Inadequate Habitat for Fish and Wildlife: The reduction in the sediment load promotes survival, growth, reproduction, and/or diversity of aquatic organisms within the stream's habitat.

Feature Measure: Linear Feet of Streambank/Shorelin

Scenario Unit: Feet

Scenario Typical Size: 1,000.0

Scenario Total Cost: $15,122.25

Scenario Cost/Unit: $15.12

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Excavation, Common Earth, side cast, small equipment	48	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic Yards	$2.24	2500	$5,600.00
Dozer, 80 HP	929	Track mounted Dozer with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$54.51	16	$872.16
Tillage, Primary	946	Includes heavy disking (offset) or chisel plow. Includes equipment, power unit and labor costs.	Acres	$15.95	0.46	$7.34
Fertilizer, ground application, dry bulk	950	Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$7.35	0.46	$3.38
Lime application	953	Lime application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$8.51	0.46	$3.91
Seeding Operation, Broadcast, Ground	959	Broadcast seed via ground operation. May require post tillage operation to incorporate seed. Includes equipment, power unit and labor costs.	Acres	$11.77	0.46	$5.41
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	224	$5,192.32
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	16	$404.96
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	56	$2,339.68
Materials						
Annual Grasses	2730	Annual grasses, one or more species, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping.	Acres	$31.62	0.46	$14.55
Mobilization						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	1	$170.76

Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: 580 - Streambank and Shoreline Protection

Scenario #2 - Bioengineered

Scenario Description:

Protection of streambanks consisting of a bioengineered technique comprised of non-structural measures such as earth revetments and benches with vegetative measures to stabilize and protect the streambank against scour and erosion. Soil bioengineering is a system of living plant materials used as structural components. Adapted types of woody vegetation (shrubs and trees) are initially installed in specified configurations that offer immediate soil protection and reinforcement. In addition, soil bioengineering systems create resistance to sliding or shear displacement in a streambank as they develop roots or fibrous inclusions. Environmental benefits derived from woody vegetation include diverse and productive riparian habitats, shade, organic additions to the stream, cover for fish, and improvements in aesthetic value and water quality. Under certain conditions, soil bioengineering installations work well in conjunction with structures to provide more permanent protection and healthy function, enhance aesthetics, and create a more environmentally acceptable product. Soil bioengineering systems normally use unrooted plant parts in the form of cut branches and rooted plants. For streambanks, living systems include brushmattresses, live stakes, joint plantings, vegetated geogrids, branchpacking, and live fascines. The purpose of this practice is to maintain, improve, or restore physical, chemical, and biological functions of a stream to provide diverse aquatic communities to improve habitat for desired aquatic species. Payment cost include shaping bank, critical area vegetation, livestake, rootwads and revetments: a 6-foot high bank at 3(H):1(V) slope for 1000 linear feet (0.46 acres) is used for estimation purposes. Resource Concerns: Soil Erosion - Excessive Bank Erosion from Streams, Shoreline and Water Conveyance Channels; Water Quality Degradation - Excessive Sediment in Surface Waters; Water Quality Degradation - Elevated Water Temperature; Excess/Insufficient Water - Excessive Sediment in Surface Waters; Inadequate Habitat for Fish and Wildlife- Habitat Degradation. Associated Practices include: 560 - Access Road; 342 - Critical Area Planting; 382 - Fence; 391 - Riparian Forest Buffer; 390 - Riparian Herbaceous Cover; 395 - Stream Habitat Improvement and Management; 614 - Watering Facility; 484-Mulching; and 570-Stormwater Runoff Control

Before Situation:

A stream bisects the agricultural property and has had all of the woody vegetation removed due to overgrazing or human manipulation; the stream has moderately degraded streambanks that are unstable and show signs of active erosion. Soil Erosion: The streambank is unstable. Water Quality Degradation: The sediment load has increased in the stream resulting in elevated water temperatures. Excess/Insufficient Water: The excessive sediment load has reduced the water conveyance capacity, storage capacity and flow within the stream. Inadequate Habitat for Fish and Wildlife: The deficiencies in the stream's habitat limit survival, growth, reproduction, and/or diversity of aquatic organisms within the stream.

After Situation:

The streambank is stable against further erosion and encourages natural sediment transport and deposition. Loss of riparian areas and sediment load is reduced in the stream. For Soil Erosion: The streambank is stable. For Water Quality Degradation: The sediment load has decreased in the stream resulting in improved aquatic habitat. For Excess/Insufficient Water: The water conveyance capacity, storage capacity and flow within the stream has been stabilized. For Inadequate Habitat for Fish and Wildlife: The reduction in the sediment load promotes survival, growth, reproduction, and/or diversity of aquatic organisms within the stream's habitat.

Feature Measure: Linear Feet of Streambank/Shorelin

Scenario Unit: Feet

Scenario Typical Size: 1,000.0

Scenario Total Cost: $43,502.79

Scenario Cost/Unit: $43.50

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Excavation, Common Earth, side cast, small equipment	48	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic Yards	$2.24	2500	$5,600.00
Earthfill, Roller Compacted	49	Earthfill, roller or machine compacted, includes equipment and labor	Cubic Yards	$4.42	2500	$11,050.00
Dozer, 80 HP	929	Track mounted Dozer with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$54.51	16	$872.16
Hydraulic Excavator, 2 CY	932	Track mounted hydraulic excavator with bucket capacity range of 1.5 to 2.5 CY. Equipment and power unit costs. Labor not included.	Hours	$126.60	75	$9,495.00
Tillage, Primary	946	Includes heavy disking (offset) or chisel plow. Includes equipment, power unit and labor costs.	Acres	$15.95	0.46	$7.34
Fertilizer, ground application, dry bulk	950	Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$7.35	0.46	$3.38
Lime application	953	Lime application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$8.51	0.46	$3.91
Seeding Operation, Broadcast, Ground	959	Broadcast seed via ground operation. May require post tillage operation to incorporate seed. Includes equipment, power unit and labor costs.	Acres	$11.77	0.46	$5.41
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	370	$8,576.60
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	16	$404.96

Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	75	$2,017.50
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	80	$3,342.40
Materials						
Tree, Hardwood, Seedling, Medium	1510	Bare root hardwood seedlings 18 to 36 inches tall; includes tropical containerized seedlings of 10 to 20 cubic inches. Includes materials and shipping only.	Each	$1.17	1000	$1,170.00
Annual Grasses, Legumes or Forbs	2732	A mix of annual grasses, legumes and/or forbs, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping.	Acres	$47.16	0.46	$21.69
Mobilization						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	1	$170.76
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	3	$761.67

Practice: 580 - Streambank and Shoreline Protection

Scenario #3 - Structural, Standard

Scenario Description:

Protection of streambanks using structural measures such as riprap, concrete block, piling revetments, with wire or geotextile fencing; with slotted fencing; jacks or jack fields, etc. to stabilize and protect banks of streams or excavated channels against scour and erosion. The purpose of this practice is to maintain, improve, or restore physical, chemical, and biological functions of a stream to provide diverse aquatic communities to improve habitat for desired aquatic species. Payment cost include shaping bank, critical area vegetation, geotextile, and rock rip rap; a 8-foot high bank at 3(H):1(V) slope for 1000 linear feet (0.46 acres) is used for estimation purposes. The rock toe will be 3' thick and 5' high and have a bed key 3 ft deep and extending 6 ft out. The bank above the riprap will be graded to a stable slope and revegetated. Resource Concerns: Soil Erosion - Excessive Bank Erosion from Streams, Shoreline and Water Conveyance Channels; Water Quality Degradation - Excessive Sediment in Surface Waters; Water Quality Degradation - Elevated Water Temperature; Excess/Insufficient Water - Excessive Sediment in Surface Waters; Inadequate Habitat for Fish and Wildlife- Habitat Degradation. Associated Practices include: 560 - Access Road; 342 - Critical Area Planting; 382 - Fence; 391 - Riparian Forest Buffer; 390 - Riparian Herbaceous Cover; 395 - Stream Habitat Improvement and Management; 614 - Watering Facility; 484-Mulching; and 570-Stormwater Runoff Control

Before Situation:

A stream bisects the agricultural property and has had all of the woody vegetation removed due to overgrazing or human manipulation; the stream has severely degraded streambanks that are unstable and show signs of active erosion. Soil Erosion: The streambank is unstable. Water Quality Degradation: The sediment load has increased in the stream resulting in elevated water temperatures. Excess/Insufficient Water: The excessive sediment load has reduced the water conveyance capacity, storage capacity and flow within the stream. Inadequate Habitat for Fish and Wildlife: The deficiencies in the stream's habitat limit survival, growth, reproduction, and/or diversity of aquatic organisms within the stream.

After Situation:

The streambank is stable against further erosion and encourages natural sediment transport and deposition. Loss of riparian areas and sediment load is reduced in the stream. For Soil Erosion: The streambank is stable. For Water Quality Degradation: The sediment load has decreased in the stream resulting in improved aquatic habitat. For Excess/Insufficient Water: The water conveyance capacity, storage capacity and flow within the stream has been stabilized. For Inadequate Habitat for Fish and Wildlife: The reduction in the sediment load promotes survival, growth, reproduction, and/or diversity of aquatic organisms within the stream's habitat.

Feature Measure: Linear Feet of Streambank/Shorelin

Scenario Unit: Feet

Scenario Typical Size: 1,000.0

Scenario Total Cost: $281,774.43

Scenario Cost/Unit: $281.77

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Earthfill, Roller Compacted	49	Earthfill, roller or machine compacted, includes equipment and labor	Cubic Yards	$4.42	3167	$13,998.14
Dozer, 80 HP	929	Track mounted Dozer with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$54.51	16	$872.16
Tillage, Primary	946	Includes heavy disking (offset) or chisel plow. Includes equipment, power unit and labor costs.	Acres	$15.95	0.46	$7.34
Fertilizer, ground application, dry bulk	950	Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$7.35	0.46	$3.38
Lime application	953	Lime application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$8.51	0.46	$3.91
Seeding Operation, Broadcast, Ground	959	Broadcast seed via ground operation. May require post tillage operation to incorporate seed. Includes equipment, power unit and labor costs.	Acres	$11.77	0.12	$1.41
Excavation, common earth, wet, side cast, large equipment	1228	Bulk excavation and side casting of wet common earth with hydraulic excavator or dragline with greater than 1 CY capacity. Includes equipment and labor.	Cubic Yards	$4.37	3167	$13,839.79
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	320	$7,417.60
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	16	$404.96
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	80	$3,342.40
Materials						
Rock Riprap, Placed with geotextile	44	Rock Riprap, placed with geotextile, includes materials, equipment and labor to transport and place	Cubic Yards	$103.28	2333	$240,952.24

Annual Grasses, Legumes or Forbs	2732	A mix of annual grasses, legumes and/or forbs, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping.	Acres	$47.16	0.46	$21.69
Mobilization						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	1	$170.76
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$484.75	1	$484.75

Practice: 580 - Streambank and Shoreline Protection

Scenario #4 - Structural, Site Specific

Scenario Description:

Protection of actively eroding streambanks using structural measures such as riprap, concrete block, gabions, etc. to stabilize and protect banks of streams or excavated channels against scour and erosion. Depending on site conditions, protection is extended from the streambank toe to 80% of the top bank height, or all the way to the top bank if overland flow or field runoff creates a need for such protection. The purpose of this practice is to maintain, improve, or restore physical, chemical, and biological functions of a stream to provide diverse aquatic communities to improve habitat for desired aquatic species. Payment cost include shaping bank, critical area vegetation, geotextile, and rock rip rap; a 15-foot high bank at 2(H):1(V) slope for 125 linear feet is used for estimation purposes. The rock will be keyed in 2' below the streambed at the toe. The rock will extend 80% of the slope distance up the bank, or 12 feet high. The bank above the riprap will be graded to a stable slope and revegetated. Resource Concerns: Soil Erosion - Excessive Bank Erosion from Streams, Shoreline and Water Conveyance Channels; Water Quality Degradation - Excessive Sediment in Surface Waters; Water Quality Degradation - Elevated Water Temperature; Excess/Insufficient Water - Excessive Sediment in Surface Waters; Inadequate Habitat for Fish and Wildlife- Habitat Degradation. Associated Practices include: 560 - Access Road; 342 - Critical Area Planting; 382 - Fence; 391 - Riparian Forest Buffer; 390 - Riparian Herbaceous Cover; 395 - Stream Habitat Improvement and Management; 614 - Watering Facility; 484-Mulching; and 570-Stormwater Runoff Control

Before Situation:

A stream bisects the agricultural property and has had all of the woody vegetation removed due to overgrazing or human manipulation; the stream has severely degraded streambanks that are unstable and show signs of active erosion. Soil Erosion: The streambank is unstable. Water Quality Degradation: The sediment load has increased in the stream resulting in elevated water temperatures. Excess/Insufficient Water: The excessive sediment load has reduced the water conveyance capacity, storage capacity and flow within the stream. Inadequate Habitat for Fish and Wildlife: The deficiencies in the stream's habitat limit survival, growth, reproduction, and/or diversity of aquatic organisms within the stream.

After Situation:

The streambank is stable against further erosion and encourages natural sediment transport and deposition. Loss of riparian areas and sediment load is reduced in the stream. For Soil Erosion: The streambank is stable. For Water Quality Degradation: The sediment load has decreased in the stream resulting in improved aquatic habitat. For Excess/Insufficient Water: The water conveyance capacity, storage capacity and flow within the stream has been stabilized. For Inadequate Habitat for Fish and Wildlife: The reduction in the sediment load promotes survival, growth, reproduction, and/or diversity of aquatic organisms within the stream's habitat.

Feature Measure: Cubic Yards of riprap

Scenario Unit: Cubic Yards

Scenario Typical Size: 306.0

Scenario Total Cost: $54,199.85

Scenario Cost/Unit: $177.12

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Earthfill, Roller Compacted	49	Earthfill, roller or machine compacted, includes equipment and labor	Cubic Yards	$4.42	890	$3,933.80
Dozer, 80 HP	929	Track mounted Dozer with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$54.51	16	$872.16
Hydraulic Excavator, 1 CY	931	Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included.	Hours	$111.83	16	$1,789.28
Tillage, Primary	946	Includes heavy disking (offset) or chisel plow. Includes equipment, power unit and labor costs.	Acres	$15.95	0.46	$7.34
Fertilizer, ground application, dry bulk	950	Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$7.35	0.46	$3.38
Lime application	953	Lime application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$8.51	0.46	$3.91
Seeding Operation, Broadcast, Ground	959	Broadcast seed via ground operation. May require post tillage operation to incorporate seed. Includes equipment, power unit and labor costs.	Acres	$11.77	0.08	$0.94
Excavation, common earth, wet, side cast, large equipment	1228	Bulk excavation and side casting of wet common earth with hydraulic excavator or dragline with greater than 1 CY capacity. Includes equipment and labor.	Cubic Yards	$4.37	890	$3,889.30
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	320	$7,417.60
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	16	$404.96
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	80	$3,342.40
Materials						

Rock Riprap, Placed with geotextile	44	Rock Riprap, placed with geotextile, includes materials, equipment and labor to transport and place	Cubic Yards	$103.28	306	$31,603.68
Annual Grasses, Legumes or Forbs	2732	A mix of annual grasses, legumes and/or forbs, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping.	Acres	$47.16	0.46	$21.69
Mobilization						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	1	$170.76
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$484.75	1	$484.75

Practice: 580 - Streambank and Shoreline Protection

Scenario #5 - Vegetative with Willow Staking

Scenario Description:

Protection of streambanks consisting of conventional plantings of vegetation to stabilize and protect against scour and erosion. The purpose of this practice is to maintain, improve, or restore physical, chemical, and biological functions of a stream to provide diverse aquatic communities to improve habitat for desired aquatic species. Payment cost include shaping bank, staking of willow cuttings, critical area vegetation, and erosion control fabric; a 6-foot high bank at 3(H):1(V) slope for 1000 linear feet (0.46 acres) where the lower 3 feet are staked with willows is used for estimation purposes. Resource Concerns: Soil Erosion - Excessive Bank Erosion from Streams, Shoreline and Water Conveyance Channels; Water Quality Degradation - Excessive Sediment in Surface Waters; Water Quality Degradation - Elevated Water Temperature; Excess/Insufficient Water - Excessive Sediment in Surface Waters; Inadequate Habitat for Fish and Wildlife- Habitat Degradation. Associated Practices include: 560 - Access Road; 342 - Critical Area Planting; 382 - Fence; 391 - Riparian Forest Buffer; 390 - Riparian Herbaceous Cover; 395 - Stream Habitat Improvement and Management; 614 - Watering Facility; 484-Mulching; and 570-Stormwater Runoff Control

Before Situation:

A stream bisects the agricultural property and has had all of the woody vegetation removed due to overgrazing or human manipulation; the stream has marginally degraded streambanks that are unstable with little hydraulic roughness near the toe and show signs of active erosion. Soil Erosion: The streambank is unstable. Water Quality Degradation: The sediment load has increased in the stream resulting in elevated water temperatures. Excess/Insufficient Water: The excessive sediment load has reduced the water conveyance capacity, storage capacity and flow within the stream. Inadequate Habitat for Fish and Wildlife: The deficiencies in the stream's habitat limit survival, growth, reproduction, and/or diversity of aquatic organisms within the stream.

After Situation:

The streambank is stablized against further erosion by the roots of planted willows and encourages natural sediment transport and deposition. The stream bank's toe is further stabilized by the addition of hydraulic roughness, via growing brushy vegetation, at the toe of the slope. Loss of riparian areas and sediment load is reduced in the stream. For Soil Erosion: The streambank is stable. For Water Quality Degradation: The sediment load has decreased in the stream resulting in improved aquatic habitat. For Excess/Insufficient Water: The water conveyance capacity, storage capacity and flow within the stream has been stabilized. For Inadequate Habitat for Fish and Wildlife: The reduction in the sediment load promotes survival, growth, reproduction, and/or diversity of aquatic organisms within the stream's habitat.

Feature Measure: Linear Feet of Streambank/Shorelin

Scenario Unit: Feet

Scenario Typical Size: 1,000.0

Scenario Total Cost: $22,169.05

Scenario Cost/Unit: $22.17

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Dozer, 80 HP	929	Track mounted Dozer with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$54.51	16	$872.16
Tillage, Primary	946	Includes heavy disking (offset) or chisel plow. Includes equipment, power unit and labor costs.	Acres	$15.95	0.46	$7.34
Fertilizer, ground application, dry bulk	950	Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$7.35	0.46	$3.38
Lime application	953	Lime application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$8.51	0.46	$3.91
Seeding Operation, Broadcast, Ground	959	Broadcast seed via ground operation. May require post tillage operation to incorporate seed. Includes equipment, power unit and labor costs.	Acres	$11.77	0.46	$5.41
Excavation, common earth, wet, side cast, large equipment	1228	Bulk excavation and side casting of wet common earth with hydraulic excavator or dragline with greater than 1 CY capacity. Includes equipment and labor.	Cubic Yards	$4.37	2500	$10,925.00
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	234	$5,424.12
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	16	$404.96
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	56	$2,339.68
Materials						
Tree & Shrub, Woody, Cuttings, Medium	1308	Woody cuttings, live stakes or whips typically 1/4 to 1 inch diameter and 24 to 48 inches long. Includes materials and shipping only.	Each	$1.49	1000	$1,490.00
Annual Grasses	2730	Annual grasses, one or more species, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping.	Acres	$31.62	0.46	$14.55

Mobilization

Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	1	$170.76
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: 580 - Streambank and Shoreline Protection

Scenario #6 - Stream Barbs

Scenario Description:

Protection of streambanks using structural measures such as stream barbs, J-hook vanes, bendway weirs, jetties, etc. to stabilize and protect banks of streams or excavated channels against scour and erosion through the use of redirective measures. Use "Structural" where additional structural measures such as tree revetments; log, rootwad and boulder revetments; dormant post plantings; piling revetments with wire or geotextile fencing; piling revetments with slotted fencing; jacks or jack fields; rock riprap; stream jetties; stream barbs; and gabions are used. The purpose of this practice is to maintain, improve, or restore physical, chemical, and biological functions of a stream to provide diverse aquatic communities to improve habitat for desired aquatic species. The Cost estimate is based on protecting 300 linear feet of streambank having 12 foot high, near verticle banks. Sloping and shaping banks to a 3(H):1(V) slope, installing 3 - 30 ft long stream barbs with geotextile underneath. The stream barbs are 30 ft in length with 20 fto bank keys and top witdth of 4 feet. The barbs have 2(H):1(V) sideslopes, and vary in height from 8' to 1'. The bed key depths vary from 4' to 2' with 1(H):2(V) side slopes. Each barb contains 148 cubic yards of rock. The bank above the riprap will be graded to a stable slope and revegetated. Resource Concerns: Soil Erosion - Excessive Bank Erosion from Streams, Shoreline and Water Conveyance Channels; Water Quality Degradation - Excessive Sediment in Surface Waters; Water Quality Degradation - Elevated Water Temperature; Excess/Insufficient Water - Excessive Sediment in Surface Waters; Inadequate Habitat for Fish and Wildlife- Habitat Degradation. Associated Practices include: 560 - Access Road; 342 - Critical Area Planting; 382 - Fence; 391 - Riparian Forest Buffer; 390 - Riparian Herbaceous Cover; 395 - Stream Habitat Improvement and Management; 614 - Watering Facility

Before Situation:

A stream bisects the agricultural property and has had all of the woody vegetation removed due to overgrazing or human manipulation; the stream has severely degraded streambanks that are unstable and show signs of active erosion. Soil Erosion: The streambank is unstable. Water Quality Degradation: The sediment load has increased in the stream resulting in elevated water temperatures. Excess/Insufficient Water: The excessive sediment load has reduced the water conveyance capacity, storage capacity and flow within the stream. Inadequate Habitat for Fish and Wildlife: The deficiencies in the stream's habitat limit survival, growth, reproduction, and/or diversity of aquatic organisms within the stream.

After Situation:

The streambank is stable against further erosion and encourages natural sediment transport and deposition. Loss of riparian areas and sediment load is reduced in the stream. For Soil Erosion: The streambank is stable. For Water Quality Degradation: The sediment load has decreased in the stream resulting in improved aquatic habitat. For Excess/Insufficient Water: The water conveyance capacity, storage capacity and flow within the stream has been stabilized. For Inadequate Habitat for Fish and Wildlife: The reduction in the sediment load promotes survival, growth, reproduction, and/or diversity of aquatic organisms within the stream's habitat.

Feature Measure: Cubic yards of Rock Rip Rap

Scenario Unit: Cubic Yards

Scenario Typical Size: 444.0

Scenario Total Cost: $46,567.43

Scenario Cost/Unit: $104.88

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Hydraulic Excavator, 2 CY	932	Track mounted hydraulic excavator with bucket capacity range of 1.5 to 2.5 CY. Equipment and power unit costs. Labor not included.	Hours	$126.60	40	$5,064.00
Excavation, common earth, large equipment, 150 ft	1223	Bulk excavation of common earth including sand and gravel with dozer >100 HP with average push distance of 150 feet. Includes equipment and labor.	Cubic Yards	$3.85	2595	$9,990.75
Hauling, bulk, highway truck	1615	Hauling of bulk earthfill, rockfill, waste or debris. One-way travel distance using fully loaded highway dump trucks (typically 16 CY or 20 TN capacity). Includes equipment and labor for truck only. Does not include cost for loading truck.	Cubic Yard Mile	$0.29	22200	$6,438.00
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	16	$370.88
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	40	$1,076.00
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	30	$1,253.40
Materials						
Rock Riprap, graded, angular, material and shipping	1200	Graded Rock Riprap for all gradation ranges. Includes materials and delivery only.	Ton	$38.20	577	$22,041.40
Geotextile, non-woven, heavy weight	1210	Non-woven greater than 8 ounce/square yard geotextile with staple anchoring. Materials and shipping only.	Square Yard	$1.48	225	$333.00

Practice: 580 - Streambank and Shoreline Protection

Scenario #7 - Longitudinal Peak Stone Toe, 4 foot high or less

Scenario Description:

Protection of streambanks using Longitudinal Peak Stone Toe protection (LPST) having a height of 4' or less. Use "Structural" where additional structural measures such as tree revetments; log, rootwad and boulder revetments; dormant post plantings; piling revetments with wire or geotextile fencing; piling revetments with slotted fencing; jacks or jack fields; rock riprap; stream jetties; stream barbs; and gabions are used. The purpose of this practice is to maintain, improve, or restore physical, chemical, and biological functions of a stream to provide diverse aquatic communities to improve habitat for desired aquatic species. The typical scenario involves the stabilization of 1,000 linear feet of a stream bank having 12 foot high near verticle banks. Estimated cost is based on the insallation of LPST, as described in NEH 654, TS14K-13, having a height of 3 ft, 1.5:1 front slope and 1.5:1 back slope. The area between the sloped bank and LPST is a 19 foot wide bench planted with shrub type vegetation (willow stakes). Material used to make the bench are taken from excavated material taken to acheive the 3(H):1(V) slope. The bank above the riprap will be graded to a stable slope and revegetated in accordance with Critical Area Planting (382). Resource Concerns: Soil Erosion - Excessive Bank Erosion from Streams, Shoreline and Water Conveyance Channels; Water Quality Degradation - Excessive Sediment in Surface Waters; Water Quality Degradation - Elevated Water Temperature; Excess/Insufficient Water - Excessive Sediment in Surface Waters; Inadequate Habitat for Fish and Wildlife- Habitat Degradation. Associated Practices include: 560 - Access Road; 342 - Critical Area Planting; 382 - Fence; 391 - Riparian Forest Buffer; 390 - Riparian Herbaceous Cover; 395 - Stream Habitat Improvement and Management; 614 - Watering Facility; 484-Mulching; and 570-Stormwater Runoff Control

Before Situation:

A stream bisects the agricultural property and has had all of the woody vegetation removed due to overgrazing or human manipulation; the stream has severely degraded streambanks that are unstable and show signs of active erosion. Soil Erosion: The streambank is unstable. Water Quality Degradation: The sediment load has increased in the stream resulting in elevated water temperatures. Excess/Insufficient Water: The excessive sediment load has reduced the water conveyance capacity, storage capacity and flow within the stream. Inadequate Habitat for Fish and Wildlife: The deficiencies in the stream's habitat limit survival, growth, reproduction, and/or diversity of aquatic organisms within the stream.

After Situation:

The streambank is stable against further erosion and encourages natural sediment transport and deposition. Loss of riparian areas and sediment load is reduced in the stream. For Soil Erosion: The streambank is stable. For Water Quality Degradation: The sediment load has decreased in the stream resulting in improved aquatic habitat. For Excess/Insufficient Water: The water conveyance capacity, storage capacity and flow within the stream has been stabilized. For Inadequate Habitat for Fish and Wildlife: The reduction in the sediment load promotes survival, growth, reproduction, and/or diversity of aquatic organisms within the stream's habitat.

Feature Measure: Linear Feet of Streambank/Shorelin

Scenario Unit: Feet

Scenario Typical Size: 1,000.0

Scenario Total Cost: $85,979.31

Scenario Cost/Unit: $85.98

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Earthfill, Roller Compacted	49	Earthfill, roller or machine compacted, includes equipment and labor	Cubic Yards	$4.42	2100	$9,282.00
Hydraulic Excavator, 1 CY	931	Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included.	Hours	$111.83	186	$20,800.38
Tillage, Primary	946	Includes heavy disking (offset) or chisel plow. Includes equipment, power unit and labor costs.	Acres	$15.95	0.06	$0.96
Fertilizer, ground application, dry bulk	950	Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$7.35	0.06	$0.44
Lime application	953	Lime application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$8.51	0.06	$0.51
Seeding Operation, Broadcast, Ground	959	Broadcast seed via ground operation. May require post tillage operation to incorporate seed. Includes equipment, power unit and labor costs.	Acres	$11.77	0.06	$0.71
Hauling, bulk, highway truck	1615	Hauling of bulk earthfill, rockfill, waste or debris. One-way travel distance using fully loaded highway dump trucks (typically 16 CY or 20 TN capacity). Includes equipment and labor for truck only. Does not include cost for loading truck.	Cubic Yard Mile	$0.29	40500	$11,745.00
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	320	$7,417.60
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	44	$1,838.32
Materials						
Rock Riprap, graded, angular, material and shipping	1200	Graded Rock Riprap for all gradation ranges. Includes materials and delivery only.	Ton	$38.20	810	$30,942.00

Tree & Shrub, Woody, Cuttings, Medium	1308	Woody cuttings, live stakes or whips typically 1/4 to 1 inch diameter and 24 to 48 inches long. Includes materials and shipping only.	Each	$1.49	2000	$2,980.00
Annual Grasses	2730	Annual grasses, one or more species, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping.	Acres	$31.62	0.06	$1.90
Mobilization						
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$484.75	2	$969.50

Practice: 580 - Streambank and Shoreline Protection

Scenario #8 - Longitudinal Peak Stone Toe, higher than 4 feet

Scenario Description:

Protection of streambanks using Longitudinal Peak Stone Toe protection (LPST) having a height of 4.5' or more. Use "Structural" where additional structural measures such as tree revetments; log, rootwad and boulder revetments; dormant post plantings; piling revetments with wire or geotextile fencing; piling revetments with slotted fencing; jacks or jack fields; rock riprap; stream jetties; stream barbs; and gabions are used. The purpose of this practice is to maintain, improve, or restore physical, chemical, and biological functions of a stream to provide diverse aquatic communities to improve habitat for desired aquatic species. The typical scenario involves the stabilization of 1,000 linear feet of a stream bank having 12 foot high near vertical banks. Estimated cost is based on the installation of LPST, as described in NEH 654, TS14K-13, having a height of 6 ft, 1.5:1 front slope and 1.5:1 back slope. The area between the sloped bank and LPST is a 19 foot wide bench planted with shrub type vegetation (willow stakes). Material used to make the bench are taken from excavated material taken to achieve the 3(H):1(V) slope. The bank above the riprap will be graded to a stable slope and revegetated in accordance with Critical Area Planting (382). Resource Concerns: Soil Erosion - Excessive Bank Erosion from Streams, Shoreline and Water Conveyance Channels; Water Quality Degradation - Excessive Sediment in Surface Waters; Water Quality Degradation - Elevated Water Temperature; Excess/Insufficient Water - Excessive Sediment in Surface Waters; Inadequate Habitat for Fish and Wildlife- Habitat Degradation. Associated Practices include: 560 - Access Road; 342 - Critical Area Planting; 382 - Fence; 391 - Riparian Forest Buffer; 390 - Riparian Herbaceous Cover; 395 - Stream Habitat Improvement and Management; 614 - Watering Facility; 484-Mulching; and 570-Stormwater Runoff Control

Before Situation:

A stream bisects the agricultural property and has had all of the woody vegetation removed due to overgrazing or human manipulation; the stream has severely degraded streambanks that are unstable and show signs of active erosion. Soil Erosion: The streambank is unstable. Water Quality Degradation: The sediment load has increased in the stream resulting in elevated water temperatures. Excess/Insufficient Water: The excessive sediment load has reduced the water conveyance capacity, storage capacity and flow within the stream. Inadequate Habitat for Fish and Wildlife: The deficiencies in the stream's habitat limit survival, growth, reproduction, and/or diversity of aquatic organisms within the stream.

After Situation:

The streambank is stable against further erosion and encourages natural sediment transport and deposition. Loss of riparian areas and sediment load is reduced in the stream. For Soil Erosion: The streambank is stable. For Water Quality Degradation: The sediment load has decreased in the stream resulting in improved aquatic habitat. For Excess/Insufficient Water: The water conveyance capacity, storage capacity and flow within the stream has been stabilized. For Inadequate Habitat for Fish and Wildlife: The reduction in the sediment load promotes survival, growth, reproduction, and/or diversity of aquatic organisms within the stream's habitat.

Feature Measure: Linear Feet of Streambank/Shorelin

Scenario Unit: Feet

Scenario Typical Size: 1,000.0

Scenario Total Cost: $240,884.25

Scenario Cost/Unit: $240.88

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Earthfill, Roller Compacted	49	Earthfill, roller or machine compacted, includes equipment and labor	Cubic Yards	$4.42	2100	$9,282.00
Hydraulic Excavator, 1 CY	931	Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included.	Hours	$111.83	310	$34,667.30
Tillage, Primary	946	Includes heavy disking (offset) or chisel plow. Includes equipment, power unit and labor costs.	Acres	$15.95	0.06	$0.96
Fertilizer, ground application, dry bulk	950	Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$7.35	0.06	$0.44
Lime application	953	Lime application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$8.51	0.06	$0.51
Seeding Operation, Broadcast, Ground	959	Broadcast seed via ground operation. May require post tillage operation to incorporate seed. Includes equipment, power unit and labor costs.	Acres	$11.77	0.06	$0.71
Hauling, bulk, highway truck	1615	Hauling of bulk earthfill, rockfill, waste or debris. One-way travel distance using fully loaded highway dump trucks (typically 16 CY or 20 TN capacity). Includes equipment and labor for truck only. Does not include cost for loading truck.	Cubic Yard Mile	$0.29	186900	$54,201.00
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	480	$11,126.40
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	93	$3,885.54
Materials						
Rock Riprap, graded, angular, material and shipping	1200	Graded Rock Riprap for all gradation ranges. Includes materials and delivery only.	Ton	$38.20	3240	$123,768.00

Tree & Shrub, Woody, Cuttings, Medium	1308	Woody cuttings, live stakes or whips typically 1/4 to 1 inch diameter and 24 to 48 inches long. Includes materials and shipping only.	Each	$1.49	2000	$2,980.00
Annual Grasses	2730	Annual grasses, one or more species, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping.	Acres	$31.62	0.06	$1.90
Mobilization						
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$484.75	2	$969.50

Practice: 580 - Streambank and Shoreline Protection

Scenario #9 - Gabion Baskets

Scenario Description:

Protection of streambanks using gabion baskets to stabilize and protect banks of streams or excavated channels against scour and erosion. The purpose of this practice is to maintain, improve, or restore physical, chemical, and biological functions of a stream to provide diverse aquatic communities to improve habitat for desired aquatic species. Payment cost include shaping bank, critical area vegetation, geotextile, gabion basket installation, rock drainfill behin gabions, and rock rip rap to protect drainfill. An 8-foot high bank with near vertical sideslopes is stabilized using a 3'x3'x4.5' gabion mattress for a foundation and a 3'x3'x3' basket to stabilize the toe. Granular backfill is used behind the baskets with riprap on top of the drainfill to protect against erosion. the riprap and slope above the gabions are 3(H):1(V) for 1000 linear feet (0.3 acres) is used for estimation purposes. Baskets are used for tiebacks and at the beginning and end. The bank above the riprap will be graded to a stable slope and revegetated. Resource Concerns: Soil Erosion - Excessive Bank Erosion from Streams, Shoreline and Water Conveyance Channels; Water Quality Degradation - Excessive Sediment in Surface Waters; Water Quality Degradation - Elevated Water Temperature; Excess/Insufficient Water - Excessive Sediment in Surface Waters; Inadequate Habitat for Fish and Wildlife- Habitat Degradation. Associated Practices include: 560 - Access Road; 342 - Critical Area Planting; 382 - Fence; 391 - Riparian Forest Buffer; 390 - Riparian Herbaceous Cover; 395 - Stream Habitat Improvement and Management; 614 - Watering Facility; 484-Mulching; and 570-Stormwater Runoff Control

Before Situation:

A stream bisects the agricultural property and has had all of the woody vegetation removed due to overgrazing or human manipulation; the stream has severely degraded streambanks that are unstable and show signs of active erosion. Soil Erosion: The streambank is unstable. Water Quality Degradation: The sediment load has increased in the stream resulting in elevated water temperatures. Excess/Insufficient Water: The excessive sediment load has reduced the water conveyance capacity, storage capacity and flow within the stream. Inadequate Habitat for Fish and Wildlife: The deficiencies in the stream's habitat limit survival, growth, reproduction, and/or diversity of aquatic organisms within the stream.

After Situation:

The streambank is stable against further erosion and encourages natural sediment transport and deposition. Loss of riparian areas and sediment load is reduced in the stream. For Soil Erosion: The streambank is stable. For Water Quality Degradation: The sediment load has decreased in the stream resulting in improved aquatic habitat. For Excess/Insufficient Water: The water conveyance capacity, storage capacity and flow within the stream has been stabilized. For Inadequate Habitat for Fish and Wildlife: The reduction in the sediment load promotes survival, growth, reproduction, and/or diversity of aquatic organisms within the stream's habitat.

Feature Measure: Linear Feet of Streambank/Shorelin

Scenario Unit: Feet

Scenario Typical Size: 1,000.0

Scenario Total Cost: $186,357.61

Scenario Cost/Unit: $186.36

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Earthfill, Roller Compacted	49	Earthfill, roller or machine compacted, includes equipment and labor	Cubic Yards	$4.42	2500	$11,050.00
Earthfill, Dumped and Spread	51	Earthfill, dumped and spread without compaction effort, includes equipment and labor	Cubic Yards	$3.61	1700	$6,137.00
Dozer, 80 HP	929	Track mounted Dozer with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$54.51	40	$2,180.40
Hydraulic Excavator, 2 CY	932	Track mounted hydraulic excavator with bucket capacity range of 1.5 to 2.5 CY. Equipment and power unit costs. Labor not included.	Hours	$126.60	40	$5,064.00
Tillage, Primary	946	Includes heavy disking (offset) or chisel plow. Includes equipment, power unit and labor costs.	Acres	$15.95	0.3	$4.79
Fertilizer, ground application, dry bulk	950	Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$7.35	0.3	$2.21
Lime application	953	Lime application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$8.51	0.3	$2.55
Seeding Operation, Broadcast, Ground	959	Broadcast seed via ground operation. May require post tillage operation to incorporate seed. Includes equipment, power unit and labor costs.	Acres	$11.77	0.3	$3.53
Excavation, common earth, wet, side cast, large equipment	1228	Bulk excavation and side casting of wet common earth with hydraulic excavator or dragline with greater than 1 CY capacity. Includes equipment and labor.	Cubic Yards	$4.37	1700	$7,429.00
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	320	$7,417.60
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	40	$1,012.40
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	40	$1,076.00

Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	80	$3,342.40
Materials						
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic Yards	$39.34	300	$11,802.00
Rock Riprap, graded, angular, material and shipping	1200	Graded Rock Riprap for all gradation ranges. Includes materials and delivery only.	Ton	$38.20	448	$17,113.60
Geotextile, non-woven, heavy weight	1210	Non-woven greater than 8 ounce/square yard geotextile with staple anchoring. Materials and shipping only.	Square Yard	$1.48	2000	$2,960.00
Gabion basket or mat	1378	Gabion baskets or mats installed and filled on grade, includes materials, transport, equipment, and labor, does not include geotextile fabric.	Cubic Yards	$124.39	875	$108,841.25
Annual Grasses	2730	Annual grasses, one or more species, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping.	Acres	$31.62	0.3	$9.49
Mobilization						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	1	$170.76
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$484.75	1	$484.75

Practice: 585 - Stripcropping

Scenario #5 - Stripcropping - wind and water erosion

Scenario Description:

This scenario describes the implementation of a strip cropping system that is designed specifically for the control of wind and water erosion or minimizing the transport of sediments or other water borne contaminants originating from runoff on cropland. The planned strip cropping system will meet the current 585 standard. Implementation will result in alternating strips of erosion susceptible crops with erosion resistant crops that are oriented as close to perpendicular to water flows as possible. The designed system will reduce erosion/sediment/contaminants to desired objectives. The scenario includes the costs of designing the system, installing the strips on the landscape appropriately, and integrating a crop rotation that includes water erosion resistant species.

Before Situation:

In this geographic area, excessive water erosion is caused by raising crops in a manner that allows sheet water flows to travel down the slope causing sheet and rill erosion or concentrated flow conditions, degradation of soil health through loss of topsoil and organic matter, along with offsite negative impacts to water quality and aquatic wildlife habitat.

After Situation:

A strip cropping system that includes at least two or more strips within the planning slope will be designed to include parallel strips of approximately equal widths of water erosion resistant crop species with non-water erosion resistant crop species. Widths will be determined using current water erosion prediction technology to meet objectives. The design and implementation of a stripcropping system will minimize wind, sheet and rill erosion, protect soil quality, reduce offsite sedimentation, and benefit offsite aquatic wildlife habitat. Erosion prediction before and after practice application will be recorded showing the design and benefits of the practice. Erosion resistant strips in rotation must be managed to maintain the planned vegetative cover and surface roughness.

Feature Measure: area of strips

Scenario Unit: Acres

Scenario Typical Size: 80.0

Scenario Total Cost: $140.76

Scenario Cost/Unit: $1.76

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	3	$71.22
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	3	$69.54

Practice: 587 - Structure for Water Control

Scenario #1 - Flashboard Riser

Scenario Description:

A Flashboard Riser typically fabricated of metal (other materials acceptable) and used in a water management system that maintains a desired water surface elevation, controls the direction or rate of flow, or conveys water to address the resource concerns: Inadequate Water - Inefficient use of Irrigation Water and Inadequate habitat for Fish and Wildlife. The water surface elevation is controlled by addition or removal of slats or "stoplogs". This scenario is applicable to variable crest weir structures where the elevation is controlled at the inlet (Half-Rounds/boxes). They are often fabricated from half pipes (i.e. half-rounds) or sheet steel in a box shape. Payment rate is based upon the Flashboard Weir Length in inches multiplied by the outlet length in feet (Inch-Foot). Cost estimate is based on a typical "Half-Round" flashboard riser shop fabricated using a longitudinal cut 36" smooth steel pipe (or other material), a 50' long - 30" outlet pipe passing through an embankment.

Before Situation:

The operator presently flood irrigates his field and has no means to accurately maintain a constant water level at varying elevations resulting in a lack of flexibility, and inefficient use of water and energy during pumping. The operator also desires to maintain a permanent pool for water fowl during the winter.

After Situation:

The operator has the capability to more efficiently control and maintain a range of water surface elevations thereby reducing the flow rate needed. Less water is wasted and both water and energy is conserved. The operator is now able to maintain adequate water during the winter as a benefit to waterfowl. Any needed re-vegetation of disturbed areas use Critical Area Planting (342). Other associated practices such as; Irrigation Water Management (449), Irrigation Land Leveling (464), Irrigation Canal or Lateral (320), Irrigation System, Tailwater Recovery (447), Dike (356), and Grade Stabilization Structure (410) will use the corresponding Standard(s) as appropriate.

Feature Measure: Flashboard Weir Length (in) x barre

Scenario Unit: Diameter Inch Foot

Scenario Typical Size: 1,800.0

Scenario Total Cost: $7,975.11

Scenario Cost/Unit: $4.43

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Earthfill, Roller Compacted	49	Earthfill, roller or machine compacted, includes equipment and labor	Cubic Yards	$4.42	190	$839.80
Earthfill, Manually Compacted	50	Earthfill, manually compacted, includes equipment and labor	Cubic Yards	$5.73	10	$57.30
Hydraulic Excavator, .5 CY	930	Track mounted hydraulic excavator with bucket capacity range of 0.3 to 0.8 CY. Equipment and power unit costs. Labor not included.	Hours	$61.38	2	$122.76
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	5	$150.25
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	6	$139.08
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	2	$53.80
Materials						
Pipe, Steel, 30 in., Std Wt, USED	1361	Materials: - USED - 30 inch - Steel Std Wt	Feet	$103.01	50	$5,150.50
Pipe, Steel, 36 in., Std Wt, USED	1362	Materials: - USED - 36 inch - Steel Std Wt	Feet	$145.73	6	$874.38
Steel, Angle, 2 1/2 in. x 2 1/2 in. x 1/4 in.	1372	Materials: Angle, 2 1/2 inch x 2 1/2 inch x 1/4 inch. Meets ASTM A36	Feet	$3.99	24	$95.76
Steel, Plate, 3/8 in.	1375	Flat steel plate, 3/8 inch thickness. Materials only.	Square Feet	$14.91	4	$59.64
Lumber, planks, posts and timbers, treated	1609	Treated dimension lumber with nominal thickness greater than 2 inches. Includes lumber and fasteners. Does not include labor.	Board Feet	$3.37	32	$107.84
Mobilization						
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	$70.11	1	$70.11
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 587 - Structure for Water Control

Scenario #3 - Commercial Inline Flashboard Riser

Scenario Description:

An Inline Water Control Structure (WCS) composed of plastic that maintains a desired water surface elevation, controls the direction or rate of flow, or conveys water to address the resource concern: Inadequate habitat for Fish and Wildlife. The water surface elevation is controlled by addition or removal of slats or "stoplogs". This scenario is applicable to variable crest weir structures where the elevation is controlled at point along a pipe extending through an embankment, providing ease of access to the structure and provide better protection against beaver activity. There are commercially available models composed of plastic that are commonly used when the width of the is 24" or less. Payment rate is based upon the Flashboard Weir Length in inches multiplied by the outlet length in feet (Inch-Foot). Cost estimate is based on a using a such a commercial product. The typical scenario is an inline structure with a width of 20", height of six feet, The pipe is 50' of 15" SCH 40 PVC (inlet and outlet combined).

Before Situation:

The landowner wishes to provide for a way to control the water surface elevation in a wetland area. The landowner wishes to enhance and enlarge the area to provide habitat for fish and wildlife.

After Situation:

A WCS is installed in a flow line allowing shallow water impoundments. A wetland area is enhanced and water levels can be varied to better accommodate wildlife needs. Any needed re-vegetation of disturbed areas use Critical Area Planting (342). Other associated practices such as; Wetland Creation (658), Wetland Enhancement (659) Wetland Wildlife Habitat Management (644), Dike (356), and Grade Stabilization Structure (410) will use the corresponding Standard(s) as appropriate.

Feature Measure: Flashboard Weir Length (in) x Barre

Scenario Unit: Diameter Inch Foot

Scenario Typical Size: 1,000.0

Scenario Total Cost: $6,006.59

Scenario Cost/Unit: $6.01

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Earthfill, Roller Compacted	49	Earthfill, roller or machine compacted, includes equipment and labor	Cubic Yards	$4.42	190	$839.80
Earthfill, Manually Compacted	50	Earthfill, manually compacted, includes equipment and labor	Cubic Yards	$5.73	15	$85.95
Hydraulic Excavator, .5 CY	930	Track mounted hydraulic excavator with bucket capacity range of 0.3 to 0.8 CY. Equipment and power unit costs. Labor not included.	Hours	$61.38	2	$122.76
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	3	$90.15
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	8	$185.44
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	2	$53.80
Materials						
Pipe, Steel, 16 in., Std Wt, USED	1357	Materials: - USED - 16 inch - Steel Std Wt	Feet	$53.29	50	$2,664.50
Water Control Structure, Stoplog, Inline, fixed costs portion	2145	Fixed cost portion of Water Level Control Structure, Inline stoplog type. Typically made of PVC or fiberglass materials. Materials only.	Each	$357.69	1	$357.69
Water Control Structure, Stoplog, Inline, variable cost portion	2146	Variable cost portion of a Water Level Control Structure, Inline stoplog type. Typically made of PVC or fiberglass materials. Calculate total variable costs by multiplying by the structure height x pipe diameter. Materials only.	Height x Diameter	$14.25	90	$1,282.50
Mobilization						
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	$70.11	1	$70.11
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 587 - Structure for Water Control

Scenario #4 - Culvert <30 inches HDPE

Scenario Description:

Install a new HDPE culvert under 30 inches in diameter to convey water under roads or other barriers. A typical scenario would be an 24 inch diameter pipe, 40 feet in length. Work includes site preparation, acquiring and installing culvert pipe with gravel bedding and fill (compacted), and riprap protection of side slopes. Use (396) Aquatic Organism Passage when the primary intent is biological concerns, not hydrologic. Use (578) Stream Crossing for culverts ≥ 30 inches or perennial flow.

Before Situation:

Water flow needs to be conveyed under an access road, ditch or other barrier. Water must be conveyed in a controlled fashion.

After Situation:

Water is conveyed in a controlled manner. Associated practices could be Access Road (560), Animal Trails and Walkways (575), Critical Area Planting (342), Drainage Water Management (554), Irrigation Canal or Lateral (320), Irrigation Pipeline (430), Irrigation Reservoir (436), Irrigation System, Surface and Subsurface (443), Irrigation System, Tailwater Recovery (447), Irrigation Water Management (449), Lined Waterway or Outlet (468), Obstruction Removal (500), Pond (378), Stormwater Runoff Control (570), Surface Drain, Field Ditch (607), Surface Drain, Main or Lateral (608), and Trails and Walkways (568).

Feature Measure: Pipe Diameter (In) x Pipe Length (Ft

Scenario Unit: Diameter Inch Foot

Scenario Typical Size: 960.0

Scenario Total Cost: $1,994.80

Scenario Cost/Unit: $2.08

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Excavation, Common Earth, side cast, small equipment	48	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic Yards	$2.24	5	$11.20
Earthfill, Manually Compacted	50	Earthfill, manually compacted, includes equipment and labor	Cubic Yards	$5.73	45	$257.85
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	10	$231.80
Materials						
Rock Riprap, Placed with geotextile	44	Rock Riprap, placed with geotextile, includes materials, equipment and labor to transport and place	Cubic Yards	$103.28	2	$206.56
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic Yards	$39.34	5	$196.70
Pipe, HDPE, CPT, Double Wall, Soil Tight, 24 in.	1246	Pipe, Corrugated HDPE Double Wall, 24 inch diameter with soil tight joints - AASHTO M294. Material cost only.	Feet	$20.92	40	$836.80
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 587 - Structure for Water Control

Scenario #5 - Culvert <30 inches CMP

Scenario Description:

Install a new Corrugated Metal Pipe (CMP) culvert under 30 inches in diameter to convey water under roads or other barriers. A typical scenario would be an 24 inch diameter pipe, 40 feet in length. Work includes site preparation, acquiring and installing culvert pipe with gravel bedding and fill (compacted), and riprap protection of side slopes. Use (396) Aquatic Organism Passage when the primary intent is biological concerns, not hydrologic. Use (578) Stream Crossing instead for culverts ≥ 30 inches or perennial flow.

Before Situation:

Water flow needs to be conveyed under an access road, ditch or other barrier. Water must be conveyed in a controlled fashion.

After Situation:

Water is conveyed in a controlled manner. Associated practices could be Access Road (560), Animal Trails and Walkways (575), Critical Area Planting (342), Drainage Water Management (554), Irrigation Canal or Lateral (320), Irrigation Pipeline (430), Irrigation Reservoir (436), Irrigation System, Surface and Subsurface (443), Irrigation System, Tailwater Recovery (447), Irrigation Water Management (449), Lined Waterway or Outlet (468), Obstruction Removal (500), Pond (378), Stormwater Runoff Control (570), Surface Drain, Field Ditch (607), Surface Drain, Main or Lateral (608), and Trails and Walkways (568).

Feature Measure: Pipe Diameter (In) x Pipe Length (Ft

Scenario Unit: Diameter Inch Foot

Scenario Typical Size: 960.0

Scenario Total Cost: $2,179.20

Scenario Cost/Unit: $2.27

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Excavation, Common Earth, side cast, small equipment	48	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic Yards	$2.24	5	$11.20
Earthfill, Manually Compacted	50	Earthfill, manually compacted, includes equipment and labor	Cubic Yards	$5.73	45	$257.85
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	10	$231.80
Materials						
Rock Riprap, Placed with geotextile	44	Rock Riprap, placed with geotextile, includes materials, equipment and labor to transport and place	Cubic Yards	$103.28	2	$206.56
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic Yards	$39.34	5	$196.70
Pipe, CMP, 24 in., 12 Gauge	1417	24 inch Corrugated Metal Pipe, Galvanized, Uncoated, 12 gage. Material cost only.	Feet	$25.53	40	$1,021.20
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 587 - Structure for Water Control

Scenario #6 - Culvert Less Than 30 inches SSP

Scenario Description:

Install a used Standard Weight Smooth Steel Pipe (SSP) culvert under 30 inches in diameter to convey water under roads or other barriers. A typical scenario would be an 24 inch diameter pipe, 40 feet in length. Work includes site preparation, acquiring and installing culvert pipe with gravel bedding and fill (compacted), and riprap protection of side slopes. Use (396) Aquatic Organism Passage when the primary intent is biological concerns, not hydrologic. Use (578) Stream Crossing instead for culverts ≥ 30 inches or perennial flow.

Before Situation:

Water flow needs to be conveyed under an access road, ditch or other barrier. Water must be conveyed in a controlled fashion.

After Situation:

Water is conveyed in a controlled manner. Associated practices could be Access Road (560), Animal Trails and Walkways (575), Critical Area Planting (342), Drainage Water Management (554), Irrigation Canal or Lateral (320), Irrigation Pipeline (430), Irrigation Reservoir (436), Irrigation System, Surface and Subsurface (443), Irrigation System, Tailwater Recovery (447), Irrigation Water Management (449), Lined Waterway or Outlet (468), Obstruction Removal (500), Pond (378), Stormwater Runoff Control (570), Surface Drain, Field Ditch (607), Surface Drain, Main or Lateral (608), and Trails and Walkways (568).

Feature Measure: Pipe Diameter (In) x Pipe Length (Ft

Scenario Unit: Diameter Inch Foot

Scenario Typical Size: 960.0

Scenario Total Cost: $4,012.69

Scenario Cost/Unit: $4.18

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Excavation, Common Earth, side cast, small equipment	48	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic Yards	$2.24	5	$11.20
Earthfill, Manually Compacted	50	Earthfill, manually compacted, includes equipment and labor	Cubic Yards	$5.73	45	$257.85
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	10	$231.80
Materials						
Rock Riprap, Placed with geotextile	44	Rock Riprap, placed with geotextile, includes materials, equipment and labor to transport and place	Cubic Yards	$103.28	2	$206.56
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic Yards	$39.34	5	$196.70
Pipe, Steel, 24 in., Std Wt, USED	1360	Materials: - USED - 24 inch - Steel Std Wt	Feet	$65.02	40	$2,600.80
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: 587 - Structure for Water Control

Scenario #7 - Slide Gate

Scenario Description:

This scenario is the installation of a permanent slide gate structure to control the conveyance of water. The typical size is a 4' diameter opening. The slide gate may be installed on an open channel or pipeline. The slide gate is made of steel and has a hand operated mechanical lifting system, i.e. screw. This scenario assists in addressing the resource concerns: water management. Conservation practices that may be associated are: 533-Pumping Plant.

Before Situation:

A channel or pipeline is in need of a head gate to control the flow of water.

After Situation:

A 4' slide gate is installed and operated by hand is installed.

Feature Measure: diameter

Scenario Unit: Feet

Scenario Typical Size: 4.0

Scenario Total Cost: $8,714.04

Scenario Cost/Unit: $2,178.51

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Backhoe, 80 HP	926	Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$31.57	6	$189.42
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	12	$360.60
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	12	$278.16
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	6	$161.40
Materials						
Screw gate, cast iron, 4 ft. diameter, 10/0 head	1746	4 ft. diameter cast iron screw (canal) gate rated at 10 seating head 0 feet unseating head. Includes materials only.	Each	$7,470.57	1	$7,470.57
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 587 - Structure for Water Control

Scenario #8 - Flap Gate

Scenario Description:

This scenario is the installation of a permanent flap (tide) gate structure to control the direction of flow resulting from tides or high water or back-flow from flooding. The typical size is a 4' diameter opening. The gate may be installed on an open channel or pipeline. It is made of steel and operates automatically. This scenario assists in addressing the resource concerns: water management. Conservation practices that may be associated are:

Before Situation:

A wetland or other area is in need of a flap gate to control the direction of the water.

After Situation:

A flap gate 4' wide is installed.

Feature Measure: Feet Diameter (of Gate)

Scenario Unit: Feet

Scenario Typical Size: 4.0

Scenario Total Cost: $8,386.80

Scenario Cost/Unit: $2,096.70

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Backhoe, 80 HP	926	Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$31.57	6	$189.42
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	12	$360.60
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	12	$278.16
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	6	$161.40
Materials						
Flap Gate, cast iron, 4 ft. diameter	1745	4 ft. diameter cast iron flap gate. Materials only.	Each	$7,143.33	1	$7,143.33
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 587 - Structure for Water Control

Scenario #9 - Flap Gate w/ Concrete Wall

Scenario Description:

Install a concrete cut off wall with tide gate at the outlet of a channel. A typical scenario would be installed in a 25 foot channel, 6 foot deep, with 2:1 side slopes. A concrete wall will extend 10 feet on each side, and include a 4' flap gate structure to control flooding. Work includes site preparation, forming and pouring concrete, backfilling and acquiring and installing the tide gate.

Before Situation:

Tides or flooding inundate and affect water quality of wetlands or other managed systems.

After Situation:

Tide or flood inundation is controlled. Associated practices could be Aquaculture Ponds (397), Aquatic Organism Passage (396), Bivalve Aquaculture Gear and Biofouling Control (400), Constructed Wetland (656), Drainage Water Management (554), Irrigation Canal or Lateral (320), Irrigation Field Ditch (388), Irrigation System, Surface and Subsurface (443), Irrigation Water Management (449), Salinity and Sodic Soil Management (610), Subsurface Drain (606), Surface Drain, Field Ditch (607), Surface Drain, Main or Lateral (608), Wetland Creation (658), Wetland Enhancement (659), Wetland Restoration (657), and Wetland Wildlife Habitat Management (644).

Feature Measure: Cubic Yards of Concrete

Scenario Unit: Cubic Yards

Scenario Typical Size: 10.0

Scenario Total Cost: $12,834.93

Scenario Cost/Unit: $1,283.49

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Concrete, CIP, formed reinforced	38	Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yards	$415.80	10	$4,158.00
Excavation, Common Earth, side cast, small equipment	48	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic Yards	$2.24	200	$448.00
Earthfill, Roller Compacted	49	Earthfill, roller or machine compacted, includes equipment and labor	Cubic Yards	$4.42	200	$884.00
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	2	$46.36
Materials						
Aggregate, Sand, Graded, Washed	45	Sand, typical ASTM C33 gradation, includes materials, equipment and labor to transport and place	Cubic Yards	$38.81	4	$155.24
Flap Gate, cast iron, 4 ft. diameter	1745	4 ft. diameter cast iron flap gate. Materials only.	Each	$7,143.33	1	$7,143.33

Practice: 587 - Structure for Water Control

Scenario #10 - Rock Checks for Water Surface Profile

Scenario Description:

Typical setting is in a stream that has become incised and is therefore disconnected from the floodplain. Typical installation consists of installing a "Vee" shaped rock structures with points facing upstream for the purpose of raising the water surface profile. Cost estimate is for three check dams with a top width of 3', max height of 6', min height of 3', and 28' length; containing an average of 58 cubic yards or 29 tons of rock for a total of 87 tons. The check dams are underlain with geotextile fabric. Disturbed areas are protected with permanent vegetative cover. Addresses resource concerns such as water quality degradation and soil erosion-concentrated flow erosion.

Before Situation:

The stream presently is incised with near vertical banks caused by bank toe erosion and sloughing. This condition has caused the floodplains to be disconnected from the stream, with only floods well above normal high-water escaping the high banks of the stream.

After Situation:

Banks are stabilized, and pools are created raising the Water Surface Profile elevation and effectively reducing the slope. Riffle pool scheme is restored and banks are protected. Water quality is protected downstream due to erosion protection, and wetland features are restored in the floodplain. Any needed re-vegetation of disturbed areas use Critical Area Planting (342). Other associated practices such as; Streambank and Shoreline Protection (580), Channel Bed Stabilization (584), Stream Habitat Improvement and Management (395), and Wetland Wildlife Habitat Management (644) will use the corresponding Standard(s) as appropriate.

Feature Measure: Tons of rock installed

Scenario Unit: Ton

Scenario Typical Size: 87.0

Scenario Total Cost: $6,694.07

Scenario Cost/Unit: $76.94

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Excavation, common earth, large equipment, 50 ft	1222	Bulk excavation of common earth including sand and gravel with dozer >100 HP with average push distance of 50 feet. Includes equipment and labor.	Cubic Yards	$1.63	84	$136.92
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	8	$185.44
Materials						
Rock Riprap, Placed with geotextile	44	Rock Riprap, placed with geotextile, includes materials, equipment and labor to transport and place	Cubic Yards	$103.28	57	$5,886.96
Mobilization						
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$484.75	1	$484.75

Practice: 587 - Structure for Water Control

Scenario #15 - Fabricated Metal Water Control Structure

Scenario Description:

A Water Control Structure fabricated of metal and used in a water management system that maintains a desired water surface elevation, controls the direction or rate of flow, or conveys water to address the resource concerns: Inadequate Water - Inefficient use of Irrigation Water and Inadequate habitat for Fish and Wildlife. This scenario is applicable to large fabricated structures used locally or not covered by other scenarios for the control of water surface elevation. The Cost estimate is based on a structure fabricated from a used Tank Car, having a diameter of 9 ft and lenght of 60 ft (9ft x 60ft = 540 Square Feet). The top half of the tank car is cut away 7 ft from one end, and a steel endplate is welded onto the cut end to form a three sided weir (7ft deep x 9ft wide). A 24 inch steel pipe having a screw valve, accessible topside, is welded through the plate allowing drawdown or further water surface elevation control. The structure passes through an embankment and regulates flow between the two sides. Payment rate is based upon the steel structure's plan view deminsions (Length x Width) in Square Feet (SF).

Before Situation:

Fields are irrigate but excess irrigation water runs off into ditches and streams due to inefficiencies in irrigation. The excess water is carrying sediment and nutrients with it which are flowing into to the basins and causing water quality issues throughout the watershed.

After Situation:

Excess irrigation water is captured and able to be stored at a consistant level to allow for adequate pumping in order to relift the excess water back into the system either directly to the field or to a surface storage reservoir. The water control structure allows the excess water to be stored so that it is not running down the basin and so excess nutrients or sediments have a chance to settle out of the water. Less water is wasted and both water and energy is conserved. The operator is now able to maintain adequate water during the winter as a benefit to waterfowl. Any needed re-vegetation of disturbed areas use Critical Area Planting (342). Other associated practices such as; Irrigation Water Management (449), Irrigation Land Leveling (464), Irrigation Canal or Lateral (320), Irrigation System, Tailwater Recovery (447), Dike (356), and Grade Stabilization Structure (410) will use the corresponding Standard(s) as appropriate.

Feature Measure: Structure Length (ft) x Stucture Wi

Scenario Unit: Square Feet

Scenario Typical Size: 540.0

Scenario Total Cost: $23,353.64

Scenario Cost/Unit: $43.25

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Concrete, CIP, formed reinforced	38	Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yards	$415.80	4	$1,663.20
Earthfill, Roller Compacted	49	Earthfill, roller or machine compacted, includes equipment and labor	Cubic Yards	$4.42	304	$1,343.68
Earthfill, Manually Compacted	50	Earthfill, manually compacted, includes equipment and labor	Cubic Yards	$5.73	15	$85.95
Hydraulic Excavator, 1 CY	931	Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included.	Hours	$111.83	16	$1,789.28
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	20	$601.00
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	40	$927.20
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	16	$430.40
Materials						
Pipe, Steel, 24 in., Std Wt, USED	1360	Materials: - USED - 24 inch - Steel Std Wt	Feet	$65.02	20	$1,300.40
Steel, Angle, 2 1/2 in. x 2 1/2 in. x 1/4 in.	1372	Materials: Angle, 2 1/2 inch x 2 1/2 inch x 1/4 inch. Meets ASTM A36	Feet	$3.99	8	$31.92
Steel, Plate, 3/8 in.	1375	Flat steel plate, 3/8 inch thickness. Materials only.	Square Feet	$14.91	40.5	$603.86
Steel Tank Car	1826	Materials: - USED Rail Road Tank Car	Each	$12,905.62	1	$12,905.62
Slide gate, steel, 2 ft. diameter, low head	1829	2 ft. diameter steel slide gate for low head installations	Each	$602.29	1	$602.29
Welded Bar Grate, metal	1980	Heavy duty vertical bar welded grating, typically 1-1/4 x 3/16 in. bars on 1 in. spacing with cross rod on 4 in. spacing. Materials only.	Square Feet	$18.11	45	$814.95
Mobilization						

Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 587 - Structure for Water Control

Scenario #16 - Flow Meter with Mechanical Index

Scenario Description:

Installed water flow meter with mechanical, cumulative volume and rate index. Meters can be any flow measurement device that meets CPS 433, (i.e. meters: turbine, propeller, acoustic, magnetic, venturi, orifice, etc.) with or without straightening vanes. Resource Concerns: Insufficient Water - Inefficient use of irrigation water, and Degraded Plant Condition - Undesirable plant productivity and health, and Inefficient Energy Use - Equipment and facilities Associated Practices: 533-Pumping Plant, 449-Irrigation Water Management, 441-Irrigation System, Microirrigation, 443-Irrigation System Surface and Subsurface, 442-Irrigation System, Sprinkler, 328-Conservation Crop Rotation, 634-Waste Transfer, and 590-Nutrient Management.

Before Situation:

Producer estimates seasonal and individual irrigation application flow rate and volumes based on energy costs, system operating pressure, or other means.

After Situation:

Producer is able to access instantaneous rate and cumulative flow volume data at the meter location. The information gained will enable the irrigator to improve irrigation water management, recognize system performance issues before they become critical, and reduce energy use.

Feature Measure: Nominal Diameter of Meter

Scenario Unit: Inch

Scenario Typical Size: 10.0

Scenario Total Cost: $1,645.40

Scenario Cost/Unit: $164.54

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Materials						
Flow Meter, with mechanical Index	1450	10 inch, Turbine Type Flow Meter with Mechanical Index, permanently installed. Includes material, labor and installation.	Each	$1,505.18	1	$1,505.18
Mobilization						
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	$70.11	2	$140.22

Practice: 587 - Structure for Water Control

Scenario #17 - Flow Meter with Electronic Index

Scenario Description:

Installed water flow meter with an electronic index . Meters can be any flow measurement device that meets CPS 433, (i.e., meters: turbine, propeller, acoustic, magnetic, venturi, orifice, etc.) with or without straightening vanes or data logging capability. Meter nominal diameter for insert type turbine meters will be installation pipe size. Typical installation would include installation of a 10 inch turbine flow meter, with electronic index output. Resource Concerns: Insufficient Water - Inefficient use of irrigation water, and Degraded Plant Condition - Undesirable plant productivity and health, and Inefficient Energy Use - Equipment and facilities Associated Practices: 533-Pumping Plant, 449-Irrigation Water Management, 441-Irrigation System, Microirrigation, 443-Irrigation System Surface and Subsurface, 442-Irrigation System, Sprinkler, 328-Conservation Crop Rotation, 634-Waster Transfer, and 590-Nutrient Management.

Before Situation:

Producer estimates seasonal and individual irrigation application flow rate and volumes based on energy costs, system operating pressure, or other means.

After Situation:

Producer is able to access instantaneous rate and cumulative flow volume data at the meter location. The information gained will enable the irrigator to improve irrigation water management, recognize system performance issues before they become critical, and reduce energy use.

Feature Measure: Nominal Diameter of Meter

Scenario Unit: Inch

Scenario Typical Size: 10.0

Scenario Total Cost: $3,106.82

Scenario Cost/Unit: $310.68

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Materials						
Flow Meter, with Electronic Index	1452	10 inch Turbine Irrigation flow meter, with Electronic Index, Rate and Volume, permanently installed. Materials only.	Each	$2,966.60	1	$2,966.60
Mobilization						
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	$70.11	2	$140.22

Practice: 587 - Structure for Water Control

Scenario #18 - Flow Meter with Electronic Index & Telemetry

Scenario Description:

Installed water flow meter with an electronic flow rate and volume index and data telemetry transmission system. Meters can be any flow measurement device that meets CPS 433, (i.e. meters: turbine, propeller, acoustic, magnetic, venturi, orifice, etc.) with or without straightening vanes. Meter nominal diameter for insert type turbine meters will be installation pipe size. Typical installation would include installation of a 10 inch magnetic flow meter, with electronic index output and telemetry data transfer system for monitoring irrigation system flow rate. Resource Concerns: Insufficient Water - Inefficient use of irrigation water, and Degraded Plant Condition - Undesirable plant productivity and health, and Inefficient Energy Use - Equipment and facilities Associated Practices: 533-Pumping Plant, 449-Irrigation Water Management, 441-Irrigation System, Microirrigation, 443-Irrigation System Surface and Subsurface, 442-Irrigation System, Sprinkler, 328-Conservation Crop Rotation, 634-Waste Transfer, and 590-Nutrient Management.

Before Situation:

Producer estimates seasonal and individual irrigation application flow rate and volumes based on energy costs, system operating pressure, or other means.

After Situation:

Producer is able to access instantaneous rate and cumulative flow volume data from a personal computer or cell phone at any time. The information gained will enable the irrigator to improve irrigation water management, recognize system performance issues before they become critical, and reduce energy use.

Feature Measure: Nominal Diameter of Meter

Scenario Unit: Inch

Scenario Typical Size: 10.0

Scenario Total Cost: $4,570.49

Scenario Cost/Unit: $457.05

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Materials						
Flow Meter, with electronic Index and telemetry	1451	10 inch Magnetic Irrigation Flow Meter, with electronic index and equipped for telemetry, permanently installed. Includes material, meter appurtenances, and installation.	Each	$4,430.27	1	$4,430.27
Mobilization						
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	$70.11	2	$140.22

Practice: 587 - Structure for Water Control

Scenario #286 - Inlet Flashboard Riser, Mixed Material

Scenario Description:

A Flashboard Riser fabricated of metal and PVC or polyethylene and PVC used in a water management system that maintains a desired water surface elevation, controls the direction or rate of flow, or conveys water to address the resource concerns: Inadequate Water - Inefficient use of Irrigation Water and Inadequate habitat for Fish and Wildlife. The water surface elevation is controlled by addition or removal of slats or "stop logs". This scenario is applicable to variable crest weir structures where the elevation is controlled at the inlet (Half-Rounds). They are often fabricated from half pipes (i.e. half-rounds) or sheet steel in a box shape. Payment rate is based upon the Flashboard Weir Length in inches multiplied by the outlet length in feet (Inch-Foot). Cost estimate is based on a "Half-Round" flashboard riser shop fabricated using a longitudinal cut 30" steel pipe, a 50' long - 24" plastic outlet pipe passing through an embankment.

Before Situation:

The operator presently flood irrigates his field and has no means to accurately maintain a constant water level at varying elevations resulting in a lack of flexibility, and inefficient use of water and energy during pumping. The operator also desires to maintain a permanent pool for water fowl during the winter.

After Situation:

The operator has the capability to more efficiently control and maintain a range of water surface elevations thereby reducing the flow rate needed. Less water is wasted and both water and energy is conserved. The operator is now able to maintain adequate water during the winter as a benefit to waterfowl. Any needed re-vegetation of disturbed areas use Critical Area Planting (342). Other associated practices such as; Irrigation Water Management (449), Irrigation Land Leveling (464), Irrigation Canal or Lateral (320), Irrigation System, Tail water Recovery (447), Dike (356), and Grade Stabilization Structure (410) will use the corresponding Standard(s) as appropriate.

Feature Measure: Flashboard Weir Length (in) x barre

Scenario Unit: Diameter Inch Foot

Scenario Typical Size: 1,500.0

Scenario Total Cost: $2,826.29

Scenario Cost/Unit: $1.88

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Earthfill, Manually Compacted	50	Earthfill, manually compacted, includes equipment and labor	Cubic Yards	$5.73	14	$80.22
Hydraulic Excavator, .5 CY	930	Track mounted hydraulic excavator with bucket capacity range of 0.3 to 0.8 CY. Equipment and power unit costs. Labor not included.	Hours	$61.38	2	$122.76
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	3	$90.15
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	8	$185.44
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	2	$53.80
Materials						
Pipe, PVC, 24 in., PS 46	1254	Pipe, PVC, PS 46, 24 inch Diameter - ASTM F679. Material cost only.	Each	$29.46	50	$1,473.00
Pipe, Steel, 30 in., Std Wt, USED	1361	Materials: - USED - 30 inch - Steel Std Wt	Feet	$103.01	3	$309.03
Steel, Angle, 2 1/2 in. x 2 1/2 in. x 1/4 in.	1372	Materials: Angle, 2 1/2 inch x 2 1/2 inch x 1/4 inch. Meets ASTM A36	Feet	$3.99	12	$47.88
Steel, Plate, 3/8 in.	1375	Flat steel plate, 3/8 inch thickness. Materials only.	Square Feet	$14.91	6	$89.46
Lumber, planks, posts and timbers, treated	1609	Treated dimension lumber with nominal thickness greater than 2 inches. Includes lumber and fasteners. Does not include labor.	Board Feet	$3.37	15	$50.55
Mobilization						
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	$70.11	1	$70.11
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 587 - Structure for Water Control

Scenario #297 - Overflow Structure Steel

Scenario Description:

A full flow drop pipe (i.e.: riser and barrel) designed and constructed from steel to maintain a desired water surface elevation in a water storage facility. This scenario is applicable to fabricated metal structures used locally or not covered by other scenarios for the purpose of controlling water surface elevation in tailwater pits and ponds this preventing overflow. Cost estimate is based on a smooth steel pipe drop structure with a flap gate on the upstream side of the structure constructed with a 36” X 6’ tall riser and a 30” X 40’ barrel (Riser Diameter inches X barrel length feet= diameter inch foot. In this instance the result will be 36” X 40’= 1440 inch feet.A full flow drop pipe (i.e.: riser and barrel) designed and constructed from steel to maintain a desired water surface elevation in a water storage facility. This scenario is applicable to fabricated metal structures used locally or not covered by other scenarios for the purpose of controlling water surface elevation in tailwater pits and ponds this preventing overflow. Cost estimate is based on a smooth steel pipe drop structure with a flap gate on the upstream side of the structure constructed with a 36” X 6’ tall riser and a 30” X 40’ barrel (Riser Diameter inches X barrel length feet= diameter inch foot. In this instance the result will be 36” X 40’= 1440 inch feet.

Before Situation:

Surface water storage facility is required to carry 1 foot of freeboard. In a rain event, runoff will fill the storage facility causing overtopping of the banks.

After Situation:

Excess surface water is allowed to flow through the structure keeping the desired water surface elevation and preventing overtopping of storage structure.

Feature Measure: weir length (ft) X barrel length (ft)

Scenario Unit: Diameter Inch Foot

Scenario Typical Size: 1,440.0

Scenario Total Cost: $11,373.33

Scenario Cost/Unit: $7.90

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Hydraulic Excavator, 1 CY	931	Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included.	Hours	$111.83	24	$2,683.92
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	2	$47.48
Portable Welder	1407	Portable field welder. Equipment only. Labor not included.	Hours	$19.98	16	$319.68
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	24	$721.20
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	16	$370.88
Materials						
Rock Riprap, Placed with geotextile	44	Rock Riprap, placed with geotextile, includes materials, equipment and labor to transport and place	Cubic Yards	$103.28	10	$1,032.80
Pipe, Steel, 30 in., Std Wt, USED	1361	Materials: - USED - 30 inch - Steel Std Wt	Feet	$103.01	40	$4,120.40
Pipe, Steel, 36 in., Std Wt, USED	1362	Materials: - USED - 36 inch - Steel Std Wt	Feet	$145.73	6	$874.38
Steel, Plate, 3/8 in.	1375	Flat steel plate, 3/8 inch thickness. Materials only.	Square Feet	$14.91	12.25	$182.65
Flap Gate, 24 inch	2099	24 inch diameter cast flap gate. Materials only.	Each	$512.16	1	$512.16
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: 587 - Structure for Water Control

Scenario #299 - SWC Automation - Programmed

Scenario Description:

A structure for water control used in a water management system that maintains a desired water surface/water table elevation, controls the direction or rate of flow, or conveys water to address the resource concerns: Inadequate Water - Inefficient use of Irrigation Water and Inadequate habitat for Fish and Wildlife. The water surface/water table elevation is controlled by a programmed unit to adjust the water control level to a planned water management plan. This scenario is applicable where SWC can assist in improving the water management achieved by these structures. Payment rate is based upon a programming unit for automatic control, the requisite motors/belts/gears/etc to operate the structure and a solar system to provide power for the unit operation. Associated practices: 449, 646, 644, 554, 606

Before Situation:

The operator presently has to manually operate SWC (e.g. insert/remove stoplogs, raise/lower gates, etc.) resulting in lack of operation, access issues, failure to follow a management plan, thereby achieving a lower level of objectives (e.g. manipulating water level for shorebird utilization, irrigation control, drainage control). For wildlife purposes, timing, depth, and duration are critical aspects, especially when addressing multiple species. In irrigation, tailwater/rainwater capture needs to be controlled in precise time allotments and durations. For drainage, water table can be managed to maximize de-nitrification, organic matter oxidization, etc. Manually operated structures are prone to management failure resulting in underachieving resource concern goals.

After Situation:

The operator has the capability to more efficiently control and maintain a range of water surface/water table elevations by programmed operation of the SWC. Once the program is recorded and started, the operation plan is followed automatically. Manual override is always provided for emergency purposes. Water control with programmed units can be varied hourly, daily or weekly as desired. Conservation goals (e.g. winter water, water conservation, de-nitrification) are more likely to be achieved.

Feature Measure: Each

Scenario Unit: Each

Scenario Typical Size: 1.0

Scenario Total Cost: $2,208.69

Scenario Cost/Unit: $2,208.69

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	8	$240.40
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	4	$92.72
Materials						
Solar Panels, fixed cost portion	1031	Fixed cost portion of the Solar Panels. This portion is a base cost for all Solar Panels and is not dependant on KiloWatt. The total cost of any Solar Panels will include this fixed cost plus a variable cost portion. The completed Solar Panels will include all materials (electrical, controllers, service drops and etc). This cost will include material, labor and equipment.	Each	$261.66	1	$261.66
Solar Panels, variable cost portion	1135	Variable cost portion of the Solar Panels. This portion IS dependent on the total Kilowatt for the Solar Panels. The total cost of any Solar Panels will include this variable cost plus the fixed cost portion. The completed Solar Panels will include all materials (electrical, controllers, and service drop, etc). This cost will include material, labor and equipment.	Kilowatt	$2,731.32	0.25	$682.83
Switches and Controls, temp sensors	1192	Temperature and soil moisture sensors installed as part of an electronic monitoring (with or without wireless telecommunications) commonly used to control pumps and irrigation systems	Each	$611.15	1	$611.15
Switches and Controls, programmable controller	1193	Programmable logic controller (with or without wireless telecommunications) commonly used to control pumps and irrigation systems	Each	$319.93	1	$319.93

Practice: 587 - Structure for Water Control

Scenario #300 - SWC Automation - Remote Operation and Monitoring

Scenario Description:

A structure for water control used in a water management system that maintains a desired water surface/water table elevation, controls the direction or rate of flow, or conveys water to address the resource concerns: Inadequate Water - Inefficient use of Irrigation Water and Inadequate habitat for Fish and Wildlife. The water surface/water table elevation is controlled by a telemetry unit to monitor and adjust the water control level to a planned water management plan. This scenario is applicable where SWC can assist in improving the water management achieved by these structures. Payment rate is based upon a telemetry control and monitoring unit for automatic control, the requisite motors/belts/gears/etc to operate the structure and a solar system to provide power for the unit operation. Associated practices: 449, 646, 644, 554, 606

Before Situation:

The operator presently has to manually operate SWC (e.g. insert/remove stoplogs, raise/lower gates, etc.) resulting in lack of operation, access issues, failure to follow a management plan, thereby achieving a lower level of objectives (e.g. manipulating water level for shorebird utilization, irrigation control, drainage control). For wildlife purposes, timing, depth, and duration are critical aspects, especially when addressing multiple species. In irrigation, tailwater/rainwater capture needs to be controlled in precise time allotments and durations. For drainage, water table can be managed to maximize de-nitrification, organic matter oxidization, etc. Manually operated structures are prone to management failure resulting in underachieving resource concern goals.

After Situation:

The operator has the capability to more efficiently control and maintain a range of water surface/water table elevations by remote operation and monitoring of the SWC. Once the remote program is recorded and started, the operation plan is followed automatically. Manual override is always provided for emergency purposes. Water control with remote operation and control can be varied hourly, daily or weekly as desired. Operation and water level can be monitored real-time (e.g. maximum 1 hour delay). Conservation goals (e.g. winter water, water conservation, de-nitrification) are more likely to be achieved and documented (system have ability to print out season long records).

Feature Measure: Each

Scenario Unit: Each

Scenario Typical Size: 1.0

Scenario Total Cost: $2,890.96

Scenario Cost/Unit: $2,890.96

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	12	$360.60
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	8	$185.44
Materials						
Solar Panels, fixed cost portion	1031	Fixed cost portion of the Solar Panels. This portion is a base cost for all Solar Panels and is not dependant on KiloWatt. The total cost of any Solar Panels will include this fixed cost plus a variable cost portion. The completed Solar Panels will include all materials (electrical, controllers, service drops and etc). This cost will include material, labor and equipment.	Each	$261.66	1	$261.66
Solar Panels, variable cost portion	1135	Variable cost portion of the Solar Panels. This portion IS dependent on the total Kilowatt for the Solar Panels. The total cost of any Solar Panels will include this variable cost plus the fixed cost portion. The completed Solar Panels will include all materials (electrical, controllers, and service drop, etc). This cost will include material, labor and equipment.	Kilowatt	$2,731.32	0.25	$682.83
Switches and Controls, temp sensors	1192	Temperature and soil moisture sensors installed as part of an electronic monitoring (with or without wireless telecommunications) commonly used to control pumps and irrigation systems	Each	$611.15	1	$611.15
Switches and Controls, programmable controller	1193	Programmable logic controller (with or without wireless telecommunications) commonly used to control pumps and irrigation systems	Each	$319.93	1	$319.93
Switches and Controls, radio system	1195	Output radio, field transmitter, and receiver commonly used to control pumps and irrigation systems	Each	$469.35	1	$469.35

Practice: 587 - Structure for Water Control

Scenario #305 - Inline Flashboard Riser, Metal

Scenario Description:

A Flashboard Riser fabricated of metal and used in a water management system that maintains a desired water surface elevation, controls the direction or rate of flow, or conveys water to address the resource concerns: Inadequate Water - Inefficient use of Irrigation Water and Inadequate habitat for Fish and Wildlife. The water surface elevation is controlled by addition or removal of slats or "stoplogs". This scenario is applicable to variable crest weir structures where the elevation is controlled at the embankment. They are often fabricated from vertical pipes with the stoplogs are located in the middle (i.e. Full-Rounds) or sheet steel in a box shape. Payment rate is based upon the Flashboard Weir Length in inches multiplied by the outlet length in feet (Inch-Foot). Cost estimate is based on a "Half-Round" flashboard riser shop fabricated using a longitudinal cut 36" smooth steel pipe, a 50' long - 30" outlet pipe passing through an embankment.

Before Situation:

The operator presently flood irrigates his field and has no means to accurately maintain a constant water level at varying elevations resulting in a lack of flexibility, and inefficient use of water and energy during pumping. The operator also desires to maintain a permanent pool for water fowl during the winter.

After Situation:

The operator has the capability to more efficiently control and maintain a range of water surface elevations thereby reducing the flow rate needed. Less water is wasted and both water and energy is conserved. The operator is now able to maintain adequate water during the winter as a benefit to waterfowl. Any needed re-vegetation of disturbed areas use Critical Area Planting (342). Other associated practices such as; Irrigation Water Management (449), Irrigation Land Leveling (464), Irrigation Canal or Lateral (320), Irrigation System, Tailwater Recovery (447), Dike (356), and Grade Stabilization Structure (410) will use the corresponding Standard(s) as appropriate.

Feature Measure: Flashboard Weir Length (in) x Barre

Scenario Unit: Diameter Inch Foot

Scenario Typical Size: 1,800.0

Scenario Total Cost: $8,328.24

Scenario Cost/Unit: $4.63

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Earthfill, Roller Compacted	49	Earthfill, roller or machine compacted, includes equipment and labor	Cubic Yards	$4.42	190	$839.80
Earthfill, Manually Compacted	50	Earthfill, manually compacted, includes equipment and labor	Cubic Yards	$5.73	15	$85.95
Hydraulic Excavator, .5 CY	930	Track mounted hydraulic excavator with bucket capacity range of 0.3 to 0.8 CY. Equipment and power unit costs. Labor not included.	Hours	$61.38	4	$245.52
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	7	$210.35
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	10	$231.80
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	4	$107.60
Materials						
Pipe, Steel, 30 in., Std Wt, USED	1361	Materials: - USED - 30 inch - Steel Std Wt	Feet	$103.01	50	$5,150.50
Pipe, Steel, 36 in., Std Wt, USED	1362	Materials: - USED - 36 inch - Steel Std Wt	Feet	$145.73	6	$874.38
Steel, Angle, 2 1/2 in. x 2 1/2 in. x 1/4 in.	1372	Materials: Angle, 2 1/2 inch x 2 1/2 inch x 1/4 inch. Meets ASTM A36	Feet	$3.99	24	$95.76
Steel, Plate, 3/8 in.	1375	Flat steel plate, 3/8 inch thickness. Materials only.	Square Feet	$14.91	10	$149.10
Lumber, planks, posts and timbers, treated	1609	Treated dimension lumber with nominal thickness greater than 2 inches. Includes lumber and fasteners. Does not include labor.	Board Feet	$3.37	4	$13.48
Mobilization						
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	$70.11	1	$70.11
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 590 - Nutrient Management

Scenario #278 - Basic NM (Non-Organic/Organic)

Scenario Description:

This scenario describes the implementation of a basic nutrient management system on > = 40 acres of cropland or hayland where there is no manure application. Scenario is applicable on non-organic and organic land. The planned NM system will meet the current Nutrient Management (590) CPS. Implementation will result in the proper rate, source, method of placement, and timing of nutrient application. Payment for implementation is to defray the costs of soil testing, analysis, and implementation of the nutrient management plan and recordkeeping. Records demonstrating implementation of the 4 R's of NM will be required.

Before Situation:

In this geographic area, a fertility program is either nonexistent or does not meet the Nutrient Management (590) CPS. Soil testing is not completed on a regular basis and applications of fertilizers are not based on land grant university recommendations or a nutrient budget. An environmental evaluation or risk assessment is not completed. Nutrients are transported to surface waters through runoff, drainage tile, or soil erosion, or to ground water from leaching in quantities that degrade water quality and limit use of intended purposes. Soil quality may be degraded by excess or inadequate nutrients. Fields have little or no erosion protection during critical periods often times resulting in sheet, rill, and ephemeral erosion.

After Situation:

A nutrient management system will be developed to meet the current Nutrient Management (590) CPS, when applicable system will also meet NOP regulations. Development and implementation of a nutrient management plan (NMP) will benefit plant productivity while also reducing potential for off-site degradation. A nutrient management budget will be developed for each field(s) based on soil test analysis and land grant university recommendations or crop removal rates. On planning units typically 40 acres or larger, soil testing is completed according to LGU recommendations. Records will be provided annually of the current soil test, analysis, application rates, forms and rates of nutrients for each field, including crop yields. Nutrient applications will be completed according to the Nutrient Management Plan that minimizes nutrient runoff and leaching or buildup of excess nutrient concentrations.

Feature Measure: <Unknown>

Scenario Unit: Acres

Scenario Typical Size: 40.0

Scenario Total Cost: $327.94

Scenario Cost/Unit: $8.20

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	1	$23.74
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	4	$92.72
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	2	$186.08
Materials						
Test, Soil Test, Standard	299	Includes materials, shiping, labor, and equipment costs.	Each	$12.70	2	$25.40

Practice: 590 - Nutrient Management

Scenario #279 - Basic NM with Manure Injection or Incorporation

Scenario Description:

This scenario describes the implementation of a basic nutrient management system on > = 40 acres of cropland or hayland where all applied nutrient sources (nitrogen, phosphorus, and potassium) are either incorporated using tillage at least 3-4 inches deep or injected into the soil at least 3-6 inches deep (Exceptions for incorporation or injection include: established close grown crops such as wheat or perennial crops such as hay or pasture). This scenario is applicable on non-organic and organic land for all nutrient sources (manure, compost, commercial fertilizers, and organic sources of nutrients). Micro-nutrients may be surface applied. The planned NM system will meet the current Nutrient Management (590) CPS. Implementation will result in the proper rate, source, method of placement (incorporation or injection), and timing of nutrient application. Payment for implementation is to defray the costs of soil testing, manure analysis, incorporation or injection of all nutrients, and the implementation of the nutrient management plan and recordkeeping. Records demonstrating implementation of the 4 R's of NM will be required. Scenario is designed to address the Nutrient Management (590) purposes for nitrogen losses via N2O emissions, nitrogen leaching, and nitrogen and phosphorus surface runoff. The basis for nutrient applications will be recommendations based on soil tests; and when applicable, plant tissue, manure, and compost analyses. Soil loss is controlled to the soil loss tolerance criteria or less for the significant soil map unit.

Before Situation:

In this geographic area, a fertility program is not properly managed to supply the proper rate, timing, method of application, and source to address air and water quality. Application of fertilizers, including manures, composts, and amendments, are surface applied and completed annually based upon tradition that does not specifically consider the detrimental effects of improper timing or rates of all nutrient sources, or excess nutrient buildup in the soil, emissions of N2O, surface runoff, or the leaching of nitrogen to ground or surface water via subsurface drainage. Fields are overwintered with little or no erosion protection often times resulting in sheet, rill, and ephemeral erosion by spring. Soil testing is not completed on a regular basis and applications of all nutrient sources are not based on land grant university recommendations or a nutrient budget. An environmental evaluation or risk assessment is not completed. Nutrients are transported to surface waters through runoff, drainage tile, soil erosion, or to ground water from leaching in quantities that degrade air and water quality. Soil quality may be degraded by excess or inadequate nutrients and erosion. Fields have little or no erosion protection during critical periods often times resulting in sheet, rill, and ephemeral erosion in excess of the planning criteria.

After Situation:

A nutrient management system is developed with the producer to meet the current Nutrient Management (590) CPS; and when applicable, the system will also meet NOP regulations. All nutrient sources will be incorporated with tillage at least 3-4 inches deep or injected at least 4-6 inches deep into the soil (Exceptions for incorporation or injection include: established close grown crops such as wheat or perennial crops such as hay or pasture). Implementation of the nutrient management plan (NMP) will benefit plant productivity while also reducing the potential for off-site degradation. A nutrient management budget will be developed for each field based on soil test analysis and land grant university recommendations or crop removal rates. On planning units typically 40 acres or larger, soil testing (and where applicable manure analyses, plant tissue analyses, etc.) is completed according to LGU recommendations. Applications of all phosphorus and nitrogen sources are based on risk assessments (PI - phosphorus index and leaching index). Records will be provided annually documenting current soil tests and other plant or manure analyses, date and rate of applications, form and placement of nutrients for each field, including post-harvest yields. Nutrient applications will be completed according to the NMP that minimizes nutrient runoff, nitrogen leaching, nitrogen emissions, or buildup of excess nutrient concentrations in the soil.

Feature Measure: <Unknown>

Scenario Unit: Acres

Scenario Typical Size: 40.0

Scenario Total Cost: $1,337.86

Scenario Cost/Unit: $33.45

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	1	$23.74
Tillage, Primary	946	Includes heavy disking (offset) or chisel plow. Includes equipment, power unit and labor costs.	Acres	$15.95	40	$638.00
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	8	$185.44
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	4	$372.16
Materials						
Test, Soil Test, Standard	299	Includes materials, shiping, labor, and equipment costs.	Each	$12.70	2	$25.40
Test, Manure Analysis	306	Moisture, Total N, P, K. Includes materials and shipping only.	Each	$41.26	1	$41.26
Test, Compost Analysis	307	Moisture, Total N, P, K. Includes materials and shipping only.	Each	$51.86	1	$51.86

Practice: 590 - Nutrient Management

Scenario #280 - Small Farm NM (Non-Organic/Organic)

Scenario Description:

Scenario is applicable on non-organic and organic land. Scenario implementation of a basic nutrient management system on small, often diversified farm systems typically between 0.5-10 acres where manure and/or compost may be utilized either alone or in conjunction with commercial fertilizer. The planned NM system will meet the current Nutrient Management (590) CPS. Implementation will result in the proper rate, source, method of placement, and timing of nutrient application. Payment for implementation is to defray the costs of soil testing, manure and/or compost analysis, and implementation of the nutrient management plan and recordkeeping. Records demonstrating implementation of the 4 R's of NM will be required. Scenario is designed to encourage producers to effectively utilize commercial fertilizers, organic fertilizers, manure, and/or compost appropriately improving soil quality and minimizing runoff of nutrients from fields to surface waters. The basis for nutrient applications will be recommendations based on soil, manure, and compost analyses.

Before Situation:

In this geographic area, a fertility program is either nonexistent or does not meet the Nutrient Management (590). Soil testing is not completed on a regular basis and applications of fertilizers are not based on land grant university recommendations or a nutrient budget. An environmental evaluation or risk assessment is not completed. Nutrients are transported to surface waters through runoff, drainage tile, or soil erosion, or to ground water from leaching in quantities that degrade water quality and limit use of intended purposes. Soil quality may be degraded by excess or inadequate nutrients. Fields have little or no erosion protection during critical periods often times resulting in sheet, rill, and ephemeral erosion.

After Situation:

A nutrient management system will be developed to meet the current Nutrient Management (590), when applicable system will also meet NOP regulations. Development and implementation of a nutrient management plan (NMP) will benefit plant productivity while also reducing potential for off-site degradation. A nutrient management budget will be developed for each field, crop block, or crop rotation within a block/field based on soil test analysis and land grant university recommendations or crop removal rates. Application of nutrients will be completed at the proper rate, timing, and methods, and sources per the NMP. Records will be provided annually of current soil test, analysis, application timing, nutrient source, application method, application rate, and crop yields for each block. Nutrient applications will be completed according to the NMP that minimizes nutrient runoff and leaching or buildup of excess nutrient concentrations.

Feature Measure: <Unknown>

Scenario Unit: Each

Scenario Typical Size: 1.0

Scenario Total Cost: $281.10

Scenario Cost/Unit: $281.10

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	3	$69.54
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	1	$93.04
Materials						
Test, Soil Test, Standard	299	Includes materials, shiping, labor, and equipment costs.	Each	$12.70	2	$25.40
Test, Manure Analysis	306	Moisture, Total N, P, K. Includes materials and shipping only.	Each	$41.26	1	$41.26
Test, Compost Analysis	307	Moisture, Total N, P, K. Includes materials and shipping only.	Each	$51.86	1	$51.86

Practice: 590 - Nutrient Management

Scenario #281 - Basic NM with Manure and/or Compost (Non-Organic/Organic)

Scenario Description:

This scenario describes the implementation of a basic nutrient management system on > = 40 acres of cropland or hayland where manure and/or compost is utilized either alone or in conjunction with commercial fertilizer. Scenario is applicable on non-organic and organic land. The planned NM system will meet the current Nutrient Management (590) CPS. Implementation will result in the proper rate, source, method of placement, and timing of nutrient application. Payment for implementation is to defray the costs of soil testing, manure and/or compost analysis, and implementation of the nutrient management plan and recordkeeping. Records demonstrating implementation of the 4 R's of NM will be required. Scenario is designed to encourage producers to effectively utilize commercial fertilizers, organic fertilizers, manure, and/or compost appropriately improving soil quality and minimizing runoff of nutrients from fields to surface waters. The basis for nutrient applications will be recommendations based on soil, manure, and compost analyses.

Before Situation:

In this geographic area, a fertility program is either nonexistent or at a basic level. Application of fertilizers, including manures, composts, and amendments, are completed annually based upon tradition that does not specifically consider the detrimental effects of improper timing or rates of nutrients, or excess nutrient buildup in the soil. Fields are overwintered with little or no erosion protection often times resulting in sheet, rill, and ephemeral erosion by spring. Soil testing is not completed on a regular basis and applications of fertilizers are not based on land grant university recommendations or a nutrient budget. An environmental evaluation or risk assessment is not completed. Nutrients are transported to surface waters through runoff, drainage tile, or soil erosion, or to ground water from leaching in quantities that degrade water quality and limit use of intended purposes. Soil quality may be degraded by excess or inadequate nutrients. Fields have little or no erosion protection during critical periods often times resulting in sheet, rill, and ephemeral erosion.

After Situation:

A nutrient management system will be developed to meet the current Nutrient Management (590) CPS, when applicable system will also meet NOP regulations. Development and implementation of a nutrient management plan (NMP) will benefit plant productivity while also reducing potential for off-site degradation. A nutrient management budget will be developed for each field(s) based on soil test analysis and land grant university recommendations or crop removal rates. On planning units typically 40 acres or larger, soil testing is completed according to LGU recommendations. Records will be provided annually of the current soil test, analysis, application rate, forms and rates of nutrients for each field, including crop yields. Nutrient applications will be completed according to the Nutrient Management Plan that minimizes nutrient runoff and leaching or buildup of excess nutrient concentrations.

Feature Measure: <Unknown>

Scenario Unit: Acres

Scenario Typical Size: 40.0

Scenario Total Cost: $699.86

Scenario Cost/Unit: $17.50

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	1	$23.74
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	8	$185.44
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	4	$372.16
Materials						
Test, Soil Test, Standard	299	Includes materials, shiping, labor, and equipment costs.	Each	$12.70	2	$25.40
Test, Manure Analysis	306	Moisture, Total N, P, K. Includes materials and shipping only.	Each	$41.26	1	$41.26
Test, Compost Analysis	307	Moisture, Total N, P, K. Includes materials and shipping only.	Each	$51.86	1	$51.86

Practice: 590 - Nutrient Management

Scenario #282 - Basic Precision NM (Non-Organic/Organic)

Scenario Description:

This scenario takes a conventional cropping system where either no nutrient management or only a basic level of nutrient management is being practiced and improves it to address air quality (reduce emissions for N fertilizer) and/or minimize agricultural nonpoint source pollution of surface and groundwater. The planned NM system will meet the current Nutrient Management (590) CPS general and additional criteria. Precision nutrient management system includes such items as split applications, variable rate applications, nitrification or urease inhibitors, additional nutrient tests including PSNT (pre-side dress nitrogen test), CSNT (corn stalk nitrate test), and PPSN (pre-plant soil nitrate test), chlorophyll meters, and/or spectral analysis may be used to further refine nutrient applications. Payment for implementation is to defray the costs of grid or zone soil testing, additional testing and analysis, equipment, implementation of the NMP and recordkeeping. Typical treatment area is 40 acres.

Before Situation:

In this geographic area, conventional fertility programs involve very little or no soil or manure testing. Application of fertilizers, including manures and amendments, are completed annually based upon tradition that does not specifically consider the detrimental affects of improper timing or rates of nutrients, nitrous oxide emissions or excess nutrient build-up in the soil. Fields are overwintered with little or no erosion protection often times resulting in sheet, rill, and ephemeral erosion by spring. Runoff flows into adjacent streams, water courses, tile drains, field surface drains, or other water courses causing degradation to receiving waters or leaching of nutrients to shallow ground water sources. There is typically no environmental evaluation of the potential for off-site movement. Soil quality may also be detrimentally affected.

After Situation:

A precision nutrient management system will be developed to meet the current Nutrient Management (590) CPS general and additional criteria, when applicable the system will also meet NOP regulations. Development and implementation of a Nutrient Management Plan (NMP) based on the 4Rs will benefit plant productivity while reducing potential of off-site movement of nutrients, including reducing nitrogen emissions. NMP may include practices such as use of split applications, slow release nutrients, nitrification inhibitors, urease inhibitors, proper timing of application, more appropriate formulations, banding, etc. Additional nutrient tests including PSNT (pre-side dress nitrogen test), CSNT (corn stalk nitrate test), and PPSN (pre-plant soil nitrate test), chlorophyll meters, spectral analysis, etc., may also be used to further refine nutrient applications. Use of a post-harvest soil test or tissue tests will help establish the adequacy of the plan in meeting crop needs while minimizing P application rate and residual N, thus reducing the potential for off-site impacts. Potential for offsite movement of nutrient may be further reduced by identifying variability across the field(s) by using soil survey maps or other simple techniques to establish management zones, along with grid or zone soil testing. Nutrients are applied at rates based on soil test zone analyses. Nitrogen and Phosphorus risk assessment tools are completed and results included in the nutrient management system specifications as required by current NRCS 590 CPS criteria and any mitigation measures are included in the conservation plan if determined needed by risk assessment results. Soil testing is completed according to LGU recommendations. Analysis are completed at least once every three years for N-P-K, and for N annually. A nutrient budget is developed for each field or management zone annually. Records will be provided annually of the current soil test, analysis, application rates, forms and rates of nutrients for each field, including crop yields.

Feature Measure: <Unknown>

Scenario Unit: Acres

Scenario Typical Size: 40.0

Scenario Total Cost: $2,139.57

Scenario Cost/Unit: $53.49

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	2	$47.48
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hours	$18.07	2	$36.14
Aerial Imagery	966	Aerial imagery. RBG (color), infrared or NDVI single image.	Acres	$1.75	40	$70.00
Chlorophyll Reader	1125	Applicator and chlorophyll sensor includes labor. No materials	Acres	$11.18	40	$447.20
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	8	$185.44
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	6	$558.24
Materials						
Test, Soil Test, Standard	299	Includes materials, shiping, labor, and equipment costs.	Each	$12.70	60	$762.00
Test, Plant Tissue Test	301	Tissue analysis for crops. Includes materials and shipping only.	Each	$23.40	1	$23.40
Test, Soil Nitrogen Testing	311	Pre-Side Dress/Deep Soil Testing. Includes materials and shipping only.	Each	$9.67	1	$9.67

Practice: 590 - Nutrient Management

Scenario #284 - Adaptive NM

Scenario Description:

The practice scenario is for the implementation of nutrient management on a small plot, as detailed in outlined in Agronomy Technical Note 7 - Adaptive Nutrient Management. Scenario includes implementing replicated strip trials on a field plot to evaluate, identify and implement various nutrient use efficiency improvement methods for timing, rate, method of application, or source of nutrients.

Before Situation:

The practice will be installed on cropland (small grain rotation or typical corn-soybean rotation) to address water quality degradation, air quality degradation and energy concerns. The scenario applies to non-organic and organic operations.

After Situation:

Installation of this scenario will result in adopting the four R's of nutrient management following the procedures outlined in Agronomy Technical Note 7 - Adaptive Nutrient Management. Implementation involves establishing the replicated plots to evaluate one or more of the 4 R's. The plot will consist of at least 4 replicated plots designed, laid out, managed and evaluated with the assistance of a consultant or extension professional knowledgeable in nutrient management and experimental design and data collection. Results are used to make nutrient application decisions to address water quality degradation issues and nutrient use efficiencies. Yields will be measured and statistically analyzed and summarized following the procedures in Agronomy Technical Note 7. The yields for each plot will be adjusted to the appropriate moisture content.

Feature Measure: <Unknown>

Scenario Unit: Each

Scenario Typical Size: 1.0

Scenario Total Cost: $2,465.23

Scenario Cost/Unit: $2,465.23

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Aerial Imagery	966	Aerial imagery. RBG (color), infrared or NDVI single image.	Acres	$1.75	1	$1.75
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	25	$579.50
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	15	$1,395.60
Materials						
Test, Soil Test, Standard	299	Includes materials, shiping, labor, and equipment costs.	Each	$12.70	2	$25.40
Test, Plant Tissue Test	301	Tissue analysis for crops. Includes materials and shipping only.	Each	$23.40	14	$327.60
Test, Soil Nitrogen Testing	311	Pre-Side Dress/Deep Soil Testing. Includes materials and shipping only.	Each	$9.67	14	$135.38

Practice: 590 - Nutrient Management

Scenario #287 - Small Scale Urban Basic Nutrient Management

Scenario Description:

This scenario applies to small farms with diversified cropping systems which will improve the current level of management in applying nutrients. Improved level of management will be such to prevent nonpoint source pollution of surface and ground waters. Typical size is less than 0.5 acres.

Before Situation:

Little to no soil or manure testing is being conducted and typically lacks a nutrient budget. Application of fertilizers, including manures and amendments, are conducted based upon traditional fertilizer recommendations from LGU or based on historic use rates. Fields are overwintered with little or no erosion protection often times resulting in sheet, rill, and ephemeral erosion. Nutrients runoff into adjacent streams, tile drains, field surface drains, or other water courses is causing degradation to surface waters or leaching to shallow ground water sources.

After Situation:

Implementation Requirements have been developed to manage nutrients according to the criteria found in Nutrient Management (590) Conservation Practice Standard for either organic or non-organic operations as appropriate. A nutrient budget has been developed for each field or management zone. Nutrients are applied according to the 4 R's. (Right rate, Right time, Right place and Right source). Records needed to complete the nutrient budget are provided which may include variety of pre-season, in-season, and post-season soil nutrient and plant tissue tests and analysis; compost or manure tests; application timing, method and rate; nutrient sources; and yield data for each field or management zone. Nutrient runoff into adjacent streams is minimized improving water quality and preventing leaching into shallow ground water sources.

Feature Measure: planted area

Scenario Unit: 1,000 Square Foot

Scenario Typical Size: 15.0

Scenario Total Cost: $947.43

Scenario Cost/Unit: $63.16

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Fertilizer, ground application, dry bulk	950	Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$7.35	0.34	$2.50
Lime application	953	Lime application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$8.51	0.34	$2.89
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	20	$463.60
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	3	$279.12
Materials						
Test, Soil Test, Standard	299	Includes materials, shiping, labor, and equipment costs.	Each	$12.70	2	$25.40
Test, Plant Tissue Test	301	Tissue analysis for crops. Includes materials and shipping only.	Each	$23.40	3	$70.20
Test, Compost Analysis	307	Moisture, Total N, P, K. Includes materials and shipping only.	Each	$51.86	2	$103.72

Practice: 591 - Amendments for Treatment of Agricultural Waste

Scenario #5 - Litter Amendments applied on a percent Soluble P Reduced for Water Quality Impacts

Scenario Description:

This practice scenario includes the application of a litter treatment amendment that is approved by NRCS to the entire poultry house to reduce water-soluble phosphorous in the poultry litter by a specified percentage. The amendment used is proven to transform nitrogen into a form of ammonium and reduce the concentration of water-soluble phosphorous in the litter and reduces ammonia levels in the house. Resource concerns from existing nutrient levels may contribute to water quality degradation from nutrient runoff and leaching from fields fertilized with poultry litter and air quality impacts such as objectionable odors and ammonia emissions. Associated practices: Nutrient Management (590).

Before Situation:

Integrator does not currently apply waste treatment amendments to the litter that reduce ammonia emissions and soluble phosphorus.

After Situation:

This scenario is based on a typical poultry operation with a desired application rate is to reduce % soluble of a phosphorus binding amendment (P) by weight of the P to litter (25%, 37.5%, 50% P reduced /ton of litter). 25% Soluble P reduced use 67 lbs. Alum per ton of litter, 37.5% Soluble P Reduced use 100 lbs. alum per ton of litter and 50% soluble P reduced use 133 lbs. alum per ton of litter. Typical operation consists of 2 houses, 40' x 500' house (20,000 SF), 21,000 birds (4 pound finished bird weight). The operation raises 5 flocks per year. 37.5 % soluble P reduced for this operation. Estimated cost is based on the following formula to calculate required amendment at the prescribed rate in tons per year of Alum is: (Number of houses) x (Number of Flocks per year) x (Number of birds) X (Finish weight of birds (lbs)) X (Pounds of litter)/bird) x (1 ton per 2000 lbs.) x (application rate of Alum for the % Soluble P reduced per ton of litter) x (1 ton per 2000 lbs.)= 37.5% soluble P reduced: 2 houses x 21,000 birds per house X 4 lbs. per bird X 0.50 lb litter/bird x 1 ton / 2000 lbs. X 100 lbs. Alum per ton of litter x 1 ton per 2000 lb = 2.1 tons / application. An NRCS approved amendment is applied between each flock at the prescribed rate up to 5 applications (5 flocks per year). The selected amendment is applied in conformance with the manufacturer's recommendations and the rates required. The amendment is proven to reduce soluble phosphorus in the litter, to control the odor, and to reduce ammonia emissions. The resulting litter contains higher levels of nutrients and nutrient management plans must account for this. Nutrient level testing of the litter and nutrient planning shall be in conformance with CPS Nutrient Management, Code 590. The amendment successfully addresses water quality degradation due to nutrients in surface and ground water and air quality impacts from objectionable odors, ammonia emissions, PM and PM precursors and bird health resource concerns.

Feature Measure: Tons of admendment per applicati

Scenario Unit: Ton

Scenario Typical Size: 2.1

Scenario Total Cost: $981.18

Scenario Cost/Unit: $467.23

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Application of ag waste amendment for poultry litter	2020	Litter amendment application performed in house. Includes equipment, power unit and labor costs.	Ton	$58.02	2.1	$121.84
Materials						
Ag Waste Amendment, aluminum sulfate, alum	1684	Aluminum sulfate, alum, poultry Litter amendment. NRCS approved for air and water quality concerns to reduce ammonia emissions and soluble phosphorus in the litter. Materials only.	Ton	$409.21	2.1	$859.34

Practice: 595 - Pest Management Conservation System

Scenario #140 - Plant Health PAMS (acs) Low Labor and Materials

Scenario Description:

PAMS activities with low labor and material costs will be implemented on a large scale crop production area.

Before Situation:

Before practice conditions vary widely. Conditions range from the client is not using any PAMS techniques to the client is using many different PAMS techniques for many different pests. In all cases at least one planned PAMS technique has risk to an identified resource concern (Plant Pest Pressure).

After Situation:

Planned Prevention (resistant cultivar selection, etc.), Avoidance (IWM for disease avoidance, change in rotation to avoid problem spots, etc.), and Monitoring (Degree day monitoring, field scouting, etc.) activities have been implemented to help meet the minimum criteria for the identified resource concerns (i.e. Plant Pest Pressure).

Feature Measure: Acres of Management Applied

Scenario Unit: Acres

Scenario Typical Size: 40.0

Scenario Total Cost: $818.66

Scenario Cost/Unit: $20.47

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Acquisition of Technical Knowledge						
Training, Workshops	294	Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants.	Each	$100.83	1	$100.83
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	2	$60.10
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	8	$185.44
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	2	$186.08
Materials						
Miscellaneous, containers, traps, etc.	298	Pheromone Traps, Culture container with lid. Includes materials and shipping only.	Each	$4.63	10	$46.30
Weather Station, Basic	314	Basic Weather Station which collects and records recording rainfall, humidity, barometric pressure, wind speed, and temperature to a home weather console. Includes materials only.	Each	$239.91	1	$239.91

Practice: 595 - Pest Management Conservation System

Scenario #141 - Plant Health PAMS (acs) Low labor only

Scenario Description:

PAMS activities with low labor costs will be implemented on a large scale crop production area.

Before Situation:

Before practice conditions vary widely. Conditions range from the client is not using any PAMS techniques to the client is using many different PAMS techniques for many different pests. In all cases at least one planned PAMS technique has risk to an identified resource concern (Plant Pest Pressure).

After Situation:

Planned Prevention (resistant cultivar selection, pest habitat removal, etc.), Avoidance (IWM for disease avoidance, change in rotation to avoid problem spots, etc.), and Monitoring (field scouting, etc.) activities have been implemented to help meet the minimum criteria for the identified resource concerns (i.e. Plant Pest Pressure).

Feature Measure: Acres of management applied

Scenario Unit: Acres

Scenario Typical Size: 40.0

Scenario Total Cost: $532.45

Scenario Cost/Unit: $13.31

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Acquisition of Technical Knowledge						
Training, Workshops	294	Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants.	Each	$100.83	1	$100.83
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	2	$60.10
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	8	$185.44
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	2	$186.08

Practice: 595 - Pest Management Conservation System

Scenario #142 - Pest Management Precision Ag

Scenario Description:

This scenario takes a conventional cropping system where either no pest management or only a basic level of pest management is being practiced and improves it to address air quality and/or minimize agricultural nonpoint sources pollution of surface and groundwater. The planned Pest Management system will meet the current Pest Management Conservation System (595) CPS general and additional criteria. Precision pest management system includes such items as pest monitoring, targeted applications, eliminates overlap, tissue testing, specialized nozzles etc. to further refine pesticide applications. Payment for implementation is to defray the costs of tissue testing, additional testing and analysis, equipment implementation of the PMCS and recordkeeping. Typical treatment area is 40 acres.

Before Situation:

Conventional pest management programs involve little or no monitoring and testing. Application of pesticides are completed annually based upon product salesmen recommendations that do not specifically consider the detrimental affects of inexact application methods. Fields are overwintered with little or no erosion protection often resulting in sheet, rill and ephemeral erosion. Runoff flows into adjacent streams, water courses, tile drains, field surface drains or other water courses causing degradation to receiving waters or leaching of pesticides to shallow ground water sources. There is typically no environmental evaluation of the potential for off-site movement. Soil health may also be detrimentally affected.

After Situation:

A precision pest management system will be developed to meet the current Pest Management Conservation System (595) CPS general and additional criteria, when applicable the system will also meet NOP regulations. Development and implementation of a PMCS will benefit plant productivity while reducing potential of off-site movement of pesticides. PMCS may include practices such as use of spot applications, proper timing of applications, more appropriate formulations etc. Additional monitoring and tissue testing may also be used to further refine pesticide applications. Smart sprayer and advanced nozzle technology may also be employed. Records will be provided annually of the current monitoring, test analysis, application rates, formulations for each field including crop yields.

Feature Measure: Acres of management applied

Scenario Unit: Acres

Scenario Typical Size: 40.0

Scenario Total Cost: $2,172.56

Scenario Cost/Unit: $54.31

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	4	$94.96
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hours	$18.07	8	$144.56
Aerial Imagery	966	Aerial imagery. RBG (color), infrared or NDVI single image.	Acres	$1.75	40	$70.00
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	8	$240.40
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	12	$278.16
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	14	$1,302.56
Materials						
Miscellaneous, containers, traps, etc.	298	Pheromone Traps, Culture container with lid. Includes materials and shipping only.	Each	$4.63	4	$18.52
Test, Plant Tissue Test	301	Tissue analysis for crops. Includes materials and shipping only.	Each	$23.40	1	$23.40

Practice: 595 - Pest Management Conservation System

Scenario #143 - Plant Health PAMS activities (Small Farm - each) labor, materials and mitigation.

Scenario Description:

PAMS activities with labor and material costs plus mitigation will be implemented on a small scale crop production area.

Before Situation:

Before practice conditions vary widely. Conditions range from the client is not using any PAMS techniques to the client is using many different PAMS techniques for many different pests. In all cases at least one planned PAMS technique has risk to an identified resource concern (Plant Pest Pressure). Mitigation over 30 points.

After Situation:

Planned Prevention (Netting to exclude insect or birds, resistant cultivar selection, etc.), Avoidance (IWM for disease avoidance, change in rotation to avoid problem spots, etc.), and Monitoring (Degree day monitoring, field scouting, etc.) activities have been implemented to help meet the minimum criteria for the identified resource concerns (i.e. Plant Pest Pressure). Mitigation over 30 points.

Feature Measure: Small farm, typically = 5Ac

Scenario Unit: Each

Scenario Typical Size: 1.0

Scenario Total Cost: $7,289.10

Scenario Cost/Unit: $7,289.10

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Acquisition of Technical Knowledge						
Training, Workshops	294	Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants.	Each	$100.83	1	$100.83
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	27	$811.35
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	8	$185.44
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	17	$1,581.68
Materials						
Miscellaneous, containers, traps, etc.	298	Pheromone Traps, Culture container with lid. Includes materials and shipping only.	Each	$4.63	3	$13.89
Weather Station, Basic	314	Basic Weather Station which collects and records recording rainfall, humidity, barometric pressure, wind speed, and temperature to a home weather console. Includes materials only.	Each	$239.91	1	$239.91
Netting, Crop Protection, Large Mesh	2762	Synthetic netting, large mesh to exclude birds and small animals. Approximately 6 to 7 inch mesh. Includes materials and shipping only.	Square Feet	$0.05	87120	$4,356.00

Practice: 595 - Pest Management Conservation System

Scenario #144 - Plant Health PAMS (acs) High labor only (intensive scouting etc.)

Scenario Description:

Plant Health PAMS (acs) High labor only (intensive scouting etc.)

Before Situation:

Before practice conditions vary widely. Conditions range from the client is not using any PAMS techniques to the client is using many different PAMS techniques for many different pests. In all cases at least one planned PAMS technique has risk to an identified resource concern (Plant Pest Pressure).

After Situation:

Planned Prevention (resistant cultivar selection, pest habitat removal, etc.), Avoidance (IWM for disease avoidance, change in rotation to avoid problem spots, etc.), and Monitoring (field scouting, etc.) activities have been implemented to help meet the minimum criteria for the identified resource concerns (i.e. Plant Pest Pressure).

Feature Measure: Acres of Management Applied

Scenario Unit: Acres

Scenario Typical Size: 40.0

Scenario Total Cost: $1,647.01

Scenario Cost/Unit: $41.18

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Acquisition of Technical Knowledge						
Training, Workshops	294	Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants.	Each	$100.83	1	$100.83
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	2	$60.10
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	32	$741.76
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	8	$744.32

Practice: 595 - Pest Management Conservation System

Scenario #145 - Plant health PAMS (Small Farm - each) labor and mitigation.

Scenario Description:

PAMS activities with labor costs will be implemented plus mitigation on a small scale crop production area.

Before Situation:

Before practice conditions vary widely. Conditions range from the client is not using any PAMS techniques to the client is using many different PAMS techniques for many different pests. In all cases at least one planned PAMS technique has risk to an identified resource concern (Plant Pest Pressure). Mitigation up to 30 points.

After Situation:

Planned Prevention (resistant cultivar selection, pest habitat removal, etc.), Avoidance (IWM for disease avoidance, change in rotation to avoid problem spots, etc.), and Monitoring (field scouting, etc.) activities have been implemented to help meet the minimum criteria for the identified resource concerns (i.e. Plant Pest Pressure). Mitigation up to 30 points.

Feature Measure: Small farm, typically = 5Ac

Scenario Unit: Each

Scenario Typical Size: 1.0

Scenario Total Cost: $1,544.33

Scenario Cost/Unit: $1,544.33

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Acquisition of Technical Knowledge						
Training, Workshops	294	Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants.	Each	$100.83	1	$100.83
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	14	$420.70
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	8	$185.44
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	9	$837.36

Practice: 595 - Pest Management Conservation System

Scenario #146 - Plant Health PAMS (acs) High Labor, materials and mitigation.

Scenario Description:

PAMS activities with high labor and material costs (weather station, netting, field sanitation, mating disruption) plus mitigation will be implemented on a large scale crop production area.

Before Situation:

Before practice conditions vary widely. Conditions range from the client is not using any PAMS techniques to the client is using many different PAMS techniques for many different pests. In all cases at least one planned PAMS technique has risk to an identified resource concern (Plant Pest Pressure). Mitigation over 30 points.

After Situation:

Planned Prevention (Netting to exclude insect or birds, resistant cultivar selection, etc.), Avoidance (IWM for disease avoidance, change in rotation to avoid problem spots, etc.), and Monitoring (Degree day monitoring, field scouting, etc.) activities have been implemented to help meet the minimum criteria for the identified resource concerns (i.e. Plant Pest Pressure). Mitigation over 30 points.

Feature Measure: Acres of management applied

Scenario Unit: Acres

Scenario Typical Size: 40.0

Scenario Total Cost: $15,900.38

Scenario Cost/Unit: $397.51

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Acquisition of Technical Knowledge						
Training, Workshops	294	Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants.	Each	$100.83	1	$100.83
Equipment Installation						
Tractor, agricultural, 120 HP	962	Agricultural tractor with horsepower range of 90 to 140. Equipment and power unit costs. Labor not included.	Hours	$51.52	150	$7,728.00
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	15	$450.75
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	150	$3,477.00
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	30	$1,253.40
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	22	$2,046.88
Materials						
Weather Station, Advanced	2550	Advance Weather Station which collects and records recording rainfall, humidity, barometric pressure, wind speed, temperature, and solar radiation from a solar powered self-standing tripod to an advance weather recording console. Used for both 449 advance irrigation water management and for Activity 202 water quality monitoring .	Each	$843.52	1	$843.52

Practice: 595 - Pest Management Conservation System

Scenario #147 - Plant Health PAMS (acs) Low Labor, materials and mitigation.

Scenario Description:

PAMS activities with low labor and material costs will be implemented plus mitigation on a large scale crop production area.

Before Situation:

Before practice conditions vary widely. Conditions range from the client is not using any PAMS techniques to the client is using many different PAMS techniques for many different pests. In all cases at least one planned PAMS technique has risk to an identified resource concern (Plant Pest Pressure). Mitigation up to 30 points.

After Situation:

Planned Prevention (Netting to exclude insect or birds, resistant cultivar selection, etc.), Avoidance (IWM for disease avoidance, change in rotation to avoid problem spots, etc.), and Monitoring (Degree day monitoring, field scouting, etc.) activities have been implemented to help meet the minimum criteria for the identified resource concerns (i.e. Plant Pest Pressure). Mitigation up to 30 points.

Feature Measure: Acres of Management Applied

Scenario Unit: Acres

Scenario Typical Size: 40.0

Scenario Total Cost: $2,115.44

Scenario Cost/Unit: $52.89

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Acquisition of Technical Knowledge						
Training, Workshops	294	Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants.	Each	$100.83	1	$100.83
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	8	$240.40
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	8	$185.44
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	14	$1,302.56
Materials						
Miscellaneous, containers, traps, etc.	298	Pheromone Traps, Culture container with lid. Includes materials and shipping only.	Each	$4.63	10	$46.30
Weather Station, Basic	314	Basic Weather Station which collects and records recording rainfall, humidity, barometric pressure, wind speed, and temperature to a home weather console. Includes materials only.	Each	$239.91	1	$239.91

Practice: 595 - Pest Management Conservation System

Scenario #148 - Water Quality Pesticide Mitigation > 30 Point AND/OR Beneficial Insect Pesticide Mitigation - Small Farm

Scenario Description:

The minimum amount of planned IPM mitigation techniques needed to reduce water quality pesticide-related resource concerns is > 30 mitigation index score. An IPM plan will be developed in accordance with this standard and the CPS 595 Implementation Requirement will document how specific pesticide hazards will be prevented or mitigated AND/OR impacts to wildlife-beneficial insects including pollinators.

Before Situation:

Before practice conditions vary widely. Conditions range from the client is not using many pest suppression techniques (pesticides, tillage for weed control, burning, etc.) to the client is using many different pest suppression techniques for many different pests, but in all cases at least one planned pest suppression technique has risk to an identified resource concern (e.g. Water Quality - Impacts to Human Drinking Water AND/OR Wildlife-beneficial insects including pollinators).

After Situation:

An IPM system with planned. Mitigation techniques (>30 points) have been implemented to meet the minimum criteria for the identified resource concerns (i.e. Water Quality - Impacts to Human Drinking Water or Fish) AND 10 points of mitigation for Wildlife (beneficial insects including pollinators) with either risk prevention (i.e. planned pesticides have no risk to the identified resource concern) or risk mitigation (i.e. planned pesticides have appropriate mitigation planned from Agronomy Technical Note 5 AND Agronomy Technical Note 9).

Feature Measure: Small Farm, typically <= 5 acs

Scenario Unit: Each

Scenario Typical Size: 1.0

Scenario Total Cost: $1,624.44

Scenario Cost/Unit: $1,624.44

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	20	$601.00
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	11	$1,023.44

Practice: 595 - Pest Management Conservation System

Scenario #149 - Plant Health PAMS (acs) High Labor and materials

Scenario Description:

PAMS activities with high labor and material costs will be implemented on a large scale crop production area (weather station, netting, field sanitation, mating disruption etc.).

Before Situation:

Before practice conditions vary widely. Conditions range from the client is not using any PAMS techniques to the client is using many different PAMS techniques for many different pests. In all cases at least one planned PAMS technique has risk to an identified resource concern (Plant Pest Pressure).

After Situation:

Planned Prevention (Netting to exclude insect or birds, resistant cultivar selection, etc.), Avoidance (IWM for disease avoidance, change in rotation to avoid problem spots, etc.), and Monitoring (Degree day monitoring, field scouting, etc.) activities have been implemented to help meet the minimum criteria for the identified resource concerns (i.e. Plant Pest Pressure).

Feature Measure: Acres of Management Applied

Scenario Unit: Acres

Scenario Typical Size: 40.0

Scenario Total Cost: $14,147.07

Scenario Cost/Unit: $353.68

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Acquisition of Technical Knowledge						
Training, Workshops	294	Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants.	Each	$100.83	1	$100.83
Equipment Installation						
Tractor, agricultural, 120 HP	962	Agricultural tractor with horsepower range of 90 to 140. Equipment and power unit costs. Labor not included.	Hours	$51.52	150	$7,728.00
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	150	$3,477.00
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	30	$1,253.40
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	8	$744.32
Materials						
Weather Station, Advanced	2550	Advance Weather Station which collects and records recording rainfall, humidity, barometric pressure, wind speed, temperature, and solar radiation from a solar powered self-standing tripod to an advance weather recording console. Used for both 449 advance irrigation water management and for Activity 202 water quality monitoring .	Each	$843.52	1	$843.52

Practice: 595 - Pest Management Conservation System

Scenario #150 - Water Quality Pesticide Mitigation = 30 Point AND/OR Beneficial Insect Pesticide Mitigation - Small Farm

Scenario Description:

The minimum amount of planned IPM mitigation techniques needed to reduce water quality pesticide-related resource concerns is = 30 mitigation index score. An IPM plan will be developed in accordance with this standard and the CPS 595 Implementation Requirement will document how specific pesticide hazards will be prevented or mitigated AND/OR impacts to wildlife-beneficial insects including pollinators.

Before Situation:

Before practice conditions vary widely. Conditions range from the client is not using many pest suppression techniques (pesticides, tillage for weed control, burning, etc.) to the client is using many different pest suppression techniques for many different pests, but in all cases at least one planned pest suppression technique has risk to an identified resource concern (e.g. Water Quality - Impacts to Human Drinking Water AND/OR Wildlife-beneficial insects including pollinators).

After Situation:

An IPM system with planned. Mitigation techniques (=30 points) have been implemented to meet the minimum criteria for the identified resource concerns (i.e. Water Quality - Impacts to Human Drinking Water or Fish) AND/OR 10 points of mitigation for Wildlife (beneficial insects including pollinators) with either risk prevention (i.e. planned pesticides have no risk to the identified resource concern) or risk mitigation (i.e. planned pesticides have appropriate mitigation planned from Agronomy Technical Note 5 AND/OR Agronomy Technical Note 9).

Feature Measure: Small Farm, typically <= 5 acres

Scenario Unit: Each

Scenario Typical Size: 1.0

Scenario Total Cost: $978.94

Scenario Cost/Unit: $978.94

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	14	$420.70
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	6	$558.24

Practice: 595 - Pest Management Conservation System

Scenario #151 - Water Quality Pesticide Mitigation > 30 Point AND/OR Beneficial Insect Pesticide Mitigation

Scenario Description:

The minimum amount of planned IPM mitigation techniques needed to reduce water quality pesticide-related resource concerns is > 30 mitigation index score. An IPM plan will be developed in accordance with this standard and the CPS 595 Implementation Requirement will document how specific pesticide hazards will be prevented or mitigated AND/OR impacts to wildlife-beneficial insects including pollinators.

Before Situation:

Before practice conditions vary widely. Conditions range from the client is not using many pest suppression techniques (pesticides, tillage for weed control, burning, etc.) to the client is using many different pest suppression techniques for many different pests, but in all cases at least one planned pest suppression technique has risk to an identified resource concern (e.g. Water Quality - Impacts to Human Drinking Water AND/OR Wildlife-beneficial insects including pollinators).

After Situation:

An IPM system with planned. Mitigation techniques (>30 points) have been implemented to meet the minimum criteria for the identified resource concerns (i.e. Water Quality - Impacts to Human Drinking Water or Fish) AND/OR 10 points of mitigation for Wildlife (beneficial insects including pollinators) with either risk prevention (i.e. planned pesticides have no risk to the identified resource concern) or risk mitigation (i.e. planned pesticides have appropriate mitigation planned from Agronomy Technical Note 5 AND/OR Agronomy Technical Note 9).

Feature Measure: Acres of Management Applied

Scenario Unit: Acres

Scenario Typical Size: 40.0

Scenario Total Cost: $2,311.55

Scenario Cost/Unit: $57.79

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	15	$450.75
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	20	$1,860.80

Practice: 595 - Pest Management Conservation System

Scenario #152 - Water Quality Pesticide Mitigation = 30 Point AND/OR Beneficial Insect Pesticide Mitigation

Scenario Description:

The minimum amount of planned IPM mitigation techniques needed to reduce water quality pesticide-related resource concerns is = 30 mitigation index score. An IPM plan will be developed in accordance with this standard and the CPS 595 Implementation Requirement will document how specific pesticide hazards will be prevented or mitigated AND/OR impacts to wildlife-beneficial insects including pollinators.

Before Situation:

Before practice conditions vary widely. Conditions range from the client is not using many pest suppression techniques (pesticides, tillage for weed control, burning, etc.) to the client is using many different pest suppression techniques for many different pests, but in all cases at least one planned pest suppression technique has risk to an identified resource concern (e.g. Water Quality - Impacts to Human Drinking Water AND/OR Wildlife-beneficial insects including pollinators).

After Situation:

An IPM system with planned. Mitigation techniques (=30 points) have been implemented to meet the minimum criteria for the identified resource concerns (i.e. Water Quality - Impacts to Human Drinking Water or Fish) AND/OR 10 points of mitigation for Wildlife (beneficial insects including pollinators) with either risk prevention (i.e. planned pesticides have no risk to the identified resource concern) or risk mitigation (i.e. planned pesticides have appropriate mitigation planned from Agronomy Technical Note 5 AND Agronomy Technical Note 9).

Feature Measure: Acres of Management Applied

Scenario Unit: Acres

Scenario Typical Size: 40.0

Scenario Total Cost: $1,326.83

Scenario Cost/Unit: $33.17

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	7	$210.35
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	12	$1,116.48

Practice: 595 - Pest Management Conservation System

Scenario #153 - Plant Health PAMS activities (Small Farm - each) labor and materials

Scenario Description:

PAMS activities with labor and material costs will be implemented on a small scale crop production area.

Before Situation:

Before practice conditions vary widely. Conditions range from the client is not using any PAMS techniques to the client is using many different PAMS techniques for many different pests. In all cases at least one planned PAMS technique has risk to an identified resource concern (Plant Pest Pressure).

After Situation:

Planned Prevention (Netting to exclude insect or birds, resistant cultivar selection, etc.), Avoidance (IWM for disease avoidance, change in rotation to avoid problem spots, etc.), and Monitoring (Degree day monitoring, field scouting, etc.) activities have been implemented to help meet the minimum criteria for the identified resource concerns (i.e. Plant Pest Pressure).

Feature Measure: Small Farm, typically <= 5 ac

Scenario Unit: Each

Scenario Typical Size: 1.0

Scenario Total Cost: $5,112.20

Scenario Cost/Unit: $5,112.20

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Acquisition of Technical Knowledge						
Training, Workshops	294	Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants.	Each	$100.83	1	$100.83
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	1	$30.05
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	8	$185.44
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	2	$186.08
Materials						
Miscellaneous, containers, traps, etc.	298	Pheromone Traps, Culture container with lid. Includes materials and shipping only.	Each	$4.63	3	$13.89
Weather Station, Basic	314	Basic Weather Station which collects and records recording rainfall, humidity, barometric pressure, wind speed, and temperature to a home weather console. Includes materials only.	Each	$239.91	1	$239.91
Netting, Crop Protection, Large Mesh	2762	Synthetic netting, large mesh to exclude birds and small animals. Approximately 6 to 7 inch mesh. Includes materials and shipping only.	Square Feet	$0.05	87120	$4,356.00

Practice: 595 - Pest Management Conservation System

Scenario #154 - Plant health PAMS (Small Farm - each) labor only

Scenario Description:

PAMS activities with labor costs will be implemented on a small scale crop production area.

Before Situation:

Before practice conditions vary widely. Conditions range from the client is not using any PAMS techniques to the client is using many different PAMS techniques for many different pests. In all cases at least one planned PAMS technique has risk to an identified resource concern (Plant Pest Pressure).

After Situation:

Planned Prevention (resistant cultivar selection, pest habitat removal, etc.), Avoidance (IWM for disease avoidance, change in rotation to avoid problem spots, etc.), and Monitoring (field scouting, etc.) activities have been implemented to help meet the minimum criteria for the identified resource concerns (i.e. Plant Pest Pressure).

Feature Measure: Small farm, typically <= 5 ac

Scenario Unit: Each

Scenario Typical Size: 1.0

Scenario Total Cost: $502.40

Scenario Cost/Unit: $502.40

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Acquisition of Technical Knowledge						
Training, Workshops	294	Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants.	Each	$100.83	1	$100.83
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	1	$30.05
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	8	$185.44
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	2	$186.08

Practice: 600 - Terrace

Scenario #4 - Narrow Base Less Than 8%

Scenario Description:

An earthen embankment with channel constructed across the field slope as part of a system to shorten slope lengths and reduce sheet, rill, and gully erosion in a cropped field. The typical installation is a system of narrow base terraces with 2:1 slopes, 2,500' length, and 2.5' height in a field with slopes from 3% to 8% constructed in loam soils or similar in regards to workability. A stable outlet is provided in the form of a Grassed Waterway or Underground Outlet. Costs include all equipment and forces necessary to excavate, shape, and compact terrace. Permanent vegetation is established. Seeding is not included. This practice addresses Concentrated Flow Erosion and Excessive Sediment in surface waters.

Before Situation:

Long slope lengths contribute to excessive sedimentation and soil erosion in cropped fields as a result of gully, rill, and sheet erosion. The excessive erosion may lead to deterioration of receiving waters due to excessive sedimentation and nutrient transport.

After Situation:

A system of narrow base terraces with approximately 2:1 front and back slopes measuring 2,500 feet in length and 2.5 feet height is constructed with spacing designed to intercept flow of water and shorten slope length to reduce erosion to acceptable levels. Work is done with dozer, scraper, or road grader. Associated practices are Critical Area Planting (342), Grassed Waterway (412), and Underground Outlet (620).

Feature Measure: Length of Terrace

Scenario Unit: Feet

Scenario Typical Size: 2,500.0

Scenario Total Cost: $3,374.91

Scenario Cost/Unit: $1.35

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Dozer, 140 HP	927	Track mounted Dozer with horsepower range of 125 to 160. Equipment and power unit costs. Labor not included.	Hours	$97.92	24	$2,350.08
Labor						
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	24	$645.60
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	3	$125.34
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 601 - Vegetative Barrier

Scenario #14 - Vegetative Planting

Scenario Description:

Permanent strips of stiff, dense vegetation established along the general contour of slopes.

Before Situation:

Significant erosion is occurring resulting in substantial transport of sediment across the slope. A large amount of sediment is subsequently delivered to the edge of the field and/or waterways.

After Situation:

Implementation Requirements are prepared and implemented for the site according to the Vegetative Barrier (601) standard. A strip or strips of stiff, dense vegetation such as Vetiver Grass is/are established along the general contour of the slope that effectively settles a significant amount of sediment above the leading edge of the vegetative barrier. Barrier may also help to connect green areas to provide shelter for wildlife.

Feature Measure: Per 100 foot Linear feet of practice

Scenario Unit: Feet

Scenario Typical Size: 100.0

Scenario Total Cost: $110.45

Scenario Cost/Unit: $1.10

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$6.00	0.01	$0.06
Fertilizer, ground application, dry bulk	950	Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$7.35	0.01	$0.07
Ground sprigging	1101	Includes costs for equipment, power unit and labor.	Acres	$60.70	0.01	$0.61
Materials						
Nitrogen (N), Ammonium Sulfate	70	Price per pound of N supplied by Ammonium Sulfate. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.79	0.46	$0.36
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$8.98	0.01	$0.09
Perennial Grass, Legume, and/or Forb Culms, Stems, Liners, or Plugs, linear planting	2324	Perennial grasses, legumes and/or forbs established in a row using vegetative propagules including culms, stems, liners, or plugs. Cost is for 100 linear feet. Includes materials and shipping.	100 Foot	$109.26	1	$109.26

Practice: 603 - Herbaceous Wind Barriers

Scenario #9 - Cool Season Annual/Perennial Species

Scenario Description:

This scenario describes the implementation of herbaceous barriers to reduce wind velocities and wind-borne particulate matter. In this scenario barriers are composed of cool season annual or perennial vegetation. Plant materials shall be selected for local adaptation and climatic conditions and are resistant to lodging and are non-spreading in their habit. Barriers will be designed as close to perpendicular to prevailing winds as practical. Barrier direction, spacing, and composition needed to achieve the desired purpose shall be designed using the currently approved wind erosion technology.

Before Situation:

Typically cropland has excessive soil disturbance and unsheltered distance that results in excessive wind erosion that affect soil resources. Seedling development and wildlife habitat are negatively affected by wind-borne sediment and sediment-borne contaminants travelling offsite.

After Situation:

Implementation Requirements will be prepared and implemented for the site according to the Herbaceous Wind Barrier (603) standard. Implementation of herbaceous wind barriers will modify the flow and velocity of air dependent upon barrier height, porosity, spacing and wind speed. Orientation is generally placed across an entire field perpendicular to applicable prevailing wind direction. Implementation will reduce soil loss, protect growing plants from damage by wind-blown soil particles, and provide food and cover for wildlife. The scenario includes the design and implementation of annual barriers and required reestablishment.

Feature Measure: linear feet of barrier planted

Scenario Unit: Linear Feet

Scenario Typical Size: 1,320.0

Scenario Total Cost: $117.48

Scenario Cost/Unit: $0.09

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	2	$47.48
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	1	$20.79
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	2	$46.36
Materials						
Annual Grasses	2730	Annual grasses, one or more species, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping.	Acres	$31.62	0.09	$2.85

Practice: 607 - Surface Drain, Field Ditch

Scenario #1 - Field Drainage Ditch

Scenario Description:

A new field ditch is constructed to collect the excess irrigation water of a single field and direct it to a collection system so that the water can be recovered and reused. Typical ditch size is trapezoidal ditch with 4ft bottom x 3ft depth x 1760 ft length with 2:1 side slopes. The total yardage of earthwork is 1956 cy. Resource concerns that will be addressed: Excess/Insufficent Water - inefficient use of irrigation water; Water Quality Degradation - excessive sediments in surface waters; Water Quality Degradation - Excess nutrients in surface and ground water; Degradation Plant Condition - undesireable plant prductivity and health. Assoicated practices: 533 - Pumping Plants; 410 - Grade Stabilization Structure; 587 - Structure for water control; 449 - Irrigation Water Management

Before Situation:

Excess irrigation water collects at lower ends of field and backs up into crops and causes plant stress or causes erosion and travels off farm in a drainage ditch causing water quality issues in lower watersheds.

After Situation:

Excess irrigation water is collected and directed into a recovery system where the water can be recycled and reused for irrigation. Sedimentation has a chance to settle out of the water allowing for less sediment to travel down stream.

Feature Measure: Volume of Earth Excavated

Scenario Unit: Cubic Yards

Scenario Typical Size: 1,956.0

Scenario Total Cost: $4,552.20

Scenario Cost/Unit: $2.33

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Excavation, Common Earth, side cast, small equipment	48	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic Yards	$2.24	1956	$4,381.44
Mobilization						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	1	$170.76

Practice: 608 - Surface Drain, Main or Lateral

Scenario #1 - Main or Lateral Drainage Ditch

Scenario Description:

A new lateral ditch is constructed to collect the excess irrigation water of a series of fields creating a collection system so that the water can be recovered and reused. Typical ditch size is trapezoidal ditch with 8 ft bottom x 5 ft depth x 1950 ft length with 2:1 side slopes. The total yardage of earthwork is 6,500 cy. Resource concerns that will be addressed: Excess/Insufficent Water - inefficient use of irrigation water; Water Quality Degradation - excessive sediments in surface waters; Water Quality Degradation - Excess nutrients in surface and ground water; Degradation Plant Condition - undesireable plant prductivity and health. Assoicated practices: 533 - Pumping Plants; 410 - Grade Stabilization Structure; 587 - Structure for water control; 449 - Irrigation Water Management

Before Situation:

Excess irrigation water collects at lower ends of field and backs up into crops and causes plant stress or causes erosion and travels off farm in a drainage ditch causing water quality issues in lower watersheds.

After Situation:

Excess irrigation water is collected and directed into a recovery system where the water can be recycled and reused for irrigation. Sedimentation has a chance to settle out of the water allowing for less sediment to travel down stream.

Feature Measure: Volume of Earth Excavated

Scenario Unit: Cubic Yards

Scenario Typical Size: 6,500.0

Scenario Total Cost: $14,730.76

Scenario Cost/Unit: $2.27

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Excavation, Common Earth, side cast, small equipment	48	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic Yards	$2.24	6500	$14,560.00
Mobilization						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	1	$170.76

Practice: 608 - Surface Drain, Main or Lateral

Scenario #2 - Two Stage Ditch

Scenario Description:

A nesting discharge channel within a larger channel is built to create a flood plain within a ditch to all improve water quality and to slow the high flow. Typical ditch size is trapezoidal ditch with 8ft bottom x 4ft depth x 1760 ft length with 2:1 side slopes with a small trapezoidal ditch with dimensions of 4ft bottom x 2ft depth x 1760 length with 2:1 side slopes. The total yardage of earthwork is 5,215 cy. Resource concerns that will be addressed: Excess/Insufficient Water - inefficient use of irrigation water; Water Quality Degradation - excessive sediments in surface waters; Water Quality Degradation - Excess nutrients in surface and ground water; Degradation Plant Condition - undesirable plant productivity and health. Associated practices: 533 - Pumping Plants; 410 - Grade Stabilization Structure; 587 - Structure for water control; 449 - Irrigation Water Management; 436 - Irrigation Reservoir

Before Situation:

Existing ditch is too small and frequent flooding occurs. Erosion due to flood velocities is high and water quality is degraded because of erosion along the stream banks. Deposition of eroded material creates sediment bars which cause the bottom of the ditch to meander which in turn creates more erosion.

After Situation:

Ditch is created which more closely mimics a natural channel. Excess flow has a flood plain to help dissipate energy and allow sediment to fall out, resulting in improved water quality down stream.

Feature Measure: Excavated Material

Scenario Unit: Cubic Yards

Scenario Typical Size: 5,215.0

Scenario Total Cost: $13,000.04

Scenario Cost/Unit: $2.49

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Excavation, Common Earth, side cast, small equipment	48	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic Yards	$2.24	5215	$11,681.60
Dozer, 80 HP	929	Track mounted Dozer with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$54.51	12	$654.12
Labor						
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	12	$322.80
Mobilization						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	2	$341.52

Practice: 612 - Tree/Shrub Establishment

Scenario #1 - Pine, Bare root

Scenario Description:

Tree seedlings will be hand planted in the forested area where few or no forest trees are growing, the existing stand of trees needs underplanting, or the previously planted seedling tree stocking level is below desirable conditions. Wildlife habitat is degraded by loss of forest conditions. This resource concern addressed is degraded plant condition -- and inadequate structure and composition, and inadequate wildlife & fish habitat.

Before Situation:

The stocking level of the forest does not meet the minimum recommended number of trees per acre. The existing condition of the forest stand does not meet the landowners objectives. To be a viable forest additional seedlings need planting. Wildlife habitat is rated poor.

After Situation:

The prescribed number of trees are hand planted on 20 acres, and the objectives of the landowner are met. The forest will provide wildlife habitat, provide a long term ground cover, and capture atmospheric carbon.

Feature Measure: Number planted

Scenario Unit: Each

Scenario Typical Size: 10,000.0

Scenario Total Cost: $2,662.08

Scenario Cost/Unit: $0.27

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Hand tools, tree planting	1590	Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included.	Hours	$12.58	8	$100.64
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	40	$927.20
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	8	$334.24
Materials						
Tree, Conifer, Seedling, Small	1512	Containerized conifer seedlings, 4 or 6 cubic inches; or bare root conifer seedlings 1+0 (one-year old seedlings grown in their original seedbed). Includes materials and shipping only.	Each	$0.12	10000	$1,200.00
Mobilization						
Mobilization, Material, distance > 50 miles	1043	Mobilization cost of materials for special cases where the distance from the supplier delivery point to the job site exceeds 50 miles. The costs for shipping by UPS or bulk freight shipping to a location within 50 miles of the job site have already been included in the component price.	Dollars	$1.00	100	$100.00

Practice: 612 - Tree/Shrub Establishment

Scenario #2 - Hardwood, bare root

Scenario Description:

Establishing a hardwood forest setting by hand planting hardwood tree seedlings. Resource concerns are degraded plant condition - undesireable productivity and health, and Inadequate structure and composition; inadequate habitat for fish and wildlife - habitat degradation.

Before Situation:

In an existing upland forest the present trees are poor quality, at low stocking levels, or are undesirable species. Existing conditions do not meet landonwer objectives of growing high quality trees. Wildlife habitat is poor due to the above described conditions. Resource concerns are degrade plant condition - undesireable productivity and health, and Inadequate structure and composition; inadequate habitat for fish and wildlife - habitat degradation. Prior to planting any needed vegetation control will be conducted first.

After Situation:

The area of treatment is 20 acres. Bare root hardwood seedlings are planted by hand in the best locations for seedling survival. Solid tree tubes are installed to protect seedlings from animal browsing damage. Post planting vegetation control is planned to ensure seedling survival.

Feature Measure: Number planted

Scenario Unit: Each

Scenario Typical Size: 6,000.0

Scenario Total Cost: $5,106.64

Scenario Cost/Unit: $0.85

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Hand tools, tree planting	1590	Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included.	Hours	$12.58	8	$100.64
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	32	$741.76
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	8	$334.24
Materials						
Tree, Hardwood, Seedling, Small	1509	Bare root hardwood seedlings 6 to 18 inches tall; includes tropical containerized seedlings of 8 cubic inches or smaller. Includes materials and shipping only.	Each	$0.63	6000	$3,780.00
Mobilization						
Mobilization, Material, distance > 50 miles	1043	Mobilization cost of materials for special cases where the distance from the supplier delivery point to the job site exceeds 50 miles. The costs for shipping by UPS or bulk freight shipping to a location within 50 miles of the job site have already been included in the component price.	Dollars	$1.00	150	$150.00

Practice: 612 - Tree/Shrub Establishment

Scenario #3 - Shrub, bare root

Scenario Description:

Shrubs are planted to provide a more diverse habitat. Plantings are in either uplands or bottomlands. The site lacks ground level habitat structure and diversity for widlife. Resource concern is inadequate habitat for fish and wildife - habitat fragmentation.

Before Situation:

No shrubbery vegetation, or very little, is present under the forest overstory. Wildlife species that need shrub cover are not present. An adequate stand of overstory trees is present, but it is a single level, not multi-level.

After Situation:

A 10 acre area is planted with shrubs. Shrubs are not planted over the entire 10 acres. They are planted in groups or motts. The motts, more or less circular in shape, are 50 feet in diameter, with 50 shrubs planted within each mott. 4 motts are planted per acre for a total of 200 shrubs per acre. Motts are randomly established to take advantage of site conditions and shrub species being planted.

Feature Measure: Number planted

Scenario Unit: Each

Scenario Typical Size: 2,000.0

Scenario Total Cost: $3,002.48

Scenario Cost/Unit: $1.50

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Hand tools, tree planting	1590	Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included.	Hours	$12.58	24	$301.92
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	24	$556.32
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	8	$334.24
Materials						
Shrub, Seedling, Medium	1507	Bare root shrub seedling, 18 to 36 inches tall; includes tropical containerized seedlings 10 to 20 cubic inches. Includes materials and shipping only.	Each	$0.83	2000	$1,660.00
Mobilization						
Mobilization, Material, distance > 50 miles	1043	Mobilization cost of materials for special cases where the distance from the supplier delivery point to the job site exceeds 50 miles. The costs for shipping by UPS or bulk freight shipping to a location within 50 miles of the job site have already been included in the component price.	Dollars	$1.00	150	$150.00

Practice: 612 - Tree/Shrub Establishment

Scenario #4 - Conifer, containerized

Scenario Description:

Tree seedlings will be hand planted in the forested area where few or no forest trees are growing, the existing stand of trees needs underplanting, or the previously planted seedling tree stocking level is below desirable conditions. Typically, containerized seedlings are used for special species, but not loblolly or slash, or to help insure survival in droughty areas. Wildlife habitat is degraded by loss of forest conditions. This resource concern addressed is degraded plant condition -- and inadequate structure and composition, and inadequate wildlife & fish habitat.

Before Situation:

The stocking level of the forest does not meet the minimum recommended number of trees per acre. The existing condition of the forest stand does not meet the landowners objectives. To be a viable forest additional seedlings need planting. Wildlife habitat is rated poor.

After Situation:

The prescribed number of trees are hand planted on 20 acres, and the objectives of the landowner are met. The forest will provide wildlife habitat, provide a long term ground cover, and capture atmospheric carbon.

Feature Measure: Number planted

Scenario Unit: Each

Scenario Typical Size: 10,000.0

Scenario Total Cost: $3,861.44

Scenario Cost/Unit: $0.39

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	40	$927.20
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	8	$334.24
Materials						
Tree, Conifer, Seedling, Medium	1514	Containerized conifer seedlings, 8 or 10 cubic inches; or bare root conifer seedlings 1+1 (two-year old seedlings that grew one year in the original seedbed and another year in a transplant bed), or bare root seedlings 2+0 (two-year old seedlings grown in their original seedbed). Includes materials and shipping only.	Each	$0.25	10000	$2,500.00
Mobilization						
Mobilization, Material, distance > 50 miles	1043	Mobilization cost of materials for special cases where the distance from the supplier delivery point to the job site exceeds 50 miles. The costs for shipping by UPS or bulk freight shipping to a location within 50 miles of the job site have already been included in the component price.	Dollars	$1.00	100	$100.00

Practice: 612 - Tree/Shrub Establishment

Scenario #5 - Cuttings

Scenario Description:

Establishing a hardwood forest setting by hand planting hardwood tree cuttings. Resource concerns are degraded plant condition - undesirable productivity and health; inadequate structure and composition; inadequate habitat for fish and wildlife - habitat degradation.

Before Situation:

In an abandoned field or existing forest the present trees are poor quality, at low stocking levels, or are undesirable species. Existing conditions do not meet landonwer objectives of growing high quality trees. Wildlife habitat is poor due to the above described conditions. Resource concerns are degrade plant condition - undesireable productivity and health, and Inadequate structure and composition; inadequate habitat for fish and wildlife - habitat degradation. Vegetation control may be conducted before or after planting.

After Situation:

The area of treatment is 20 acres. Hardwood cuttings are planted by hand in the best locations for tree survival. Post planting vegetation control is planned to ensure tree survival.

Feature Measure: Number planted

Scenario Unit: Each

Scenario Typical Size: 6,000.0

Scenario Total Cost: $10,518.56

Scenario Cost/Unit: $1.75

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Hand tools, tree planting	1590	Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included.	Hours	$12.58	32	$402.56
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	32	$741.76
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	8	$334.24
Materials						
Tree & Shrub, Woody, Cuttings, Medium	1308	Woody cuttings, live stakes or whips typically 1/4 to 1 inch diameter and 24 to 48 inches long. Includes materials and shipping only.	Each	$1.49	6000	$8,940.00
Mobilization						
Mobilization, Material, distance > 50 miles	1043	Mobilization cost of materials for special cases where the distance from the supplier delivery point to the job site exceeds 50 miles. The costs for shipping by UPS or bulk freight shipping to a location within 50 miles of the job site have already been included in the component price.	Dollars	$1.00	100	$100.00

Practice: 612 - Tree/Shrub Establishment

Scenario #6 - Hardwood, 3 gal pots

Scenario Description:

Hardwood seedlings (potted) to be planted to restablish an upland hardwood forest. Planting will be by hand. The resource setting is an area that historically was an upland hardwood forest. Resource concerns are degrade plant condition - undesireable productivity and health, and Inadequate structure and composition; inadequate habitat for fish and wildlife.

Before Situation:

The native forest that has been removed and the land is either row cropped, grazed or hayed or brushy forest. If any upland trees exist they are poor quality tree or undesirable species. Terrain is gently to moderately sloping with soil erosion-sheet and rill ocurring.

After Situation:

The area of treatment is 10 acres. Potted/containerized hardwood seedlings are planted by hand. Post vegetation control should be evaluated and conducted it necessary.

Feature Measure: Number planted

Scenario Unit: Each

Scenario Typical Size: 100.0

Scenario Total Cost: $2,016.64

Scenario Cost/Unit: $20.17

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Auger, Post driver attachment	934	Auger or post driver attachment to a tractor or skidsteer. Does not include power unit. Labor not included.	Hours	$12.82	8	$102.56
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hours	$22.62	8	$180.96
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	16	$370.88
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	8	$334.24
Materials						
Tree, Hardwood, Potted, Medium	1532	Potted hardwood seedling, 2 gallons or larger. Includes materials and shipping only.	Each	$9.28	100	$928.00
Mobilization						
Mobilization, Material, distance > 50 miles	1043	Mobilization cost of materials for special cases where the distance from the supplier delivery point to the job site exceeds 50 miles. The costs for shipping by UPS or bulk freight shipping to a location within 50 miles of the job site have already been included in the component price.	Dollars	$1.00	100	$100.00

Practice: 612 - Tree/Shrub Establishment

Scenario #39 - Hardwood, Pine seeding mixture

Scenario Description:

Pine and hardwood tree seedlings will be hand planted in the forested area where few or no forest trees are growing, the existing stand of trees needs underplanting, or the previously planted seedling tree stocking level is below desirable conditions. Wildlife habitat is degraded by loss of forest conditions. This resource concern addressed is degraded plant condition -- and inadequate structure and composition, and inadequate wildlife & fish habitat.

Before Situation:

The stocking level of the forest does not meet the minimum recommended number of trees per acre. The existing condition of the forest stand does not meet the landowners objectives. To be a viable forest additional seedlings need planting. Wildlife habitat is rated poor. Prior to planting any needed undesirable vegetation control will be conducted.

After Situation:

The prescribed number of trees are hand planted on 20 acres, and the objectives of the landowner are met. The forest will provide wildlife habitat, provide a long term ground cover, and capture atmospheric carbon. The mixture of pine and hardwood seedlings will provide a diverse habitat and offer the landowner an array of management alternatives. Post planting vegetation control may be planned to ensure seedling survival.

Feature Measure: Number planted

Scenario Unit: Each

Scenario Typical Size: 8,000.0

Scenario Total Cost: $4,462.08

Scenario Cost/Unit: $0.56

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Hand tools, tree planting	1590	Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included.	Hours	$12.58	8	$100.64
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	40	$927.20
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	8	$334.24
Materials						
Tree, Hardwood, Seedling, Small	1509	Bare root hardwood seedlings 6 to 18 inches tall; includes tropical containerized seedlings of 8 cubic inches or smaller. Includes materials and shipping only.	Each	$0.63	4000	$2,520.00
Tree, Conifer, Seedling, Small	1512	Containerized conifer seedlings, 4 or 6 cubic inches; or bare root conifer seedlings 1+0 (one-year old seedlings grown in their original seedbed). Includes materials and shipping only.	Each	$0.12	4000	$480.00
Mobilization						
Mobilization, Material, distance > 50 miles	1043	Mobilization cost of materials for special cases where the distance from the supplier delivery point to the job site exceeds 50 miles. The costs for shipping by UPS or bulk freight shipping to a location within 50 miles of the job site have already been included in the component price.	Dollars	$1.00	100	$100.00

Practice: 614 - Watering Facility

Scenario #1 - Permanent Drinking/Storage <500 Gallons

Scenario Description:

A permanent watering facility for livestock and or wildlife constructed of approved materials with less than 500 gallons of capacity that stores adequate quantity and quality of water for storage and or direct drinking access. All watering facilities will be constructed from approved durable materials that have a life expectancy that meets or exceeds the planned useful life of the installation. This watering facility will address the resource concerns of inadequate supply of water for livestock and or wildlife, habitat degradation, water quality, and undesirable plant productivity and health.

Before Situation:

This practice applies to all land uses where there is a need for new or improved watering facilities for livestock and or wildlife, where water is not available in sufficient quantities at specific locations, and habitat, water quality, plant productivity and health needs to be improved.

After Situation:

A permanent watering facility with a capacity of less than 500 gallons is installed with all tank materials, tank plumbing and float valve, to provide adequate water storage capacity to ensure an adequate supply and quality of water for livestock or wildlife for storage and or direct drinking access and provides improved plant productivity and health, water quality, and habitat. All watering facilities are constructed from approved durable materials that have a life expectancy that meets or exceeds the planned useful life of the installation and placed on a properly prepared foundation with required plumbing. All needed pipelines are installed using Livestock Pipeline (516). Any needed vegetation of disturbed areas will use Critical Area Planting (342). All collectors or catchments for collecting precipitation will be addressed by using Water Harvesting Catchment (636). Any needed water source installation will use Water Well (642), Pumping Plant (533), Spring Development (574), or Livestock Pipeline (516) as appropriate. Areas around watering facilities where animal concentrations or overflow from the watering facility will cause resource concerns will be protected by using Heavy Use Area Protection (561) as appropriate.

Feature Measure: Capacity in Gallons

Scenario Unit: Gallons

Scenario Typical Size: 250.0

Scenario Total Cost: $931.94

Scenario Cost/Unit: $3.73

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Excavation, Common Earth, side cast, small equipment	48	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic Yards	$2.24	0.5	$1.12
Backhoe, 80 HP	926	Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$31.57	2	$63.14
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	2	$47.48
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	2.5	$57.95
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	2	$50.62
Materials						
Wildlife Escape Ramp	242	Pool size 15' x 30', for small mammals less than one pound.	Each	$72.84	1	$72.84
Tank, Galvanized Steel Livestock, >75 - 300 gallon	1067	Includes tank materials and float valve	Gallons	$1.48	250	$370.00
Aggregate, Gravel, Ungraded, Quarry Run	1099	Includes materials, equipment and labor	Cubic Yards	$29.80	0.5	$14.90
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 614 - Watering Facility

Scenario #2 - Permanent Drinking/Storage 500-1000 Gallons

Scenario Description:

A permanent watering facility for livestock and or wildlife constructed of approved materials with 500 to 1,000 gallons of capacity that stores adequate quantity and quality of water for storage and or direct drinking access. All watering facilities will be constructed from approved durable materials that have a life expectancy that meets or exceeds the planned useful life of the installation. This watering facility will address the resource concerns of inadequate supply of water for livestock and or wildlife, habitat degradation, water quality, and undesirable plant productivity and health.

Before Situation:

This practice applies to all land uses where there is a need for new or improved watering facilities for livestock and or wildlife, where water is not available in sufficient quantities at specific locations, and habitat, water quality, plant productivity and health needs to be improved.

After Situation:

A permanent watering facility with a capacity of 500 to 1,000 gallons is installed with all tank materials, tank plumbing and float valve, to provide adequate water storage capacity to ensure an adequate supply and quality of water for livestock or wildlife for storage and or direct drinking access and provides improved plant productivity and health, water quality, and habit. All watering facilities are constructed from approved durable materials that have a life expectancy that meets or exceeds the planned useful life of the installation and placed on a properly prepared foundation with required plumbing. All needed pipelines are installed using Livestock Pipeline (516). Any needed vegetation of disturbed areas will use Critical Area Planting (342). All collectors or catchments for collecting precipitation will be addressed by using Water Harvesting Catchment (636). Any needed water source installation will use Water Well (642), Pumping Plant (533), Spring Development (574), or Livestock Pipeline (516) as appropriate. Areas around watering facilities where animal concentrations or overflow from the watering facility will cause resource concerns will be protected by using Heavy Use Area Protection (561) as appropriate.

Feature Measure: Capacity in Gallons

Scenario Unit: Gallons

Scenario Typical Size: 750.0

Scenario Total Cost: $1,893.80

Scenario Cost/Unit: $2.53

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Excavation, Common Earth, side cast, small equipment	48	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic Yards	$2.24	2	$4.48
Backhoe, 80 HP	926	Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$31.57	6	$189.42
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	6	$142.44
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	6	$180.30
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	6.75	$156.47
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	6	$151.86
Materials						
Wildlife Escape Ramp	242	Pool size 15' x 30', for small mammals less than one pound.	Each	$72.84	1	$72.84
Tank, Galvanized Steel Livestock, > 300 - 1,000 gallon	1068	Includes tank materials and float valve	Gallons	$0.91	750	$682.50
Aggregate, Gravel, Ungraded, Quarry Run	1099	Includes materials, equipment and labor	Cubic Yards	$29.80	2	$59.60
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 614 - Watering Facility

Scenario #3 - Permanent Drinking/Storage 1001-5000 Gallons

Scenario Description:

A permanent watering facility for livestock and or wildlife constructed of approved materials with greater than 1,000 to 5,000 gallons of capacity that stores adequate quantity and quality of water for storage and or direct drinking access. All watering facilities will be constructed from approved durable materials that have a life expectancy that meets or exceeds the planned useful life of the installation. This watering facility will address the resource concerns of inadequate supply of water for livestock, habitat degradation, water quality, and undesirable plant productivity and health.

Before Situation:

This practice applies to all land uses where there is a need for new or improved watering facilities for livestock and or wildlife, where water is not available in sufficient quantities at specific locations, and habitat, water quality, plant productivity and health needs to be improved.

After Situation:

A permanent watering facility with a capacity of greater than 1,000 to 5,000 gallons is installed with all tank materials, tank plumbing and float valve, to provide adequate water storage capacity to ensure an adequate supply and quality of water for livestock or wildlife for storage and or direct drinking access and provides improved plant productivity and health, water quality, and habitat. All watering facilities are constructed from approved durable materials that have a life expectancy that meets or exceeds the planned useful life of the installation and placed on a properly prepared foundation with required plumbing. All needed pipelines are installed using Livestock Pipeline (516). Any needed vegetation of disturbed areas will use Critical Area Planting (342). All collectors or catchments for collecting precipitation will be addressed by using Water Harvesting Catchment (636). Any needed water source installation will use Water Well (642), Pumping Plant (533), Spring Development (574), or Livestock Pipeline (516) as appropriate. Areas around watering facilities where animal concentrations or overflow from the watering facility will cause resource concerns will be protected by using Heavy Use Area Protection (561) as appropriate.

Feature Measure: Capacity in Gallons

Scenario Unit: Gallons

Scenario Typical Size: 2,000.0

Scenario Total Cost: $3,688.10

Scenario Cost/Unit: $1.84

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Concrete, CIP, slab on grade, reinforced	37	Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yards	$315.01	4	$1,260.04
Excavation, Common Earth, side cast, small equipment	48	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic Yards	$2.24	7	$15.68
Backhoe, 80 HP	926	Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$31.57	8	$252.56
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	8	$189.92
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	8	$240.40
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	9	$208.62
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	8	$202.48
Materials						
Aggregate, Sand, Graded, Washed	45	Sand, typical ASTM C33 gradation, includes materials, equipment and labor to transport and place	Cubic Yards	$38.81	7	$271.67
Wildlife Escape Ramp	242	Pool size 15' x 30', for small mammals less than one pound.	Each	$72.84	1	$72.84
Tank, Galvanized Steel Bottomless Livestock, <= 6,000 gallon	1069	Includes tank materials, shipping, and float valve, no liner	Gallons	$0.36	2000	$720.00
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 614 - Watering Facility

Scenario #4 - Permanent Drinking/Storage Greater Than 5000 Gallons

Scenario Description:

A permanent watering facility for livestock and or wildlife constructed of approved materials with more than 5,000 gallons of capacity that stores adequate quantity and quality of water for storage and or direct drinking access All watering facilities will be constructed from approved durable materials that have a life expectancy that meets or exceeds the planned useful life of the installation. This watering facility will address the resource concerns of inadequate supply of water for livestock, habitat degradation, water quality, and undesirable plant productivity and health.

Before Situation:

This practice applies to all land uses where there is a need for new or improved watering facilities for livestock and or wildlife, where water is not available in sufficient quantities at specific locations, and habitat, water quality, plant productivity and health needs to be improved.

After Situation:

A permanent watering facility with a capacity of more than 5,000 gallons is installed with all tank materials, tank plumbing and float valve, to provide adequate water storage capacity to ensure an adequate supply and quality of water for livestock or wildlife for storage and or direct drinking access and provides improved plant productivity and health, water quality, and habitat. All watering facilities are constructed from approved durable materials that have a life expectancy that meets or exceeds the planned useful life of the installation and placed on a properly prepared foundation with required plumbing. All needed pipelines are installed using Livestock Pipeline (516). Any needed vegetation of disturbed areas will use Critical Area Planting (342). All collectors or catchments for collecting precipitation will be addressed by using Water Harvesting Catchment (636). Any needed water source installation will use Water Well (642), Pumping Plant (533), Spring Development (574), or Livestock Pipeline (516) as appropriate. Areas around watering facilities where animal concentrations or overflow from the watering facility will cause resource concerns must be protected by using Heavy Use Area Protection (561) as appropriate.

Feature Measure: Capacity in Gallons

Scenario Unit: Gallons

Scenario Typical Size: 10,000.0

Scenario Total Cost: $7,419.37

Scenario Cost/Unit: $0.74

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Concrete, CIP, slab on grade, reinforced	37	Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yards	$315.01	7	$2,205.07
Excavation, Common Earth, side cast, small equipment	48	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic Yards	$2.24	13	$29.12
Backhoe, 80 HP	926	Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$31.57	12	$378.84
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	12	$284.88
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	12	$360.60
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	14	$324.52
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	12	$303.72
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	12	$501.36
Materials						
Aggregate, Sand, Graded, Washed	45	Sand, typical ASTM C33 gradation, includes materials, equipment and labor to transport and place	Cubic Yards	$38.81	13	$504.53
Wildlife Escape Ramp	242	Pool size 15' x 30', for small mammals less than one pound.	Each	$72.84	1	$72.84
Tank, Galvanized Steel Bottomless Livestock, > 6,000 gallon	1070	Includes tank materials, shipping, and float valve, no liner	Gallons	$0.22	10000	$2,200.00
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 614 - Watering Facility

Scenario #5 - Freeze Proof Conc. Tank

Scenario Description:

Freeze Proof Tank: The scenario is for the installation of a freeze proof concrete livestock watering tank with a capacity greater than 200 gallons. The tank is a manufactured or formed in place concrete tank with sloping sides designed to prevent freezing. It is installed in the ground or partially covered with soil to prevent freezing. The cost includes all field preparation, excavation, concrete or gravel base, and plumbing as needed to install the tank. It does not include the pipeline to deliver the water to the tank.. This watering facility will address the resource concerns of inadequate supply of water for livestock and or wildlife, habitat degradation, water quality, and undesirable plant productivity and health.

Before Situation:

This practice applies to all land uses where there is a need for new or improved watering facilities for livestock and or wildlife, where water is not available in sufficient quantities at specific locations, and habitat, water quality, plant productivity and health needs to be improved.

After Situation:

The typical installation is one single tank of 250 gallons. The tank may be installed in the back slope of a pond's embankment or backfilled by material obtained from the pasture. Typically a small backhoe or skidsteer is needed to prepare the foundation, place the gravel and place the tank. A laborer is required to assist the operator and make on-the-ground connections and adjustments. After the installaiton, livestock may easily obtain water from relatively short distances. Surface water is no longer used for watering livestock and livestock grazing is uniformly distributed, thereby preventing sediments from reaching the surface water. All needed pipelines are installed using Livestock Pipeline (516). Any needed vegetation of disturbed areas will use Critical Area Planting (342). All collectors or catchments for collecting precipitation will be addressed by using Water Harvesting Catchment (636). Any needed water source installation will use Water Well (642), Pumping Plant (533), Spring Development (574), or Livestock Pipeline (516) as appropriate. Areas around watering facilities where animal concentrations or overflow from the watering facility will cause resource concerns will be protected by using Heavy Use Area Protection (561) as appropriate.

Feature Measure: Capacity in Gallons

Scenario Unit: Gallons

Scenario Typical Size: 250.0

Scenario Total Cost: $1,341.98

Scenario Cost/Unit: $5.37

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Backhoe, 80 HP	926	Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$31.57	2	$63.14
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	2	$46.36
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	2	$50.62
Materials						
Wildlife Escape Ramp	242	Pool size 15' x 30', for small mammals less than one pound.	Each	$72.84	1	$72.84
Tank, Freeze Proof, concrete, => 200 gallons	285	Concrete tank with sloping sides, cover for partial burial providing freeze protection. Includes materials and shipping.	Each	$923.36	1	$923.36
Aggregate, Gravel, Ungraded, Quarry Run	1099	Includes materials, equipment and labor	Cubic Yards	$29.80	0.5	$14.90
Mobilization						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	1	$170.76

Practice: 614 - Watering Facility

Scenario #6 - Fountain

Scenario Description:

This scenario is for the installation of a livestock watering fountain in a pasture; typically near headquarters. The fountain is a manufactured valve type fountain with a capacity of less than 200 gallons. The cost includes all field preparation, excavation, concrete or gravel pad, and plumbing as needed to install the fountain. It does not include the pipeline to deliver the drinking water to the fountain or the heavy use are around the fountain. The unit cost will be based on each (ea) structure installed. This watering facility will address the resource concerns of inadequate supply of water for livestock and or wildlife, habitat degradation, water quality, and undesirable plant productivity and health.

Before Situation:

The typical location of this practice is near headquarters or other winter grazing area which has limited or no access to water. This practice applies to all land uses where there is a need for new or improved watering facilities for livestock and or wildlife, where water is not available in sufficient quantities at specific locations, and habitat, water quality, plant productivity and health needs to be improved.

After Situation:

A permanent watering facility, typically a single livestock watering fountain with two ball tupe access ports, with a capacity of less than 200 gallons is installed with all tank materials, tank plumbing and float valve, to provide adequate water storage capacity to ensure an adequate supply and quality of water for livestock or wildlife for storage and or direct drinking access and provides improved plant productivity and health, water quality, and habitat. All watering facilities are constructed from approved durable materials that have a life expectancy that meets or exceeds the planned useful life of the installation and placed on a properly prepared foundation with required plumbing. All needed pipelines are installed using Livestock Pipeline (516). Any needed vegetation of disturbed areas will use Critical Area Planting (342). All collectors or catchments for collecting precipitation will be addressed by using Water Harvesting Catchment (636). Any needed water source installation will use Water Well (642), Pumping Plant (533), Spring Development (574), or Livestock Pipeline (516) as appropriate. Areas around watering facilities where animal concentrations or overflow from the watering facility will cause resource concerns will be protected by using Heavy Use Area Protection (561) as appropriate.

Feature Measure: Each Fountain

Scenario Unit: Each

Scenario Typical Size: 1.0

Scenario Total Cost: $1,333.94

Scenario Cost/Unit: $1,333.94

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Concrete, CIP, slab on grade, reinforced	37	Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yards	$315.01	0.5	$157.51
Backhoe, 80 HP	926	Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$31.57	2	$63.14
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	2	$46.36
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	2	$50.62
Materials						
Wildlife Escape Ramp	242	Pool size 15' x 30', for small mammals less than one pound.	Each	$72.84	1	$72.84
Tank, Freeze Proof, 2 hole	280	Tank, Freeze Proof with 2 drinking holes. Includes materials and shipping.	Each	$772.71	1	$772.71
Mobilization						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	1	$170.76

Practice: 614 - Watering Facility

Scenario #7 - Tire Tank

Scenario Description:

This scenario is for the installation of a livestock watering tank frabricated from a heavy equipment or tractor tire in a condition acceptable for use as a livestock waterer. The cost includes all field preparation, excavation, sand, gravel and plumbing as needed to install the tank. The payment is based on the volume in gallons (gal) that the tank can store. It does not include the pipeline to deliver the water to a tank or trough. Cost estimates are based on a 8 foot diameter tire tank having a storage capacity of 630 gallons ((Diameter2)/4 x 3.14 x Water Depth x 7.48 gal/ft3)

Before Situation:

The typical location of this practice is a pasture which has limited or no access to water. Livestock concentrate in areas creating erosion and do not graze uniformly. This scenario is to address the Resouce Concerns - Domestic Animals, Inadequate Stock Water and Water Quality, Excessive Nutrients and Excessive Sediments in Surface Water.

After Situation:

The typical installation is one single tank of 630 gallons. A small backhoe or skid steer is needed to prepare the gravel foundation. Laborer is required to assist with on-the-ground connections. The tank will be located so that livestock may easily obtain water from relatively short distances. Surface water is no longer used for watering livestock and livestock grazing is uniformly distributed, thereby preventing sediments from reaching the surface water.

Feature Measure: Capacity in Gallons

Scenario Unit: Gallons

Scenario Typical Size: 630.0

Scenario Total Cost: $1,243.83

Scenario Cost/Unit: $1.97

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Backhoe, 80 HP	926	Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$31.57	1	$31.57
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	2	$46.36
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	1	$25.31
Materials						
Wildlife Escape Ramp	242	Pool size 15' x 30', for small mammals less than one pound.	Each	$72.84	1	$72.84
Tank, Tire, 8' diameter	286	Tire, includes material cost for tank and shipping. Labor and other appurtenance costs not included.	Each	$787.74	1	$787.74
Tank, Float Valve Assembly	1077	Float Valve, Stem, Swivel, Float Ball	Each	$94.35	1	$94.35
Aggregate, Gravel, Ungraded, Quarry Run	1099	Includes materials, equipment and labor	Cubic Yards	$29.80	0.5	$14.90
Mobilization						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	1	$170.76

Practice: 620 - Underground Outlet

Scenario #1 - UO Less Than 6 inches

Scenario Description:

Cost estimate is based upon 500 feet of 6" approved plastic pipe to convey stormwater or roof runoff from one location to a suitable and stable outlet. Trench is excavated 30" deep and 18" wide by small hydraulic track excavator or backhoe. Costs include 6" SCH-40, PVC pipe, trench excavation, trench backfill, rodent guard and laid up stone headwall at outlet. This practice is often installed in conjunction with Roof Run off Structure, terraces, diversions, sediment control basins, waterways or simlar practices.

Before Situation:

Excessive sedimentation and soil erosion as a result of gully, rill or sheet erosion which exceeds "T" from farm fields and other locations. Also, roof runoff or surface runoff that becomes contminated with agricultural wastes that significantly contributes to the amount of runoff that has to be stored or treated.

After Situation:

Field system meets "T" or "clean" storm water runoff is diverted away from an agricultural waste management system to minimize the volume of runoff that is contaminated by agricultural waste. Associated practices are Roof Runoff Structure (558), Critical Area Planting (342), Grassed Waterway (412), Terrace (600), Diversion (342), Water and Sediment Control Basin (638), and Subsurface Drainage (606)

Feature Measure: Length of Conduit

Scenario Unit: Feet

Scenario Typical Size: 500.0

Scenario Total Cost: $5,054.92

Scenario Cost/Unit: $10.11

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Excavation, common earth, small equipment, 50 ft	1220	Bulk excavation of common earth with dozer <100 HP with average push distance of 50 feet. Includes equipment and labor.	Cubic Yards	$2.26	69	$155.94
Excavation, common earth, side cast, large equipment	1227	Bulk excavation and side casting of common earth with hydraulic excavator with less greater than 1 CY capacity. Includes equipment and labor.	Cubic Yards	$1.44	69	$99.36
Labor						
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	2	$83.56
Materials						
Rock Riprap, Placed with geotextile	44	Rock Riprap, placed with geotextile, includes materials, equipment and labor to transport and place	Cubic Yards	$103.28	1	$103.28
Pipe, PVC, 6 in., SCH 40	980	Materials: - 6 inch - PVC - SCH 40 - ASTM D1785	Feet	$8.21	500	$4,105.00
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: 620 - Underground Outlet

Scenario #2 - UO Less than 6inches, w Riser

Scenario Description:

Install 500 feet of 6" approved plastic pipe to convey stormwater from one location to a suitable and stable outlet. Trench is excavated approximately 54"" deep and 15" wide by trencher. Costs include 6" HDPE corrugated single wall plastic tubing, 8" Perforated PVC Riser Inlet, trench excavation, trench backfill, rodent guard and laid up stone headwall at outlet. This practice is often installed in conjunction with terraces, diversions, sediment control basins, waterways or simlar practices.

Before Situation:

Excessive sedimentation and soil erosion as a result of gully, rill or sheet erosion which exceeds "T" from farm fields and other locations. Also, roof runoff or surface runoff that becomes contminated with agricultural wastes that significantly contributes to the amount of runoff that has to be stored or treated.

After Situation:

Field system meets "T" or "clean" storm water runoff is diverted away from an agricultural waste management system to minimize the volume of runoff that is contaminated by agricultural waste. Associated practices are Critical Area Planting (342), Grassed Waterway (412), Terrace (600), Diversion (342), Water and Sediment Control Basin (638), and Subsurface Drainage (606)

Feature Measure: Length of Conduit

Scenario Unit: Feet

Scenario Typical Size: 500.0

Scenario Total Cost: $2,937.75

Scenario Cost/Unit: $5.88

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Excavation, common earth, small equipment, 50 ft	1220	Bulk excavation of common earth with dozer <100 HP with average push distance of 50 feet. Includes equipment and labor.	Cubic Yards	$2.26	105	$237.30
Trencher, wheel type	1259	Wheel type Trencher, typically 350 HP with 6 foot max depth. Equipment only.	Hours	$166.26	5	$831.30
Compaction, earthfill, vibratory plate	1260	Compaction of earthfill with a walk behind vibratory plate compactor in typical 6-8 inch thick lifts, 2 passes. Includes equipment and labor.	Cubic Yards	$2.11	2	$4.22
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	5	$126.55
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	2	$83.56
Materials						
Rock Riprap, Placed with geotextile	44	Rock Riprap, placed with geotextile, includes materials, equipment and labor to transport and place	Cubic Yards	$103.28	1	$103.28
Pipe, HDPE, 6 in., CPT, Single Wall	1242	Pipe, Corrugated Plastic Tubing, Single Wall, 6 inch diameter - ASTM F405. Material cost only.	Feet	$1.48	500	$740.00
Inlet, riser, 8 in.	1262	Riser, polymer, complete vertical perforated UGO inlet with Tee, orifice plate if needed, 8 inch diameter. Materials only.	Each	$151.88	2	$303.76
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: 620 - Underground Outlet

Scenario #3 - Greater Than 6 and Less Than or Equal To 12 inches

Scenario Description:

Cost estimate is based upon 500 feet of 8" approved plastic pipe to convey stormwater or roof runoff from one location to a suitable and stable outlet. Trench is excavated 30" deep and 18" wide by small hydraulic track excavator or backhoe. Costs include 6" SCH-40, PVC pipe, trench excavation, trench backfill, rodent guard and laid up stone headwall at outlet. This practice is often installed in conjunction with Roof Run off Structure, terraces, diversions, sediment control basins, waterways or simlar practices.

Before Situation:

Excessive sedimentation and soil erosion as a result of gully, rill or sheet erosion which exceeds "T" from farm fields and other locations. Also, roof runoff or surface runoff that becomes contminated with agricultural wastes that significantly contributes to the amount of runoff that has to be stored or treated.

After Situation:

Field system meets "T" or "clean" storm water runoff is diverted away from an agricultural waste management system to minimize the volume of runoff that is contaminated by agricultural waste. Associated practices are Roof Runoff Structure (558), Critical Area Planting (342), Grassed Waterway (412), Terrace (600), Diversion (342), Water and Sediment Control Basin (638), and Subsurface Drainage (606)

Feature Measure: Length of Conduit

Scenario Unit: Feet

Scenario Typical Size: 500.0

Scenario Total Cost: $7,124.92

Scenario Cost/Unit: $14.25

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Excavation, common earth, small equipment, 50 ft	1220	Bulk excavation of common earth with dozer <100 HP with average push distance of 50 feet. Includes equipment and labor.	Cubic Yards	$2.26	69	$155.94
Excavation, common earth, side cast, large equipment	1227	Bulk excavation and side casting of common earth with hydraulic excavator with less greater than 1 CY capacity. Includes equipment and labor.	Cubic Yards	$1.44	69	$99.36
Labor						
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	2	$83.56
Materials						
Rock Riprap, Placed with geotextile	44	Rock Riprap, placed with geotextile, includes materials, equipment and labor to transport and place	Cubic Yards	$103.28	1	$103.28
Pipe, PVC, 8 in., SCH 40	981	Materials: - 8 inch - PVC - SCH 40 - ASTM D1785	Feet	$12.35	500	$6,175.00
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: 620 - Underground Outlet

Scenario #4 - Greater Than 6 and Less Than or Equal To 12 inches, with Riser

Scenario Description:

Install 500 feet of 10" approved plastic pipe to convey stormwater from one location to a suitable and stable outlet. Trench Excavation is 58" deep and 28" wide. Costs include 10" HDPE pipe, 12" Perforated PVC Riser Inlet, trench excavation, trench backfill, rodent guard and laid up stone headwall at outlet. This practice is often installed in conjunction with terraces, diversions, sediment control basins, waterways or simlar practices.

Before Situation:

Excessive sedimentation and soil erosion as a result of gully, rill or sheet erosion which exceeds "T" from farm fields and other locations. Also, roof runoff or surface runoff that becomes contminated with agricultural wastes that significantly contributes to the amount of runoff that has to be stored or treated.

After Situation:

Field system meets "T" or "clean" storm water runoff is diverted away from an agricultural waste management system to minimize the volume of runoff that is contaminated by agricultural waste. Associated practices are Critical Area Planting (342), Grassed Waterway (412), Terrace (600), Diversion (342), Water and Sediment Control Basin (638), and Subsurface Drainage (606)

Feature Measure: Length of Conduit

Scenario Unit: Feet

Scenario Typical Size: 500.0

Scenario Total Cost: $5,197.95

Scenario Cost/Unit: $10.40

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Excavation, common earth, small equipment, 50 ft	1220	Bulk excavation of common earth with dozer <100 HP with average push distance of 50 feet. Includes equipment and labor.	Cubic Yards	$2.26	210	$474.60
Trencher, wheel type	1259	Wheel type Trencher, typically 350 HP with 6 foot max depth. Equipment only.	Hours	$166.26	5	$831.30
Compaction, earthfill, vibratory plate	1260	Compaction of earthfill with a walk behind vibratory plate compactor in typical 6-8 inch thick lifts, 2 passes. Includes equipment and labor.	Cubic Yards	$2.11	2	$4.22
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	5	$126.55
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	4	$167.12
Materials						
Rock Riprap, Placed with geotextile	44	Rock Riprap, placed with geotextile, includes materials, equipment and labor to transport and place	Cubic Yards	$103.28	1	$103.28
Pipe, HDPE, CPT, Double Wall, Soil Tight, 10 in.	1243	Pipe, Corrugated HDPE Double Wall, 10 inch diameter with soil tight joints - AASHTO M252. Material cost only.	Feet	$5.13	500	$2,565.00
Inlet, riser, 10 in.	1263	Riser, polymer, complete vertical perforated UGO inlet with Tee, orifice plate if needed, 10 inch diameter. Materials only.	Each	$209.05	2	$418.10
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: 620 - Underground Outlet

Scenario #5 - Greater Than 12 and Less Than or Equal To 18 inches

Scenario Description:

Install 500 feet of 18" approved plastic pipe to convey stormwater from one location to a suitable and stable outlet. Trench excavation is 66" deep x 39" wide. Costs include 18" HDPE pipe, Precast concrete drop inlet with steel grate, trench excavation, bedding material, trench backfill, rodent guard and laid up stone headwall at outlet. This practice is often is installed in conjunction with terraces, diversions, sediment control basins, waterways or simlar practices.

Before Situation:

Excessive sedimentation and soil erosion as a result of gully, rill or sheet erosion which exceeds "T" from farm fields and other locations. Also, roof runoff or surface runoff that becomes contminated with agricultural wastes that significantly contributes to the amount of runoff that has to be stored or treated.

After Situation:

Field system meets "T" or "clean" storm water runoff is diverted away from an agricultural waste management system to minimize the volume of runoff that is contaminated by agricultural waste. Associated practices are Critical Area Planting (342), Grassed Waterway (412), Terrace (600), Diversion (342), Water and Sediment Control Basin (638), and Subsurface Drainage (606)

Feature Measure: Length of Conduit

Scenario Unit: Feet

Scenario Typical Size: 500.0

Scenario Total Cost: $11,198.28

Scenario Cost/Unit: $22.40

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Excavation, common earth, small equipment, 50 ft	1220	Bulk excavation of common earth with dozer <100 HP with average push distance of 50 feet. Includes equipment and labor.	Cubic Yards	$2.26	330	$745.80
Excavation, common earth, side cast, large equipment	1227	Bulk excavation and side casting of common earth with hydraulic excavator with less greater than 1 CY capacity. Includes equipment and labor.	Cubic Yards	$1.44	330	$475.20
Compaction, earthfill, vibratory plate	1260	Compaction of earthfill with a walk behind vibratory plate compactor in typical 6-8 inch thick lifts, 2 passes. Includes equipment and labor.	Cubic Yards	$2.11	2	$4.22
Labor						
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	4	$167.12
Materials						
Rock Riprap, Placed with geotextile	44	Rock Riprap, placed with geotextile, includes materials, equipment and labor to transport and place	Cubic Yards	$103.28	1	$103.28
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic Yards	$39.34	60	$2,360.40
Pipe, HDPE, CPT, Double Wall, Soil Tight, 18 in.	1245	Pipe, Corrugated HDPE Double Wall, 18 inch diameter with soil tight joints - AASHTO M294. Material cost only.	Feet	$12.21	500	$6,105.00
Catch Basin, concrete, 2 ft.x 2 ft. x 6 ft.	1257	Catch Basin, Precast Concrete, 2 ft. square or round, cast grate, 6 ft. deep. Includes materials, equipment and labor.	Each	$729.48	1	$729.48
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: 620 - Underground Outlet

Scenario #6 - Greater Than 18 and Less Than or Equal To 24 inches

Scenario Description:

Install 500 feet of 24" approved plastic pipe to convey stormwater from one location to a suitable and stable outlet. Trench excavation is 72" x 48" wide. Costs include 24" HDPE pipe, Precast concrete drop inlet with steel grate, 24" HDPE pipe, trench excavation, bedding material, trench backfill, rodent guard and laid up stone headwall at outlet. Practice is often installed in conjunction with terraces, diversions, sediment control basins, waterways or simlar practices.

Before Situation:

Excessive sedimentation and soil erosion as a result of gully, rill or sheet erosion which exceeds "T" from farm fields and other locations. Also, roof runoff or surface runoff that becomes contminated with agricultural wastes that significantly contributes to the amount of runoff that has to be stored or treated.

After Situation:

Field system meets "T" or "clean" storm water runoff is diverted away from an agricultural waste management system to minimize the volume of runoff that is contaminated by agricultural waste. Associated practices are Critical Area Planting (342), Grassed Waterway (412), Terrace (600), Diversion (342), Water and Sediment Control Basin (638), and Subsurface Drainage (606)

Feature Measure: Length of Conduit

Scenario Unit: Feet

Scenario Typical Size: 500.0

Scenario Total Cost: $16,962.28

Scenario Cost/Unit: $33.92

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Excavation, common earth, small equipment, 50 ft	1220	Bulk excavation of common earth with dozer <100 HP with average push distance of 50 feet. Includes equipment and labor.	Cubic Yards	$2.26	445	$1,005.70
Excavation, common earth, side cast, large equipment	1227	Bulk excavation and side casting of common earth with hydraulic excavator with less greater than 1 CY capacity. Includes equipment and labor.	Cubic Yards	$1.44	445	$640.80
Compaction, earthfill, vibratory plate	1260	Compaction of earthfill with a walk behind vibratory plate compactor in typical 6-8 inch thick lifts, 2 passes. Includes equipment and labor.	Cubic Yards	$2.11	2	$4.22
Labor						
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	4	$167.12
Materials						
Rock Riprap, Placed with geotextile	44	Rock Riprap, placed with geotextile, includes materials, equipment and labor to transport and place	Cubic Yards	$103.28	1	$103.28
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic Yards	$39.34	85	$3,343.90
Pipe, HDPE, CPT, Double Wall, Soil Tight, 24 in.	1246	Pipe, Corrugated HDPE Double Wall, 24 inch diameter with soil tight joints - AASHTO M294. Material cost only.	Feet	$20.92	500	$10,460.00
Catch Basin, concrete, 2 ft.x 2 ft. x 6 ft.	1257	Catch Basin, Precast Concrete, 2 ft. square or round, cast grate, 6 ft. deep. Includes materials, equipment and labor.	Each	$729.48	1	$729.48
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: 620 - Underground Outlet

Scenario #7 - Greater Than 24 and Less Than or Equal To 30 inches

Scenario Description:

Install 500 feet of 30" approved plastic pipe to convey stormwater from one location to a suitable and stable outlet. Trench excavation is 78" deep x 56" wide. Costs include 30" HDPE pipe, Precast concrete drop inlet with steel grate, trench excavation, bedding material, trench backfill, rodent guard and laid up stone headwall at outlet. This practices is often installed in conjunction with terraces, diversions, sediment control basins, waterways or simlar practices.

Before Situation:

Excessive sedimentation and soil erosion as a result of gully, rill or sheet erosion which exceeds "T" from farm fields and other locations. Also, roof runoff or surface runoff that becomes contminated with agricultural wastes that significantly contributes to the amount of runoff that has to be stored or treated.

After Situation:

Field system meets "T" or "clean" storm water runoff is diverted away from an agricultural waste management system to minimize the volume of runoff that is contaminated by agricultural waste. Associated practices are Critical Area Planting (342), Grassed Waterway (412), Terrace (600), Diversion (342), Water and Sediment Control Basin (638), and Subsurface Drainage (606)

Feature Measure: Length of Conduit

Scenario Unit: Feet

Scenario Typical Size: 500.0

Scenario Total Cost: $22,726.50

Scenario Cost/Unit: $45.45

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Excavation, common earth, small equipment, 50 ft	1220	Bulk excavation of common earth with dozer <100 HP with average push distance of 50 feet. Includes equipment and labor.	Cubic Yards	$2.26	565	$1,276.90
Excavation, common earth, side cast, large equipment	1227	Bulk excavation and side casting of common earth with hydraulic excavator with less greater than 1 CY capacity. Includes equipment and labor.	Cubic Yards	$1.44	565	$813.60
Compaction, earthfill, vibratory plate	1260	Compaction of earthfill with a walk behind vibratory plate compactor in typical 6-8 inch thick lifts, 2 passes. Includes equipment and labor.	Cubic Yards	$2.11	2	$4.22
Labor						
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	4	$167.12
Materials						
Rock Riprap, Placed with geotextile	44	Rock Riprap, placed with geotextile, includes materials, equipment and labor to transport and place	Cubic Yards	$103.28	1	$103.28
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic Yards	$39.34	105	$4,130.70
Pipe, HDPE, CPT, Double Wall, Soil Tight, 30 in.	1247	Pipe, Corrugated HDPE Double Wall, 30 inch diameter with soil tight joints - AASHTO M294. Material cost only.	Feet	$29.30	500	$14,650.00
Catch Basin, concrete, 3 ft. x 3 ft. x 6 ft.	1258	Catch Basin, Precast Concrete, 3 feet square or round, cast grate, 6 feet deep. Includes materials, equipment and labor.	Each	$1,072.90	1	$1,072.90
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: 632 - Waste Separation Facility

Scenario #2 - Earthen Settling Structure

Scenario Description:

An earthen structure, such as a basin or a terrace or dike like structure, used to capture and separate a portion of the solids from a liquid stream from a feedlot or confinement facility. A concrete pad should be installed on the bottom of the basin and around outlet structures to facilitate cleanout. Removes as portion of the solids to facilitate waste handling and to address water quality concerns. Associated practices include Nutrient Management (590), Composting Facility (317), Anaerobic Digester (366), Waste Storage Facility (313), Waste Recycling (633), Waste Transfer (634), Vegetated Treatment Area (635), Pond Lining or Sealing (521A-D), and Waste Treatment (629).

Before Situation:

Applicable to situations where partitioning solids, liquids, and nutrients will facilitate the management of an animal waste management system, improve air quality (reduce odors), and address water quality concerns.

After Situation:

One earthen settling basin structure (60 ft wide by 200 ft long by 3 ft deep, with three screening outlet structures) constructed around or at a livestock feeding operation. Removes a portion of the solids that otherwise would leave with the runoff from an animal feeding operation. Part of an animal waste management system.

Feature Measure: Cubic Foot of Design Storage

Scenario Unit: Cubic Feet

Scenario Typical Size: 30,000.0

Scenario Total Cost: $14,264.05

Scenario Cost/Unit: $0.48

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Concrete, CIP, formed reinforced	38	Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yards	$415.80	12	$4,989.60
Excavation, Common Earth, side cast, small equipment	48	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic Yards	$2.24	1000	$2,240.00
Earthfill, Roller Compacted	49	Earthfill, roller or machine compacted, includes equipment and labor	Cubic Yards	$4.42	1000	$4,420.00
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	8	$185.44
Materials						
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic Yards	$39.34	14	$550.76
Weeping Wall	1765	Weeping wall or picket screen structure for solid settling basin. Materials only.	Feet	$24.49	24	$587.76
Mobilization						
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	$70.11	3	$210.33
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	2	$341.52
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$484.75	1	$484.75

Practice: 632 - Waste Separation Facility

Scenario #3 - Concrete Basin

Scenario Description:

A concrete structure, such as a basin with concrete walls and floor, used to capture and separate a portion of the solids from a liquid stream from a feedlot or confinement facility. Removes as portion of the solids to facilitate waste handling and to address water quality concerns. Associated practices include Nutrient Management (590), Composting Facility (317), Anaerobic Digester (366), Waste Storage Facility (313), Waste Recycling (633), Waste Transfer (634), Pumping Plant (533), Vegetated Treatment Area (635), Pond Lining or Sealing (521A-D), and Waste Treatment (629).

Before Situation:

Applicable to situations where partitioning solids, liquids, and nutrients will facilitate the management of an animal waste management system, improve air quality (reduce odors), and address water quality concerns.

After Situation:

One concrete settling basin structure (20 ft wide by 30 ft long with 3 ft high walls and weeping wall/picket structure or outlet control) constructed around or at a livestock feeding operation. Removes a portion of the solids that otherwise would leave with the runoff from an animal feeding operation. Part of an animal waste management system.

Feature Measure: Cubic Foot of Design Storage

Scenario Unit: Cubic Feet

Scenario Typical Size: 1,800.0

Scenario Total Cost: $12,043.47

Scenario Cost/Unit: $6.69

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Concrete, CIP, slab on grade, reinforced	37	Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yards	$315.01	12	$3,780.12
Concrete, CIP, formed reinforced	38	Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yards	$415.80	12	$4,989.60
Geotextile, woven	42	Woven Geotextile Fabric. Includes materials, equipment and labor	Square Yard	$1.18	50	$59.00
Excavation, Common Earth, side cast, small equipment	48	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic Yards	$2.24	50	$112.00
Earthfill, Roller Compacted	49	Earthfill, roller or machine compacted, includes equipment and labor	Cubic Yards	$4.42	50	$221.00
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	8	$185.44
Materials						
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic Yards	$39.34	32	$1,258.88
Weeping Wall	1765	Weeping wall or picket screen structure for solid settling basin. Materials only.	Feet	$24.49	6	$146.94
Mobilization						
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	$70.11	3	$210.33
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	2	$341.52
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$484.75	1	$484.75

Practice: 634 - Waste Transfer

Scenario #1 - Wastewater catch basin, less than or equal to 1000 gal.

Scenario Description:

Installation for a wastewater collection system that includes materials and structures to collect liquids of a design volume less than 1000 gallons such as silage leachate, lot runoff and other contaminated liquid effluent. This may include curbs, screens, precast manholes, sumps or catch basins. The wastewater will typically be transferred from the collection basin to a waste storage facility through a gravity or low pressure flow conduit. Associated practices may include: PS 313 Waste Storage Facility; PS 533, Pumping Plant; PS 430, Irrigation Pipeline; PS 632, Waste Separation Facility; PS 468, Lined Waterway or Outlet; PS 590 Nutrient Management; PS 633, Waste Recycling. This scenario addresses the potential for surface water and groundwater quality degradation from liquid wastewater running unchecked out of silage bunkers and off of animal feeding lots.

Before Situation:

Inadequate storage is available to collect wastewater from an operation that may contaminate surface or groundwater resources. The liquids contain few solids or limited solids that can be easily screened out without blocking the collection intake.

After Situation:

This practice scenario is suitable where the estimated design volume for wastewater transfer is less than 1000 gallons of contaminated liquid that may flow from silage bunkers or animal lot areas after a precipitation event. The practice scenario typically includes materials and installation of flat and formed concrete for curbs and/or gutters to collect liquids. With the installation of a precast manhole with lid or catch basin with grate. The cost includes excavation, placement of bedding as needed, placement of structure and backfill with construction of concrete inlet collection area. Transfer pump if needed must be contracted under pumping plant, PS 533.

Feature Measure: Collection volume installed

Scenario Unit: Gallons

Scenario Typical Size: 1,000.0

Scenario Total Cost: $8,574.93

Scenario Cost/Unit: $8.57

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Concrete, CIP, slab on grade, reinforced	37	Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yards	$315.01	4	$1,260.04
Concrete, CIP, formed reinforced	38	Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yards	$415.80	2	$831.60
Backhoe, 80 HP	926	Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$31.57	8	$252.56
Dozer, 80 HP	929	Track mounted Dozer with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$54.51	4	$218.04
Tractor, agricultural, 120 HP	962	Agricultural tractor with horsepower range of 90 to 140. Equipment and power unit costs. Labor not included.	Hours	$51.52	4	$206.08
Demolition, concrete	1498	Demolition and disposal of reinforced concrete structures including slabs and walls. Includes labor and equipment.	Cubic Yards	$11.62	2	$23.24
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	24	$556.32
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	8	$202.48
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	8	$215.20
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	16	$668.48
Materials						
Aggregate, Gravel, Ungraded, Quarry Run	1099	Includes materials, equipment and labor	Cubic Yards	$29.80	5	$149.00
Catch Basin, concrete, 60 in dia.	1754	Precast 60-in diameter catch basin, 6 feet deep, with collar and grate cover. Materials only.	Each	$3,142.59	1	$3,142.59
Mobilization						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	2	$341.52

Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: 634 - Waste Transfer

Scenario #6 - Concrete Channel

Scenario Description:

Installation of a concrete channel that consists of a slab with curb and footing on each side of the slab for the entire length of the channel to enable the facility manager to direct liquid waste to an existing collection basin and/or waste storage facility. Water quality concerns will be addressed by preventing liquid waste from entering surface waters, and to facilitate timely land application of manure and wastewater at agronomic rates according to the CNMP. This scenario addresses the potential for surface water and groundwater quality degradation. Associated practices may include: PS 313 Waste Storage Facility; PS 533, Pumping Plant; PS 430, Irrigation Pipeline; PS 632, Waste Separation Facility; PS 468, Lined Waterway or Outlet; PS 590 Nutrient Management; PS 633, Waste Recycling.

Before Situation:

Current facility operations are allowing liquid waste to flow uncontrolled during periods of precipitation events or cleaning operations such that water resources can be contaminated.

After Situation:

Typical installation of a 12 foot wide 100' long concrete channel that consists of a 5" thick concrete slab with curbing on each side of the slab that is 2' high, 6" thick with footing for the entire length. The purpose is to transfer liquids or manure slurry from one area to an existing collection basin or waste storage facility. Includes safety chain for equipment. Alternative configurations can consist of the installation of a more narrow or wider channel that may or may not have curbs or a deeper shaped channel and may include a half pipe on the bottom.

Feature Measure: Bottom surface area of concrete ch

Scenario Unit: Square Feet

Scenario Typical Size: 1,200.0

Scenario Total Cost: $17,345.52

Scenario Cost/Unit: $14.45

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Concrete, CIP, slab on grade, reinforced	37	Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yards	$315.01	22	$6,930.22
Concrete, CIP, formed reinforced	38	Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yards	$415.80	11	$4,573.80
Dozer, 80 HP	929	Track mounted Dozer with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$54.51	8	$436.08
Demolition, concrete	1498	Demolition and disposal of reinforced concrete structures including slabs and walls. Includes labor and equipment.	Cubic Yards	$11.62	4	$46.48
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	64	$1,483.52
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	8	$215.20
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	50	$2,089.00
Materials						
Aggregate, Gravel, Ungraded, Quarry Run	1099	Includes materials, equipment and labor	Cubic Yards	$29.80	26	$774.80
Safety gate, span manure transfer channel or chute	1952	Safety gate to span manure transfer channel at push off wall or chute outlet. Minimum of 4 ft. tall with openings that will not pass a 6 inch or larger sphere. Includes materials only.	Feet	$18.04	16	$288.64
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: 634 - Waste Transfer

Scenario #15 - 10 inch diameter, Low pressure flow PVC pipeline, from waste storage pond to land application site.

Scenario Description:

Low pressure flow pipeline used to transfer manure wastewater by a low pressure pump from the waste storage pond to the field where it is applied according to the CNMP. The pipeline moves the water from the pond through a buried mainline with low pressure outlets that spread the water on a vegetated treatment area or to a site where the water is applied through an existing field application system. Low pressure flow PVC transfer pipelines can be between 3" and 30" diameter and are designed for a pumping pressure of 100 psi or less. This practice includes the pipe plus an inlet riser structure, clean-out risers and outlet risers plus all other valves and fittings, trench excavation and backfill, labor and a equipment for installation. Appurtenances include: couplings, fittings, air vents, pressure relief valves, thrust blocks, risers, and inline valves, and are included in the cost of pipe material (additional 10% of pipe material quantity). Cost of appurtenances does not include flow meters or backflow preventers. Typical installation applies to soils with no special bedding requirements. This pipeline is part of a manure transfer system for a planned waste management or comprehensive nutrient management plan. This scenario addresses the transport of liquid waste to a waste storage or treatment facility to prevent a water quality resource concern of excessive nutrients/organics and harmful levels of pathogens in surface water and/or excessive nutrients/organics in ground water. Associated practices may include: PS 313 Waste Storage Facility; PS 533, Pumping Plant; PS 430, Irrigation Pipeline; PS 632, Waste Separation Facility; PS 468, Lined Waterway or Outlet; PS 590 Nutrient Management; PS 633, Waste Recycling; PS 635, Vegetated Treatment Area.

Before Situation:

The waste storage structure is separated from the application fields where wastewater nutrients are needed. Soil nutrients in the near fields have high phosphorus levels from over application near the waste storage facility. The current application operation is high in the use of time and energy and may cause water quality concerns as it is not efficient in transporting the waste to the field.

After Situation:

Install a 1000 foot long 10 inch diameter PVC gasketted IPS pipe that has an SDR of 41 and is water tight under low pressure flow to transfer the manure wastewater. An inlet riser and is located near the pump site of the waste storage pond and designed for the desired pumping pressure and flow volume for the application system. This scenario includes the pipe, inlet riser, couplers, air-vac vents, all other fittings, and risers placed as specified by the design, trench excavation, pipe bedding and backfill. The site should be evaluated by the designing engineer to make sure the design will function. The transfer pipeline will deliver the manure slurry to the fields for agronomic nutrient utilization according to the CNMP, thereby protecting water quality resources.

Feature Measure: Length of pipe installed

Scenario Unit: Feet

Scenario Typical Size: 1,000.0

Scenario Total Cost: $28,700.72

Scenario Cost/Unit: $28.70

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Concrete, CIP, formless, non reinforced	36	Non reinforced concrete cast-in-placed without forms by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yards	$157.03	1	$157.03
Earthfill, Manually Compacted	50	Earthfill, manually compacted, includes equipment and labor	Cubic Yards	$5.73	127	$727.71
Trenching, Earth, loam, 24 in. x 48 in.	54	Trenching, earth, loam, 24 inch wide x 48 inch depth, includes equipment and labor for trenching and backfilling	Feet	$2.74	1000	$2,740.00
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	70	$1,622.60
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	20	$835.60
Materials						
Pipe, PVC, 10 in., SDR 21	1714	Materials: - 10 inch - PVC - SDR 21 - ASTM D2241	Feet	$20.10	1100	$22,110.00
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: 634 - Waste Transfer

Scenario #16 - 6 inch diameter, Pressure flow PVC pipeline, from waste storage pond to land application site.

Scenario Description:

Pressure flow pipeline used to transfer manure wastewater by pumping from the waste storage pond to the field where it is to be applied according to the CNMP. Pressure flow transfer pipelines can be between 3" and 12" diameter but 6" diameter is a commonly used pipe size. Pressure pipe will handle an internal pumping pressure between 130 and 200 psi depending on the designed pumping system and must have gasketted joints to seal for the wastewater transfer. The pressure pipe moves the water by pumping from the intake riser location, through a buried mainline with outlet risers spaced at 300 ft intervals for a traveler applicator. This practice includes the pipe plus an inlet riser structure, clean-out risers and outlet risers plus all other valves and fittings, trench excavation and backfill, labor and a equipment for installation. Appurtenances include: couplings, fittings, air vents, pressure relief valves, thrust blocks, risers, and inline valves, and are included in the cost of pipe material (additional 10% of pipe material quantity). Cost of appurtenances does not include flow meters or backflow preventers. Typical installation applies to soils with no special bedding requirements. This pipeline is part of a manure transfer system for a planned waste management or comprehensive nutrient management plan. This scenario addresses the transport of liquid waste to a waste storage or treatment facility to prevent a water quality resource concern of excessive nutrients/organics and harmful levels of pathogens in surface water and/or excessive nutrients/organics in ground water. Associated practices may include: PS 313 Waste Storage Facility; PS 533, Pumping Plant; PS 430, Irrigation Pipeline; PS 632, Waste Separation Facility; PS 468, Lined Waterway or Outlet; PS 590 Nutrient Management; PS 633, Waste Recycling; PS 635, Vegetated Treatment Area.

Before Situation:

The waste storage structure is separated from the application fields where wastewater nutrients are needed. Soil nutrients in the near fields have high phosphorus levels from over application near the waste storage facility. The current application operation is high in the use of time and energy and may cause water quality concerns as it is not efficient in transporting the waste to the field.

After Situation:

Install a 1000 foot long 6 inch diameter PVC gasketted IPS pipe that has an SDR of 21 and is water tight under pressure flow to transfer the manure wastewater. An inlet riser and is located near the pump site of the waste storage pond and designed for the desired pressure and flow for the application system. This scenario includes the pipe, inlet riser, couplers, air-vac vents, all other fittings, and risers placed as specified by the design, trench excavation, pipe bedding and backfill. The site should be evaluated by the designing engineer to make sure the design will function. The transfer pipeline will deliver the manure slurry to the fields for agronomic nutrient utilization according to the CNMP, thereby protecting water quality resources.

Feature Measure: Length of pipe installed

Scenario Unit: Feet

Scenario Typical Size: 1,000.0

Scenario Total Cost: $14,815.71

Scenario Cost/Unit: $14.82

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Concrete, CIP, formless, non reinforced	36	Non reinforced concrete cast-in-placed without forms by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yards	$157.03	1	$157.03
Earthfill, Manually Compacted	50	Earthfill, manually compacted, includes equipment and labor	Cubic Yards	$5.73	90	$515.70
Trenching, Earth, loam, 24 in. x 48 in.	54	Trenching, earth, loam, 24 inch wide x 48 inch depth, includes equipment and labor for trenching and backfilling	Feet	$2.74	1000	$2,740.00
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	70	$1,622.60
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	20	$835.60
Materials						
Pipe, PVC, 6 in., SDR 21	987	Materials: - 6 inch - PVC - SDR 21 200 psi - ASTM D2241	Feet	$7.67	1100	$8,437.00
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: 634 - Waste Transfer

Scenario #17 - Agitator, small, mixing contents of a reception pit that is no more than 10 ft. deep.

Scenario Description:

This scenario is for a manure and wastewater agitator associated with an agricultural production operation to transfer agricultural waste product from the production source to a storage facility for proper utilization. This agitator is typically no more than 15 HP and is used for smaller waste storage facilities that are less than 10 feet deep. This scenario does not include a pump. Associated practices may include: PS 313 Waste Storage Facility; PS 533, Pumping Plant; PS 430, Irrigation Pipeline; PS 632, Waste Separation Facility; PS 468, Lined Waterway or Outlet; PS 590 Nutrient Management; PS 633, Waste Recycling. The waste transfer equipment is installed to address water quality concerns by facilitating timely land application of waste at agronomic rates according to the nutrient management plan. This scenario addresses the potential for surface water and groundwater quality degradation.

Before Situation:

In this typical setting, the operator has a small waste storage structure from a confined animal feeding operation without an effective waste handling and transfer system to manage the waste stream departing from the facility.

After Situation:

The typical installation would be for a small manure 10 HP agitator to put settled manure solids into suspension for removal from an animal waste storage structure and transfer to the next step of waste treatment, utilization or storage. Part of an animal waste management system to address water quality concerns. If required a wastewater reception pit, concrete channel or transfer conduit scenario may need to be contracted to support the operation of this waste transfer system equipment.

Feature Measure: Agitator for wastewater, installed

Scenario Unit: Each

Scenario Typical Size: 1.0

Scenario Total Cost: $9,967.52

Scenario Cost/Unit: $9,967.52

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	11	$330.55
Materials						
Manure agitator, mixing depth less than 10 feet.	1768	Agitator to move put settled manure solids into suspension for removal from an animal waste storage structure. Materials only.	Each	$9,496.75	1	$9,496.75
Mobilization						
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	$70.11	2	$140.22

Practice: 634 - Waste Transfer

Scenario #18 - Agitator, medium, mixing contents of a reception pit that is 10 ft to 15 ft. deep.

Scenario Description:

This scenario is for a manure and wastewater agitator associated with an agricultural production operation to transfer agricultural waste product from the storage facility to a site for proper utilization. This agitator is typically 30 HP and is used where the waste storage facility tank or pond is between 10 and 15 feet deep. This scenario does not include a pump. Associated practices may include: PS 313 Waste Storage Facility; PS 533, Pumping Plant; PS 430, Irrigation Pipeline; PS 632, Waste Separation Facility; PS 468, Lined Waterway or Outlet; PS 590 Nutrient Management; PS 633, Waste Recycling. The waste transfer equipment is installed to address water quality concerns by facilitating timely land application of waste at agronomic rates according to the nutrient management plan. This scenario addresses the potential for surface water and groundwater quality degradation.

Before Situation:

In this typical setting, the operator has waste production from a confined animal feeding operation without an effective waste handling and transfer system to manage the waste stream departing from the facility.

After Situation:

A typical installation would be for a medium 30 HP manure agitator to put settled manure solids into suspension for removal from an animal waste storage structure and transfer to the next step of waste treatment, utilization or storage. Part of an animal waste management system to address water quality concerns. If required a wastewater reception pit, concrete channel or transfer conduit scenario may need to be contracted to support the operation of this waste transfer system equipment.

Feature Measure: Agitator for wastewater, installed

Scenario Unit: Each

Scenario Typical Size: 1.0

Scenario Total Cost: $10,811.13

Scenario Cost/Unit: $10,811.13

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	12	$360.60
Materials						
Manure agitator, mixing depth 10 to 15 feet deep	1766	Agitator to move put settled manure solids into suspension for removal from an animal waste storage structure. Materials only.	Each	$10,109.01	1	$10,109.01
Mobilization						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	2	$341.52

Practice: 634 - Waste Transfer

Scenario #19 - Agitator, large, mixing contents of a reception pit that is over 15 ft. deep.

Scenario Description:

This scenario is for a large manure and wastewater agitator associated with an agricultural production operation to transfer agricultural waste product from the storage facility to a site for proper utilization. This agitator is typically 100 HP and is used where the waste storage facility tank or pond is greater than15 feet deep. This scenario does not include a pump. Associated practices may include: PS 313 Waste Storage Facility; PS 533, Pumping Plant; PS 430, Irrigation Pipeline; PS 632, Waste Separation Facility; PS 468, Lined Waterway or Outlet; PS 590 Nutrient Management; PS 633, Waste Recycling. The waste transfer equipment is installed to address water quality concerns by facilitating timely land application of waste at agronomic rates according to the nutrient management plan. This scenario addresses the potential for surface water and groundwater quality degradation.

Before Situation:

In this typical setting, the operator has waste production from a confined animal feeding operation without an effective waste handling and transfer system to manage the waste stream departing from the facility.

After Situation:

A typical installation would be for a large 100 HP manure agitator to put settled manure solids into suspension for removal from an animal waste storage structure and facilitate the transfer of this material to the next step of waste treatment or utilization. This agitator is for a tank deeper than 15 feet and is part of an animal waste management system to address water quality concerns. This covers the cost of the agitator equipment materials and labor for the electrical hook-up.

Feature Measure: Agitator for wastewater, installed

Scenario Unit: Each

Scenario Typical Size: 1.0

Scenario Total Cost: $11,956.38

Scenario Cost/Unit: $11,956.38

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	12	$360.60
Materials						
Manure agitator, mixing depth greater than 15 feet deep.	1767	Agitator to move put settled manure solids into suspension for removal from an animal waste storage structure. Materials only.	Each	$11,088.00	1	$11,088.00
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: 635 - Vegetated Treatment Area

Scenario #9 - Graded Area, Gravity Flow Surface Application

Scenario Description:

This is a permanent herbaceous vegetative area or channel installed down slope from a livestock production area. Wastewater (runoff or milking parlor wastewater) is properly collected and released with a controlled gravity outflow into the VTA. The VTA vegetation is harvested to removed nutrients on a regular basis. This practice addresses water quality degradation due to uncontrolled nutrient rich wastewater that can flow into surface waters or leach into ground water. Associated practices: Waste Storage Facility (313), Fence (382), Waste Separation Facility (632), Manure Transfer (634), Roof runoff Management (558), Pumping Plant (533), Subsurface Drain (606), Critical Area Planting (342), Terrace (600), Nutrient Management (590), Diversion (362), Pipeline (516), Land Smoothing (466), Precision Land Forming (462), Waste Treatment (629)

Before Situation:

Nutrient rich wastewater is running off from an animal operation that has the potential to pollute surface waters or ponding and leaching into groundwater.

After Situation:

Typical VTA is 1.0 ac in size, includes a gravel trench for distribution flow (sheet flow) into the VTA. Typically requires grading and shaping, gravel spreader trenches and perforated pipe to maintain sheet flow throughout the VTA. A settling basin for wastewater collection is contracted using Solid/Liquid Waste Separation Facility (632). For milkhouse waste, Waste Treatment (629) could be contracted to provide pre-treatment prior to being released into the VTA. The VTA practice will provide a controlled release of nutrient rich wastewater into a designed vegetative area for nutrient uptake. This system will improve water quality by treating nutrient rich wastewater and prevent contamination of surface and ground water resources.

Feature Measure: Amount of VTA installed

Scenario Unit: Acres

Scenario Typical Size: 1.0

Scenario Total Cost: $7,941.20

Scenario Cost/Unit: $7,941.20

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Geotextile, woven	42	Woven Geotextile Fabric. Includes materials, equipment and labor	Square Yard	$1.18	400	$472.00
Excavation, Common Earth, side cast, small equipment	48	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic Yards	$2.24	70	$156.80
Dozer, 80 HP	929	Track mounted Dozer with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$54.51	16	$872.16
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	20	$463.60
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	16	$430.40
Materials						
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic Yards	$39.34	70	$2,753.80
Pipe, PVC, 2 in., SCH 40	976	Materials: - 2 inch - PVC - SCH 40 - ASTM D1785	Feet	$1.58	45	$71.10
Coupling, PVC, endcap, 2 in., SCH 20	1727	2 inch - PVC- SCH 40- ASTM D1785 pipe endcaps. Materials only.	Each	$0.71	15	$10.65
Pipe, PE, 6 in., DR 9, perforated	1728	Materials: - 6 inch - Perforated PE - 160 psi - ASTM D3035 DR 9	Feet	$26.66	80	$2,132.80
Mobilization						
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	$70.11	1	$70.11
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: 635 - Vegetated Treatment Area

Scenario #10 - Graded Area, Pumped Into A Basin, Gravity Flow Surface Application

Scenario Description:

This is a permanent herbaceous vegetative area or channel located upslope from the livestock production area. The topography of the site requires wastewater to be pumped uphill to the VTA designed system. Wastewater (runoff or milking parlor wastewater) is properly collected at the production area and pumped uphill to a shallow tank or basin where it has a controlled gravity outflow into the VTA. The VTA vegetation is harvested to removed nutrients on a regular basis. This practice addresses water quality degradation due to uncontrolled nutrient rich wastewater that can flow into surface waters or leach into ground water. Associated practices: Waste Storage Facility (313), Fence (382), Waste Separation Facility (632), Manure Transfer (634), Irrigation System, Sprinkler (442), Roof runoff Management (558), Pumping Plant (533), Subsurface Drain (606), Critical Area Planting (342), Terrace (600), Nutrient Management (590), Diversion (362), Pipeline (516), Land Smoothing (466), Precision Land Forming (462), Waste Treatment (629).

Before Situation:

Nutrient rich wastewater is running off from an animal operation that has the potential to pollute surface waters or ponding and leaching into groundwater.

After Situation:

Typical VTA is 1.0 ac in size, includes the installation site to be upslope from the production area with a shallow tank or basin that provides a controlled gravity outflow into the VTA. Typically requires grading and shaping, gravel spreader trenches and perferated pipe to maintain sheet flow throughout the VTA. A settling basin for wastewater collection is contracted using Solid/Liquid Waste Separation Facility (632) and Pumping Plant (533) to get the wastewater upslope to the VTA distrubution point. For milkhouse waste, Waste Treatment (629) could be contracted to provide pretreatment prior to being released into the VTA. The VTA practice will provide a controlled release of nutrient rich wastewater into a designed vegetative area for nutrient uptake. This system will improve water quality by treating nutrient rich wastewater and prevent contamination of surface and ground water resources.

Feature Measure: Amount of VTA installed

Scenario Unit: Acres

Scenario Typical Size: 1.0

Scenario Total Cost: $13,831.75

Scenario Cost/Unit: $13,831.75

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Concrete, CIP, slab on grade, reinforced	37	Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yards	$315.01	2	$630.02
Concrete, CIP, formed reinforced	38	Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yards	$415.80	12	$4,989.60
Geotextile, woven	42	Woven Geotextile Fabric. Includes materials, equipment and labor	Square Yard	$1.18	400	$472.00
Excavation, Common Earth, side cast, small equipment	48	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic Yards	$2.24	100	$224.00
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	40	$927.20
Materials						
Aggregate, Sand, Graded, Washed	45	Sand, typical ASTM C33 gradation, includes materials, equipment and labor to transport and place	Cubic Yards	$38.81	6	$232.86
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic Yards	$39.34	70	$2,753.80
Pipe, PVC, 2 in., SCH 40	976	Materials: - 2 inch - PVC - SCH 40 - ASTM D1785	Feet	$1.58	45	$71.10
Ball Valve, 4 in.	1726	4 inch ball valve, metal body. Materials only.	Each	$369.86	2	$739.72
Coupling, PVC, endcap, 2 in., SCH 20	1727	2 inch - PVC- SCH 40- ASTM D1785 pipe endcaps. Materials only.	Each	$0.71	15	$10.65
Pipe, PE, 6 in., DR 9, perforated	1728	Materials: - 6 inch - Perforated PE - 160 psi - ASTM D3035 DR 9	Feet	$26.66	80	$2,132.80
Mobilization						
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	$70.11	2	$140.22
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: 635 - Vegetated Treatment Area

Scenario #11 - Graded Area, Mechanical Distribution

Scenario Description:

This is a permanent herbaceous vegetative area located adjacent to a livestock production area. Wastewater (runoff or milking parlor wastewater) is properly collected at the production area and pumped to mechanically distribute wastewater onto the VTA. The VTA vegetation is harvested to removed nutrients on a regular basis. This practice addresses water quality degradation due to uncontrolled nutrient rich wastewater that can flow into surface waters or leach into ground water. Associated practices: Waste Storage Facility (313), Fence (382), Waste Separation Facility (632), Manure Transfer (634), Irrigation System, Sprinkler (442), Roof runoff Management (558), Pumping Plant (533), Subsurface Drain (606), Critical Area Planting (342), Terrace (600), Nutrient Management (590), Diversion (362), Pipeline (516), Land Smoothing (466), Precision Land Forming (462), Waste Treatment (629)

Before Situation:

Nutrient rich wastewater is running off from an animal operation that has the potential to pollute surface waters or ponding and leaching into groundwater.

After Situation:

Typical VTA is 1.0 ac in size, includes the sizing, grading and shaping of the VTA area. Typically requires grading and shaping to maintain sheet flow onto the VTA. A settling basin for wastewater collection is contracted using Solid/Liquid Waste Separation Facility (632) and Pumping Plant (533) to get the wastewater to the VTA mechanical distribution component that is contracted using Irrigation System, Sprinkler (442). For milkhouse waste, Waste Treatment (629) could be contracted to provide pretreatment prior to being pumped and distributed onto the VTA. The VTA practice will provide a controlled release of nutrient rich wastewater into a designed vegetative area for nutrient uptake. This system will improve water quality by treating nutrient rich wastewater and prevent contamination of surface and ground water resources.

Feature Measure: Amount of VTA installed

Scenario Unit: Acres

Scenario Typical Size: 1.0

Scenario Total Cost: $1,927.33

Scenario Cost/Unit: $1,927.33

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Dozer, 80 HP	929	Track mounted Dozer with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$54.51	16	$872.16
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	16	$370.88
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	16	$430.40
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 635 - Vegetated Treatment Area

Scenario #12 - Existing Vegetative Area, Gravity Flow Surface Application

Scenario Description:

An existing permanent herbaceous vegetated area that meets the requirements for a VTA and is used as an overland flow area for nutrient rich runoff treatment. A flow distribution component is installed to achieve sheet flow at the start of the VTA. Clean runoff is diverted where possible. The VTA vegetation is harvested to removed nutrients on a regular basis. This practice addresses water quality degradation due to uncontrolled nutrient rich runoff that can flow into surface waters or leach into ground water. Associated practices: Waste Storage Facility (313), Fence (382), Waste Separation Facility (632), Manure Transfer (634), Irrigation System, Sprinkler (442), Roof runoff Management (558), Pumping Plant (533), Subsurface Drain (606), Critical Area Planting (342), Terrace (600), Nutrient Management (590), Diversion (362), Pipeline (516), Land Smoothing (466), Precision Land Forming (462), Waste Treatment Area (629)

Before Situation:

Nutrient rich wastewater is running off from an animal operation that has the potential to pollute surface waters or ponding and leaching into groundwater.

After Situation:

Typical VTA is 1.0 ac in size, includes gravel trenchs and perforated pipe to establish sheet flow into the VTA where an existing permanent herbaceouse vegetated area meets the requirements for a VTA. Does not include any grading or seeding. The VTA practice will provide a controlled release of nutrient rich runoff into an existing vegetative area for nutrient uptake. This system will improve water quality by treating nutrient rich runoff and prevent contamination of surface and ground water resources.

Feature Measure: Amount of VTA treating wastewate

Scenario Unit: Acres

Scenario Typical Size: 1.0

Scenario Total Cost: $10,062.59

Scenario Cost/Unit: $10,062.59

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Concrete, CIP, formed reinforced	38	Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yards	$415.80	7	$2,910.60
Geotextile, woven	42	Woven Geotextile Fabric. Includes materials, equipment and labor	Square Yard	$1.18	445	$525.10
Excavation, Common Earth, side cast, small equipment	48	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic Yards	$2.24	75	$168.00
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	16	$370.88
Materials						
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic Yards	$39.34	75	$2,950.50
Pipe, PVC, 2 in., SCH 40	976	Materials: - 2 inch - PVC - SCH 40 - ASTM D1785	Feet	$1.58	40	$63.20
Coupling, PVC, endcap, 2 in., SCH 20	1727	2 inch - PVC- SCH 40- ASTM D1785 pipe endcaps. Materials only.	Each	$0.71	20	$14.20
Pipe, PE, 6 in., DR 9, perforated	1728	Materials: - 6 inch - Perforated PE - 160 psi - ASTM D3035 DR 9	Feet	$26.66	100	$2,666.00
Mobilization						
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	$70.11	2	$140.22
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 638 - Water and Sediment Control Basin

Scenario #2 - WASCOB topsoil

Scenario Description:

Typical scenarios for the construction of 700 CY earthen embankment. Prior to building the embankment, 6 inches of topsoil is removed and stockpiled. Outlet is typically an underground outlet. An earthen embankment or combination ridge and channel generally constructed across the slope and minor watercourses to form a sediment trap and water detention basin. Topsoil is replaced following construction of the embankment. Costs include all equipment necessary to strip and stock pile topsoil, excavate, shape, grade and compact the Water and Sediment Control Basin, spread and replace topsoil after construction and mobilization of equipment. Seeding not included. This practice is utilized to reduce watercourse and gully erosion, trap sediment, reduce and manage onsite and downstream runoff. Sheet and rill erosion will be controlled by other conservation practices. Work is done with dozer, scraper, or road grader.

Before Situation:

Site has shallow topsoil which if removed by earthwork for construction of embankment will significantly impact yields. Farming fields with excessive slope length has resulted in multiple rills and/or ephemeral gullies that will continue to worsen over time. The excessive erosion may lead to deterioration of receiving waters due to excessive sedimentation and nutrient transport. Resource concern addressed includes soil erosion and water quality by trapping sediment and/or reduce erosion in a field to protect riparian areas and water bodies from sediment deposition. Surface water causes erosion and the sediment (and potentially pesticides) is being transported into the riparian areas and water bodies downstream.

After Situation:

Water and Sediment Control Basis is constructed with 700 CY of excavation/earthfill with dozer, scraper and/or road grader. Rill and/or gully erosion is reduced. If riser and underground outlet are needed, then include Underground Outlet (620). Include Critical Area Planting (342) where necessary to prevent erosion following construction activities.

Feature Measure: CY of WASCOB Embankment

Scenario Unit: Cubic Yards

Scenario Typical Size: 700.0

Scenario Total Cost: $2,107.67

Scenario Cost/Unit: $3.01

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Stripping and stockpiling, topsoil	1199	Stripping and stockpiling of topsoil adjacent to stripping area. Includes equipment and labor.	Cubic Yards	$0.92	250	$230.00
Excavation, common earth, small equipment, 50 ft	1220	Bulk excavation of common earth with dozer <100 HP with average push distance of 50 feet. Includes equipment and labor.	Cubic Yards	$2.26	700	$1,582.00
Labor						
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	1	$41.78
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 642 - Water Well

Scenario #1 - Dug Well

Scenario Description:

Typical construction is for the excavation of a shallow dug well. The purpose of the practice is to provide water for livestock. A typical dug well is 2 to 4 foot in diameter and 15 feet in depth. The well is excavated using a backhoe. Excavate to a depth where the water recharge is greater than the equipment can remove. Washed gravel is placed in the base of the dug opening. Concrete casings about 2 inches thick are installed to hold the water. Pea gravel is placed above the washed gravel to transition to the earth backfill. The hole is backfilled and sloped to direct surface water away from entering the cover.

Before Situation:

Livestock have insufficient water or are fenced from their water source.

After Situation:

Sufficient water is available for livestock. Utilize Pumping Plant (533) and Pipeline (516) as associated practices. Use Critical Area Seeding (342) where necessary to prevent erosion following construciton activities.

Feature Measure: Linear Foot of well depth

Scenario Unit: Feet

Scenario Typical Size: 15.0

Scenario Total Cost: $2,128.26

Scenario Cost/Unit: $141.88

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Concrete, CIP, formed reinforced	38	Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yards	$415.80	1	$415.80
Backhoe, 80 HP	926	Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$31.57	10	$315.70
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	10	$231.80
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	10	$269.00
Materials						
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic Yards	$39.34	3	$118.02
Test, Standard Water Test, Well Water	309	Well Water Suitability test. Includes materials and shipping only.	Each	$48.39	1	$48.39
Aggregate, gravel, washed, pea gravel	1331	Washed and graded pea gravel river stone. Includes materials and local delivery within 20 miles of quarry.	Cubic Yards	$43.34	1	$43.34
Grout, cement	1333	Cement grout meeting ASTM specifications for well sealing. Includes both neat-cement grout and bentonite gout mixtures. Includes materials, equipment and labor to place.	Cubic Yards	$414.72	1	$414.72
Chlorine	1335	Liquid chlorine bleach. Includes materials only.	Gallons	$4.40	4	$17.60
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 642 - Water Well

Scenario #4 - Small Plastic Farm Well, Less Than 6 in

Scenario Description:

Installation of a well with PVC casing diameter of 4 inches or less; typical farm well has 4 inch diameter PVC casing. Note that doubling the diameter of water well casings only increases specific capacity by 10%. Increasing the length of the screened interval in a well is much more cost-effective at increasing yield. A well is drilled, dug, driven, bored, jetted or otherwise constructed to an aquifer for water supply. A PVC cap and grouting are installed to prevent a direct conduit to ground water, and the well is disinfected in accordance with state and local regulations. The purpose of the practice is to provide water for livestock or small irrigation systems, such as, micro-irrigation. Cost estimate is based on a well depth of 100 feet, with well casing 4 inches in diameter, PVC casing installed to a depth of 50 feet, and typical yield of less than or equal to 250 gpm.

Before Situation:

Livestock have insufficient water or are fenced from their water source or there is insufficient water for use in micro-irrigation/small irrigation systems.

After Situation:

Sufficient water is available for livestock or irrigation. Utilize Pumping Plant (533) and Pipeline (516) or Irrigation water conveyance (430) as associated practices. Use Critical Area Seeding (342) where necessary to prevent erosion following construciton activities.

Feature Measure: Linear Foot of well depth

Scenario Unit: Feet

Scenario Typical Size: 100.0

Scenario Total Cost: $2,750.40

Scenario Cost/Unit: $27.50

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Rotary Drill Rig	1595	Rotary drill rig including equipment and power unit costs. Labor not included.	Hours	$345.72	4	$1,382.88
Materials						
Test, Standard Water Test, Well Water	309	Well Water Suitability test. Includes materials and shipping only.	Each	$48.39	1	$48.39
Grout, cement	1333	Cement grout meeting ASTM specifications for well sealing. Includes both neat-cement grout and bentonite gout mixtures. Includes materials, equipment and labor to place.	Cubic Yards	$414.72	1	$414.72
Chlorine	1335	Liquid chlorine bleach. Includes materials only.	Gallons	$4.40	1	$4.40
Well Cap, 4 in.	1785	Well cap, 4 inch. Materials only.	Each	$35.12	1	$35.12
Well Casing, Plastic, 4 in.	1803	PVC or ABS non-threaded well casing, 4 inch. Materials only.	Feet	$5.23	50	$261.50
Well Screen, plastic, 4 in.	1998	4 inch PVC well screen. Materials only.	Feet	$6.99	50	$349.50
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 642 - Water Well

Scenario #5 - Small Plastic Farm Well, 6 in and Greater

Scenario Description:

Installation of a well with PVC casing having a diameter of 6 inches or greater. Note that doubling the diameter of water well casings only increases specific capacity by 10%. Increasing the length of the screened interval in a well is much more cost-effective at increasing yield. A well is drilled, dug, driven, bored, jetted or otherwise constructed to an aquifer for water supply. A PVC cap and grouting are installed to prevent a direct conduit to ground water, and the well is disinfected in accordance with state and local regulations. The purpose of the practice is to provide water for livestock or small irrigation systems. Cost estimate is based on a well depth of 100 feet, with well casing 6 inches in diameter, PVC casing installed to a depth of 50 feet, and typical yield of less than or equal to 250 gpm.

Before Situation:

Livestock have insufficient water or are fenced from their water source or there is insufficient water for use in micro-irrigation/small irrigation systems.

After Situation:

Sufficient water is available for livestock or irrigation. Utilize Pumping Plant (533) and Pipeline (516) or Irrigation water conveyance (430) as associated practices. Use Critical Area Seeding (342) where necessary to prevent erosion following construciton activities.

Feature Measure: Linear Foot of well depth

Scenario Unit: Feet

Scenario Typical Size: 100.0

Scenario Total Cost: $3,726.34

Scenario Cost/Unit: $37.26

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Rotary Drill Rig	1595	Rotary drill rig including equipment and power unit costs. Labor not included.	Hours	$345.72	4	$1,382.88
Materials						
Test, Standard Water Test, Well Water	309	Well Water Suitability test. Includes materials and shipping only.	Each	$48.39	1	$48.39
Grout, cement	1333	Cement grout meeting ASTM specifications for well sealing. Includes both neat-cement grout and bentonite gout mixtures. Includes materials, equipment and labor to place.	Cubic Yards	$414.72	2	$829.44
Chlorine	1335	Liquid chlorine bleach. Includes materials only.	Gallons	$4.40	1	$4.40
Well Cap, 6 in.	1786	Well cap, 6 inch. Materials only.	Each	$47.09	1	$47.09
Well Casing, Plastic, 6 in.	1804	PVC or ABS non-threaded well casing, 6 inch. Materials only.	Feet	$10.05	75	$753.75
Well Screen, plastic, 6 in.	1999	6 inch PVC well screen. Materials only.	Feet	$16.26	25	$406.50
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 642 - Water Well

Scenario #6 - Uncased Bedrock Well with PVC Surface Casing

Scenario Description:

Typical construction is for the installation of a deep open borehole well in solid bedrock with 6 inch diameter PVC surface casing. A well is drilled, dug, driven, bored, jetted or otherwise constructed to an aquifer for water supply. A PVC cap and grouting are installed to prevent a direct conduit to ground water, and the well is disinfected in accordance with state and local regulations. The purpose of the practice is to provide water for livestock or small irrigation systems, such as, micro-irrigation. Cost estimate is based on a well depth of 350 feet, with an open borehole 4 inches in diameter, and 30 ft of 6 inch PVC casing installed from surface into top of bedrock. Note that doubling the diameter of water well casings only increases specific capacity by 10%. Increasing the length of the screened interval in a well is much more cost-effective at increasing yield.

Before Situation:

Livestock have insufficient water or are fenced from their water source or there is insufficient water for use in micro-irrigation/small irrigation systems.

After Situation:

Sufficient water is available for livestock or irrigation. Utilize Pumping Plant (533) and Pipeline (516) or Irrigation water conveyance (430) as associated practices. Use Critical Area Seeding (342) where necessary to prevent erosion following construciton activities.

Feature Measure: Linear Foot of well depth

Scenario Unit: Feet

Scenario Typical Size: 350.0

Scenario Total Cost: $10,750.15

Scenario Cost/Unit: $30.71

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Rotary Drill Rig	1595	Rotary drill rig including equipment and power unit costs. Labor not included.	Hours	$345.72	28	$9,680.16
Materials						
Test, Standard Water Test, Well Water	309	Well Water Suitability test. Includes materials and shipping only.	Each	$48.39	1	$48.39
Grout, cement	1333	Cement grout meeting ASTM specifications for well sealing. Includes both neat-cement grout and bentonite gout mixtures. Includes materials, equipment and labor to place.	Cubic Yards	$414.72	1	$414.72
Chlorine	1335	Liquid chlorine bleach. Includes materials only.	Gallons	$4.40	1	$4.40
Well Cap, 6 in.	1786	Well cap, 6 inch. Materials only.	Each	$47.09	1	$47.09
Well Casing, Plastic, 6 in.	1804	PVC or ABS non-threaded well casing, 6 inch. Materials only.	Feet	$10.05	30	$301.50
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 642 - Water Well

Scenario #7 - Uncased Bedrock Well with Steel Surface Casing

Scenario Description:

Typical construction is for the installation of an deep open borehole well in solid bedrock with 6 inch diameter steel surface casing. Steel surface casing is often required for installation purposes when gravel or cobbles are present at or near the surface. A well is drilled, dug, driven, bored, jetted or otherwise constructed to an aquifer for water supply. A PVC cap and grouting are installed to prevent a direct conduit to ground water, and the well is disinfected in accordance with state and local regulations. The purpose of the practice is to provide water for livestock or small irrigation systems, such as, micro-irrigation. Cost estimate is based on a well depth of 350 feet, with an open borehole 4 inches in diameter, and 30 ft of 6 inch steel casing installed from surface into top of bedrock. Note that doubling the diameter of water well casings only increases specific capacity by 10%. Increasing the length of the screened interval in a well is much more cost-effective at increasing yield.

Before Situation:

Livestock have insufficient water or are fenced from their water source or there is insufficient water for use in micro-irrigation/small irrigation systems.

After Situation:

Sufficient water is available for livestock or irrigation. Utilize Pumping Plant (533) and Pipeline (516) or Irrigation water conveyance (430) as associated practices. Use Critical Area Seeding (342) where necessary to prevent erosion following construciton activities.

Feature Measure: Linear Foot of well depth

Scenario Unit: Feet

Scenario Typical Size: 350.0

Scenario Total Cost: $11,235.25

Scenario Cost/Unit: $32.10

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Rotary Drill Rig	1595	Rotary drill rig including equipment and power unit costs. Labor not included.	Hours	$345.72	28	$9,680.16
Materials						
Test, Standard Water Test, Well Water	309	Well Water Suitability test. Includes materials and shipping only.	Each	$48.39	1	$48.39
Grout, cement	1333	Cement grout meeting ASTM specifications for well sealing. Includes both neat-cement grout and bentonite gout mixtures. Includes materials, equipment and labor to place.	Cubic Yards	$414.72	1	$414.72
Chlorine	1335	Liquid chlorine bleach. Includes materials only.	Gallons	$4.40	1	$4.40
Well Cap, 6 in.	1786	Well cap, 6 inch. Materials only.	Each	$47.09	1	$47.09
Well Casing, Metal, 6 in.	1810	Steel well casing, 6 inch. Materials only.	Feet	$26.22	30	$786.60
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 642 - Water Well

Scenario #8 - Deep Well

Scenario Description:

Typical construction is for the installation of a well, in areas where sufficient water is known to occur > 600 feet of the ground surface. The well shall be drilled, dug, driven, bored, jetted or otherwise constructed to an aquifer for water supply. The purpose of the practice is to provide water for livestock or micro-irrigation. Well casings are 4-6" in diameter. Cost estimate based on a well 800 feet deep, with casing installed to a depth of 775 feet.

Before Situation:

Livestock have insufficient water or are fenced from their water source. There is insufficient water for use in micro-irrigation.

After Situation:

Sufficient water is available for livestock or micro-irrigation. Utilize Pumping Plant (533) and Pipeline (516) as associated practices. Use Critical Area Seeding (342) where necessary to prevent erosion following construciton activities.

Feature Measure: Linear foot of well depth

Scenario Unit: Feet

Scenario Typical Size: 800.0

Scenario Total Cost: $34,708.03

Scenario Cost/Unit: $43.39

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Rotary Drill Rig	1595	Rotary drill rig including equipment and power unit costs. Labor not included.	Hours	$345.72	32	$11,063.04
Materials						
Test, Standard Water Test, Well Water	309	Well Water Suitability test. Includes materials and shipping only.	Each	$48.39	1	$48.39
Grout, cement	1333	Cement grout meeting ASTM specifications for well sealing. Includes both neat-cement grout and bentonite gout mixtures. Includes materials, equipment and labor to place.	Cubic Yards	$414.72	1	$414.72
Chlorine	1335	Liquid chlorine bleach. Includes materials only.	Gallons	$4.40	1	$4.40
Well Cap, 6 in.	1786	Well cap, 6 inch. Materials only.	Each	$47.09	1	$47.09
Well Casing, Metal, 6 in.	1810	Steel well casing, 6 inch. Materials only.	Feet	$26.22	775	$20,320.50
Well Screen, stainless steel, 6 in.	1995	6 inch Stainless steel well screen. Materials only.	Feet	$102.24	25	$2,556.00
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 643 - Restoration of Rare or Declining Natural Communities

Scenario #3 - Rare or Declining Habitat Monitoring and Management, Medium Intensity and Complexity

Scenario Description:

This scenario is applied to all landuse types including those with wildlife as a modifier, where any resource concern is identified related to rare or declining habitats, and where medium intensity and complexity of monitoring or management will treat the identified resource concern. Two or three monitoring efforts are needed and each requiring less than 2 people and less than 8 hours per effort. Two or three adaptive management efforts are required (such as cutting of limbs that impede monitoring efforts, replacing damaged fence markers, or other minor adaptive management activities). The adaptive mgmt requires hand labor and the occasional use of light equipment. A crew of 2 is needed for the hand labor efforts and the crew will require less than 16 total hours of labor per mgmt effort. Mowing of roads and trail is required to provide access for monitoring and management.

Before Situation:

Rare or declining habitat is deficient due to the absence of annual monitoring and adaptive management actions of medium intensity and complexity.

After Situation:

Rare or declining habitat is improved by implementation of annual adaptive management actions of medium intensity and complexity.

Feature Measure: Monitoring efforts and adaptive m

Scenario Unit: Acres

Scenario Typical Size: 160.0

Scenario Total Cost: $1,990.97

Scenario Cost/Unit: $12.44

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Chainsaw	937	Equipment and power unit costs. Labor not included.	Hours	$7.00	4	$28.00
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	6	$142.44
Mower, Bush Hog	940	Equipment and power unit costs. Labor not included.	Hours	$49.85	5	$249.25
Rangeland/grassland field monitoring kit	967	Miscellaneous tools needed to complete rangeland/grassland monitoring. Materials may include camera, clippers, plot frame, scale, tape measure, etc. Includes materials and shipping only.	Each	$50.73	1	$50.73
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	20	$463.60
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	5	$126.55
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	10	$930.40

Practice: 643 - Restoration of Rare or Declining Natural Communities

Scenario #4 - Habitat Monitoring and Management, High Intensity and Complexity

Scenario Description:

This scenario is applied to all landuse types including those with wildlife as a modifier, where any resource concern is identified for wildlife, and where high intensity and complexity of monitoring or management will treat the identified resource concern. Two - four monitoring efforts are needed and each requiring less than 2 people and less than 8 hours per effort. The adaptive management actions (2 - 5 efforts) such as cutting of limbs that are impeding access of birds into nest boxes, replacing damaged fence markers, cleaning of nest structures and debris around other structures requires hand labor and light equipment, requiring a 2-person crew less than 1 day per effort.

Before Situation:

Wildlife habitat is deficient due to the absence of annual monitoring and adaptive management actions of high intensity and complexity.

After Situation:

Wildlife habitat is improved by implementation of annual adaptive management actions of high intensity and complexity.

Feature Measure: Monitoring efforts and adaptive m

Scenario Unit: Acres

Scenario Typical Size: 80.0

Scenario Total Cost: $1,868.65

Scenario Cost/Unit: $23.36

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Chainsaw	937	Equipment and power unit costs. Labor not included.	Hours	$7.00	8	$56.00
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	6	$142.44
Mower, Bush Hog	940	Equipment and power unit costs. Labor not included.	Hours	$49.85	3	$149.55
Rangeland/grassland field monitoring kit	967	Miscellaneous tools needed to complete rangeland/grassland monitoring. Materials may include camera, clippers, plot frame, scale, tape measure, etc. Includes materials and shipping only.	Each	$50.73	1	$50.73
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	20	$463.60
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	3	$75.93
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	10	$930.40

Practice: 643 - Restoration of Rare or Declining Natural Communities

Scenario #5 - Development of Shallow Micro-Topographic Features with Normal Farming Equipment.

Scenario Description:

This typical scenario is installed on open non-wetlands. The purpose is to increase plant species richness and diversity, create micro-habitats for invertebrates, increase water infiltration and reduce run-off. The area is plowed to loosen the soil. Then the soil is excavated with normal farming equipment (e.g. tractor and box-blade) to a depth of 2-6 inches and immediately deposited. This lowering and raising of a box-blade restores the original micro-topographic features (6' X 6' depressions and mounds) common to most landscapes and landforms prior to clearing, tilling, and annual mowing. Restoration of shallow but frequent micro-topographic features has been lost by the smoothing action of tillage, mowing and the original land-clearing. This scenario it typically implemented for ecosystem restoration projects such as prairie restoration and range-land restoration, and particularly on moderately well-drained soils.

Before Situation:

Micro-topographic features have been eliminated by past conversion to agriculture and/or past cultural practices. This has resulted in the lack of micro-soil moisture gradients within the field. The opportunity for plant species richness and diversity is minimal. Water storage potential is absent. Water rapidly runs off the field after rains and snow melt, carrying nutrients, solids and surface organic materials. No micro-ponding sites are available for invertebrate use.

After Situation:

Shallow micro-depressions and mounds are numerous. This varied micro-topographic features provided varied moisture gradients required for high plant species richness and diversity. Wildlife habitat is improved. Water conservation is increased, increasing vegetative production. Water quality is improved as the micro depressions capture sediments, nutrients and manure. Over time, the micro-depressions become more nutrient rich than the micro-highs, further increasing plant species richness.

Feature Measure: hours of tractor use

Scenario Unit: Acres

Scenario Typical Size: 20.0

Scenario Total Cost: $779.98

Scenario Cost/Unit: $39.00

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Tillage, Primary	946	Includes heavy disking (offset) or chisel plow. Includes equipment, power unit and labor costs.	Acres	$15.95	20	$319.00
Tractor, agricultural, 120 HP	962	Agricultural tractor with horsepower range of 90 to 140. Equipment and power unit costs. Labor not included.	Hours	$51.52	6	$309.12
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	6	$151.86

Practice: 643 - Restoration of Rare or Declining Natural Communities

Scenario #6 - Development of Deep Micro-Topographic Features with Heavy Equipment.

Scenario Description:

This typical scenario is installed on open non-wetlands, where micro-topographic features have been removed by past farming and/or ranching cultural practices. The purpose is to increase plant species richness and diversity, create micro-habitats for invertebrates, increase water infiltration and reduce run-off. The area is plowed 2 weeks prior to excavation to kill existing vegetation and allow for proper dirt work. Then the soil is excavated with track equipment (dozer) to a depth of 6-12 inches and immediately deposited. This lowering and raising of a dozer -blade restores the original deep micro-topographic features (10' X10' depressions and mounds) common to many landscapes and landforms prior to the lands conversion to agricultural lands. This scenario it typically implemented for ecosystem restoration projects such as wetland restoration (herbaceous or prior to planting of woody species), prairie restoration and range-land restoration. It is most commonly applied to well-drained soils as the purpose is for the micro-depression to pond water for short duration (less than 7 days).

Before Situation:

Micro-topographic features have been eliminated by past conversion to agriculture and/or past cultural practices. This has resulted in the lack of micro-soil moisture gradients within the field. The opportunity for plant species richness and diversity is minimal. Water storage potential is absent. Water rapidly runs off the field after rains and snow melt, carrying nutrients, solids and surface organic materials. No micro-ponding sites are available aquatic dependent invertebrates. Vertebrate wildlife habitat is lacking diversity.

After Situation:

Deep (6" - 12" depth) micro-depressions and mounds are numerous. These varied micro-topographic features provide varied moisture gradients required for development of high plant species richness and diversity. Wildlife habitat is improved. Water conservation is increased, increasing vegetative production. Water quality is improved as the deep micro-depressions capture sediments, nutrients and manure. Over time, the micro-depressions become more nutrient rich than the micro-highs, further increasing plant species richness.

Feature Measure: Hours

Scenario Unit: Acres

Scenario Typical Size: 20.0

Scenario Total Cost: $2,243.67

Scenario Cost/Unit: $112.18

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Dozer, 200 HP	928	Track mounted Dozer with horsepower range of 160 to 250. Equipment and power unit costs. Labor not included.	Hours	$204.12	6	$1,224.72
Tillage, Primary	946	Includes heavy disking (offset) or chisel plow. Includes equipment, power unit and labor costs.	Acres	$15.95	20	$319.00
Labor						
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	8	$215.20
Mobilization						
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$484.75	1	$484.75

Practice: 643 - Restoration of Rare or Declining Natural Communities

Scenario #7 - Topographic Feature Creation, Medium Complexity and Intensity

Scenario Description:

Setting is any land use with the potential to provide habitat for species of plants and animals identified as Rare and Declining and the habitat potential is not currently being captured. This scenario is typically occurs on lands used for the production of forest products, grazing and/or fish and wildlife where the slope gradient is less than two percent and predominant soils are not excessively drained. The State-approved habitat evaluation or appraisal found that a limiting factor for species of plants and animals identified as rare and declining is the absence of sufficient variability in microtopograpic relief in the area. The construction of medium intensity and medium complexity topographic features will provide for diverse soil hydrologic conditions needed to treat the degraded plant condition and/or inadequate habitat for rare and declining species. The construction of micro and macro topographic features can be implemented with the use of equipment in the 70-150 HP range due to current site conditions and implementation techniques. This scenario is for earthwork, not associated with habitat structures or any other national standard (e.g. Wetland Restoration (657), Wetland Enhancement (659), Wetland Creation (658), and Dike (356)).

Before Situation:

The site lacks sufficient micro- and macrotopographic features needed for optimal habitat for target rare and declining species. Typically the site has been previously manipulated and utilized for agricultural, livestock or forest production. With the loss of hummocks, depressions and other topographic features scattered throughout the site, both plant and animal species that are dependent on the microenvironments created by these features are no longer present or are in decline within the planning unit.

After Situation:

Appropriate equipment (i.e. - Skidsteer, Farm Tractor, Small Dozer, etc) was used to construct planned topographic features essential for identified species. As a result of the installation, adequate habitat needs have been provided.

Feature Measure: number and size of constructed fea

Scenario Unit: Acres

Scenario Typical Size: 50.0

Scenario Total Cost: $38,278.47

Scenario Cost/Unit: $765.57

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Excavation, Common Earth, side cast, small equipment	48	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic Yards	$2.24	15	$33.60
Earthfill, Roller Compacted	49	Earthfill, roller or machine compacted, includes equipment and labor	Cubic Yards	$4.42	15	$66.30
Earthfill, Manually Compacted	50	Earthfill, manually compacted, includes equipment and labor	Cubic Yards	$5.73	15	$85.95
Backhoe, 80 HP	926	Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$31.57	32	$1,010.24
Dozer, 140 HP	927	Track mounted Dozer with horsepower range of 125 to 160. Equipment and power unit costs. Labor not included.	Hours	$97.92	64	$6,266.88
Dozer, 80 HP	929	Track mounted Dozer with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$54.51	64	$3,488.64
Hydraulic Excavator, 1 CY	931	Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included.	Hours	$111.83	32	$3,578.56
Skidsteer, 80 HP	933	Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$59.94	64	$3,836.16
Track Loader, 95HP	935	Equipment and power unit costs. Labor not included.	Hours	$89.75	64	$5,744.00
Tractor, agricultural, 120 HP	962	Agricultural tractor with horsepower range of 90 to 140. Equipment and power unit costs. Labor not included.	Hours	$51.52	64	$3,297.28
Aerial Imagery	966	Aerial imagery. RBG (color), infrared or NDVI single image.	Acres	$1.75	50	$87.50
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	128	$2,967.04
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	256	$6,479.36
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	32	$1,336.96

Practice: 643 - Restoration of Rare or Declining Natural Communities

Scenario #63 - Woodland, Glade, Barren, Savanna or Prairie Restoration

Scenario Description:

Removing or reducing woody plant canopy and utilizing chemical treatment (except for non-sprouting woody species) to promote herbaceous growth to restore and manage open woodlands, glades, barrens, savannas or prairies where the Ecological Site Description or landform indicates an open woodland, glade, barren, savanna or prairie. Scenario is for the following situations: 1.) open woodland restoration where basal area removal is >40 square feet per acre, or >300 stems per acre; 2.) glade or barren restoration where greater than 20% canopy cover across the treatment area is in undesirable non-herbaceous cover; or 3.) savanna or prairie restoration where greater than 50% canopy cover across the treatment area is in undesirable non-herbaceous cover. Payment is based on impacted acres only. This scenario is intended to restore and manage the ecological site for associated wildlife species that benefit from habitats such as open woodlands, glades, barrens, savannas or prairies. Associated practices may include, but are not limited to; Early Successional Habitat Management/Development (647), Prescribed Burning (338) and Conservation Cover (327).

Before Situation:

The understory has a minimal amount of herbaceous and early woody successional vegetation. Wildlife food, cover and shelter are lacking and woody cover control is needed to manage for associated wildlife species that benefit from habitats such as open woodlands, glades, barrens, savannas or prairies.

After Situation:

Open woodland, glade, barren, savanna or prairie is restored and flora and fauna that depend on that habitat flourish

Feature Measure: treated acres

Scenario Unit: Acres

Scenario Typical Size: 10.0

Scenario Total Cost: $3,238.68

Scenario Cost/Unit: $323.87

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Chainsaw	937	Equipment and power unit costs. Labor not included.	Hours	$7.00	8	$56.00
Mower, Bush Hog	940	Equipment and power unit costs. Labor not included.	Hours	$49.85	24	$1,196.40
Chemical, spot treatment, single stem application	964	Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included.	Hours	$68.31	2.5	$170.78
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	55	$1,652.75
Materials						
Herbicide, Triclopyor	338	Refer to WIN-PST for product names and active ingredients. Materials and shipping	Acres	$32.55	5	$162.75

Practice: 644 - Wetland Wildlife Habitat Management

Scenario #5 - Development of Shallow Micro-Topographic Features with Normal Farming Equipment.

Scenario Description:

This typical scenario is installed on non-forested wetlands, including openlands prior to tree planting. The purpose is to increase plant species richness and diversity, create micro-habitats for invertebrates, increase water infiltration and reduce run-off. The area is plowed to loosen the soil. Then the soil is excavated with normal farming equipment (e.g. tractor and box-blade) to a depth of 2-6 inches and immediately deposited. This lowering and raising of a box-blade restores the original micro-topographic features (6' X 6' depressions and mounds) common to most landscapes and landforms prior to clearing, tilling, and annual mowing. Restoration of shallow but frequent micro-topographic features has been lost by the smoothing action of tillage, mowing and the original land-clearing. This scenario it typically implemented for ecosystem restoration projects such as prairie restoration and range-land restoration, and particularly on moderately well-drained soils.

Before Situation:

Micro-topographic features have been eliminated by past conversion to agriculture and/or past cultural practices. This has resulted in the lack of micro-soil moisture gradients within the field. The opportunity for plant species richness and diversity is minimal. Water storage potential is absent. Water rapidly runs off the field after rains and snow melt, carrying nutrients, solids and surface organic materials. No micro-ponding sites are available for invertebrate use.

After Situation:

Shallow micro-depressions and mounds are numerous. This varied micro-topographic features provided varied moisture gradients required for high plant species richness and diversity. Wildlife habitat is improved. Water conservation is increased, increasing vegetative production. Water quality is improved as the micro depressions capture sediments, nutrients and manure. Over time, the micro-depressions become more nutrient rich than the micro-highs, further increasing plant species richness.

Feature Measure: hours of tractor use

Scenario Unit: Acres

Scenario Typical Size: 20.0

Scenario Total Cost: $779.98

Scenario Cost/Unit: $39.00

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Tillage, Primary	946	Includes heavy disking (offset) or chisel plow. Includes equipment, power unit and labor costs.	Acres	$15.95	20	$319.00
Tractor, agricultural, 120 HP	962	Agricultural tractor with horsepower range of 90 to 140. Equipment and power unit costs. Labor not included.	Hours	$51.52	6	$309.12
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	6	$151.86

Practice: 644 - Wetland Wildlife Habitat Management

Scenario #6 - Development of Deep Micro-Topographic Features with Heavy Equipment.

Scenario Description:

This typical scenario is installed on non-forested wetlands (or open land prior to tree planting), where micro-topographic features have been removed by past farming and/or ranching cultural practices. The purpose is to increase plant species richness and diversity, create micro-habitats for invertebrates, increase water infiltration and reduce run-off. The area is plowed 2 weeks prior to excavation to kill existing vegetation and allow for proper dirt work. Then the soil is excavated with track equipment (dozer) to a depth of 6-12 inches and immediately deposited. This lowering and raising of a dozer -blade restores the original deep micro-topographic features (10' X10' depressions and mounds) common to many landscapes and landforms prior to the lands conversion to agricultural lands. This scenario it typically implemented for ecosystem restoration projects such as wetland restoration (herbaceous or prior to planting of woody species), prairie restoration and range-land restoration. It is most commonly applied to well-drained soils as the purpose is for the micro-depression to pond water for short duration (less than 7 days).

Before Situation:

Micro-topographic features have been eliminated by past conversion to agriculture and/or past cultural practices. This has resulted in the lack of micro-soil moisture gradients within the field. The opportunity for plant species richness and diversity is minimal. Water storage potential is absent. Water rapidly runs off the field after rains and snow melt, carrying nutrients, solids and surface organic materials. No micro-ponding sites are available aquatic dependent invertebrates. Vertebrate wildlife habitat is lacking diversity.

After Situation:

Deep (6" - 12" depth) micro-depressions and mounds are numerous. These varied micro-topographic features provide varied moisture gradients required for development of high plant species richness and diversity. Wildlife habitat is improved. Water conservation is increased, increasing vegetative production. Water quality is improved as the deep micro-depressions capture sediments, nutrients and manure. Over time, the micro-depressions become more nutrient rich than the micro-highs, further increasing plant species richness.

Feature Measure: Hours

Scenario Unit: Acres

Scenario Typical Size: 20.0

Scenario Total Cost: $2,243.67

Scenario Cost/Unit: $112.18

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Dozer, 200 HP	928	Track mounted Dozer with horsepower range of 160 to 250. Equipment and power unit costs. Labor not included.	Hours	$204.12	6	$1,224.72
Tillage, Primary	946	Includes heavy disking (offset) or chisel plow. Includes equipment, power unit and labor costs.	Acres	$15.95	20	$319.00
Labor						
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	8	$215.20
Mobilization						
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$484.75	1	$484.75

Practice: 644 - Wetland Wildlife Habitat Management

Scenario #8 - Topographic Feature Creation, High

Scenario Description:

Corrective measures will require the use of equipment 150 HP in size or larger due to current site conditions and implementation techniques. The setting is all landuses, but typically is on lands used for the production of agricultural products, where the slope gradient is less than two percent and soils that are not excessivly drained, that are being converted back to wetland habitats for fish and wildlife. The State-approved habitat evaluation or appraisal found that a limiting factor for wetland wildlife is the absence of sufficient variability in microtopograpic releif in the area. The construction of low intensity and low complexity topographic features will provide for diverse soil hydrologic conditions needed to treat the degraded plant condition and/or inadequate habitat for wetland wildlife. The contruction of micro and macro topographic featuires will require the use of equipment 150 HP in size or larger due to current site conditions and implementation techniques. Appropriate equipment (i.e. – Dozer, Excavator, etc) will be used to construct planned topographic features essential for identified species.

Before Situation:

The site lacks sufficient micro- and macrotopographic features needed for optimal wetland wildlife habitat for target species. Typically the site has been previously manipulated and utilized for agricultural production. With the loss of ridges and swales and other topographic features scattered throughout the site, both plant and animal species that are dependent on the microenvironments created by these features are no longer present or are in decline within the planning unit.

After Situation:

Appropriate equipment (i.e. - Dozer, Excavator, etc) was used to construct planned topographic features essential for identified species. As a result of the installation, adequate habitat structure such as micro and macro topographic features will provide for diverse soil hydrologic conditions needed to treat the degraded plant condition and/or inadequate habitat for wetland wildlife.

Feature Measure: number and size of constructed fea

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $397,096.27

Scenario Cost/Unit: $3,970.96

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Acquisition of Technical Knowledge						
Training, Workshops	294	Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants.	Each	$100.83	1	$100.83
Equipment Installation						
Dozer, 200 HP	928	Track mounted Dozer with horsepower range of 160 to 250. Equipment and power unit costs. Labor not included.	Hours	$204.12	1000	$204,120.00
Hydraulic Excavator, 2 CY	932	Track mounted hydraulic excavator with bucket capacity range of 1.5 to 2.5 CY. Equipment and power unit costs. Labor not included.	Hours	$126.60	1000	$126,600.00
Aerial Imagery	966	Aerial imagery. RBG (color), infrared or NDVI single image.	Acres	$1.75	100	$175.00
Labor						
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	2000	$53,800.00
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	248	$10,361.44
Mobilization						
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$484.75	4	$1,939.00

Practice: 644 - Wetland Wildlife Habitat Management

Scenario #10 - Close Risers by Nov.1-Feb.15

Scenario Description:

This scenario addresses inadequate habitat for fish and wildlife on cropland and/or moist soil areas. The resource concern is addressed by providing shallow water habitat for wildlife such as shorebirds, waterfowl, wading birds, mammals, fish, reptiles, amphibians, and other species that require shallow water for at least part of their life cycle. Sites are flooded up to a depth of 18" with an average depth of 9". Water is provided by placing boards in risers of water control structures by November 1 to catch precipitation. Removal of boards after February 15 allows area to drain. Associated practices are P.C. 587, Structure for Water Control and P.C. 356, Dikes.

Before Situation:

There is inadequate habitat to provide optimum resting, nesting, and feeding habitat for waterfowl, shorebirds, and other wildlife (amphibians, reptiles, mammals, invertebrates, etc.).

After Situation:

A single or series of shallow water areas that are managed per standard and specification. Water levels are regulated to maintain temporary wildlife habitat. Water control structures are closed by November 1 and held through February 15 to catch rainfall. Depths are based on actual rainfall for that year; based on climatic data, assume enough rainfall to average 6-8 inches. The producer manages the timing and duration of water required for different species of waterfowl/shorebirds. This management will benefit wildlife while minimizing nutrient export and aquifer depletion. Flooded sites vary from mudflats to water depths of 18" with an average depth of 9". The hydrologic conditions of ponding and saturation (frequency, depth, duration, timing) provides optimum seasonal habitat for waterfowl, shorebirds, and other wildlife (amphibians, reptiles, mammals, invertebrates, etc.). If needed and dikes or water control structures are not currently present on the fields planned to be flooded, these practices may be planned for the same fields and cost shared under Structure for Water Control (587) and Dike (356). Depending on local conditions, other Conservation Practices may also be required.

Feature Measure: <Unknown>

Scenario Unit: Acres

Scenario Typical Size: 15.0

Scenario Total Cost: $185.44

Scenario Cost/Unit: $12.36

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	8	$185.44

Practice: 645 - Upland Wildlife Habitat Management

Scenario #3 - Habitat Monitoring and Management, Medium Intensity and Complexity

Scenario Description:

This scenario is applied to all landuse types including those with wildlife as a modifier, where any resource concern is identified for wildlife, and where medium intensity and complexity of monitoring or management will treat the identified resource concern. Two or three monitoring efforts are needed and each requiring less than 2 people and less than 8 hours per effort. Two or three adaptive management efforts are required (such as cutting of limbs that are impeding access of birds into nest boxes, replacing damaged fence markers, cleaning of nest structures and debris around other structures). The adaptive mgmt requires hand labor and the occasional use of light equipment. A crew of 2 is needed for the hand labor efforts and the crew will require less than 16 total hours of labor per mgmt effort. Mowing of roads and trail is required to provide access for monitoring and management.

Before Situation:

Wildlife habitat is deficient due to the absence of annual monitoring and adaptive management actions of medium intensity and complexity.

After Situation:

Wildlife habitat is improved by implementation of annual adaptive management actions of medium intensity and complexity.

Feature Measure: Monitoring efforts and adaptive m

Scenario Unit: Acres

Scenario Typical Size: 160.0

Scenario Total Cost: $1,990.97

Scenario Cost/Unit: $12.44

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Chainsaw	937	Equipment and power unit costs. Labor not included.	Hours	$7.00	4	$28.00
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	6	$142.44
Mower, Bush Hog	940	Equipment and power unit costs. Labor not included.	Hours	$49.85	5	$249.25
Rangeland/grassland field monitoring kit	967	Miscellaneous tools needed to complete rangeland/grassland monitoring. Materials may include camera, clippers, plot frame, scale, tape measure, etc. Includes materials and shipping only.	Each	$50.73	1	$50.73
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	20	$463.60
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	5	$126.55
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	10	$930.40

Practice: 645 - Upland Wildlife Habitat Management

Scenario #4 - Habitat Monitoring and Management, High Intensity and Complexity

Scenario Description:

This scenario is applied to all landuse types including those with wildlife as a modifier, where any resource concern is identified for wildlife, and where high intensity and complexity of monitoring or management will treat the identified resource concern. Two - four monitoring efforts are needed and each requiring less than 2 people and less than 8 hours per effort. The adaptive management actions (2 - 5 efforts) such as cutting of limbs that are impeding access of birds into nest boxes, replacing damaged fence markers, cleaning of nest structures and debris around other structures requires hand labor and light equipment, requiring a 2-person crew less than 1 day per effort.

Before Situation:

Wildlife habitat is deficient due to the absence of annual monitoring and adaptive management actions of high intensity and complexity.

After Situation:

Wildlife habitat is improved by implementation of annual adaptive management actions of high intensity and complexity.

Feature Measure: Monitoring efforts and adaptive m

Scenario Unit: Acres

Scenario Typical Size: 80.0

Scenario Total Cost: $2,423.57

Scenario Cost/Unit: $30.29

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Hydraulic Excavator, 1 CY	931	Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included.	Hours	$111.83	4	$447.32
Chainsaw	937	Equipment and power unit costs. Labor not included.	Hours	$7.00	8	$56.00
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	6	$142.44
Mower, Bush Hog	940	Equipment and power unit costs. Labor not included.	Hours	$49.85	3	$149.55
Rangeland/grassland field monitoring kit	967	Miscellaneous tools needed to complete rangeland/grassland monitoring. Materials may include camera, clippers, plot frame, scale, tape measure, etc. Includes materials and shipping only.	Each	$50.73	1	$50.73
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	20	$463.60
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	3	$75.93
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	4	$107.60
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	10	$930.40

Practice: 645 - Upland Wildlife Habitat Management

Scenario #5 - Development of Shallow Micro-Topographic Features with Normal Farming Equipment.

Scenario Description:

This typical scenario is installed on open non-wetlands. The purpose is to increase plant species richness and diversity, create micro-habitats for invertebrates, increase water infiltration and reduce run-off. The area is plowed to loosen the soil. Then the soil is excavated with normal farming equipment (e.g. tractor and box-blade) to a depth of 2-6 inches and immediately deposited. This lowering and raising of a box-blade restores the original micro-topographic features (6' X 6' depressions and mounds) common to most landscapes and landforms prior to clearing, tilling, and annual mowing. Restoration of shallow but frequent micro-topographic features has been lost by the smoothing action of tillage, mowing and the original land-clearing. This scenario it typically implemented for ecosystem restoration projects such as prairie restoration and range-land restoration, and particularly on moderately well-drained soils.

Before Situation:

Micro-topographic features have been eliminated by past conversion to agriculture and/or past cultural practices. This has resulted in the lack of micro-soil moisture gradients within the field. The opportunity for plant species richness and diversity is minimal. Water storage potential is absent. Water rapidly runs off the field after rains and snow melt, carrying nutrients, solids and surface organic materials. No micro-ponding sites are available for invertebrate use.

After Situation:

Shallow micro-depressions and mounds are numerous. This varied micro-topographic features provided varied moisture gradients required for high plant species richness and diversity. Wildlife habitat is improved. Water conservation is increased, increasing vegetative production. Water quality is improved as the micro depressions capture sediments, nutrients and manure. Over time, the micro-depressions become more nutrient rich than the micro-highs, further increasing plant species richness.

Feature Measure: hours of tractor use

Scenario Unit: Acres

Scenario Typical Size: 20.0

Scenario Total Cost: $779.98

Scenario Cost/Unit: $39.00

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Tillage, Primary	946	Includes heavy disking (offset) or chisel plow. Includes equipment, power unit and labor costs.	Acres	$15.95	20	$319.00
Tractor, agricultural, 120 HP	962	Agricultural tractor with horsepower range of 90 to 140. Equipment and power unit costs. Labor not included.	Hours	$51.52	6	$309.12
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	6	$151.86

Practice: 645 - Upland Wildlife Habitat Management

Scenario #6 - Development of Deep Micro-Topographic Features with Heavy Equipment.

Scenario Description:

This typical scenario is installed on open non-wetlands, where micro-topographic features have been removed by past farming and/or ranching cultural practices. The purpose is to increase plant species richness and diversity, create micro-habitats for invertebrates, increase water infiltration and reduce run-off. The area is plowed 2 weeks prior to excavation to kill existing vegetation and allow for proper dirt work. Then the soil is excavated with track equipment (dozer) to a depth of 6-12 inches and immediately deposited. This lowering and raising of a dozer -blade restores the original deep micro-topographic features (10' X10' depressions and mounds) common to many landscapes and landforms prior to the lands conversion to agricultural lands. This scenario it typically implemented for ecosystem restoration projects such as wetland restoration (herbaceous or prior to planting of woody species), prairie restoration and range-land restoration. It is most commonly applied to well-drained soils as the purpose is for the micro-depression to pond water for short duration (less than 7 days).

Before Situation:

Micro-topographic features have been eliminated by past conversion to agriculture and/or past cultural practices. This has resulted in the lack of micro-soil moisture gradients within the field. The opportunity for plant species richness and diversity is minimal. Water storage potential is absent. Water rapidly runs off the field after rains and snow melt, carrying nutrients, solids and surface organic materials. No micro-ponding sites are available aquatic dependent invertebrates. Vertebrate wildlife habitat is lacking diversity.

After Situation:

Deep (6" - 12" depth) micro-depressions and mounds are numerous. These varied micro-topographic features provide varied moisture gradients required for development of high plant species richness and diversity. Wildlife habitat is improved. Water conservation is increased, increasing vegetative production. Water quality is improved as the deep micro-depressions capture sediments, nutrients and manure. Over time, the micro-depressions become more nutrient rich than the micro-highs, further increasing plant species richness.

Feature Measure: Hours

Scenario Unit: Acres

Scenario Typical Size: 20.0

Scenario Total Cost: $2,243.67

Scenario Cost/Unit: $112.18

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Dozer, 200 HP	928	Track mounted Dozer with horsepower range of 160 to 250. Equipment and power unit costs. Labor not included.	Hours	$204.12	6	$1,224.72
Tillage, Primary	946	Includes heavy disking (offset) or chisel plow. Includes equipment, power unit and labor costs.	Acres	$15.95	20	$319.00
Labor						
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	8	$215.20
Mobilization						
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$484.75	1	$484.75

Practice: 645 - Upland Wildlife Habitat Management

Scenario #7 - Snag Creation

Scenario Description:

Creation of snags can provide habitat components in monotypic woodlands where there is little standing decaying trees, downed woody debris, and/or little understory. The selected trees within the proposed area would be chemically deadened. Consideration should be given regarding increased nest parasitism by species such as brown-headed cowbirds. This scenario covers all uplands habitats, that are not covered under 643, that need snags created when habitat assessment indicates Inadequate Habitat for Fish or Wildlife-habitat degradation. Intensity is the number of structures to be installed per acre. For this scenario the intensity is 6 snags per acre. Complexity is defined by the combination of skill level, equipment needed and ease of accesability for createing and installing these structures. For this scenario the complexity would include: specialized labor without supervision; common hand tools and equipment; installation is within a quarter mile of a driveable road; and terrain is gentle to moderate. This practice may be installed alone or in combination with facilitating practices. Facilitating practices may include but not limited to: 391, 647 and 666.

Before Situation:

The setting is a 160-acre woodland area lacking sufficient snags needed to provide nesting and cover cavities, foraging habitat, and perching locations for the vast array of species dependent on dead and decaying standing and laying trees. In addition, the canopy lacks forest opening critical to the target wildlife species. No more than 6 snags per acre is needed to bring the deficient habitat limiting factor up to planning criteria. The project can be implemented within a quarter mile of a driveable road and terrain is gentle to moderate.

After Situation:

The 160 acres of treated woodland has become more diverse in regard to the number snags, as well as small forest openings and the resulting increase in richness and diversity of the understory. Adquate habitat exists for the vast array of invetegrates, birds and mammals that require dead trees for food, cover and shelter.

Feature Measure: <Unknown>

Scenario Unit: Acres

Scenario Typical Size: 160.0

Scenario Total Cost: $4,718.26

Scenario Cost/Unit: $29.49

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Rangeland/grassland field monitoring kit	967	Miscellaneous tools needed to complete rangeland/grassland monitoring. Materials may include camera, clippers, plot frame, scale, tape measure, etc. Includes materials and shipping only.	Each	$50.73	2	$101.46
Labor						
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	48	$4,465.92
Materials						
Tree Marking Paint	313	Trees to be cut through tree marking are physically identified through the application of paint on the tree. Typically one quart of paint is used to mark one acre of trees. Includes materials and shipping only.	Acres	$9.43	16	$150.88

Practice: 645 - Upland Wildlife Habitat Management

Scenario #322 - Interseeding Milkweed Into Existing Habitat

Scenario Description:

Inter-seeding milkweed into an existing stand of vegetation that has sufficient nectar plant richness and distribution, but lacks reproductive habitat (milkweed is lacking). Existing vegetation will be treated with herbicides in strips. Entire area will be burned or mowed prior to application of herbicides to 6-10 foot wide strips. Drilling of milkweed will be in the treated (herbicide strips). Seeding in strips will be 25% of the field.

Before Situation:

An open field that may support enough forb species richness, abundance and distribution to provide good or excellent monarch nectaring habitat, but milkweed is lacking. These conditions fail to meet the limiting factor for monarchs as required to meet Upland Wildlife Habitat (654) as reproductive habitat is identified as the limiting factor for this species. Application of the Monarch WHEG finds the habitat quality rating to be poor or fair.

After Situation:

The open field supports good or excellent monarch reproductive habitat. Application of the Monarch WHEG finds the habitat quality rating to be good or excellent.

Feature Measure: acre

Scenario Unit: Acres

Scenario Typical Size: 5.0

Scenario Total Cost: $738.65

Scenario Cost/Unit: $147.73

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$6.00	5	$30.00
Mechanical weed control, Vegetation termination	957	Mechanical operations, Includes: Roller/crimper, mower, shredder, etc. Includes equipment, power unit and labor costs.	Acres	$20.84	5	$104.20
Seeding Operation, No Till/Strip Till Planter	1230	No Till/Strip Till row planters for seeding. Includes all costs for equipment, power unit, and labor.	Acres	$19.44	5	$97.20
Materials						
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$8.98	1.25	$11.23
Native Perennial Grasses, Legumes and/or Forb Mix for Targeted Wildlife/Pollinator Habitat or Ecological Restoration, moderate commercial availability	2619	Diverse mix of native perennial grasses, legumes and forbs, less than 50% grasses, may include biennials and a small percentage of annual species for establishment purposes and/or if allowed by the CPS. This is a mix composed of species required to meet specific wildlife/pollinator habitat or ecological requirements. Seed is moderately easy to purchase commercially. Includes materials and shipping.	Acres	$396.82	1.25	$496.03

Practice: 645 - Upland Wildlife Habitat Management

Scenario #323 - Patch Openings

Scenario Description:

Creating forest openings create habitat, cover and browse for many species of wildlife. Wildlife habitat is increased by the additional edge and plant diversity created by implementing this practice. The openings are created by cutting or removing undesirable tree species or removing dense groups of smaller trees. These openings are used to increase the herbaceous vegetative layer and develop desirable wildlife habitat.

Before Situation:

The forest has a lack of lack of desirable wildlife habitat due to a dominant single tree species occupying the site and/or a dense over-story condition limiting understory.

After Situation:

Once the patch openings are in place, the forest will have one or more small openings that increase the amount of edge, cover and plant diversity. These small openings offer many positive effects such as providing a diverse habitat cover and food sources for many wildlife species.

Feature Measure: Acres

Scenario Unit: Acres

Scenario Typical Size: 5.0

Scenario Total Cost: $1,585.65

Scenario Cost/Unit: $317.13

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Dozer, 140 HP	927	Track mounted Dozer with horsepower range of 125 to 160. Equipment and power unit costs. Labor not included.	Hours	$97.92	10	$979.20
Labor						
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	10	$269.00
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	2	$83.56
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 646 - Shallow Water Development and Management

Scenario #1 - Shallow Water Management - Low Level

Scenario Description:

This scenario addresses inadequate habitat for fish and wildlife on cropland. The resource concern is addressed by providing shallow water habitat for wildlife such as shorebirds, waterfowl, wading birds, mammals, fish, reptiles, amphibians, and other species that require shallow water for at least part of their life cycle. Sites are flooded up to a depth of 18" with an average depth of 9". Water is provided by natural flooding and/or precipitation.

Before Situation:

There is inadequate habitat to provide optimum resting, nesting, and feeding habitat for waterfowl, shorebirds, and other wildlife (amphibians, reptiles, mammals, invertebrates, etc.).

After Situation:

A single or series of shallow water areas that are managed per standard and specification. Water levels are regulated to maintain temporary wildlife habitat. Timing and duration of flooding and de-watering is dependent on specific species requirements. Water is pumped into area to be flooded. Flooded sites vary from mudflats to water depths of 18" with an average depth of 9". The hydrologic conditions of ponding and saturation (frequency, depth, duration, timing) provides optimum seasonal habitat for waterfowl, shorebirds, and other wildlife (amphibians, reptiles, mammals, invertebrates, etc.). If needed and dikes or water control structures are not currently present on the fields planned to be flooded, these practices may be planned for the same fields and cost shared under Structure for Water Control (587) and Dike (356). If a natural water source (i.e. precipitation or flooding) is not available, Pumping Plant (533) may be cost shared to provide a water source. Depending on local conditions, other Conservation Practices may also be required.

Feature Measure: Acre of shallow water

Scenario Unit: Acres

Scenario Typical Size: 1.0

Scenario Total Cost: $23.18

Scenario Cost/Unit: $23.18

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	1	$23.18

Practice: 646 - Shallow Water Development and Management

Scenario #2 - Shallow Water Management-High Level

Scenario Description:

This scenario addresses inadequate habitat for fish and wildlife on cropland. To facilitate practice code 643, 644, 645, or 395, seasonal shallow water is provided annually for target species by purchasing of water, lifting of such water, monitoring of the water quality, response by target plant community, use by target flora or fauna. Sites are flooded up to a depth of 18"with an average depth of 9". Monitoring and adaptive management accomplished of existing water control structures is accomplished to meet very specific conditions needed to address previously identified degraded plant conditions or inadequate habitat for fish and/or wildlife. This high-level managmenet is applied to lands used for crop, pasture, hay, forests or wildlife lands where target flora and fauna have been identified as a primary concern. Loss of some level of crop, forage, hay or forest products may occur depending on site specific conditions.

Before Situation:

The site has existing infrastructure (reliable water source, dikes, water control structures, pumps, gates) to provide a reliable seasonal water source. The site is not subject to frequent natural flooding. The potential benefits to target fauna and flora is not being captured. The purchase of water, supply of water and intensive managment of season water, coupled with monitoring, adaptive managment from highly trained individuals will fully address the identifed degraded plant conditions and/or inadequate habitat for fish and/or wildlife.

After Situation:

A single or series of shallow water areas that are managed per standard and specification. Water levels are regulated to maintain temporary wildlife habitat. Timing and duration of flooding and de-watering is dependent on specific species requirements. Water is pumped into area to be flooded. Flooded sites vary from mudflats to water depths of 18" with an average depth of 9". The hydrologic conditions of ponding and saturation (frequency, depth, duration, timing) provides optimum seasonal habitat for waterfowl, shorebirds, and other wildlife (amphibians, reptiles, mammals, invertebrates, etc.). If Dikes or Water Control Structures are not currently present on the fields planned to be flooded, these practices may be planned for the same fields and cost shared under Structure for Water Control (587) and Dike (356). If a natural water source (i.e. precipitation or flooding) is not available, Pumping Plant (533) may be cost shared to provide a water source. Depending on local conditions, other Conservation Practices may also be required.

Feature Measure: Acre of shallow water

Scenario Unit: Acres

Scenario Typical Size: 1.0

Scenario Total Cost: $106.10

Scenario Cost/Unit: $106.10

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Water management, Flooding & dewatering	969	Includes equipment and power unit. Labor not included.	Acre Feet	$165.84	0.5	$82.92
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	1	$23.18

Practice: 646 - Shallow Water Development and Management

Scenario #4 - Close Risers Sept. 1 - March 1

Scenario Description:

This scenario addresses the identified resource concern of inadequate habitat for fish and wildlife on cropland and for moist soil areas. Rain water is captured on a 15-acre cropland field by annually installing three 6-inch boards in an existing water control structure (one trip to the field). Installation of the boards occurs immediately following crop harvest. The boards are maintained in the structure until the spring of the following year. After placements of boards, a monthly inspection of the field and boards is conducted to assure that it is functional properly and that debris is not impairing flow (4 trips). To provide mud-flat habitat spring of the year, the boards are remove incrementally. Associated practices are P.C. 587, Structure for Water Control and P.C. 356, Dikes.

Before Situation:

A 15-acre cropland field has the infrastructure (dikes and water control capability) for flooding for wildlife, but the water (grade) control structure is left open to allow the field to drain during the non-crop season. Conditions are not present to provide suitable wetland wildlife habitat during the non-crop season.

After Situation:

A 15-acre cropland field that has the infrastructure (dikes and water control capability) for flooding, is flooded after harvest to provide habitat for water dependent wildlife. The resource concern of inadequate fish and wildlife habitat on cropland and for moist soil areas is addressed by providing shallow water habitat for wildlife such as shorebirds, waterfowl, wading birds, mammals, fish, reptiles, amphibians, and other species that require shallow water during the non-crop season.

Feature Measure: Acres treated

Scenario Unit: Acres

Scenario Typical Size: 15.0

Scenario Total Cost: $324.52

Scenario Cost/Unit: $21.63

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	14	$324.52

Practice: 647 - Early Successional Habitat Development-Mgt

Scenario #1 - Disking

Scenario Description:

This practice addresses inadequate wildlife habitat for species requiring early successional habitat at varying stages. This scenario provides early successional habitat by setting back succession and manipulating species composition by disking vegetation and creating bare ground, forbs for feeding habitat, and NWSGS for nesting habitat all within the homerange for grassland birds, such as quail. No more than 1/3 to 1/2 of the area should be disked within 1 year. The typical setting for this scenario is at the edge of crop fields, in pastures, odd areas such as pivot corners, and thinned forest understory. This scenario is applicable nationwide. Where the management of woody plants is required to create or maintain early successional habitat, conservation practice 314 brush management or 666 forest stand improvement should be used. Where chemical control of weeds, including invasives, is required to reduce competition for the desired plant community conservation practice 315 herbaceous weed control should be used. Where the seedbank is inadequate for natural regeneration and seeding is required, use conservation practice 550 range seeding or 327 Conservation Cover.

Before Situation:

The site is static or trending to higher successional plant species. The disturbance regime to maintain a lower successional stage is lacking. Pastures are often monotypic, lacking in diversity. Bare ground for seedling establishment is absent. Stands are often dense and inhibit the movements of younger wildlife species suchh as game bird chicks.

After Situation:

The application of this scenario improves wildlife habitat for species requiring early successional plant communities by reducing competition and creating bare ground for the establishment of early successional plants. Additionally, brood rearing habitat is improved both by the resultant food resources and the increased openess of the plant community that allows chicks to negotiate the terrain and exploit those food resources.

Feature Measure: width and length of treated area

Scenario Unit: Acres

Scenario Typical Size: 40.0

Scenario Total Cost: $1,289.60

Scenario Cost/Unit: $32.24

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acres	$11.35	40	$454.00
Labor						
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	20	$835.60

Practice: 647 - Early Successional Habitat Development-Mgt

Scenario #2 - CRP Mowing/Bailing

Scenario Description:

This practice scenario is used as a mid-contract management activity for the CRP program. It involves mowing and bailing established plant communities to both stimulate new growth and to set back woody, less desirable species. The typical size of the practice is 20 acres. Increased annual/herbaceous plant diversity will improve wildlife habitat, pollinator habitat, and overall soil health. The typical setting for this scenario is on CRP lands established in early successional vegetation. This scenario is applicable nationwide. Where the management of woody plants is require to create or maintain early successional habitat conservation practice 314 brush management or 666 forest stand improvement should be used. Where chemical control of weeds, including invasives, is required to reduce competition for the desired plant community conservation practice 315 herbaceous weed control should be used. Where the seedbank is inadequate for natural regeneration and seeding is required, use conservation practice 550 range seeding or 327 Conservation Cover.

Before Situation:

The site has an established native plant cover and is being managed under a conservation plan and CRP contract. Typically, plant diversity and vigor begins to diminish over time and less desirable woody species begin to emerge as a part of natural succession. Wildlife populations are healthy, some pollinator habitat is being provided, and soil health is improving. Wildlife populations are healthy, some pollinator habitat is being provided, and soil health is improving.

After Situation:

With the introduction of a mowing/bailing activity, wildlife populations improve considerably, pollinator habitat is improved and exists for a longer period of time, woody species are set back, and soil health improves at a faster pace.

Feature Measure: width and length of treated area

Scenario Unit: Acres

Scenario Typical Size: 20.0

Scenario Total Cost: $450.96

Scenario Cost/Unit: $22.55

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Mower, Bush Hog	940	Equipment and power unit costs. Labor not included.	Hours	$49.85	6	$299.10
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	6	$151.86

Practice: 647 - Early Successional Habitat Development-Mgt

Scenario #3 - Wetland Disking

Scenario Description:

This practice addresses inadequate wetland wildlife habitat for species preferring early successional foods and habitat. This scenario provides early successional habitat by setting back succession and manipulating species composition. The typical setting for this scenario is managed moist-soil wetlands, restored wetlands, and shallow natural wetlands that periodically dry under normal conditions. Where the management of woody plants is require to maintain early successional habitat conservation practice 314 brush management or 666 forest stand improvement should be used. Where chemical control of weeds, including invasives, is required to reduce competition for the desired plant community conservation practice 315 herbaceous weed control should be used.

Before Situation:

The site is static or trending to late successional perennial plant species. The disturbance regime to maintain a early successional stage is lacking. Bare ground for annual seedling establishment is absent. Stands are often dense and do not produce preferred foods for wetland dependant wildlife species, such as waterfowl and shorebirds.

After Situation:

The application of this scenario improves wetland wildlife foods and habitat for species requiring early successional plant communities by reducing competition and creating bare ground for the establishment of early successional plants. Additionally, plant diversity and wetland functions and values can be improved.

Feature Measure: width and length of treated area

Scenario Unit: Acres

Scenario Typical Size: 15.0

Scenario Total Cost: $580.77

Scenario Cost/Unit: $38.72

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Tillage, Primary	946	Includes heavy disking (offset) or chisel plow. Includes equipment, power unit and labor costs.	Acres	$15.95	15	$239.25
Mobilization						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	2	$341.52

Practice: 647 - Early Successional Habitat Development-Mgt

Scenario #4 - Wetland Mowing

Scenario Description:

This scenario address inadequate habitat for wetland wildlife where setting back succession by mowing herbaceous and/or woody species will improve habitat for the target species. Mowing can be used to increase structural diversity by creating areas of shorter vegetation prefered by some species or certain life stages of species. Mowing also allows wildlife access when habitat is flooded, makes seed more available, and provides vegetation and soil contact necessary for invertebrate response in wetlands. The typical setting for this scenario is in managed moist-soil wetlands, restored wetlands, andshallow natural wetlands that periodically dry under normal conditions. Where the management of woody plants is require to create or maintain early successional habitat conservation practice 314 brush management or 666 forest stand improvement should be used. Where chemical control of weeds, including invasives, is required to reduce competition for the desired plant community conservation practice 315 herbaceous weed control should be used.

Before Situation:

The site is static or trending to late successional perennial plant species. The disturbance regime to maintain a early successional stage is lacking. Bare ground for annual seedling establishment is absent. Stands are often dense and do not produce preferred foods for wetland dependant wildlife species, such as waterfowl and shorebirds.

After Situation:

The application of this scenario improves wetland wildlife foods and habitat for species requiring early successional plant communities by reducing competition and creating bare ground for the establishment of early successional plants. Additionally, plant diversity and wetland functions and values can be improved.

Feature Measure: width and length of treated area

Scenario Unit: Acres

Scenario Typical Size: 15.0

Scenario Total Cost: $567.00

Scenario Cost/Unit: $37.80

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Mower, Bush Hog	940	Equipment and power unit costs. Labor not included.	Hours	$49.85	3	$149.55
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	3	$75.93
Mobilization						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	2	$341.52

Practice: 647 - Early Successional Habitat Development-Mgt

Scenario #5 - Late Season Shallow Water with Manipulation

Scenario Description:

Used on rice fields, crawfish fields, other cropland, moist soil units, shallow water areas to provide habitat for wildife. This scenario addresses inadequate habitat for fish and wildlife on cropland and/or moist soil areas. The resource concern is addressed by providing shallow water habitat for wildlife such as shorebirds, waterfowl, wading birds, mammals, fish, reptiles, amphibians, and other species that require shallow water for at least part of their life cycle. Sites are flooded up to a depth of 18" with an average depth of 9". Associated practices are P.C. 587, Structure for Water Control and P.C. 356, Dikes.

Before Situation:

Currently these agricultural fields do not provide habitat for waterfowl/shorebirds. Water and moist soil is typically not managed during this timeframe.

After Situation:

Water control structures are closed, holding 8 to 18 inches of water as of May 1, to catch rainfall. Depths will be dependent on actual rainfall for that year. Based on climatic data, we assume enough rainfall to average 6-8 inches, lasting through July. The producer will manipulate emergent vegetation by rolling or lightly disking, so that 50% or more of the vegetation is at or below the soil surface. This management will benefit wildlife while minimizing nutrient export and aquifer depletion.

Feature Measure: <Unknown>

Scenario Unit: Acres

Scenario Typical Size: 40.0

Scenario Total Cost: $1,767.02

Scenario Cost/Unit: $44.18

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Mower, Bush Hog	940	Equipment and power unit costs. Labor not included.	Hours	$49.85	22	$1,096.70
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acres	$11.35	10	$113.50
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	22	$556.82

Practice: 647 - Early Successional Habitat Development-Mgt

Scenario #6 - Extended Late Season Shallow Water w/ Manipulation

Scenario Description:

Used on rice fields, crawfish fields, other cropland, moist soil units, shallow water areas to provide habitat for wildife. This scenario addresses inadequate habitat for fish and wildlife on cropland and/or moist soil areas. The resource concern is addressed by providing shallow water habitat for wildlife such as shorebirds, waterfowl, wading birds, mammals, fish, reptiles, amphibians, and other species that require shallow water for at least part of their life cycle. Sites are flooded up to a depth of 18" with an average depth of 9". Associated practices are P.C. 587, Structure for Water Control and P.C. 356, Dikes.

Before Situation:

Currently these agricultural fields do not provide habitat for waterfowl/shorebirds. Water and moist soil is typically not managed during this timeframe.

After Situation:

Water control structures are closed, holding 8 to 18 inches of water as of May 1, to catch rainfall. Depths will be dependent on actual rainfall for that year. Based on climatic data, we assume enough rainfall to average 6-8 inches, lasting through August. The producer will manipulate emergent vegetation by rolling or lightly disking, so that 50% or more of the vegetation is at or below the soil surface. This management will benefit wildlife while minimizing nutrient export and aquifer depletion.

Feature Measure: <Unknown>

Scenario Unit: Acres

Scenario Typical Size: 40.0

Scenario Total Cost: $3,475.80

Scenario Cost/Unit: $86.90

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Mower, Bush Hog	940	Equipment and power unit costs. Labor not included.	Hours	$49.85	20	$997.00
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acres	$11.35	40	$454.00
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	80	$2,024.80

Practice: 649 - Structures for Wildlife

Scenario #5 - Escape Ramp

Scenario Description:

Retrofit an existing watering trough/tank with an appropriately designed and installed wildlife escape ramp to reduce wildlife mortality and maintain water quality within the watering facility.

Before Situation:

Existing watering facilities lack escape potential for wildlife. This results in death of the small wildlife accessing the facility for water, and resulting poor water quality as the animal decays.

After Situation:

Watering facilities provide wildlife safe access. Water quality is improved within the watering facility and wildlife mortality is reduced.

Feature Measure: Each Ramp

Scenario Unit: Each

Scenario Typical Size: 1.0

Scenario Total Cost: $84.43

Scenario Cost/Unit: $84.43

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	0.5	$11.59
Materials						
Wildlife Escape Ramp	242	Pool size 15' x 30', for small mammals less than one pound.	Each	$72.84	1	$72.84

Practice: 649 - Structures for Wildlife

Scenario #8 - Brush Pile - Large

Scenario Description:

Downed tree structures are created to provide shrubby/woody escape cover for wildlife. Existing sod will be killed prior to placement of tree structures. Felling of select trees and placement in selected locations to provide wildlife cover. Typical scenario of 30' x 50' area for structure covered by interlocking limbs of trees at least 12" in diameter.

Before Situation:

The existing habitat lacks escape, ground nesting and safe loafing cover.

After Situation:

Large brush piles provide needed escape, ground nesting and safe loafing cover for targeted wildlife species.

Feature Measure: brush piles

Scenario Unit: Each

Scenario Typical Size: 1.0

Scenario Total Cost: $161.79

Scenario Cost/Unit: $161.79

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Skidsteer, 80 HP	933	Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$59.94	1	$59.94
Chainsaw	937	Equipment and power unit costs. Labor not included.	Hours	$7.00	1	$7.00
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	3	$69.54
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	1	$25.31

Practice: 656 - Constructed Wetland

Scenario #1 - Small less than 0.1 ac

Scenario Description:

This practice scenario includes the basic earthwork and native and/or organic wetland vegetation needed to create a constructed wetland to treat contaminated agricultural runoff for a small site (i.e. <0.1 ac). All other components, such as water control structures, dikes or upstream sediment basins, must be paid for under facilitating practices. Soil, water and tissue sampling are required. The purpose of the practice is to address resource concerns related to water quality degradation due to excess nutrient and pathogens. Associated practices: Structure for Water Control (587); Sediment Basin (350); Dike (356); Pond Sealing or Lining, Compacted Clay Treatment (521D); Pond Sealing or Lining, Flexible Membrane (521A); Fence (382); Grade Stabilization Structure (410); Pumping Plant (533); Waste Transfer (634)

Before Situation:

Contaminated agricultural runoff causes excess ponding and/or water quality degradation.

After Situation:

A 2000 sq foot constructed wetland (i.e. 20' x 100') will be constructed with an average 18" depth. Only the earthwork and wetland vegetation are considered in this scenario. Any structures or sediment basins will be designed under a separate practice. The constructed wetland treats the effluent by reducing excess nutrients and adding oxygen through wetland plants and functions before the effluent is transported to a waste storage facility or discharged off site, if permitted by regulation.

Feature Measure: Area of Constructed Wetland

Scenario Unit: Square Feet

Scenario Typical Size: 2,000.0

Scenario Total Cost: $1,327.29

Scenario Cost/Unit: $0.66

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Clearing and Grubbing	40	Clearing and Grubbing, includes materials, equipment and labor	Acres	$304.62	0.05	$15.23
Stripping and stockpiling, topsoil	1199	Stripping and stockpiling of topsoil adjacent to stripping area. Includes equipment and labor.	Cubic Yards	$0.92	37	$34.04
Excavation, common earth, small equipment, 50 ft	1220	Bulk excavation of common earth with dozer <100 HP with average push distance of 50 feet. Includes equipment and labor.	Cubic Yards	$2.26	74	$167.24
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	4	$92.72
Materials						
Test, Soil Test, Standard	299	Includes materials, shiping, labor, and equipment costs.	Each	$12.70	2	$25.40
Test, Plant Tissue Test	301	Tissue analysis for crops. Includes materials and shipping only.	Each	$23.40	1	$23.40
Test, Standard Water Test, Well Water	309	Well Water Suitability test. Includes materials and shipping only.	Each	$48.39	8	$387.12
Native Aquatic Plants, Emergent or Submerged	2336	Native aquatic emergent or submerged. All required materials for establishing vegetation. Includes material and shipping.	Each	$1.01	325	$328.25
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 656 - Constructed Wetland

Scenario #3 - Large greater than 0.5 ac

Scenario Description:

This practice scenario includes the basic earthwork and native and/or organic wetland vegetation needed to create a constructed wetland to treat contaminated agricultural runoff for a large site (i.e. >0.5 ac). All other components, such as water control structures, dikes or upstream sediment basins, must be paid for under facilitating practices. Soil, water and tissue sampling are required. The purpose of the practice is to address resource concerns related to water quality degradation due to excess nutrient and pathogens. Associated practices: Structure for Water Control (587); Sediment Basin (350); Dike (356); Pond Sealing or Lining, Compacted Clay Treatment (521D); Pond Sealing or Lining, Flexible Membrane (521A); Fence (382); Grade Stabilization Structure (410); Pumping Plant (533); Waste Transfer (634)

Before Situation:

Contaminated agricultural runoff causes excess ponding and/or water quality degradation.

After Situation:

A 1 acre constructed wetland (i.e. 95' x 460') will be constructed with an average 18" depth. Only the earthwork and wetland vegetation are considered in this scenario. Any structures or sediment basins will be designed under a separate practice. The constructed wetland is sited near the property boundary, but still takes cropland out of production (1/2 wetland acreage). The constructed wetland treats the effluent by reducing excess nutrients and adding oxygen through wetland plants and functions before the effluent is transported to a waste storage facility or discharged off site, if permitted by regulation.

Feature Measure: Area of Constructed Wetland

Scenario Unit: Acres

Scenario Typical Size: 1.0

Scenario Total Cost: $9,896.36

Scenario Cost/Unit: $9,896.36

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Clearing and Grubbing	40	Clearing and Grubbing, includes materials, equipment and labor	Acres	$304.62	1	$304.62
Stripping and stockpiling, topsoil	1199	Stripping and stockpiling of topsoil adjacent to stripping area. Includes equipment and labor.	Cubic Yards	$0.92	809	$744.28
Excavation, common earth, small equipment, 50 ft	1220	Bulk excavation of common earth with dozer <100 HP with average push distance of 50 feet. Includes equipment and labor.	Cubic Yards	$2.26	1619	$3,658.94
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	37	$857.66
Materials						
Test, Soil Test, Standard	299	Includes materials, shiping, labor, and equipment costs.	Each	$12.70	2	$25.40
Test, Plant Tissue Test	301	Tissue analysis for crops. Includes materials and shipping only.	Each	$23.40	1	$23.40
Test, Standard Water Test, Well Water	309	Well Water Suitability test. Includes materials and shipping only.	Each	$48.39	8	$387.12
Native Aquatic Plants, Emergent or Submerged	2336	Native aquatic emergent or submerged. All required materials for establishing vegetation. Includes material and shipping.	Each	$1.01	3605	$3,641.05
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 657 - Wetland Restoration

Scenario #1 - Mineral Flat

Scenario Description:

A Mineral Flat wetland is to be restored. The tract size is 160 Acres consists of surface saturated soils interspersed with shallow depressions that are not depressional class HGM wetlands. The wetland size is also 160 acres. Resource Concerns are: 4-SOIL QUALITY DEGRADATION - Organic matter depletion, 11- WATER QUALITY DEGRADATION - Excess nutrients in surface and ground waters, 12 - WATER QUALITY DEGRADATION - Pesticides transported to surface and ground waters, 16 - WATER QUALITY DEGRADATION - Excessive sediment in surface waters, 18 - DEGRADED PLANT CONDITION - Undesirable plant productivity and health, 19 - DEGRADED PLANT CONDITION, Inadequate strucuture and composition, 22- INADEQUATE HABITAT FOR FISH AND WILDLIFE - Habitat degradation.

Before Situation:

The site has been drained with a tile drain system. A suitable seed bank exists for natural regeneration to re-establish hydrophytic vegetation. The site is in agricultural production.

After Situation:

The drain tiles have been rendered non-functional by excavating 50 foot lengths of tile mains and laterals in 24 separate locations, and backfilling with excavated earth, which is compacted with the excavator bucket. There are no facilitating practices. Restoration of hydrology and plant community functions will improve the WATER QUALITY and DEGRADED PLANT CONDITION concerns listed above. The hydrologic and vegetative practices will address the SOIL QUALITY DEGRADATION and INADEQUATE HABITAT FOR FISH AND WILDLIFE concerns.

Feature Measure: Acres of Tract

Scenario Unit: Acres

Scenario Typical Size: 160.0

Scenario Total Cost: $2,334.45

Scenario Cost/Unit: $14.59

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Hydraulic Excavator, .5 CY	930	Track mounted hydraulic excavator with bucket capacity range of 0.3 to 0.8 CY. Equipment and power unit costs. Labor not included.	Hours	$61.38	24	$1,473.12
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	24	$607.44
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 657 - Wetland Restoration

Scenario #2 - Riverine Levee Removal and Floodplain Features

Scenario Description:

A Riverine HGM tract on a large floodplain is to be restored. It has been converted to agricultural production by surface ditching and clearing of woody vegetation. The size of the tract is 100 acres. The wetland extent is 60 acres, and 40 acres are adjacent non-wetland. Resource Concerns are: 4-SOIL QUALITY DEGRADATION - Organic matter depletion, 11- WATER QUALITY DEGRADATION - Excess nutrients in surface and ground waters, 12 - WATER QUALITY DEGRADATION - Pesticides transported to surface and ground waters, 16 - WATER QUALITY DEGRADATION - Excessive sediment in surface waters, 18 - DEGRADED PLANT CONDITION - Undesirable plant productivity and health, 19 - DEGRADED PLANT CONDITION, Inadequate strucuture and composition, 22- INADEQUATE HABITAT FOR FISH AND WILDLIFE - Habitat degradation.

Before Situation:

A levee prevents floodwater from entering the tract. The original cover was forest. The site is drained by surface ditches which collect surface water and direct it to the river through a flap gate structure. The site has been completely cleared, and no suitable adjacent seedwall exists for natural regeneration of forest species. The lateral connectivity between the channel and floodplain has been altered by construction of levees along the reach.

After Situation:

The hydrology of the site is restored with the installation of ditch plugs, and the excavation of macrotopographic features with an average depth of 6" over 30% of the wetland area. Excavated spoil is placed adjacent to the features on the wetland and adjacent non-wetland area with a maximum depth of 24 inches. The levee has been breached at the upstream and downstream ends of the tract reach, restoring dynamic stream flooding. The breach length is 150 feet long at both locations. Both the wetland and non-wetland areas are planted with a Bottomland Hardwood species mix. The levee breaches are armored with rock riprap. Facilitating practices include Grade Stabilization Structure and Tree and Shrub Planting. Restoration of hydrology and plant community functions will improve the WATER QUALITY and DEGRADED PLANT CONDITION concerns listed above. The hydrologic and vegetative practices will address the SOIL QUALITY DEGRADATION and INADEQUATE HABITAT FOR FISH AND WILDLIFE concerns.

Feature Measure: Acres of Tract

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $38,459.05

Scenario Cost/Unit: $384.59

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Excavation, Common Earth, side cast, small equipment	48	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic Yards	$2.24	16520	$37,004.80
Mobilization						
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$484.75	3	$1,454.25

Practice: 657 - Wetland Restoration

Scenario #3 - Depression Sediment Removal and Ditch Plug

Scenario Description:

A Depressional HGM class wetland is to be restored. The tract size is 15 acres, and the actual wetland size is 10 acres. The site is a recharge depression, fed only from surface runoff. Resource Concerns are: 4-SOIL QUALITY DEGRADATION - Organic matter depletion, 11- WATER QUALITY DEGRADATION - Excess nutrients in surface and ground waters, 12 - WATER QUALITY DEGRADATION - Pesticides transported to surface and ground waters, 16 - WATER QUALITY DEGRADATION - Excessive sediment in surface waters, 18 - DEGRADED PLANT CONDITION - Undesirable plant productivity and health, 19 - DEGRADED PLANT CONDITION, Inadequate strucuture and composition, 22- INADEQUATE HABITAT FOR FISH AND WILDLIFE - Habitat degradation.

Before Situation:

The wetland has been converted to agricultural production, and the tract drained with a surface ditch. The ditch is 4' average depth, and 12 feet average width. The wetland receives surface runoff from an adjacent upland watershed, and ponds water on a shallow perched layer. The watershed has been converted from native to agricultural landuse, and the resultant soil erosion has deposited 6" of sediment in the bottom of the depression.

After Situation:

The ditch has been plugged by the installation of a 50' long section of compacted clay fill, and the deposition has been removed down to the original topsoil layer. A herbaceous plant community has been seeded. Facilitative practices include Conservation Cover. Restoration of hydrology and plant community functions will improve the WATER QUALITY and DEGRADED PLANT CONDITION concerns listed above. The hydrologic and vegetative practices will address the SOIL QUALITY DEGRADATION and INADEQUATE HABITAT FOR FISH AND WILDLIFE concerns.

Feature Measure: Acres of Tract

Scenario Unit: Acres

Scenario Typical Size: 15.0

Scenario Total Cost: $19,432.96

Scenario Cost/Unit: $1,295.53

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Excavation, Common Earth, side cast, small equipment	48	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic Yards	$2.24	8067	$18,070.08
Earthfill, Roller Compacted	49	Earthfill, roller or machine compacted, includes equipment and labor	Cubic Yards	$4.42	89	$393.38
Mobilization						
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$484.75	2	$969.50

Practice: 657 - Wetland Restoration

Scenario #4 - Estuarine Fringe Levee Removal

Scenario Description:

An Estuarine Fringe HGM landscape is to be restored. The wetland is subject to tidally induced water level fluctuations. The tract size is 120 acres, and the wetland area is 100 acres. Resource Concerns are: 4-SOIL QUALITY DEGRADATION - Organic matter depletion, 11- WATER QUALITY DEGRADATION - Excess nutrients in surface and ground waters, 12 - WATER QUALITY DEGRADATION - Pesticides transported to surface and ground waters, 16 - WATER QUALITY DEGRADATION - Excessive sediment in surface waters, 18 - DEGRADED PLANT CONDITION - Undesirable plant productivity and health, 19 - DEGRADED PLANT CONDITION, Inadequate strucuture and composition, 22- INADEQUATE HABITAT FOR FISH AND WILDLIFE - Habitat degradation.

Before Situation:

The wetland has been converted to agricultural production by construction of a dike to prevent tidal flows. The dike has a culvert with a flapgate to allow surface water to flow out, but prevents tide water from entering. The dike is 7 feet high above the current marsh surface. The dike has side slopes of 3:1, with a 12 foot top. A suitable seedbank exists for natural regeneration of the original plant community. The soils are organic, and loss of hydrology has caused the land surface to subside 3 feet due to aerobic decomposition of organic matter (mineralization).

After Situation:

The dike has been breached in 4 locations, corresponding to the number of original inlet channels. The breach locations have 8 foot long steel sheet pile Structures for Water Control installed to prevent tidal surges from causing serious erosion on the subsided land surface. The original flap gate culvert has been removed. The dike is 4 feet higher than the weir crests, so the excavations are 4 feet by 8 feet long, with 3:1 side slopes. The culvert has been removed and salvaged by the landowner. Facilitating practices are Structure for Water Control. Restoration of hydrology and plant community functions will improve the WATER QUALITY and DEGRADED PLANT CONDITION concerns listed above. The hydrologic and vegetative practices will address the SOIL QUALITY DEGRADATION and INADEQUATE HABITAT FOR FISH AND WILDLIFE concerns.

Feature Measure: Acres of Tract

Scenario Unit: Acres

Scenario Typical Size: 120.0

Scenario Total Cost: $2,090.41

Scenario Cost/Unit: $17.42

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Excavation, Common Earth, side cast, small equipment	48	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic Yards	$2.24	284	$636.16
Mobilization						
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$484.75	3	$1,454.25

Practice: 657 - Wetland Restoration

Scenario #5 - Riverine Channel and Floodplain Restoration

Scenario Description:

A Riverine HGM landscape on a small stream on a low stream order riparian landscape has been converted to agricultural production. The stream channel has degraded. The reach is 1500 feet in length, and the tract size is 15 acres. The wetland area is 10 acres. Resource Concerns are: 4-SOIL QUALITY DEGRADATION - Organic matter depletion, 11- WATER QUALITY DEGRADATION - Excess nutrients in surface and ground waters, 12 - WATER QUALITY DEGRADATION - Pesticides transported to surface and ground waters, 16 - WATER QUALITY DEGRADATION - Excessive sediment in surface waters, 18 - DEGRADED PLANT CONDITION - Undesirable plant productivity and health, 19 - DEGRADED PLANT CONDITION, Inadequate strucuture and composition, 22- INADEQUATE HABITAT FOR FISH AND WILDLIFE - Habitat degradation.

Before Situation:

Channel incision has broken the lateral connectivity between the stream and floodplain. The coversion to cropland was accompanied by filling and leveling of backswamp, side channel, and oxbow features which formerly ponded water or exposed the floodplain groundwater table. The site no longer has access to floodwater or water surface profile supported groundwater. No suitable seed bank exists for natural regeneration of the original hydrophytic plant community, either in the channel, or on the floodplain.

After Situation:

The hydrology of the site is restored by the installation of a series of rock check structures to raise the stream water surface profile. Floodplain macrotopographic features replicating the original side channels, oxbows, and backswamps are constructed by excavation. Spoil is placed adjacent to the excavations to replicate natural depositional features. The average depth of the excavated features is 2 feet, and the surface area of the excavations is 25% of the tract size. The eroding stream bank is stabilized with soil bio-engineering features, and fish habitat improvement measures are installed in the channel. The tract is seeded to appropriate hydrophytic and upland vegetation, both woody and herbaceous. Facilitating practices are Streambank and Shoreline protection, Structure for Water Control, Conservation Cover, Tree/Shrub Establishment, and Stream Habitat Improvement and Management. Restoration of hydrology and plant community functions will improve the WATER QUALITY and DEGRADED PLANT CONDITION concerns listed above. The hydrologic and vegetative practices will address the SOIL QUALITY DEGRADATION and INADEQUATE HABITAT FOR FISH AND WILDLIFE concerns.

Feature Measure: Acres of Tract

Scenario Unit: Acres

Scenario Typical Size: 15.0

Scenario Total Cost: $7,745.50

Scenario Cost/Unit: $516.37

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Excavation, Common Earth, side cast, small equipment	48	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic Yards	$2.24	3025	$6,776.00
Mobilization						
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$484.75	2	$969.50

Practice: 657 - Wetland Restoration

Scenario #6 - Aquaculture Pond Levee Breach

Scenario Description:

Levee Breach - minimum 50 ft. base with 6:1 side slope (includes mobilization, equipment and labor to cut breach and spread spoil along levee). An Aquaculture Pond tract on a large floodplain is to be restored to a wetland and reconnected to the floodplain. It has been converted to aquacultural production by clearing of woody vegetation, land leveling and building levees. The total levee breach is 500 feet. Resource Concerns are: 19 - DEGRADED PLANT CONDITION, Inadequate strucuture and composition, 22- INADEQUATE HABITAT FOR FISH AND WILDLIFE - Habitat degradation.

Before Situation:

Levee construction for aquaculture production has reduced floodplain size and eliminated floodplain function in impacted area. The coversion to aquaculture was achieved by filling and leveling of backswamp, side channel, and/or oxbow features which formerly ponded water, provided floodplain storage, and/or provided floodplain filtering. The site no longer has access to floodwater and does not function as part of the floodplain.

After Situation:

A minimum breach of 50 feet at the base (varying top widths) will be used to allow the floodplain hydrologic access into and out of the existing aquaculture pond bottoms in order to restore floodplain wetland functions. Levee breaches will be installed in sizes and amounts where needed to restore floodplain and wetland function. Levee breaches are typically installed with 6:1 side slopes to provide easy maintenance and deter animal burrowing. Bottom widths are wide (min. 50') to allow adequate floodplain function, maintenance, and deter beaver dam activity. Breaches are typically installed with heavy euipment to address the resource problem of impaired hydrological function.

Feature Measure: <Unknown>

Scenario Unit: Each

Scenario Typical Size: 8.0

Scenario Total Cost: $11,835.64

Scenario Cost/Unit: $1,479.46

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Earthfill, Roller Compacted	49	Earthfill, roller or machine compacted, includes equipment and labor	Cubic Yards	$4.42	945	$4,176.90
Excavation, clay, large equipment, 1500 ft	1217	Bulk excavation of clay with scrapers with average haul distance of 1500 feet. Includes equipment and labor.	Cubic Yards	$5.92	945	$5,594.40
Labor						
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	3	$125.34
Mobilization						
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$484.75	4	$1,939.00

Practice: 657 - Wetland Restoration

Scenario #7 - Levee Breach _ DS

Scenario Description:

Levee Breach - minimum 50 ft. base with 6:1 side slope (includes mobilization, equipment and labor to cut breach and spread spoil along levee). A levee on a large floodplain is to be breached to restore a wetland. It has been converted to agricultural production by clearing of woody vegetation, land leveling and building levees. The levee size is 1000 feet. Resource Concerns are: 19 - DEGRADED PLANT CONDITION, Inadequate strucuture and composition, 22- INADEQUATE HABITAT FOR FISH AND WILDLIFE - Habitat degradation.

Before Situation:

This practice will be applied on existing levees impacting the restoration of the hydrological functions of wetlands.

After Situation:

A minimum breach of 50 feet will be used to restore wetland function. This is typically installed with heavy euipment to address the resource problem of impaired hydrological function.

Feature Measure: number of breaches

Scenario Unit: Each

Scenario Typical Size: 1.0

Scenario Total Cost: $2,634.46

Scenario Cost/Unit: $2,634.46

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Dozer, 140 HP	927	Track mounted Dozer with horsepower range of 125 to 160. Equipment and power unit costs. Labor not included.	Hours	$97.92	12	$1,175.04
Labor						
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	12	$322.80
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	4	$167.12
Mobilization						
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$484.75	2	$969.50

Practice: 657 - Wetland Restoration

Scenario #8 - Levee Demolition - DS

Scenario Description:

Demolition of Levee - 10 ft. top and 2:1 side slope. A levee on a large floodplain is to be demolished to restore a wetland. It has been converted to agricultural production by clearing of woody vegetation, land leveling and building levees. The levee size is 1000 feet. Resource Concerns are: 19 - DEGRADED PLANT CONDITION, Inadequate strucuture and composition, 22- INADEQUATE HABITAT FOR FISH AND WILDLIFE - Habitat degradation.

Before Situation:

This practice will be applied by removing existing levees which impede the restoration of the hydrological functions of wetlands.

After Situation:

This is typically installed with heavy euipment to address the resource problem of impaired hydrological function.

Feature Measure: 1000 ft of levee

Scenario Unit: Each

Scenario Typical Size: 1.0

Scenario Total Cost: $10,598.74

Scenario Cost/Unit: $10,598.74

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Backhoe, 80 HP	926	Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$31.57	24	$757.68
Dozer, 105 HP	1320	Track mounted Dozer with horsepower range of 90 to 125. Equipment and power unit costs. Labor not included.	Hours	$86.06	24	$2,065.44
Truck, dump, 8 CY	1401	Dump truck for moving bulk material. Typically capacity is 12 ton or 8 cubic yards. Includes equipment only.	Hours	$54.74	48	$2,627.52
Labor						
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	96	$2,582.40
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	15	$626.70
Mobilization						
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$484.75	4	$1,939.00

Practice: 657 - Wetland Restoration

Scenario #9 - Microhydrology - dump spoil - DS

Scenario Description:

Pond/Serpentine excavation and dumping within 100 ft., creating mound from spoil (typically 1.2 acre pond or 750 ft. serpentine). Serpentine typical size is 50' bottom, 3:1 s/s 3' deep, yeilding 4916 c.y. of spoil.

Before Situation:

This practice is typically conducted on hydrologically impaired degraded wetlands where slough type habitat has been removed.

After Situation:

This is typically installed with heavy euipment to address the resource problem of impaired hydrological function and lacking wetland habatit.

Feature Measure: 750' of serpentine

Scenario Unit: Acres

Scenario Typical Size: 1.2

Scenario Total Cost: $8,090.04

Scenario Cost/Unit: $6,741.70

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Backhoe, 80 HP	926	Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$31.57	38	$1,199.66
Dozer, 80 HP	929	Track mounted Dozer with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$54.51	38	$2,071.38
Labor						
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	76	$2,044.40
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	20	$835.60
Mobilization						
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$484.75	4	$1,939.00

Practice: 657 - Wetland Restoration

Scenario #10 - Microhydrology haul spoil - DS

Scenario Description:

Pond/Serpentine excavation and dumping greater than 200 ft., creating mound from spoil (typically 1.2 acre pond or 750 ft. serpentine). Serpentine typical size is 50' bottom, 3:1 s/s 3' deep, yeilding 4916 c.y. of spoil.

Before Situation:

This practice is typically conducted on hydrologically impaired degraded wetlands where slough type habitat has been removed.

After Situation:

This is typically installed with heavy euipment to address the resource problem of impaired hydrological function and lacking wetland habatit.

Feature Measure: 750' of serpentine

Scenario Unit: Acres

Scenario Typical Size: 1.2

Scenario Total Cost: $10,685.73

Scenario Cost/Unit: $8,904.78

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Backhoe, 80 HP	926	Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$31.57	38	$1,199.66
Dozer, 80 HP	929	Track mounted Dozer with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$54.51	25	$1,362.75
Truck, dump, 8 CY	1401	Dump truck for moving bulk material. Typically capacity is 12 ton or 8 cubic yards. Includes equipment only.	Hours	$54.74	38	$2,080.12
Labor						
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	101	$2,716.90
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	10	$417.80
Mobilization						
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$484.75	6	$2,908.50

Practice: 658 - Wetland Creation

Scenario #1 - Wetland Creation, Wildlife Pond

Scenario Description:

A wetland is created on a flat mineral upland at a location where surface runoff may be intercepted and ponded by excavation. Resource concerns are 22 - INDEQUATE HABITAT FOR FISH AND WILDLIFE - Habitat degradation.

Before Situation:

The site is in cropland on an upland, non floodplain site (interfluve).

After Situation:

An excavation with an average depth of 12" has created a shallow depression in a broad swale which intercepts surface runoff. The excavated material has been spread on adjacent areas. The INADEQUATE HABITAT FOR FISH AND WILDLIFE resource concern has been addressed with the provision of seasonal open water for terrestrial, aquatic, and waterfowl species.

Feature Measure: Acres of Wetland

Scenario Unit: Acres

Scenario Typical Size: 5.0

Scenario Total Cost: $19,039.58

Scenario Cost/Unit: $3,807.92

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Excavation, Common Earth, side cast, small equipment	48	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic Yards	$2.24	8067	$18,070.08
Mobilization						
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$484.75	2	$969.50

Practice: 659 - Wetland Enhancement

Scenario #1 - Riverine Channel and Floodplain Restoration

Scenario Description:

A Riverine HGM landscape on a small stream on a low stream order riparian landscape has been converted to agricultural production. The stream channel has degraded. The reach is 1500 feet in length, and the tract size is 15 acres. The wetland area is 10 acres. Resource Concerns are: 4-SOIL QUALITY DEGRADATION - Organic matter depletion, 11- WATER QUALITY DEGRADATION - Excess nutrients in surface and ground waters, 12 - WATER QUALITY DEGRADATION - Pesticides transported to surface and ground waters, 16 - WATER QUALITY DEGRADATION - Excessive sediment in surface waters, 18 - DEGRADED PLANT CONDITION - Undesirable plant productivity and health, 19 - DEGRADED PLANT CONDITION, Inadequate strucuture and composition, 22- INADEQUATE HABITAT FOR FISH AND WILDLIFE - Habitat degradation.

Before Situation:

Channel incision has broken the lateral connectivity between the stream and floodplain. The coversion to cropland was accompanied by filling and leveling of backswamp, side channel, and oxbow features which formerly ponded water or exposed the floodplain groundwater table. The site no longer has access to floodwater or water surface profile supported groundwater. No suitable seed bank exists for natural regeneration of the original hydrophytic plant community, either in the channel, or on the floodplain.

After Situation:

The hydrology of the site is restored by the installation of a series of rock check structures to raise the stream water surface profile. Floodplain macrotopographic features replicating the original side channels, oxbows, and backswamps are constructed by excavation. Spoil is placed adjacent to the excavations to replicate natural depositional features. The average depth of the excavated features is 2 feet, and the surface area of the excavations is 25% of the tract size. The eroding stream bank is stabilized with soil bio-engineering features, and fish habitat improvement measures are installed in the channel. The tract is seeded to appropriate hydrophytic and upland vegetation, both woody and herbaceous. Facilitating practices are Streambank and Shoreline protection, Structure for Water Control, Conservation Cover, Tree/Shrub Establishment, and Stream Habitat Improvement and Management. Restoration of hydrology and plant community functions will improve the WATER QUALITY and DEGRADED PLANT CONDITION concerns listed above. The hydrologic and vegetative practices will address the SOIL QUALITY DEGRADATION and INADEQUATE HABITAT FOR FISH AND WILDLIFE concerns.

Feature Measure: Acres of Tract

Scenario Unit: Acres

Scenario Typical Size: 15.0

Scenario Total Cost: $7,745.50

Scenario Cost/Unit: $516.37

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Excavation, Common Earth, side cast, small equipment	48	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic Yards	$2.24	3025	$6,776.00
Mobilization						
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$484.75	2	$969.50

Practice: 660 - Tree/Shrub Pruning

Scenario #1 - One step to 18ft

Scenario Description:

Pruning is done by hand with hand tools, pole saws or with gas pole saw. 100 Crop trees/acre are identified for pruning. To improve the quality of the stem wood and increase grass production in sylvopasture system, branches are pruned from the trees. Trees are pruned to a height to allow the bottom 16' ft log to be free of branches and leave room for a stump (approx. 18').

Before Situation:

Trees are retaining limbs mostly along the mid to upper section of the tree bole, reducing quality and grass production. Lower branches may have naturally self pruned to differing heights. Pruning height is at least to eighteen (18) feet above the ground, leaving 40% crown. Degrade plant condition- undesirable plant productivity and health is the resource concern.

After Situation:

Typical Sylvopasture system of 20 acres is maintained. Trees are pruned to the desirable height of 18 feet, but leaving 40% crown. Pruned branches are treated if they are a hazard, see Woody Residue Treatment standard or Prescribed fire.

Feature Measure: area of treatment

Scenario Unit: Acres

Scenario Typical Size: 20.0

Scenario Total Cost: $10,442.36

Scenario Cost/Unit: $522.12

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	48	$1,139.52
Pruning tools, hand tools	1318	Pruning tools, hand tools, shears, loppers, pole saw, handsaw. Material costs only. Labor not included.	Hours	$2.22	80	$177.60
Pruning tool, pole saw	1319	Gasoline powered pole chainsaw. Labor not included.	Hours	$8.55	160	$1,368.00
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	240	$5,563.20
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	48	$2,005.44
Materials						
Tree Marking Paint	313	Trees to be cut through tree marking are physically identified through the application of paint on the tree. Typically one quart of paint is used to mark one acre of trees. Includes materials and shipping only.	Acres	$9.43	20	$188.60

Practice: 660 - Tree/Shrub Pruning

Scenario #2 - First Stage to 10ft

Scenario Description:

Pruning is done by hand with chain saws, tree loppers, hand shears, or hand saws. 100 crop trees/acre are identified for pruning. To improve the quality of the stem wood and increase sunlight for grass development in sylvopasture system, branches are pruned from the trees. Trees are not big enough to allow pruning in one step. Plan to prune in two stages. First stage is to prune approximtely 8 - 10 ft with the idea to prune the remainder of the desired 18 ft at a later date.

Before Situation:

Trees are retaining lower limbs along the entire tree bole, reducing wood quality and inhibiting grass growth. Pruning height will be based on overall stand diameter and height, leaving 40% crown. Stand has been thinned and crop trees are identified for pruning. Degrade plant condition- undesirable plant productivity and health is the resource concern.

After Situation:

Typical Sylvopasture system of 20 acres is maintained. Trees are pruned to the desirable height of 8-10 feet, but leaving 40% crown. Pruned branches are treated if they are a hazard, see Woody Residue Treatment standard or Prescribed fire.

Feature Measure: area of treatment

Scenario Unit: Acres

Scenario Typical Size: 20.0

Scenario Total Cost: $3,522.12

Scenario Cost/Unit: $176.11

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	16	$379.84
Pruning tools, hand tools	1318	Pruning tools, hand tools, shears, loppers, pole saw, handsaw. Material costs only. Labor not included.	Hours	$2.22	40	$88.80
Pruning tool, pole saw	1319	Gasoline powered pole chainsaw. Labor not included.	Hours	$8.55	40	$342.00
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	80	$1,854.40
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	16	$668.48
Materials						
Tree Marking Paint	313	Trees to be cut through tree marking are physically identified through the application of paint on the tree. Typically one quart of paint is used to mark one acre of trees. Includes materials and shipping only.	Acres	$9.43	20	$188.60

Practice: 660 - Tree/Shrub Pruning

Scenario #3 - Second Stage 10ft to 18ft

Scenario Description:

Pruning is done by hand with pole saws or with gas pole saw. 100 Crop trees/acre are identified for pruning. To improve the quality of the stem wood and increase grass production in sylvopasture system, branches are pruned from the trees. Second stage is to prune remainder of the unpruned branches left by the first stage of pruning to the desired 18 ft. (approx. 10' to 18').

Before Situation:

Trees are retaining limbs mostly along the mid to upper section of the tree bole, reducing quality and grass production. Lower branches (0-9 feet) may have already been pruned, have naturally self pruned to differing heights. Pruning height is at least to eighteen (18) feet above the ground, leaving 40% crown. Degrade plant condition-undesirable plant productivity and health is the resource concern.

After Situation:

Typical Sylvopasture system of 20 acres is maintained. Trees are pruned to the desirable height of 18 feet, but leaving 40% crown. Pruned branches are treated if they are a hazard, see Woody Residue Treatment standard or Prescribed fire.

Feature Measure: area of treatment

Scenario Unit: Acres

Scenario Typical Size: 20.0

Scenario Total Cost: $8,966.80

Scenario Cost/Unit: $448.34

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	40	$949.60
Pruning tool, pole saw	1319	Gasoline powered pole chainsaw. Labor not included.	Hours	$8.55	200	$1,710.00
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	200	$4,636.00
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	40	$1,671.20

Practice: 666 - Forest Stand Improvement

Scenario #1 - Single stem - Hand tools

Scenario Description:

Adjust species composition and/or density of a stand of trees to meet objectives. The operation is supervised and carried out using hand tools such as chainsaws, weed eaters with saw blades, or machetes. Species that do NOT sprout are targeted (i.e. cedar and pine). This scenerio is NOT appropriate to target species that sprout. Resource concerns can include: Forage Quality and Palatability, Noxious and Invasive Plants, Plants not adapted or suited, Productivity, Health and Vigor, Wildfire Hazard, Inadequate Cover/Shelter, Inadequate Quantities and Quality of Feed and Forage, Excessive Greenhouse Gas - CO2 (carbon dioxide), or Classic Gully.

Before Situation:

The density and/or species composition of a stand of trees is inconsistent with desired objectives. The stand could have poor health and vigor because of overstocking or undesirable species to be compatible with objectives for timber, wildlife, or aesthetics.

After Situation:

Density and/or species composition of the stand is consistent with desired objectives. Stand will have good health and vigor with desirable species.

Feature Measure: Area treated

Scenario Unit: Acres

Scenario Typical Size: 40.0

Scenario Total Cost: $11,250.35

Scenario Cost/Unit: $281.26

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Chainsaw	937	Equipment and power unit costs. Labor not included.	Hours	$7.00	125	$875.00
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	125	$3,756.25
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	125	$2,897.50
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	40	$3,721.60

Practice: 666 - Forest Stand Improvement

Scenario #2 - Single Stem - Chemical

Scenario Description:

Adjust species composition and/or density of a stand of trees to meet objectives. The operation is carried out using hand tools with chemical treatment such as cut stump treatment, hack and squirt, basal spray. or back pack spray. Species that sprout are targeted (i.e. oak, hickory, elm, etc.). This scenerio is NOT appropriate to target species that DO NOT sprout. Resource concerns can include: Forage Quality and Palatability, Noxious and Invasive Plants, Plants not adapted or suited, Productivity, Health and Vigor, Wildfire Hazard, Inadequate Cover/Shelter, Inadequate Quantities and Quality of Feed and Forage, Excessive Greenhouse Gas - CO2 (carbon dioxide), or Classic Gully.

Before Situation:

The existing condition of the stand cannot meet the landowners objectives because the composition consists of unwanted species and the stocking exceeds the recommended level.

After Situation:

The composition of the stand can meet the landowners objectives and the growth, condition and quality of the remaining trees are improved.

Feature Measure: Acres treated

Scenario Unit: Acres

Scenario Typical Size: 40.0

Scenario Total Cost: $8,062.48

Scenario Cost/Unit: $201.56

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Chemical, spot treatment, single stem application	964	Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included.	Hours	$68.31	96	$6,557.76
Labor						
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	8	$744.32
Materials						
Herbicide, Picloram	337	Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$19.01	40	$760.40

Practice: 666 - Forest Stand Improvement

Scenario #3 - Chemical-Ground-Light Equipment

Scenario Description:

Using ground applied herbicides to release young desirable trees from competing and/or overtopping vegetation using ground-based machinery (typical farm equipment). Typical sites include abandoned fields, pastures, or agricultural fields. Resource concerns can include: Forage Quality and Palatability, Noxious and Invasive Plants, Plants not adapted or suited, Productivity, Health and Vigor, Wildfire Hazard, Inadequate Cover/Shelter, Inadequate Quantities and Quality of Feed and Forage, Excessive Greenhouse Gas - CO2 (carbon dioxide), or Classic Gully. Supervisor has received adequate training for this scenario.

Before Situation:

An adequately stocked stand of desirable species is not meeting objective due to undesirable vegetation. If left uncontrolled, undesirable vegetation will inhibit desired species. Noxious and invasive species may also be present on the site. Application of herbicides will be by ground equipment as an over-the-top spray.

After Situation:

The released stand of trees contains the composition and quality needed to meet the landowner's objectives and address the resource concerns.

Feature Measure: Acres treated

Scenario Unit: Acres

Scenario Typical Size: 40.0

Scenario Total Cost: $2,415.77

Scenario Cost/Unit: $60.39

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$6.00	40	$240.00
Labor						
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	6	$250.68
Materials						
Herbicide, Imazapyr	336	Pre and post-emergent, non-selective herbicide for control of undesirable vegetation in non-crop areas. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$39.97	40	$1,598.80
Herbicide, Surfactant	1095	Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$1.81	40	$72.40
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 666 - Forest Stand Improvement

Scenario #4 - Chemical-Ground-Heavy Equipment

Scenario Description:

Using ground applied herbicides to release young desirable trees from competing and/or overtopping vegetation using ground-based machinery (dozers or skidders and NOT typical farm equipment). Typical sites include forestland with terrain too rough and uneven or vegetation too big or thick to be sprayed with normal farm equipment. Resource concerns can include: Forage Quality and Palatability, Noxious and Invasive Plants, Plants not adapted or suited, Productivity, Health and Vigor, Wildfire Hazard, Inadequate Cover/Shelter, Inadequate Quantities and Quality of Feed and Forage, Excessive Greenhouse Gas - CO2 (carbon dioxide), or Classic Gully. Supervisor has received adequate training for this scenario.

Before Situation:

An adequately stocked stand of desirable species is not meeting objective due to undesirable vegetation. If left uncontrolled, undesirable vegetation will inhibit desired species. Noxious and invasive species may also be present on the site. Application of herbicides will be by ground equipment as an over-the-top spray.

After Situation:

The released stand of trees contains the composition and quality needed to meet the landowner's objectives and address the resource concerns.

Feature Measure: Acres treated

Scenario Unit: Acres

Scenario Typical Size: 40.0

Scenario Total Cost: $6,868.19

Scenario Cost/Unit: $171.70

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Chemical, ground application, forested land	1313	Chemical application performed by ground equipment where trees and terrain impede passage of wide boom sprayers. Utilizes forestry application methods that include heavy equipment such as skidders. Includes material, equipment, power unit and labor costs.	Acres	$109.45	40	$4,378.00
Labor						
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	8	$334.24
Materials						
Herbicide, Imazapyr	336	Pre and post-emergent, non-selective herbicide for control of undesirable vegetation in non-crop areas. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$39.97	40	$1,598.80
Herbicide, Surfactant	1095	Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$1.81	40	$72.40
Mobilization						
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$484.75	1	$484.75

Practice: 666 - Forest Stand Improvement

Scenario #5 - Chemical, Aerial

Scenario Description:

Using aerially applied chemicals to release desirable trees from competing and/or overtopping vegetation. Resource concerns can include: Forage Quality and Palatability, Noxious and Invasive Plants, Plants not adapted or suited, Productivity, Health and Vigor, Wildfire Hazard, Inadequate Cover/Shelter, Inadequate Quantities and Quality of Feed and Forage, Excessive Greenhouse Gas - CO2 (carbon dioxide), or Classic Gully. Supervisor has received adequate training for this scenario.

Before Situation:

An adequately stocked stand of desirable species and trees is not growing to its potential for the site due to severe competition from undesirable trees and brush. Releasing the desirable trees from the competition will be achieved through the application of appropriate herbicides according to label directions. Application will be by helicopter as an over-the-top spray. The work will be professionally planned and supervised.

After Situation:

The released stand of trees contains the composition and quality needed to meet the landowner's objectives and address the resource concerns.

Feature Measure: Area treated

Scenario Unit: Acres

Scenario Typical Size: 40.0

Scenario Total Cost: $3,923.80

Scenario Cost/Unit: $98.10

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Chemical, aerial application, helicopter	1991	Chemical application performed by helicopter on forest only. Includes equipment, mobilization, and labor.	Acres	$40.61	40	$1,624.40
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	8	$185.44
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	2	$83.56
Materials						
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$8.98	40	$359.20
Herbicide, Imazapyr	336	Pre and post-emergent, non-selective herbicide for control of undesirable vegetation in non-crop areas. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$39.97	40	$1,598.80
Herbicide, Surfactant	1095	Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$1.81	40	$72.40

Practice: 666 - Forest Stand Improvement

Scenario #6 - Mechanical, Light Equipment

Scenario Description:

Using light equipment (typcially tractors used in normal farming operations) to control undesirable vegetation (disk or bush hog) competing with desirable species. Resource concerns can include: Forage Quality and Palatability, Noxious and Invasive Plants, Plants not adapted or suited, Productivity, Health and Vigor, Wildfire Hazard, Inadequate Cover/Shelter, Inadequate Quantities and Quality of Feed and Forage, Excessive Greenhouse Gas - CO2 (carbon dioxide), or Classic Gully.

Before Situation:

A stand of young, desirable trees is adversely affected by competition either from undesirable species or because the stand is overstocked. The vegetation to be controlled is small enough that it can be mowed or shredded. The work can be done by mowing or shredding strips through the stand, mowing between planted rows, etc.

After Situation:

After adjusting the stocking to an acceptable level and/or controlling the competing vegetation, stand growth, condition, and overall quality is improved. In addition, wildlife habitat is improved with the resulting increase of sunlight reaching the forest floor.

Feature Measure: Area Treated

Scenario Unit: Acres

Scenario Typical Size: 40.0

Scenario Total Cost: $2,845.09

Scenario Cost/Unit: $71.13

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Mower, Bush Hog	940	Equipment and power unit costs. Labor not included.	Hours	$49.85	32	$1,595.20
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	32	$809.92
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	2	$186.08
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 666 - Forest Stand Improvement

Scenario #7 - Mechanical, Medium Equipment

Scenario Description:

Using medium equipment (usually hydroax & not typical farming equipment) to control undesirable competing vegetation that is competing with desirable species or to reduce the stocking level of a stand of desirable trees too big to be mowed with a bush hog. Resource concerns can include: Forage Quality and Palatability, Noxious and Invasive Plants, Plants not adapted or suited, Productivity, Health and Vigor, Wildfire Hazard, Inadequate Cover/Shelter, Inadequate Quantities and Quality of Feed and Forage, Excessive Greenhouse Gas - CO2 (carbon dioxide), or Classic Gully.

Before Situation:

A stand of desirable trees is adversely affected by competition either from undesirable species, cull trees, or because the stand is overstocked. The vegetation to be controlled is too large to be mowed.

After Situation:

The released stand of trees contains the composition and quality needed to meet the landowner's objectives and address the resource concerns.

Feature Measure: Area treated

Scenario Unit: Acres

Scenario Typical Size: 40.0

Scenario Total Cost: $6,806.69

Scenario Cost/Unit: $170.17

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Brush Chipper, 6 in. capacity	938	Brush Chipper, 6 inch capacity, typically 35 HP. Includes chipper and power unit. Labor not included.	Hours	$27.00	80	$2,160.00
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	20	$474.80
Labor						
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	80	$2,152.00
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	20	$835.60
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	10	$930.40
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 666 - Forest Stand Improvement

Scenario #8 - Mechanical, Heavy Equipment

Scenario Description:

Using heavy equipment (usually bull dozers, masticator, or mulcher & not typical farming equipment) to control undesirable competing vegetation that is competing with desirable species or to reduce the stocking level of a stand of desirable trees too big to be mowed. Resource concerns can include: Forage Quality and Palatability, Noxious and Invasive Plants, Plants not adapted or suited, Productivity, Health and Vigor, Wildfire Hazard, Inadequate Cover/Shelter, Inadequate Quantities and Quality of Feed and Forage, Excessive Greenhouse Gas - CO2 (carbon dioxide), or Classic Gully.

Before Situation:

A stand of desirable trees is adversely affected by competition either from undesirable species, cull trees, or because the stand is overstocked. The vegetation to be controlled is too large to be mowed or shredded. Therefore other mechanical methods such as using masticators or mulchers is necessary.

After Situation:

The released stand of trees contains the composition and quality needed to meet the landowner's objectives and address the resource concerns.

Feature Measure: Area treated

Scenario Unit: Acres

Scenario Typical Size: 40.0

Scenario Total Cost: $14,997.53

Scenario Cost/Unit: $374.94

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Mechanical cutter, chopper	943	Forestry mulcher, flail shredder, hydro axe, brush cutter, etc. Equipment and power unit costs. Labor not included.	Hours	$95.19	110	$10,470.90
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	110	$2,784.10
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	16	$1,488.64
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 666 - Forest Stand Improvement

Scenario #37 - Heavy Equipment, Mechanical Treatment

Scenario Description:

Using equipment such as a masticator or mulcher to mechanically control vegetation that competes with desirable trees and/or species, or to reduce the density of a stand of desirable trees. The trees to be retained will be marked by a forester. Resource concerns include: - Undesirable plant productivity and health; - Wildlife habitat degradation; - Wildfire hazard; and - Inadequate structure and composition.

Before Situation:

A stand of desirable trees is adversely affected by competition from undesirable species and/or trees, or because the stand is excessively dense. The vegetation to be controlled is too large to be mowed and requires mechanized equipment such as masticators or mulchers.

After Situation:

The released stand of trees has a composition and structure that satisfies landowners' objectives and addresses the resource concerns.

Feature Measure: Area treated

Scenario Unit: Acres

Scenario Typical Size: 10.0

Scenario Total Cost: $5,312.19

Scenario Cost/Unit: $531.22

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Mechanical cutter, chopper	943	Forestry mulcher, flail shredder, hydro axe, brush cutter, etc. Equipment and power unit costs. Labor not included.	Hours	$95.19	30	$2,855.70
Labor						
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	30	$807.00
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	15	$1,395.60
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 666 - Forest Stand Improvement

Scenario #51 - Patch Openings

Scenario Description:

Creating forest openings or patches may be used to naturally regenerate forest stands or create wildlife habitat diversity. The openings are created by cutting or removing undesirable tree species or removing dense groups of smaller trees. Hardwood stands may regenerate through seeds or sprouts while pine stands regenerate through seed dispersal. These openings will serve to develop desirable conditions for regeneration to occur on the site. Resource concerns include plant productivity, plant health, inadequate wildlife habitat/food/cover.

Before Situation:

The forest has a lack of acceptable growing stock, poor quality trees, a dense number of trees per acre or the presence of a few desirable trees to regenerate the stand.

After Situation:

Once the patch openings are in place, the forest will have one or more small openings that develop suitable conditions for desirable regeneration to occur on the site. Additionally, these small openings offer many positive effects such as providing a diverse habitat cover and food sources for many wildlife species.

Feature Measure: Acres

Scenario Unit: Acres

Scenario Typical Size: 5.0

Scenario Total Cost: $2,209.75

Scenario Cost/Unit: $441.95

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Dozer, 140 HP	927	Track mounted Dozer with horsepower range of 125 to 160. Equipment and power unit costs. Labor not included.	Hours	$97.92	15	$1,468.80
Labor						
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	15	$403.50
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	2	$83.56
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: 670 - Energy Efficient Lighting System

Scenario #2 - Lighting - LED

Scenario Description:

To install dimmable LEDs to replace incandescent lamps on a one-for-one basis. Light fixtures do not have to be replaced. A typical poultry house has 48 fixtures. LED requirements: minimum 6 Watt, 3700 Kelvin, dimmable, grow-out bulb; industrial grade; suitably protected from dirt accumulation. In high humidity environments or areas subject to wash down, gasketted or weatherproof housings are required to prevent corrosion and premature failure.

Before Situation:

An inefficient lighting system such as one using incandescent lamps has been identified by an on-farm energy audit.

After Situation:

More efficient lighting is provided by Light-Emitting Diode (LED) lamps in order to reduce energy use as evidenced by the energy audit.Associated practices/activities: 122-AgEMP - HQ and 374-Farmstead Energy Improvement. The resource concern is inefficient use of energy in the farm operation which increases dependence on non-renewable energy sources and can be addressed through improved energy efficiency. Any improvements are based on a Type 2 energy audit meeting the requirements of ASABE S612.

Feature Measure: Each lamp replaced

Scenario Unit: Each

Scenario Typical Size: 1.0

Scenario Total Cost: $12.63

Scenario Cost/Unit: $12.63

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	0.17	$3.94
Materials						
Lighting, bulb, LED, dimmable, minimum 450 lumens	1167	Light Emitting Diode (LED), typically 3700 Kelvin, dimmable, grow-out bulb; industrial grade; suitably protected from dirt accumulation. Materials only.	Each	$8.69	1	$8.69

Practice: 670 - Energy Efficient Lighting System

Scenario #3 - Lighting, Linear Fluorescent

Scenario Description:

The lighting system consists of a four-foot, three-lamp fixture with a single electronic ballast. The high-efficiency lighting system uses high-efficiency T8 or T5 fluorescent lamps. Associated materials for installation of replacement fixtures are included. Appropriate disposal of existing lamps, ballasts and other materials is required.

Before Situation:

Inefficient lighting (such as incandescent or T12 fluorescent tubes driven by magnetic ballasts) as evidenced by an on-farm energy audit.

After Situation:

High-efficiency lighting system which reduces energy use. The new lighting equipment will provide suitable light levels and reduce overall power requirements (kW) compared to the existing lighting system as evidenced by the energy audit. Associated practices/activities: may include 122-AgEMP - HQ and 374-Farmstead Energy Improvement. The resource concern is inefficient use of energy in the farm operation which increases dependence on non-renewable energy sources and can be addressed through improved energy efficiency. Any improvements are based on a Type 2 energy audit meeting the requirements of ASABE S612.

Feature Measure: Each fixture replaced

Scenario Unit: Each

Scenario Typical Size: 1.0

Scenario Total Cost: $30.05

Scenario Cost/Unit: $30.05

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	1	$30.05

Practice: 672 - Energy Efficient Building Envelope

Scenario #1 - Building Envelope, Attic Insulation

Scenario Description:

Install a minimum R-7 insulation in addition to existing attic or ceiling to reduce heat transfer. Increased insulation reduces seasonal heat loss and heat gain which reduces the respective need for heating and cooling equipment to operate.

Before Situation:

A poultry house with an inefficient building envelope with limited attic insulation.

After Situation:

A more effective and efficient building envelope can be created through addition of, or increased, attic insulation. Associated practices/activities: 122-AgEMP - HQ and 374-Farmstead Energy Improvement. The resource concern is inefficient use of energy in the farm operation which increases dependence on non-renewable energy sources and can be addressed through improved energy efficiency. Any improvements are based on a Type 2 energy audit meeting the requirements of ASABE S612.

Feature Measure: Area of Attic Insulated

Scenario Unit: Square Feet

Scenario Typical Size: 20,000.0

Scenario Total Cost: $6,579.58

Scenario Cost/Unit: $0.33

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	48	$1,112.64
Materials						
Insulation material, cellulose	2272	Cellulose insulation. Unit is a measurement of the in-place volume after being blown. Includes materials only.	Cubic Feet	$0.82	6667	$5,466.94

Practice: 672 - Energy Efficient Building Envelope

Scenario #2 - Building Envelope, Wall Insulation

Scenario Description:

Enclose both sidewalls and endwalls from ceiling to floor in one of two manners: 1) metal exterior, 3.5" fiberglass batts (R-11), vapor barrier, & interior plywood or OSB sheathing, or 2) closed-cell polyurethane foam application (minimum 1" thickness (R-7) of 2.5 lbs/cu.ft. or higher density, (3.0 or higher density preferred) with a form of physical protective barrier on lower 2' (may be 6 lbs/cu.ft. or higher density 1/8" thick foam, or treated lumber). Based on a 40' x 400' poultry house.

Before Situation:

A poultry house with an inefficient building envelope with limited wall insulation.

After Situation:

A more effective and efficient building envelope can be created through addition of, or increased, insulation. Associated practices/activities: may include 122-AgEMP - HQ and 374-Farmstead Energy Improvement. The resource concern is inefficient use of energy in the farm operation which increases dependence on non-renewable energy sources and can be addressed through improved energy efficiency. Any improvements are based on a Type 2 energy audit meeting the requirements of ASABE S612.

Feature Measure: Area of Wall Insulated

Scenario Unit: Square Feet

Scenario Typical Size: 4,620.0

Scenario Total Cost: $14,506.80

Scenario Cost/Unit: $3.14

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Materials						
Insulation, polyurethane, R-7, with sheathing skirt	1198	Closed-cell polyurethane foam insulation (minimum 1 inch thickness (R-7) with a protective sheeting barrier on lower 2 feet of wall height. Includes materials, equipment and labor to install.	Square Feet	$2.15	4620	$9,933.00
Insulation, Spray Foam, 1 to 3 inches	2669	Spray foam insulation, One inch increments per SF. Insulation R values 1 inch R6.5 - 1 SF, 2 inch R13, 2-SF and 3 inch R19.5, 3-SF. Includes materials, equipment and installation.	Square Feet	$0.99	4620	$4,573.80

Practice: 672 - Energy Efficient Building Envelope

Scenario #3 - Building Envelope, Sidewall Renovation

Scenario Description:

Renovate sidewalls from top of footer to eave to remove flexible curtains and construct an insulated permanent wall in one of two manners: 1) metal exterior, 3.5" fiberglass batts (R-11), vapor barrier, & interior plywood or OSB sheathing, or 2) closed-cell polyurethane foam application (minimum 1" thickness (R-7) of 2.5 lbs/cu.ft. or higher density, (3.0 or higher density preferred) with a form of physical protective barrier on lower 2' (may be 6 lbs/cu.ft. or higher density 1/8" thick foam, or treated lumber). Based on a 40' x 400' poultry house.

Before Situation:

A poultry house has plastic or flexible drop-down curtains in one or more walls. The curtains, which provide little thermal resistance, are obsolete due to changes in the ventilation scheme of the house.

After Situation:

A more effective and efficient building envelope can be created through addition of, or increased, insulation. Associated practices/activities: may include 122-AgEMP - HQ and 374-Farmstead Energy Improvement. The resource concern is inefficient use of energy in the farm operation which increases dependence on non-renewable energy sources and can be addressed through improved energy efficiency. Any improvements are based on a Type 2 energy audit meeting the requirements of ASABE S612.

Feature Measure: Area of Wall Renovated

Scenario Unit: Square Feet

Scenario Typical Size: 4,620.0

Scenario Total Cost: $21,806.40

Scenario Cost/Unit: $4.72

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Materials						
Corrugated Steel, 28 gauge	223	Corrugated or ribbed, galvanized, 28 gauge, includes fasteners, materials only.	Square Feet	$1.58	4620	$7,299.60
Insulation, polyurethane, R-7, with sheathing skirt	1198	Closed-cell polyurethane foam insulation (minimum 1 inch thickness (R-7) with a protective sheeting barrier on lower 2 feet of wall height. Includes materials, equipment and labor to install.	Square Feet	$2.15	4620	$9,933.00
Insulation, Spray Foam, 1 to 3 inches	2669	Spray foam insulation, One inch increments per SF. Insulation R values 1 inch R6.5 - 1 SF, 2 inch R13, 2-SF and 3 inch R19.5, 3-SF. Includes materials, equipment and installation.	Square Feet	$0.99	4620	$4,573.80

Practice: 672 - Energy Efficient Building Envelope

Scenario #4 - Building Envelope, Sealant, Open Truss

Scenario Description:

A typical scenario is sealing the gaps between walls, ceiling, etc. in a poultry house or greenhouse. Sealing is performed by a professional contractor, not merely use of spray foam from a can. The unit basis of payment in this scenario is each house based on 60' x 500' poultry house with an assumed need of sealant to seal 2740' linear feet of gap. (2800' = 2 x 1120' perimeter of house + 500' of ridgecap + 60' gables and random repair)

Before Situation:

An agricultural facility with an inefficient building envelope with gaps between walls, ceiling, etc. for a total of 2800 linear feet.

After Situation:

A more effective and efficient building envelope can be created through interior sealing of the exterior walls at the footer plate, eaves, ridge cap, and gable ends. The sealant reduces seasonal heat loss and heat gain due to infiltration which reduces the respective need for heating and cooling equipment to operate. Associated practices/activities: may include 122-AgEMP - HQ and 374-Farmstead Energy Improvement. The resource concern is inefficient use of energy in the farm operation which increases dependence on non-renewable energy sources and can be addressed through improved energy efficiency. Any improvements are based on a Type 2 energy audit meeting the requirements of ASABE S612.

Feature Measure: Length of House

Scenario Unit: Feet

Scenario Typical Size: 500.0

Scenario Total Cost: $4,536.00

Scenario Cost/Unit: $9.07

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Materials						
Sealant	1150	Greenhouse and building gap sealant. Performed by a professional contractor spraying the areas with an approved sealant for poultry production facilities. Includes materials, equipment and labor to install.	Feet	$1.62	2800	$4,536.00

Practice: 672 - Energy Efficient Building Envelope

Scenario #5 - Building Envelope, Sealant, Drop Ceiling

Scenario Description:

A typical scenario is sealing the gaps between walls, ceiling, footing, and other miscelaneous holes in a poultry house or greenhouse. Sealing is performed by a professional contractor, not merely use of spray foam from a can. The unit basis of payment in this scenario is each house based on 60' x 500' poultry house with an assumed need of sealant to seal 2300' linear feet of gap. (2240' = 2 x 1120' perimeter of house + 500' of ridgecap+ 60' miscelaneous repair)

Before Situation:

An agricultural facility with an inefficient building envelope with gaps between walls, ceiling, etc. for a total of 2300 linear feet.

After Situation:

A more effective and efficient building envelope can be created through interior sealing of the exterior walls at the footer plate, eaves, ridge cap, and gable ends. The sealant reduces seasonal heat loss and heat gain due to infiltration which reduces the respective need for heating and cooling equipment to operate. Associated practices/activities: may include 122-AgEMP - HQ and 374-Farmstead Energy Improvement. The resource concern is inefficient use of energy in the farm operation which increases dependence on non-renewable energy sources and can be addressed through improved energy efficiency. Any improvements are based on a Type 2 energy audit meeting the requirements of ASABE S612.

Feature Measure: Length of House

Scenario Unit: Feet

Scenario Typical Size: 500.0

Scenario Total Cost: $3,726.00

Scenario Cost/Unit: $7.45

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Materials						
Sealant	1150	Greenhouse and building gap sealant. Performed by a professional contractor spraying the areas with an approved sealant for poultry production facilities. Includes materials, equipment and labor to install.	Feet	$1.62	2300	$3,726.00

Practice: 672 - Energy Efficient Building Envelope

Scenario #8 - Building Envelope, Insulated Roll-Up Door

Scenario Description:

A typical scenario is the replacement of non-insulated rollup doors on poultry houses with insulated rollup doors. The increased insulation reduces seasonal heat loss and heat gain which reduces the respective need for heating and cooling equipment to operate.

Before Situation:

Poultry house has non-insulated or inefficiantly insulated rollup doors causing high heat loss or gain.

After Situation:

A more effective and efficient energy seal can be created through the addition of, or increased R-value, insulated rollup doors. Associated practices/activities: may include 122-AgEMP - HQ, 672-Building Envelope Improvement, and other activities within 374-Farmstead Energy Improvement. The resource concern is inefficient use of energy in the farm operation which increases dependence on non-renewable energy sources and can be addressed through improved energy efficiency. Any improvements are based on a Type 2 energy audit meeting the requirements of ASABE S612.

Feature Measure: Each Door

Scenario Unit: Each

Scenario Typical Size: 1.0

Scenario Total Cost: $2,287.10

Scenario Cost/Unit: $2,287.10

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	5	$115.90
Materials						
Door, Insulated, Roll-up	2392	Rolling service insulated steel door, 20 gauge. Includes hardware required to install. Used to replace non insulated door in buildings. Materials only.	Square Feet	$13.57	160	$2,171.20

Practice: 808 - Soil Carbon Amendment

Scenario #98 - Compost, Small Scale, Intensive

Scenario Description:

This scenario is used for the application of compost to small areas, typically less than 1 acre. Compost of a known origin and nutrient content is imported from an outside source and applied to land to improve soil health. This scenario is used for situations where manual labor is typically used to apply or incorporate compost amendments at a minimum of 10 tons/acre or 460 lbs/1000 sq. ft.

Before Situation:

An in-field soil health assessment or other appropriate planning criteria/tools indicate a need to treat soil health related resource concerns. Soil fertility/nutrients are tested prior to application. A soil health laboratory test may also be taken using Soil Testing (216) to document benchmark conditions.

After Situation:

Compost was applied at a minimum of 460 lbs/1000 square feet or 4.6 cubic yards per acre without creating an unacceptable risk of N or P losses. Soil physical, chemical or biological properties are improved. A soil health laboratory test may also be taken using Soil Testing (216) to evaluate the effectiveness of the practice.

Feature Measure: Amount of compost applied per 1,0

Scenario Unit: 1,000 Square Foot

Scenario Typical Size: 10.0

Scenario Total Cost: $397.64

Scenario Cost/Unit: $39.76

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	8	$185.44
Materials						
Compost	265	A mixture of decaying organic matter, as from leaves and manure, used to improve soil structure and provide nutrients.	Ton	$60.26	2.3	$138.60
Mobilization						
Aggregate, Shipping, Cubic Yard-mile	2360	Mobilization of aggregate material beyond 20 miles of local delivery from quarry to construction site. Cubic Yard-mile (Cubic Yard * miles of haul).	Cubic Yard Mile	$0.32	230	$73.60

Practice: 808 - Soil Carbon Amendment

Scenario #99 - Compost and Biochar Mix

Scenario Description:

This scenario is used to import compost and biochar mix that contains at least 10% biochar on a volume basis. Total compost and biochar application rate should be a minimum of 3 tons/acre or 6 cubic yards. Both materials are known origin, production methods and nutrient content. Mixture is applied to land to increase or improve organic matter content and improve aggregate stability, habitat for soil organisms, and plant productivity and health.

Before Situation:

An in-field assessment and a basic laboratory soil health test indicates that soil organism habitat loss or degradation, aggregate instability or low organic matter levels are present and the addition of a carbon amendment is needed to contribute to the soil food web, improve aggregate stability and organic matter.

After Situation:

Soil, compost, and biochar was tested. Biochar was mixed with compost at a minimum of 10% by volume basis. Soil health improved by the addition of stable carbon compost microorganism and water holding capacity is improved. A follow up soil health test is planned using Soil Testing (216).

Feature Measure: Area

Scenario Unit: Acres

Scenario Typical Size: 20.0

Scenario Total Cost: $8,244.74

Scenario Cost/Unit: $412.24

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acres	$11.35	20	$227.00
Manure, compost, application	955	Loading, hauling and spreading manure/compost by ground equipment. Includes equipment, power unit and labor costs.	Hours	$129.42	4	$517.68
Materials						
Compost	265	A mixture of decaying organic matter, as from leaves and manure, used to improve soil structure and provide nutrients.	Ton	$60.26	50	$3,013.00
Test, Soil Health, Basic Package	2734	Basic soil health laboratory assessment for soil organic carbon, aggregation, bioavailable nitrogen, respiration, and active carbon according to technical note 450-03. Includes shipping and handling.	Number	$118.94	1	$118.94
Biochar	2743	Solid material obtained from thermochemical conversion of biomass in an oxygen-limited environment (pyrolysis). Biochar is typically produced from woody biomass, but other carbon sources may be used. Materials only.	Cubic Yards	$244.01	12	$2,928.12
Mobilization						
Aggregate, Shipping, Cubic Yard-mile	2360	Mobilization of aggregate material beyond 20 miles of local delivery from quarry to construction site. Cubic Yard-mile (Cubic Yard * miles of haul).	Cubic Yard Mile	$0.32	4500	$1,440.00

Practice: 810 - Annual Forages for Grazing Systems

Scenario #9 - Annual forages mix

Scenario Description:

Seeding crop, pasture or grazing land to multi-species mix of annual grasses, legumes, forbs or similar species. This mix will address all the planned purposes of the Annual Forages for Grazing Systems (810) standard. Plant forage immediately after harvest of a row crop, small grain, or other forage. Seeding equipment typically used is available on-site. When applicable, terminate the annual forage using an approved method prior to planting a subsequent crop per the NRCS Cover Crop Termination.

Before Situation:

Existing forage stands do not meet the forage demands and or quality for grazing animals, particularly during periods of low forage production. Resource concerns include undesirable plant productivity and health, inadequate feed and forage for livestock, soil erosion, and soil quality. In cases where poor quality or low yields exist in current annual pasture, annual forages replace the existing undesirable forage species and provides temporary forage and erosion control. This payment scenario is based on the no-till drilling of annual forages with no chemical applications.

After Situation:

Established annual forage mix improved livestock nutrition through improved forage quality and quantity, reduced erosion and improved soil condition. Over time, soil health is improved due to the additional biomass, ground cover, soil infiltration, and plant diversity introduced to the cropping or pasture system.

Feature Measure: acres of annual forages planted

Scenario Unit: Acres

Scenario Typical Size: 20.0

Scenario Total Cost: $1,590.80

Scenario Cost/Unit: $79.54

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	20	$415.80
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	10	$231.80
Materials						
Annual Grasses, Legumes or Forbs	2732	A mix of annual grasses, legumes and/or forbs, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping.	Acres	$47.16	20	$943.20

Practice: 810 - Annual Forages for Grazing Systems

Scenario #10 - Overseeding legumes with low soil ph

Scenario Description:

Seeding crop, pasture or grazing land to annual legumes. This annual legume will address the planned purposes of the annual forages for grazing systems (810) standard. Plant legumes into an existing stand to increase forage grazing season or to improve forage quantity and quality.

Before Situation:

Existing forage stands do no meet the forage demands or quality for grazing animals, particularly during periods of low forage production. Resource concerns include undesirable plant productivity and health, inadequate feed and forage for livestock, soil erosion, and soil quality. In cases where poor quality or low yield exists in current annual pastures, annual forages replace the existing undesirable forage species and provides temporary forage and erosion control.

After Situation:

Established annual forage improves livestock nutrition through improved forage quality and quantity, reduced erosion and improved soil condition. Over time, soil health is improved due to the additional biomass, ground cover, soil infiltration, and plant diversity introduced into the pasture system.

Feature Measure: Acres planted

Scenario Unit: Acres

Scenario Typical Size: 20.0

Scenario Total Cost: $1,666.55

Scenario Cost/Unit: $83.33

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	20	$415.80
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	10	$231.80
Materials						
Lime, ENM	75	Fertilizer: Limestone Spread on field.	Ton	$63.05	1	$63.05
Test, Soil Test, Standard	299	Includes materials, shiping, labor, and equipment costs.	Each	$12.70	1	$12.70
Annual Grasses, Legumes or Forbs	2732	A mix of annual grasses, legumes and/or forbs, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping.	Acres	$47.16	20	$943.20

Practice: B000BFF1 - Buffer Bundle#1

Scenario #1 - Buffer Bundle#1

Scenario Description:
Addresses water quality degradation, degraded plant condition, fish/wildlife inadequate habitat, and/or air quality impacts.

Before Situation:
Resources are protected at the minimum level of the conservation practice standard(s) applied as part of the enhancement.

After Situation:
The adoption of this enhancement will provide resource protection above the minimum level of the conservation practice standard(s) applied

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 3.0

Scenario Total Cost: $6,677.30

Scenario Cost/Unit: $2,225.77

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	8	$189.92
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acres	$11.35	1	$11.35
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$6.00	7	$42.00
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	1	$20.79
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hours	$22.62	6	$135.72
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hours	$18.07	10	$180.70
Cultipacking	1100	Includes equipment, power unit and labor costs.	Acres	$9.21	1	$9.21
Hand tools, tree planting	1590	Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included.	Hours	$12.58	10	$125.80
Mechanical tree planter	1600	Mechanical tree planter. Requires a pulling unit of either tractor or small dozer depending upon site conditions. Does not include labor.	Hours	$5.93	6	$35.58
Foregone Income						
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acres	$287.72	1.23	$353.90
FI, Soybeans Dryland	1961	Dryland Soybeans is Primary Crop	Acres	$225.71	1.08	$243.77
FI, Wheat Dryland	1963	Dryland Wheat is Primary Crop	Acres	$109.80	0.69	$75.76
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	2	$60.10
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	16	$370.88
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	6	$151.86
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	6	$250.68
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	2	$186.08
Materials						

Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$8.98	5	$44.90
Herbicide, Sulfometuron & metsulfuron	344	A residual sulfonylurea herbicide that kills broadleaf weeds and some annual grasses. It is a systemic compound with foliar and soil activity. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$12.27	5	$61.35
Herbicide, Surfactant	1095	Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$1.81	5	$9.05
Shrub, Seedling, Medium	1507	Bare root shrub seedling, 18 to 36 inches tall; includes tropical containerized seedlings 10 to 20 cubic inches. Includes materials and shipping only.	Each	$0.83	341	$283.03
Tree, Hardwood, Seedling, Medium	1510	Bare root hardwood seedlings 18 to 36 inches tall; includes tropical containerized seedlings of 10 to 20 cubic inches. Includes materials and shipping only.	Each	$1.17	2518	$2,946.06
Annual Grasses, Legumes or Forbs	2732	A mix of annual grasses, legumes and/or forbs, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping.	Acres	$47.16	1	$47.16
Native Perennial Grasses, Legumes and/or Forbs, Medium Density	2754	A mix of native perennial grasses, legumes, and/or forbs, Grasses typically greater than 50% of the mix, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at medium to higher density (41-60 pure live seeds/sq ft). Species typically easy to purchase. Includes material and shipping.	Acres	$246.25	1	$246.25
Mobilization						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	2	$341.52
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: B000CPL10 - YEAR 1 Irrigated Cropland (MRBI/Ogallala)

Scenario #13 - YEAR 1 Irrigated Cropland (MRBI/Ogallala)

Scenario Description:
Addresses water quality degradation, insufficient water, soil erosion, and inefficient energy.

Before Situation:
Resources are protected at the minimum level of the conservation practice standard(s) applied as part of the enhancement.

After Situation:
The adoption of this enhancement will provide resource protection above the minimum level of the conservation practice standard(s) applied

Feature Measure: acres of cropland where enhancem

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $13,857.03

Scenario Cost/Unit: $138.57

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	30	$712.20
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	19	$570.95
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	16	$668.48
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	41	$3,814.64
Materials						
Nitrogen-Urease inhibitor	260	Nitrogen-Urease inhibitor	Acres	$31.37	100	$3,137.00
Test, Soil Nitrogen Testing	311	Pre-Side Dress/Deep Soil Testing. Includes materials and shipping only.	Each	$9.67	5	$48.35
Switches and Controls, temp sensors	1192	Temperature and soil moisture sensors installed as part of an electronic monitoring (with or without wireless telecommunications) commonly used to control pumps and irrigation systems	Each	$611.15	3	$1,833.45
Data Logger with Telemetry System	1454	Data Logger W/Graphic Output for water management and telemetry - data communication device with power supply in a weather proof enclosure. Equipment only.	Each	$1,525.93	1	$1,525.93
Weather Station, Advanced	2550	Advance Weather Station which collects and records recording rainfall, humidity, barometric pressure, wind speed, temperature, and solar radiation from a solar powered self-standing tripod to an advance weather recording console. Used for both 449 advance irrigation water management and for Activity 202 water quality monitoring .	Each	$843.52	1	$843.52
Annual Grasses	2730	Annual grasses, one or more species, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping.	Acres	$31.62	20	$632.40
Mobilization						
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	$70.11	1	$70.11

Practice: B000CPL11 - YEAR 2+ Irrigated Cropland (MRBI/Ogallala)

Scenario #4 - YEAR 2+ Irrigated Cropland (MRBI/Ogallala)

Scenario Description:
Addresses water quality degradation, insufficient water, and soil erosion.

Before Situation:
Resources are protected at the minimum level of the conservation practice standard(s) applied as part of the enhancement.

After Situation:
The adoption of this enhancement will provide resource protection above the minimum level of the conservation practice standard(s) applied.

Feature Measure: acres of cropland where enhancem

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $6,238.60

Scenario Cost/Unit: $62.39

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	41	$1,232.05
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	24	$1,002.72
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	2	$186.08
Materials						
Nitrogen-Urease inhibitor	260	Nitrogen-Urease inhibitor	Acres	$31.37	100	$3,137.00
Test, Soil Nitrogen Testing	311	Pre-Side Dress/Deep Soil Testing. Includes materials and shipping only.	Each	$9.67	5	$48.35
Annual Grasses	2730	Annual grasses, one or more species, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping.	Acres	$31.62	20	$632.40

Practice: B000CPL12 - Non-Irrigated Precision Ag (MRBI)

Scenario #4 - Non-Irrigated Precision Ag (MRBI)

Scenario Description:
Addresses water quality degradation, soil quality, and soil erosion.

Before Situation:
Resources are protected at the minimum level of the conservation practice standard(s) applied as part of the enhancement.

After Situation:
The adoption of this enhancement will provide resource protection above the minimum level of the conservation practice standard(s) applied

Feature Measure: acres of cropland where enhancem

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $3,544.31

Scenario Cost/Unit: $35.44

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Chemical, precision application	949	Chemical application performed by light bar/GPS navigation system. Includes equipment, power unit and labor costs.	Acres	$7.70	100	$770.00
Fertilizer, precision application	952	Fertilizer application performed by light bar/GPS navigation system. Includes equipment, power unit and labor costs.	Acres	$8.30	100	$830.00
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	1	$30.05
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	9	$837.36
Materials						
Test, Soil Test, Standard	299	Includes materials, shiping, labor, and equipment costs.	Each	$12.70	35	$444.50
Annual Grasses	2730	Annual grasses, one or more species, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping.	Acres	$31.62	20	$632.40

Practice: B000CPL13 - Non-Irrigated Cropland (MRBI)

Scenario #4 - Non-Irrigated Cropland (MRBI)

Scenario Description:
Addresses water quality degradation, soil quality, and soil erosion.

Before Situation:
Resources are protected at the minimum level of the conservation practice standard(s) applied as part of the enhancement.

After Situation:
The adoption of this enhancement will provide resource protection above the minimum level of the conservation practice standard(s) applied.

Feature Measure: acres of cropland where enhancem

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $5,078.70

Scenario Cost/Unit: $50.79

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	11	$330.55
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	10	$930.40
Materials						
Nitrogen-Urease inhibitor	260	Nitrogen-Urease inhibitor	Acres	$31.37	100	$3,137.00
Test, Soil Nitrogen Testing	311	Pre-Side Dress/Deep Soil Testing. Includes materials and shipping only.	Each	$9.67	5	$48.35
Annual Grasses	2730	Annual grasses, one or more species, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping.	Acres	$31.62	20	$632.40

Practice: B000CPL14 - YEAR 1 Irrigated Precision Ag Cropland (MRBI)

Scenario #4 - YEAR 1 Irrigated Precision Ag Cropland (MRBI)

Scenario Description:
Addresses water quality degradation, insufficient water, soil erosion, and inefficient energy.

Before Situation:
Resources are protected at the minimum level of the conservation practice standard(s) applied as part of the enhancement.

After Situation:
The adoption of this enhancement will provide resource protection above the minimum level of the conservation practice standard(s) applied

Feature Measure: acres of cropland where enhancem

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $11,946.18

Scenario Cost/Unit: $119.46

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	30	$712.20
Fertilizer, precision application	952	Fertilizer application performed by light bar/GPS navigation system. Includes equipment, power unit and labor costs.	Acres	$8.30	100	$830.00
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	19	$570.95
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	16	$668.48
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	41	$3,814.64
Materials						
Test, Soil Test, Standard	299	Includes materials, shiping, labor, and equipment costs.	Each	$12.70	35	$444.50
Switches and Controls, temp sensors	1192	Temperature and soil moisture sensors installed as part of an electronic monitoring (with or without wireless telecommunications) commonly used to control pumps and irrigation systems	Each	$611.15	3	$1,833.45
Data Logger with Telemetry System	1454	Data Logger W/Graphic Output for water management and telemetry - data communication device with power supply in a weather proof enclosure. Equipment only.	Each	$1,525.93	1	$1,525.93
Weather Station, Advanced	2550	Advance Weather Station which collects and records recording rainfall, humidity, barometric pressure, wind speed, temperature, and solar radiation from a solar powered self-standing tripod to an advance weather recording console. Used for both 449 advance irrigation water management and for Activity 202 water quality monitoring .	Each	$843.52	1	$843.52
Annual Grasses	2730	Annual grasses, one or more species, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping.	Acres	$31.62	20	$632.40
Mobilization						
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	$70.11	1	$70.11

Practice: B000CPL15 - YEAR 2+ Irrigated Precision Ag Cropland (MRBI)

Scenario #4 - YEAR 2+ Irrigated Precision Ag Cropland (MRBI)

Scenario Description:
Addresses water quality degradation, insufficient water, and soil erosion.

Before Situation:
Resources are protected at the minimum level of the conservation practice standard(s) applied as part of the enhancement.

After Situation:
The adoption of this enhancement will provide resource protection above the minimum level of the conservation practice standard(s) applied

Feature Measure: acres of cropland where enhancem

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $4,327.75

Scenario Cost/Unit: $43.28

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Fertilizer, precision application	952	Fertilizer application performed by light bar/GPS navigation system. Includes equipment, power unit and labor costs.	Acres	$8.30	100	$830.00
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	41	$1,232.05
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	24	$1,002.72
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	2	$186.08
Materials						
Test, Soil Test, Standard	299	Includes materials, shiping, labor, and equipment costs.	Each	$12.70	35	$444.50
Annual Grasses	2730	Annual grasses, one or more species, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping.	Acres	$31.62	20	$632.40

Practice: B000CPL16 - Non-Irrigated Cropland with Water Bodies (MRBI)

Scenario #4 - Non-Irrigated Cropland with Water Bodies (MRBI)

Scenario Description:
Addresses water quality degradation, soil erosion, and soil quality

Before Situation:
Resources are protected at the minimum level of the conservation practice standard(s) applied as part of the enhancement.

After Situation:
The adoption of this enhancement will provide resource protection above the minimum level of the conservation practice standard(s) applied

Feature Measure: acres of cropland where enhancem

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $5,798.05

Scenario Cost/Unit: $57.98

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$6.00	2	$12.00
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	2	$41.58
Foregone Income						
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acres	$287.72	0.82	$235.93
FI, Soybeans Dryland	1961	Dryland Soybeans is Primary Crop	Acres	$225.71	0.72	$162.51
FI, Wheat Dryland	1963	Dryland Wheat is Primary Crop	Acres	$109.80	0.46	$50.51
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	11	$330.55
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	9	$837.36
Materials						
Nitrogen-Urease inhibitor	260	Nitrogen-Urease inhibitor	Acres	$31.37	100	$3,137.00
Test, Soil Nitrogen Testing	311	Pre-Side Dress/Deep Soil Testing. Includes materials and shipping only.	Each	$9.67	5	$48.35
Herbicide, Imazapyr	336	Pre and post-emergent, non-selective herbicide for control of undesirable vegetation in non-crop areas. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$39.97	2	$79.94
Annual Grasses	2730	Annual grasses, one or more species, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping.	Acres	$31.62	20	$632.40
Native Perennial Grasses, Low Density	2750	Native perennial grasses, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Includes material and shipping.	Acres	$114.96	2	$229.92

Practice: B000CPL17 - Non-Irrigated Cropland with Water Bodies Riparian Forest Buffer (MRBI)

Scenario #4 - Non-Irrigated Cropland with Water Bodies Riparian Forest Buffer (MRBI)

Scenario Description:
Addresses water quality degradation, soil erosion, and soil quality

Before Situation:
Resources are protected at the minimum level of the conservation practice standard(s) applied as part of the enhancement.

After Situation:
The adoption of this enhancement will provide resource protection above the minimum level of the conservation practice standard(s) applied

Feature Measure: acres of cropland where enhancem

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $8,847.05

Scenario Cost/Unit: $88.47

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	18	$427.32
Mower, Bush Hog	940	Equipment and power unit costs. Labor not included.	Hours	$49.85	2	$99.70
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$6.00	2	$12.00
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hours	$22.62	4	$90.48
Hand tools, tree planting	1590	Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included.	Hours	$12.58	16	$201.28
Foregone Income						
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acres	$287.72	0.82	$235.93
FI, Soybeans Dryland	1961	Dryland Soybeans is Primary Crop	Acres	$225.71	0.72	$162.51
FI, Wheat Dryland	1963	Dryland Wheat is Primary Crop	Acres	$109.80	0.46	$50.51
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	11	$330.55
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	18	$417.24
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	4	$101.24
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	4	$167.12
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	9	$837.36
Materials						
Nitrogen-Urease inhibitor	260	Nitrogen-Urease inhibitor	Acres	$31.37	100	$3,137.00
Test, Soil Nitrogen Testing	311	Pre-Side Dress/Deep Soil Testing. Includes materials and shipping only.	Each	$9.67	5	$48.35
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$8.98	1	$8.98
Herbicide, Sulfometuron & metsulfuron	344	A residual sulfonylurea herbicide that kills broadleaf weeds and some annual grasses. It is a systemic compound with foliar and soil activity. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$12.27	1	$12.27

Herbicide, Surfactant	1095	Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$1.81	1	$1.81
Tree, Hardwood, Seedling, Medium	1510	Bare root hardwood seedlings 18 to 36 inches tall; includes tropical containerized seedlings of 10 to 20 cubic inches. Includes materials and shipping only.	Each	$1.17	872	$1,020.24
Tree shelter, solid tube type, 4 in. x 48 in.	1566	4 inch x 48 inch tree tube for protection from animal damage. Materials only.	Each	$5.02	100	$502.00
Stakes, wood, 1 in. x 1 in. x 48 in.	1578	1 in. x 1 in. x 48 in. wood stakes to fasten items in place. Includes materials only.	Each	$1.80	100	$180.00
Annual Grasses	2730	Annual grasses, one or more species, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping.	Acres	$31.62	20	$632.40
Mobilization						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	1	$170.76

Practice: B000CPL18 - Crop Bundle #18 - Precision Ag

Scenario #4 - Crop Bundle #18 - Precision Ag

Scenario Description:
Addresses water quality degradation, fish and wildlife inadequate habitat, air quality impairment, and either soil erosion or soil quality degradation resource concerns.

Before Situation:
Resources are protected at the minimum level of the conservation practice standard(s) applied as part of the enhancement.

After Situation:
The adoption of this enhancement will provide resource protection above the minimum level of the conservation practice standard(s) applied

Feature Measure: acres of cropland where enhancem

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $3,599.00

Scenario Cost/Unit: $35.99

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Chemical, precision application	949	Chemical application performed by light bar/GPS navigation system. Includes equipment, power unit and labor costs.	Acres	$7.70	100	$770.00
Fertilizer, precision application	952	Fertilizer application performed by light bar/GPS navigation system. Includes equipment, power unit and labor costs.	Acres	$8.30	100	$830.00
Foregone Income						
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acres	$287.72	0.17	$48.91
FI, Soybeans Dryland	1961	Dryland Soybeans is Primary Crop	Acres	$225.71	0.17	$38.37
FI, Wheat Dryland	1963	Dryland Wheat is Primary Crop	Acres	$109.80	0.17	$18.67
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	1	$30.05
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	1	$41.78
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	8	$744.32
Materials						
Test, Soil Test, Standard	299	Includes materials, shiping, labor, and equipment costs.	Each	$12.70	35	$444.50
Annual Grasses	2730	Annual grasses, one or more species, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping.	Acres	$31.62	20	$632.40

Practice: B000CPL19 - Crop Bundle #19 - Soil Health Precision Ag

Scenario #4 - Crop Bundle #19 - Soil Health Precision Ag

Scenario Description:
Addresses water quality degradation, soil quality degradation, fish and wildlife inadequate habitat, and insufficient water resource concerns.

Before Situation:
Resources are protected at the minimum level of the conservation practice standard(s) applied as part of the enhancement.

After Situation:
The adoption of this enhancement will provide resource protection above the minimum level of the conservation practice standard(s) applied

Feature Measure: acres of cropland where enhancem

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $3,560.37

Scenario Cost/Unit: $35.60

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Chemical, precision application	949	Chemical application performed by light bar/GPS navigation system. Includes equipment, power unit and labor costs.	Acres	$7.70	100	$770.00
Fertilizer, precision application	952	Fertilizer application performed by light bar/GPS navigation system. Includes equipment, power unit and labor costs.	Acres	$8.30	100	$830.00
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	2	$60.10
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	13	$1,209.52
Materials						
Test, Soil Test, Standard	299	Includes materials, shiping, labor, and equipment costs.	Each	$12.70	35	$444.50
Native Perennial Grasses, Legumes and/or Forbs, Medium Density	2754	A mix of native perennial grasses, legumes, and/or forbs, Grasses typically greater than 50% of the mix, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at medium to higher density (41-60 pure live seeds/sq ft). Species typically easy to purchase. Includes material and shipping.	Acres	$246.25	1	$246.25

Practice: B000CPL20 - Crop Bundle #20 - Soil Health Assessment

Scenario #4 - Crop Bundle #20 - Soil Health Assessment

Scenario Description:
Addresses water quality degradation, soil quality degradation, fish and wildlife inadequate habitat, and insufficient water resource concerns.

Before Situation:
Resources are protected at the minimum level of the conservation practice standard(s) applied as part of the enhancement.

After Situation:
The adoption of this enhancement will provide resource protection above the minimum level of the conservation practice standard(s) applied.

Feature Measure: acres of cropland where enhancem

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $5,471.34

Scenario Cost/Unit: $54.71

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	12	$360.60
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	16	$1,488.64
Materials						
Nitrogen-Urease inhibitor	260	Nitrogen-Urease inhibitor	Acres	$31.37	100	$3,137.00
Test, Soil Test, Standard	299	Includes materials, shiping, labor, and equipment costs.	Each	$12.70	15	$190.50
Test, Soil Nitrogen Testing	311	Pre-Side Dress/Deep Soil Testing. Includes materials and shipping only.	Each	$9.67	5	$48.35
Native Perennial Grasses, Legumes and/or Forbs, Medium Density	2754	A mix of native perennial grasses, legumes, and/or forbs, Grasses typically greater than 50% of the mix, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at medium to higher density (41-60 pure live seeds/sq ft). Species typically easy to purchase. Includes material and shipping.	Acres	$246.25	1	$246.25

Practice: B000CPL21 - Crop Bundle #21 - Crop Bundle (Organic)

Scenario #4 - Crop Bundle #21 - Crop Bundle (Organic)

Scenario Description:
Addresses soil quality degradation, water quality degradation, and degraded plant condition resource concerns.

Before Situation:
Resources are protected at the minimum level of the conservation practice standard(s) applied as part of the enhancement.

After Situation:
The adoption of this enhancement will provide resource protection above the minimum level of the conservation practice standard(s) applied.

Feature Measure: acres of cropland where enhancem

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $6,776.91

Scenario Cost/Unit: $67.77

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	10	$237.40
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acres	$11.35	1	$11.35
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$6.00	2	$12.00
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	1	$20.79
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hours	$18.07	10	$180.70
Cultipacking	1100	Includes equipment, power unit and labor costs.	Acres	$9.21	1	$9.21
Hand tools, tree planting	1590	Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included.	Hours	$12.58	10	$125.80
Foregone Income						
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acres	$287.72	0.82	$235.93
FI, Soybeans Dryland	1961	Dryland Soybeans is Primary Crop	Acres	$225.71	0.72	$162.51
FI, Wheat Dryland	1963	Dryland Wheat is Primary Crop	Acres	$109.80	0.46	$50.51
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	10	$300.50
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	10	$231.80
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	9	$837.36
Materials						
Nitrogen-Urease inhibitor	260	Nitrogen-Urease inhibitor	Acres	$31.37	100	$3,137.00
Test, Soil Nitrogen Testing	311	Pre-Side Dress/Deep Soil Testing. Includes materials and shipping only.	Each	$9.67	5	$48.35
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$8.98	1	$8.98
Herbicide, Sulfometuron & metsulfuron	344	A residual sulfonylurea herbicide that kills broadleaf weeds and some annual grasses. It is a systemic compound with foliar and soil activity. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$12.27	1	$12.27

Herbicide, Surfactant	1095	Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$1.81	1	$1.81
Shrub, Seedling, Medium	1507	Bare root shrub seedling, 18 to 36 inches tall; includes tropical containerized seedlings 10 to 20 cubic inches. Includes materials and shipping only.	Each	$0.83	341	$283.03
Tree, Hardwood, Seedling, Medium	1510	Bare root hardwood seedlings 18 to 36 inches tall; includes tropical containerized seedlings of 10 to 20 cubic inches. Includes materials and shipping only.	Each	$1.17	340	$397.80
Annual Grasses, Legumes or Forbs	2732	A mix of annual grasses, legumes and/or forbs, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping.	Acres	$47.16	1	$47.16
Mobilization						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	1	$170.76
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: B000CPL22 - Crop Bundle #22 - Erosion Bundle (Organic)

Scenario #4 - Crop Bundle #22 - Erosion Bundle (Organic)

Scenario Description:
Addresses soil quality degradation, water quality degradation, soil erosion, and fish and wildlife inadequate habitat resource concerns.

Before Situation:
Resources are protected at the minimum level of the conservation practice standard(s) applied as part of the enhancement.

After Situation:
The adoption of this enhancement will provide resource protection above the minimum level of the conservation practice standard(s) applied.

Feature Measure: acres of cropland where enhancem

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $5,757.21

Scenario Cost/Unit: $57.57

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	13	$390.65
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	14	$1,302.56
Materials						
Nitrogen-Urease inhibitor	260	Nitrogen-Urease inhibitor	Acres	$31.37	100	$3,137.00
Test, Soil Nitrogen Testing	311	Pre-Side Dress/Deep Soil Testing. Includes materials and shipping only.	Each	$9.67	5	$48.35
Annual Grasses	2730	Annual grasses, one or more species, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping.	Acres	$31.62	20	$632.40
Native Perennial Grasses, Legumes and/or Forbs, Medium Density	2754	A mix of native perennial grasses, legumes, and/or forbs, Grasses typically greater than 50% of the mix, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at medium to higher density (41-60 pure live seeds/sq ft). Species typically easy to purchase. Includes material and shipping.	Acres	$246.25	1	$246.25

Practice: B000CPL23 - Crop Bundle #23 - Pheasant and quail habitat

Scenario #14 - Crop Bundle #23 - Pheasant and quail habitat

Scenario Description:
Addresses wildlife inadequate habitat, water quality degradation and/or air quality impacts, and soil health and/or degraded plant condition.

Before Situation:
Resources are protected at the minimum level of the conservation practice standards applied as part of the bundle.

After Situation:
The adoption of these enhancements will provide resource protection above the minimum level of the conservation practice standard(s) applied

Feature Measure: Acres where the bundle is impleme

Scenario Unit: Acres

Scenario Typical Size: 40.0

Scenario Total Cost: $1,994.85

Scenario Cost/Unit: $49.87

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acres	$11.35	1	$11.35
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$6.00	1	$6.00
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	1	$20.79
Foregone Income						
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acres	$287.72	0.41	$117.97
FI, Soybeans Dryland	1961	Dryland Soybeans is Primary Crop	Acres	$225.71	0.36	$81.26
FI, Wheat Dryland	1963	Dryland Wheat is Primary Crop	Acres	$109.80	0.23	$25.25
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	2	$60.10
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	2	$46.36
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	4	$372.16
Materials						
Annual Grasses, Legumes or Forbs	2732	A mix of annual grasses, legumes and/or forbs, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping.	Acres	$47.16	20	$943.20
Introduced Perennial Grasses, Legumes and/or Forbs, High Density	2749	Introduced perennial grasses, legumes, and/or forbs, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at high density (greater than 60 pure live seeds/sq ft). Includes material and shipping.	Acres	$64.17	1	$64.17
Native Perennial Grasses, Legumes and/or Forbs, Medium Density	2754	A mix of native perennial grasses, legumes, and/or forbs, Grasses typically greater than 50% of the mix, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at medium to higher density (41-60 pure live seeds/sq ft). Species typically easy to purchase. Includes material and shipping.	Acres	$246.25	1	$246.25

Practice: B000CPL24 - Crop Bundle #24 - Cropland Soil Health Management System

Scenario #4 - Crop Bundle #24- Cropland Soil Health Management System

Scenario Description:
Addresses soil health, water quality (or water quality and air quality), and either soil erosion, soil compaction, or plant pest pressure.

Before Situation:
Resources are protected at the minimum level of the conservation practice standards applied as part of the bundle.

After Situation:
The adoption of these enhancements will provide resource protection above the minimum level of the conservation practice standard(s) applied.

Feature Measure: acre

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $4,785.89

Scenario Cost/Unit: $47.86

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	2	$60.10
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	14	$1,302.56
Materials						
Nitrogen-Urease inhibitor	260	Nitrogen-Urease inhibitor	Acres	$31.37	100	$3,137.00
Test, Soil Nitrogen Testing	311	Pre-Side Dress/Deep Soil Testing. Includes materials and shipping only.	Each	$9.67	5	$48.35
Test, Soil Health, Basic Package	2734	Basic soil health laboratory assessment for soil organic carbon, aggregation, bioavailable nitrogen, respiration, and active carbon according to technical note 450-03. Includes shipping and handling.	Number	$118.94	2	$237.88

Practice: B000FST1 - Forest Bundle#1

Scenario #1 - Forest Bundle#1

Scenario Description:
Addresses forest management on sites that are not adapted to natural fire disturbances. Addresses resouce concerns air quality impacts, degraded plant condition and fish/wildlife inadequate habitat.

Before Situation:
Resources are protected at the minimum level of the conservation practice standard(s) applied as part of the enhancement.

After Situation:
The adoption of this enhancement will provide resource protection above the minimum level of the conservation practice standard(s) applied

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 111.0

Scenario Total Cost: $9,222.04

Scenario Cost/Unit: $83.08

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Chainsaw	937	Equipment and power unit costs. Labor not included.	Hours	$7.00	45	$315.00
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	15	$356.10
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$6.00	1	$6.00
Chemical, spot treatment, single stem application	964	Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included.	Hours	$68.31	41	$2,800.71
Hand tools, tree planting	1590	Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included.	Hours	$12.58	11	$138.38
Foregone Income						
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acres	$287.72	0.41	$117.97
FI, Soybeans Dryland	1961	Dryland Soybeans is Primary Crop	Acres	$225.71	0.36	$81.26
FI, Wheat Dryland	1963	Dryland Wheat is Primary Crop	Acres	$109.80	0.23	$25.25
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	7	$210.35
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	49	$1,135.82
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	12	$1,116.48
CAP Labor, forester	1302	Conservation Activity Plan labor to manage nonindustrial private forest lands for conservation, economic, and recreational purposes. Will inventory the type, amount, and location of standing timber and appraise the timber's condition. Will determine how to conserve wildlife habitats, improve water quality and soil stability, and how best to comply with environmental regulations. May devise plans for planting and growing new trees, monitoring trees for healthy growth, determining optimal thinning schedules, and increasing carbon capture and storage.	Hours	$81.17	17	$1,379.89
Materials						
Tree Marking Paint	313	Trees to be cut through tree marking are physically identified through the application of paint on the tree. Typically one quart of paint is used to mark one acre of trees. Includes materials and shipping only.	Acres	$9.43	20	$188.60
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$8.98	1	$8.98

Herbicide, Picloram	337	Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$19.01	21	$399.21
Herbicide, Sulfometuron & metsulfuron	344	A residual sulfonylurea herbicide that kills broadleaf weeds and some annual grasses. It is a systemic compound with foliar and soil activity. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$12.27	1	$12.27
Herbicide, Surfactant	1095	Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$1.81	1	$1.81
Shrub, Seedling, Medium	1507	Bare root shrub seedling, 18 to 36 inches tall; includes tropical containerized seedlings 10 to 20 cubic inches. Includes materials and shipping only.	Each	$0.83	605	$502.15
Tree, Hardwood, Seedling, Medium	1510	Bare root hardwood seedlings 18 to 36 inches tall; includes tropical containerized seedlings of 10 to 20 cubic inches. Includes materials and shipping only.	Each	$1.17	218	$255.06
Mobilization						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	1	$170.76

Practice: B000FST2 - Forest Bundle #2 - Post-fire Management

Scenario #8 - Forest Bundle #2 - Post-fire Management

Scenario Description:

Forest stand improvement that improves forest health to reduce the risk of wildfire and wildlife habitat. Addresses air quality impacts, degraded plant condition, and fish/wildlife inadequate habitat.

Before Situation:

Resources are protected at the minimum level of conservation practice standard(s) applied as part of the enhancement.

After Situation:

The adoption of these enhancements will provide resource protection above the minimum level of the conservation practice standard(s) applied.

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 10.0

Scenario Total Cost: $8,857.32

Scenario Cost/Unit: $885.73

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Chainsaw	937	Equipment and power unit costs. Labor not included.	Hours	$7.00	8	$56.00
Mechanical cutter, chopper	943	Forestry mulcher, flail shredder, hydro axe, brush cutter, etc. Equipment and power unit costs. Labor not included.	Hours	$95.19	28	$2,665.32
Chemical, spot treatment, single stem application	964	Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included.	Hours	$68.31	30	$2,049.30
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	8	$240.40
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	28	$708.68
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	19	$1,767.76
Materials						
Herbicide, Imazapyr	336	Pre and post-emergent, non-selective herbicide for control of undesirable vegetation in non-crop areas. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$39.97	30	$1,199.10
Mobilization						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	1	$170.76

Practice: B000GRZ1 - Grazing Bundle 1 - Range and Pasture

Scenario #4 - Grazing Bundle 1 - Range and Pasture

Scenario Description:
This bundle addresses soil erosion, degraded plant condition, and fish and wildlife inadequate habitat resource concerns through adoption of enhancements E528L, E315A, and E645A.

Before Situation:
Resources are protected at the minimum level of the conservation practice standard(s) applied as part of the enhancement.

After Situation:
The adoption of this enhancement will provide resource protection above the minimum level of the conservation practice standard(s) applied.

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 40.0

Scenario Total Cost: $3,297.92

Scenario Cost/Unit: $82.45

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Acquisition of Technical Knowledge						
Training, Workshops	294	Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants.	Each	$100.83	1	$100.83
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	24	$569.76
Chemical, spot treatment, single stem application	964	Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included.	Hours	$68.31	2	$136.62
Trailer, enclosed, small	1503	Small enclosed trailer (typically less than 30' in length) pulled by a pickup to transport materials and equipment. Truck not included.	Hours	$11.36	24	$272.64
Foregone Income						
FI, Grazing AUMs	2079	Grazing is the Primary Land Use	Animal Unit Month	$19.44	10	$194.40
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	58	$1,344.44
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	2	$83.56
Materials						
Wire, Polywire	8	Wire, Polywire for electric fence - 1,300 ft. Includes materials and shipping only.	Each	$55.14	1	$55.14
Electric, Energizer, Solar	27	Electric, Energizer, Solar for electric fence. Includes materials and shipping only.	Each	$369.77	1	$369.77
Mobilization						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	1	$170.76

Practice: B000GRZ2 - Grazing Bundle 2 - Range and Pasture

Scenario #4 - Grazing Bundle 2 - Range and Pasture

Scenario Description:
This bundle addresses water quality degradation, fish and wildlife inadequate habitat, and soil erosion resource concerns through adoption of enhancements E472A, E382A, and E580A.

Before Situation:
Resources are protected at the minimum level of the conservation practice standard(s) applied as part of the enhancement.

After Situation:
The adoption of this enhancement will provide resource protection above the minimum level of the conservation practice standard(s) applied.

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 3.5

Scenario Total Cost: $7,273.11

Scenario Cost/Unit: $2,078.03

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Auger, Post driver attachment	934	Auger or post driver attachment to a tractor or skidsteer. Does not include power unit. Labor not included.	Hours	$12.82	5	$64.10
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	13	$308.62
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hours	$22.62	5	$113.10
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hours	$18.07	9	$162.63
Trailer, enclosed, small	1503	Small enclosed trailer (typically less than 30' in length) pulled by a pickup to transport materials and equipment. Truck not included.	Hours	$11.36	8	$90.88
Hand tools, tree planting	1590	Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included.	Hours	$12.58	8	$100.64
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	81	$1,877.58
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	5	$126.55
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	8	$334.24
Materials						
Wire, Barbed, Galvanized, 12.5 Gauge, 1,320' roll	1	Galvanized 12.5 gauge, 1,320' roll. Includes materials and shipping only.	Each	$79.36	4	$317.44
Post, Wood, CCA treated, 3-4 in. x 7 ft.	9	Wood Post, Line 3-4 inch dia. X 7 ft., CCA Treated. Includes materials and shipping only.	Each	$8.06	20	$161.20
Post, Wood, CCA treated, 6 in. x 8 ft.	12	Wood Post, End 6 inch dia. X 8 ft., CCA Treated. Includes materials and shipping only.	Each	$18.55	8	$148.40
Post, Steel T, 1.33 lbs, 6 ft.	15	Steel Post, Studded 6 ft. - 1.33 lb. Includes materials and shipping only.	Each	$5.95	90	$535.50
Fence, Wire Assembly, Barbed Wire	30	Brace pins, battens, clips, staples. Includes materials and shipping only.	Feet	$0.22	1320	$290.40
Vinyl Undersill Strips	241	Marking material using the undersill strips of vinyl siding. Priced per foot of fence per each wire. Materials only.	Feet	$0.09	2000	$180.00
Gate, Pipe, 12 ft.	1057	6 rail tube gate, 16 gauge. Includes materials and shipping only.	Each	$206.61	2	$413.22
Shrub, Potted, Small	1524	Potted shrub seedling, 1 quart to 1 gallon. Includes materials and shipping only.	Each	$5.63	65	$365.95
Tree, Hardwood, Potted, Small	1529	Potted hardwood seedling, 1 quart to 1 gallon. Includes materials and shipping only.	Each	$4.51	65	$293.15
Tree, Conifer, Potted, Small	1534	Potted conifer seedling, 1 quart to 1 gallon. Includes materials and shipping only.	Each	$4.44	65	$288.60

Tree shelter, mesh tree tube, 48 in.	1556	48 inch tall vexar or other open weave tubular tree shelter to protect from animal damage. Materials only.	Each	$1.43	65	$92.95
Tree shelter, solid tube type, 4 in. x 24 in.	1563	4 inch x 24 inch tree tube for protection from animal damage. Materials only.	Each	$2.46	65	$159.90
Tree shelter, solid tube type, 4 in. x 48 in.	1566	4 inch x 48 inch tree tube for protection from animal damage. Materials only.	Each	$5.02	65	$326.30
Stakes, wood, 1 in. x 1 in. x 48 in.	1578	1 in. x 1 in. x 48 in. wood stakes to fasten items in place. Includes materials only.	Each	$1.80	195	$351.00
Mobilization						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	1	$170.76

Practice: B000GRZ3 - Grazing Bundle 3 - Range and Pasture

Scenario #4 - Grazing Bundle 3 - Range and Pasture

Scenario Description:
This bundle addresses water quality degradation, fish and wildlife inadequate habitat, and soil erosion resource concerns through adoption of enhancements E472A, E390B, and E580A.

Before Situation:
Resources are protected at the minimum level of the conservation practice standard(s) applied as part of the enhancement.

After Situation:
The adoption of this enhancement will provide resource protection above the minimum level of the conservation practice standard(s) applied.

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 6.0

Scenario Total Cost: $8,241.95

Scenario Cost/Unit: $1,373.66

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Auger, Post driver attachment	934	Auger or post driver attachment to a tractor or skidsteer. Does not include power unit. Labor not included.	Hours	$12.82	5	$64.10
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	13	$308.62
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$6.00	4	$24.00
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	2	$41.58
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hours	$22.62	5	$113.10
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hours	$18.07	8	$144.56
Trailer, enclosed, small	1503	Small enclosed trailer (typically less than 30' in length) pulled by a pickup to transport materials and equipment. Truck not included.	Hours	$11.36	8	$90.88
Hand tools, tree planting	1590	Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included.	Hours	$12.58	8	$100.64
Foregone Income						
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acres	$287.72	0.82	$235.93
FI, Soybeans Dryland	1961	Dryland Soybeans is Primary Crop	Acres	$225.71	0.72	$162.51
FI, Wheat Dryland	1963	Dryland Wheat is Primary Crop	Acres	$109.80	0.46	$50.51
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	81	$1,877.58
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	5	$126.55
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	8	$334.24
Materials						
Wire, Barbed, Galvanized, 12.5 Gauge, 1,320' roll	1	Galvanized 12.5 gauge, 1,320' roll. Includes materials and shipping only.	Each	$79.36	4	$317.44
Post, Wood, CCA treated, 3-4 in. x 7 ft.	9	Wood Post, Line 3-4 inch dia. X 7 ft., CCA Treated. Includes materials and shipping only.	Each	$8.06	20	$161.20
Post, Wood, CCA treated, 6 in. x 8 ft.	12	Wood Post, End 6 inch dia. X 8 ft., CCA Treated. Includes materials and shipping only.	Each	$18.55	8	$148.40
Post, Steel T, 1.33 lbs, 6 ft.	15	Steel Post, Studded 6 ft. - 1.33 lb. Includes materials and shipping only.	Each	$5.95	90	$535.50
Fence, Wire Assembly, Barbed Wire	30	Brace pins, battens, clips, staples. Includes materials and shipping only.	Feet	$0.22	1320	$290.40

Herbicide, Imazapyr	336	Pre and post-emergent, non-selective herbicide for control of undesirable vegetation in non-crop areas. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$39.97	4	$159.88
Gate, Pipe, 12 ft.	1057	6 rail tube gate, 16 gauge. Includes materials and shipping only.	Each	$206.61	2	$413.22
Shrub, Potted, Small	1524	Potted shrub seedling, 1 quart to 1 gallon. Includes materials and shipping only.	Each	$5.63	65	$365.95
Tree, Hardwood, Potted, Small	1529	Potted hardwood seedling, 1 quart to 1 gallon. Includes materials and shipping only.	Each	$4.51	65	$293.15
Tree, Conifer, Potted, Small	1534	Potted conifer seedling, 1 quart to 1 gallon. Includes materials and shipping only.	Each	$4.44	65	$288.60
Tree shelter, mesh tree tube, 48 in.	1556	48 inch tall vexar or other open weave tubular tree shelter to protect from animal damage. Materials only.	Each	$1.43	65	$92.95
Tree shelter, solid tube type, 4 in. x 24 in.	1563	4 inch x 24 inch tree tube for protection from animal damage. Materials only.	Each	$2.46	65	$159.90
Tree shelter, solid tube type, 4 in. x 48 in.	1566	4 inch x 48 inch tree tube for protection from animal damage. Materials only.	Each	$5.02	65	$326.30
Stakes, wood, 1 in. x 1 in. x 48 in.	1578	1 in. x 1 in. x 48 in. wood stakes to fasten items in place. Includes materials only.	Each	$1.80	195	$351.00
Native Perennial Grasses, Legumes and/or Forbs, Medium Density	2754	A mix of native perennial grasses, legumes, and/or forbs, Grasses typically greater than 50% of the mix, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at medium to higher density (41-60 pure live seeds/sq ft). Species typically easy to purchase. Includes material and shipping.	Acres	$246.25	2	$492.50
Mobilization						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	1	$170.76

Practice: B000GRZ4 - Grazing Bundle 4 - Range and Pasture

Scenario #4 - Grazing Bundle 4 - Range and Pasture

Scenario Description:
This bundle addresses water quality degradation, fish and wildlife inadequate habitat, and soil erosion resource concerns through adoption of enhancements E472A, E391C, and E580A.

Before Situation:
Resources are protected at the minimum level of the conservation practice standard(s) applied as part of the enhancement.

After Situation:
The adoption of this enhancement will provide resource protection above the minimum level of the conservation practice standard(s) applied.

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 4.0

Scenario Total Cost: $10,595.80

Scenario Cost/Unit: $2,648.95

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Auger, Post driver attachment	934	Auger or post driver attachment to a tractor or skidsteer. Does not include power unit. Labor not included.	Hours	$12.82	5	$64.10
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	29	$688.46
Mower, Bush Hog	940	Equipment and power unit costs. Labor not included.	Hours	$49.85	2	$99.70
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$6.00	2	$12.00
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hours	$22.62	9	$203.58
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hours	$18.07	8	$144.56
Trailer, enclosed, small	1503	Small enclosed trailer (typically less than 30' in length) pulled by a pickup to transport materials and equipment. Truck not included.	Hours	$11.36	8	$90.88
Hand tools, tree planting	1590	Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included.	Hours	$12.58	24	$301.92
Foregone Income						
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acres	$287.72	0.82	$235.93
FI, Soybeans Dryland	1961	Dryland Soybeans is Primary Crop	Acres	$225.71	0.72	$162.51
FI, Wheat Dryland	1963	Dryland Wheat is Primary Crop	Acres	$109.80	0.46	$50.51
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	99	$2,294.82
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	9	$227.79
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	12	$501.36
Materials						
Wire, Barbed, Galvanized, 12.5 Gauge, 1,320' roll	1	Galvanized 12.5 gauge, 1,320' roll. Includes materials and shipping only.	Each	$79.36	4	$317.44
Post, Wood, CCA treated, 3-4 in. x 7 ft.	9	Wood Post, Line 3-4 inch dia. X 7 ft., CCA Treated. Includes materials and shipping only.	Each	$8.06	20	$161.20
Post, Wood, CCA treated, 6 in. x 8 ft.	12	Wood Post, End 6 inch dia. X 8 ft., CCA Treated. Includes materials and shipping only.	Each	$18.55	8	$148.40
Post, Steel T, 1.33 lbs, 6 ft.	15	Steel Post, Studded 6 ft. - 1.33 lb. Includes materials and shipping only.	Each	$5.95	90	$535.50
Fence, Wire Assembly, Barbed Wire	30	Brace pins, battens, clips, staples. Includes materials and shipping only.	Feet	$0.22	1320	$290.40

Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$8.98	1	$8.98
Herbicide, Sulfometuron & metsulfuron	344	A residual sulfonylurea herbicide that kills broadleaf weeds and some annual grasses. It is a systemic compound with foliar and soil activity. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$12.27	1	$12.27
Gate, Pipe, 12 ft.	1057	6 rail tube gate, 16 gauge. Includes materials and shipping only.	Each	$206.61	2	$413.22
Herbicide, Surfactant	1095	Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$1.81	1	$1.81
Tree, Hardwood, Seedling, Medium	1510	Bare root hardwood seedlings 18 to 36 inches tall; includes tropical containerized seedlings of 10 to 20 cubic inches. Includes materials and shipping only.	Each	$1.17	872	$1,020.24
Shrub, Potted, Small	1524	Potted shrub seedling, 1 quart to 1 gallon. Includes materials and shipping only.	Each	$5.63	65	$365.95
Tree, Conifer, Potted, Small	1534	Potted conifer seedling, 1 quart to 1 gallon. Includes materials and shipping only.	Each	$4.44	65	$288.60
Tree shelter, mesh tree tube, 48 in.	1556	48 inch tall vexar or other open weave tubular tree shelter to protect from animal damage. Materials only.	Each	$1.43	65	$92.95
Tree shelter, solid tube type, 4 in. x 24 in.	1563	4 inch x 24 inch tree tube for protection from animal damage. Materials only.	Each	$2.46	65	$159.90
Tree shelter, solid tube type, 4 in. x 48 in.	1566	4 inch x 48 inch tree tube for protection from animal damage. Materials only.	Each	$5.02	165	$828.30
Stakes, wood, 1 in. x 1 in. x 48 in.	1578	1 in. x 1 in. x 48 in. wood stakes to fasten items in place. Includes materials only.	Each	$1.80	295	$531.00
Mobilization						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	2	$341.52

Practice: B000GRZ5 - Grazing Bundle 5 - Range and Pasture

Scenario #4 - Grazing Bundle 5 - Range and Pasture

Scenario Description:
This bundle addresses livestock production limitation, degraded plant condition, and fish and wildlife inadequate habitat resource concerns through adoption of enhancements E528A, E315A, and E645A.

Before Situation:
Resources are protected at the minimum level of the conservation practice standard(s) applied as part of the enhancement.

After Situation:
The adoption of this enhancement will provide resource protection above the minimum level of the conservation practice standard(s) applied.

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 1,050.0

Scenario Total Cost: $5,721.80

Scenario Cost/Unit: $5.45

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Acquisition of Technical Knowledge						
Training, Workshops	294	Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants.	Each	$100.83	1	$100.83
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	28	$664.72
Chemical, spot treatment, single stem application	964	Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included.	Hours	$68.31	2	$136.62
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hours	$18.07	12	$216.84
Trailer, enclosed, small	1503	Small enclosed trailer (typically less than 30' in length) pulled by a pickup to transport materials and equipment. Truck not included.	Hours	$11.36	24	$272.64
Foregone Income						
FI, Grazing AUMs	2079	Grazing is the Primary Land Use	Animal Unit Month	$19.44	36	$699.84
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	65	$1,506.70
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	2	$83.56
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	12	$1,116.48
Materials						
Wire, Polywire	8	Wire, Polywire for electric fence - 1,300 ft. Includes materials and shipping only.	Each	$55.14	1	$55.14
Electric, Energizer, Solar	27	Electric, Energizer, Solar for electric fence. Includes materials and shipping only.	Each	$369.77	1	$369.77
Tank, Polyethylene, 300 gallon	291	Portable heavy duty rubber stock tank.	Each	$327.90	1	$327.90
Mobilization						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	1	$170.76

Practice: B000LLP1 - Longleaf Pine Bundle#1

Scenario #1 - Longleaf Pine Bundle#1

Scenario Description:
?Improves conifer forest health through prescribed burning and grazing management. Addresses water quality degredation, degraded plant condition, and fish/wildlife inadequate habitat.

Before Situation:
Resources are protected at the minimum level of the conservation practice standard(s) applied as part of the enhancement.

After Situation:
The adoption of this enhancement will provide resource protection above the minimum level of the conservation practice standard(s) applied

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 110.0

Scenario Total Cost: $10,345.06

Scenario Cost/Unit: $94.05

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Auger, Post driver attachment	934	Auger or post driver attachment to a tractor or skidsteer. Does not include power unit. Labor not included.	Hours	$12.82	5	$64.10
Chainsaw	937	Equipment and power unit costs. Labor not included.	Hours	$7.00	7	$49.00
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	24	$569.76
Mower, Bush Hog	940	Equipment and power unit costs. Labor not included.	Hours	$49.85	2	$99.70
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$6.00	2	$12.00
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hours	$22.62	9	$203.58
Chemical, spot treatment, single stem application	964	Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included.	Hours	$68.31	3	$204.93
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hours	$18.07	2	$36.14
Hand tools, tree planting	1590	Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included.	Hours	$12.58	16	$201.28
Water tank, portable	1602	Portable water tank transported in a pick up truck. Typically with 200 gallon capacity includes tank with pump, hose and sprayer. Does not include the pickup truck. Equipment only.	Hours	$13.82	2	$27.64
Foregone Income						
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acres	$287.72	0.82	$235.93
FI, Soybeans Dryland	1961	Dryland Soybeans is Primary Crop	Acres	$225.71	0.72	$162.51
FI, Wheat Dryland	1963	Dryland Wheat is Primary Crop	Acres	$109.80	0.46	$50.51
FI, Grazing AUMs	2079	Grazing is the Primary Land Use	Animal Unit Month	$19.44	12	$233.28
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	55	$1,652.75
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	53	$1,228.54
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	9	$227.79
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	14	$584.92

Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	3	$279.12
Materials						
Wire, Barbed, Galvanized, 12.5 Gauge, 1,320' roll	1	Galvanized 12.5 gauge, 1,320' roll. Includes materials and shipping only.	Each	$79.36	4	$317.44
Post, Wood, CCA treated, 3-4 in. x 7 ft.	9	Wood Post, Line 3-4 inch dia. X 7 ft., CCA Treated. Includes materials and shipping only.	Each	$8.06	20	$161.20
Post, Wood, CCA treated, 6 in. x 8 ft.	12	Wood Post, End 6 inch dia. X 8 ft., CCA Treated. Includes materials and shipping only.	Each	$18.55	8	$148.40
Post, Steel T, 1.33 lbs, 6 ft.	15	Steel Post, Studded 6 ft. - 1.33 lb. Includes materials and shipping only.	Each	$5.95	90	$535.50
Fence, Wire Assembly, Barbed Wire	30	Brace pins, battens, clips, staples. Includes materials and shipping only.	Feet	$0.22	1320	$290.40
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$8.98	1	$8.98
Herbicide, Picloram	337	Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$19.01	1	$19.01
Herbicide, Sulfometuron & metsulfuron	344	A residual sulfonylurea herbicide that kills broadleaf weeds and some annual grasses. It is a systemic compound with foliar and soil activity. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$12.27	1	$12.27
Gate, Pipe, 12 ft.	1057	6 rail tube gate, 16 gauge. Includes materials and shipping only.	Each	$206.61	2	$413.22
Herbicide, Surfactant	1095	Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$1.81	1	$1.81
Tree, Hardwood, Seedling, Medium	1510	Bare root hardwood seedlings 18 to 36 inches tall; includes tropical containerized seedlings of 10 to 20 cubic inches. Includes materials and shipping only.	Each	$1.17	872	$1,020.24
Tree shelter, solid tube type, 4 in. x 48 in.	1566	4 inch x 48 inch tree tube for protection from animal damage. Materials only.	Each	$5.02	100	$502.00
Stakes, wood, 1 in. x 1 in. x 48 in.	1578	1 in. x 1 in. x 48 in. wood stakes to fasten items in place. Includes materials only.	Each	$1.80	100	$180.00
Fuel, ignition fuel mixture	1596	Mixture of gasoline and diesel for ignition of prescribed burns. Materials only.	Gallons	$3.14	5	$15.70
Mobilization						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	2	$341.52
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: B000LLP2 - Longleaf Pine Bundle#2

Scenario #1 - Longleaf Pine Bundle#2

Scenario Description:
Improves conifer forest health through prescribed burning and forest stand management. Addresses air quality impacts, degraded plant condition, and fish/wildlife inadequate habitat.

Before Situation:
Resources are protected at the minimum level of the conservation practice standard(s) applied as part of the enhancement.

After Situation:
The adoption of this enhancement will provide resource protection above the minimum level of the conservation practice standard(s) applied

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 125.0

Scenario Total Cost: $16,224.20

Scenario Cost/Unit: $129.79

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Chainsaw	937	Equipment and power unit costs. Labor not included.	Hours	$7.00	157	$1,099.00
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	18	$427.32
Mechanical cutter, chopper	943	Forestry mulcher, flail shredder, hydro axe, brush cutter, etc. Equipment and power unit costs. Labor not included.	Hours	$95.19	16	$1,523.04
Chemical, spot treatment, single stem application	964	Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included.	Hours	$68.31	19	$1,297.89
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hours	$18.07	2	$36.14
Water tank, portable	1602	Portable water tank transported in a pick up truck. Typically with 200 gallon capacity includes tank with pump, hose and sprayer. Does not include the pickup truck. Equipment only.	Hours	$13.82	2	$27.64
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	174	$5,228.70
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	4	$92.72
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	16	$404.96
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	2	$83.56
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	44	$4,093.76
Materials						
Herbicide, Imazapyr	336	Pre and post-emergent, non-selective herbicide for control of undesirable vegetation in non-crop areas. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$39.97	20	$799.40
Herbicide, Picloram	337	Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$19.01	1	$19.01
Fuel, ignition fuel mixture	1596	Mixture of gasoline and diesel for ignition of prescribed burns. Materials only.	Gallons	$3.14	5	$15.70
Native Perennial Grasses, Legumes and/or Forb Mix for Targeted Wildlife/Pollinator Habitat or Ecological Restoration, moderate commercial availability	2619	Diverse mix of native perennial grasses, legumes and forbs, less than 50% grasses, may include biennials and a small percentage of annual species for establishment purposes and/or if allowed by the CPS. This is a mix composed of species required to meet specific wildlife/pollinator habitat or ecological requirements. Seed is moderately easy to purchase commercially. Includes materials and shipping.	Acres	$396.82	1	$396.82
Mobilization						

Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	1	$170.76
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: B000LLP3 - Longleaf Pine Bundle#3

Scenario #1 - Longleaf Pine Bundle#3

Scenario Description:
Improves forest health and wildlife habitat through forest stand management. Addresses air quality impacts, degraded plant condition, and fish/wildlife inadequate habitat.

Before Situation:
Resources are protected at the minimum level of the conservation practice standard(s) applied as part of the enhancement.

After Situation:
The adoption of this enhancement will provide resource protection above the minimum level of the conservation practice standard(s) applied

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 125.0

Scenario Total Cost: $17,706.01

Scenario Cost/Unit: $141.65

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Chainsaw	937	Equipment and power unit costs. Labor not included.	Hours	$7.00	157	$1,099.00
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	42	$997.08
Mechanical cutter, chopper	943	Forestry mulcher, flail shredder, hydro axe, brush cutter, etc. Equipment and power unit costs. Labor not included.	Hours	$95.19	16	$1,523.04
Chemical, spot treatment, single stem application	964	Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included.	Hours	$68.31	19	$1,297.89
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hours	$18.07	2	$36.14
Trailer, enclosed, small	1503	Small enclosed trailer (typically less than 30' in length) pulled by a pickup to transport materials and equipment. Truck not included.	Hours	$11.36	24	$272.64
Water tank, portable	1602	Portable water tank transported in a pick up truck. Typically with 200 gallon capacity includes tank with pump, hose and sprayer. Does not include the pickup truck. Equipment only.	Hours	$13.82	2	$27.64
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	173	$5,198.65
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	50	$1,159.00
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	16	$404.96
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	2	$83.56
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	44	$4,093.76
Materials						
Herbicide, Imazapyr	336	Pre and post-emergent, non-selective herbicide for control of undesirable vegetation in non-crop areas. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$39.97	20	$799.40
Herbicide, Picloram	337	Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$19.01	1	$19.01
Fuel, ignition fuel mixture	1596	Mixture of gasoline and diesel for ignition of prescribed burns. Materials only.	Gallons	$3.14	5	$15.70
Mobilization						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	1	$170.76

Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: B000LLP4 - Longleaf Pine Bundle #4

Scenario #4 - Longleaf Pine Bundle #4

Scenario Description:

Improves forest health and wildlife habitat through conversion of forest stands that are not predominantly longleaf pine. Addresses degraded plant condition, fish/wildlife inadequate food and habitat, and water quality.

Before Situation:

Resources are protected at the minimum level of the conservation practice standards applied as part of the enhancement.

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level of the conservation practice standards applied.

Feature Measure: Acres

Scenario Unit: Acres

Scenario Typical Size: 50.0

Scenario Total Cost: $16,566.21

Scenario Cost/Unit: $331.32

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Chainsaw	937	Equipment and power unit costs. Labor not included.	Hours	$7.00	157	$1,099.00
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	18	$427.32
Mechanical cutter, chopper	943	Forestry mulcher, flail shredder, hydro axe, brush cutter, etc. Equipment and power unit costs. Labor not included.	Hours	$95.19	20	$1,903.80
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$6.00	10	$60.00
Chemical, spot treatment, single stem application	964	Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included.	Hours	$68.31	23	$1,571.13
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hours	$18.07	2	$36.14
Water tank, portable	1602	Portable water tank transported in a pick up truck. Typically with 200 gallon capacity includes tank with pump, hose and sprayer. Does not include the pickup truck. Equipment only.	Hours	$13.82	2	$27.64
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	173	$5,198.65
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	2	$46.36
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	20	$506.20
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	2	$83.56
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	44	$4,093.76
Materials						
Herbicide, Imazapyr	336	Pre and post-emergent, non-selective herbicide for control of undesirable vegetation in non-crop areas. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$39.97	20	$799.40
Herbicide, Picloram	337	Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$19.01	1	$19.01
Fuel, ignition fuel mixture	1596	Mixture of gasoline and diesel for ignition of prescribed burns. Materials only.	Gallons	$3.14	5	$15.70
Mobilization						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	1	$170.76

Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: B000LLP5 - Longleaf Pine Bundle #5

Scenario #4 - Longleaf Pine Bundle #5

Scenario Description:
Improves conifer forest health through prescribed burning and forest stand management, and reduction of pine straw raking. Addresses soil and water quality, degraded plant condition, and fish/wildlife inadequate habitat.

Before Situation:
Resources are protected at the minimum level of the conservation practice standards applied as part of the enhancement.

After Situation:
The adoption of this enhancement will provide resource protection above the minimum level of the conservation practice standards applied.

Feature Measure: Acres

Scenario Unit: Acres

Scenario Typical Size: 50.0

Scenario Total Cost: $34,090.28

Scenario Cost/Unit: $681.81

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Chainsaw	937	Equipment and power unit costs. Labor not included.	Hours	$7.00	157	$1,099.00
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	20	$474.80
Mechanical cutter, chopper	943	Forestry mulcher, flail shredder, hydro axe, brush cutter, etc. Equipment and power unit costs. Labor not included.	Hours	$95.19	16	$1,523.04
Chemical, spot treatment, single stem application	964	Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included.	Hours	$68.31	19	$1,297.89
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hours	$18.07	6	$108.42
Water tank, portable	1602	Portable water tank transported in a pick up truck. Typically with 200 gallon capacity includes tank with pump, hose and sprayer. Does not include the pickup truck. Equipment only.	Hours	$13.82	2	$27.64
Foregone Income						
FI, reduced pine straw raking	2691	Longleaf pine needles are primary crop.	Acres	$342.30	50	$17,115.00
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	173	$5,198.65
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	2	$46.36
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	16	$404.96
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	2	$83.56
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	54	$5,024.16
Materials						
Test, Soil Test, Standard	299	Includes materials, shiping, labor, and equipment costs.	Each	$12.70	10	$127.00
Tree Marking Paint	313	Trees to be cut through tree marking are physically identified through the application of paint on the tree. Typically one quart of paint is used to mark one acre of trees. Includes materials and shipping only.	Acres	$9.43	5	$47.15
Herbicide, Imazapyr	336	Pre and post-emergent, non-selective herbicide for control of undesirable vegetation in non-crop areas. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$39.97	20	$799.40
Herbicide, Picloram	337	Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$19.01	1	$19.01

Fuel, ignition fuel mixture	1596	Mixture of gasoline and diesel for ignition of prescribed burns. Materials only.	Gallons	$3.14	5	$15.70
Mobilization						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	1	$170.76
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: B000PST5 - Pasture Bundle 5

Scenario #4 - Pasture Bundle #5

Scenario Description:
Implementation of site specific strategies applied to range or pasture land uses through adoption of the following CSP enhancements: E528J, E315A, and E645A.

Before Situation:
Resources are protected at the minimum level of the conservation practice standard(s) applied as part of the enhancement.

After Situation:
Adoption of these bundled enhancements provides a combined benefit for resource protection that exceeds the minimum level for the associated practice standards in order to address the resource concerns Soil Erosion or Water Quality Degradation, Degraded Plant Condition, and Fish and Wildlife Inadequate Habitat.

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 60.0

Scenario Total Cost: $3,604.78

Scenario Cost/Unit: $60.08

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Acquisition of Technical Knowledge						
Training, Workshops	294	Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants.	Each	$100.83	1	$100.83
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	24	$569.76
Chemical, spot treatment, single stem application	964	Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included.	Hours	$68.31	2	$136.62
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hours	$18.07	6	$108.42
Trailer, enclosed, small	1503	Small enclosed trailer (typically less than 30' in length) pulled by a pickup to transport materials and equipment. Truck not included.	Hours	$11.36	24	$272.64
Foregone Income						
FI, Grazing AUMs	2079	Grazing is the Primary Land Use	Animal Unit Month	$19.44	6	$116.64
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	56	$1,298.08
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	2	$83.56
Materials						
Wire, Polywire	8	Wire, Polywire for electric fence - 1,300 ft. Includes materials and shipping only.	Each	$55.14	4	$220.56
Electric, Energizer, Solar	27	Electric, Energizer, Solar for electric fence. Includes materials and shipping only.	Each	$369.77	1	$369.77
Tank, Polyethylene, 300 gallon	291	Portable heavy duty rubber stock tank.	Each	$327.90	1	$327.90

Practice: B000PSTX - Pasture Bundle #6 - Pasture

Scenario #8 - Pasture Bundle #6

Scenario Description:

Managing the harvest of vegetation with grazing and/or browsing animals for the purposes of maintaining desired pasture composition/plant vigor and improving/maintaining quantity and quality of forage for the animals' health and productivity following the recommendations of a qualifying professional, as detailed in the documentation and implementation requirements. Establishing adapted and/or compatible species, varieties, or cultivars of perennial, herbaceous species that can provide the structure and composition needed to enhance livestock and wildlife habitat, particularly when targeted forage supply and quality, cover, and shelter are not available in other pastures.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 528 - Prescribed Grazing. Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 512 - Pasture and Hay Planting. Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 315-Herbaceous Weed Treatment

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 528 - Prescribed Grazing. The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 512 - Pasture and Hay Planting. The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 315-Herbaceous Weed Treatment.

Feature Measure: Acres

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $7,749.49

Scenario Cost/Unit: $77.49

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	25	$593.50
Chemical, spot treatment, single stem application	964	Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included.	Hours	$68.31	2	$136.62
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hours	$18.07	12	$216.84
Trailer, enclosed, small	1503	Small enclosed trailer (typically less than 30' in length) pulled by a pickup to transport materials and equipment. Truck not included.	Hours	$11.36	4	$45.44
Foregone Income						
FI, Grazing AUMs	2079	Grazing is the Primary Land Use	Animal Unit Month	$19.44	36	$699.84
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	5	$115.90
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	4	$167.12
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	12	$1,116.48
Materials						
Wire, Polywire	8	Wire, Polywire for electric fence - 1,300 ft. Includes materials and shipping only.	Each	$55.14	4	$220.56
Electric, Energizer, Solar	27	Electric, Energizer, Solar for electric fence. Includes materials and shipping only.	Each	$369.77	1	$369.77
Tank, Polyethylene, 300 gallon	291	Portable heavy duty rubber stock tank.	Each	$327.90	1	$327.90
Nutritional Balance Analyzer, fecal sample analysis only	1127	NIRS fecal analysis, animal performance report. Includes materials and shipping only.	Each	$47.42	6	$284.52
Introduced Perennial Grasses, Legumes and/or Forbs, Low Density	2747	Introduced perennial grasses, legumes, and/or forbs, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Includes material and shipping.	Acres	$34.55	100	$3,455.00

Practice: E199A - Comprehensive Conservation Plan

Scenario #4 - Single Enterprise-Low

Scenario Description:

Conservation plan developed by a Technical Service Provider (TSP) for a participant enrolled in a contract through the Conservation Stewardship Program (CSP). NRCS will use the Conservation Assessment and Ranking Tool (CART) to identify all State priority resource concern categories (PRCCs) that the TSP must include in the CSP CCP. TSP develops a minimum of one conservation system alternative for one land use by each land management system included in the producer's operation. This typical scenario involves one agricultural enterprise and a.) 1 Land use with less than or equal to 4 priority resource concerns, OR b.) 2-3 Land Uses with less than or equal to two priority resource concern categories per land use.

Before Situation:

NRCS has identified priority resource concern categories that have not met stewardship thresholds. State priority resource concern categories need to be evaluated for one land use and each land management system.

After Situation:

TSP conducts an on-site inventory of all land uses and land management systems in the producer's operation. Assessment for each priority resource concern is completed by land use. Conservation practices, enhancements or bundles are identified. Develops a minimum of one conservation system alternative for each land use that meet the producer's objectives. Plan document follows the requirements ofE199A Guide sheet and meets Conservation Plan CPA 199 or applicable conservation activities CPA 102 CNMP or CPA 106 Forestry Plan.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $6,933.46

Scenario Cost/Unit: $6,933.46

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, agronomist	1295	Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner.	Hours	$103.89	10	$1,038.90
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	8	$894.16
Cap Labor, conservation scientist	1300	Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering.	Hours	$83.34	60	$5,000.40

Practice: E199A - Comprehensive Conservation Plan

Scenario #20 - Single Enterprise-Medium

Scenario Description:

Conservation plan developed by a Technical Service Provider (TSP) for a participant enrolled in a contract through the Conservation Stewardship Program (CSP). NRCS will use the Conservation Assessment and Ranking Tool (CART) to identify all State priority resource concern categories (PRCCs) that the TSP must include in the CSP CCP. TSP develops a minimum of one conservation system alternative for one land use by each land management system included in the producer's operation. This typical scenario involves one agricultural enterprise and a.) 1 Land Use with greater than 4 priority resource concerns, OR b.) 2-3 Land Use with 3 to 4 priority resource concern categories per land use, OR c.) 4 or more Land Use with less than or equal to 2 priority resource concerns.

Before Situation:

NRCS has identified priority resource concern categories that have not met stewardship thresholds. State priority resource concern categories need to be evaluated for one land use and each land management system.

After Situation:

TSP conducts an on-site inventory of all land uses and land management systems in the producer's operation. Assessment for each priority resource concern is completed by land use. Conservation practices, enhancements or bundles are identified. Develops a minimum of one conservation system alternative for each land use that meet the producer's objectives. Plan document follows the requirements ofE199A Guide sheet and meets Conservation Plan CPA 199 or applicable conservation activities CPA 102 CNMP or CPA 106 Forestry Plan.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $9,047.34

Scenario Cost/Unit: $9,047.34

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, agronomist	1295	Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner.	Hours	$103.89	10	$1,038.90
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	12	$1,341.24
Cap Labor, conservation scientist	1300	Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering.	Hours	$83.34	80	$6,667.20

Practice: E199A - Comprehensive Conservation Plan

Scenario #36 - Single Enterprise-High

Scenario Description:

Conservation plan developed by a Technical Service Provider (TSP) for a participant enrolled in a contract through the Conservation Stewardship Program (CSP). NRCS will use the Conservation Assessment and Ranking Tool (CART) to identify all State priority resource concern categories (PRCCs) that the TSP must include in the CSP CCP. TSP develops a minimum of one conservation system alternative for one land use by each land management system included in the producer's operation. This typical scenario involves one agricultural enterprise and a.) 2-3 Land Use with 4 or more priority resource concern categories per land use, OR b.) 4 or more Land Use with 3 to 4 priority resource concerns.

Before Situation:

NRCS has identified priority resource concern categories that have not met stewardship thresholds. State priority resource concern categories need to be evaluated for one land use and each land management system.

After Situation:

TSP conducts an on-site inventory of all land uses and land management systems in the producer's operation. Assessment for each priority resource concern is completed by land use. Conservation practices, enhancements or bundles are identified. Develops a minimum of one conservation system alternative for each land use that meet the producer's objectives. Plan document follows the requirements ofE199A Guidesheet and meets Conservation Plan CPA 199 or applicable conservation activities CPA 102 CNMP or CPA 106 Forestry Plan.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $11,125.14

Scenario Cost/Unit: $11,125.14

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, agronomist	1295	Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner.	Hours	$103.89	30	$3,116.70
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	12	$1,341.24
Cap Labor, conservation scientist	1300	Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering.	Hours	$83.34	80	$6,667.20

Practice: E199A - Comprehensive Conservation Plan

Scenario #52 - Multiple Enterprise-Medium

Scenario Description:

Conservation plan developed by a Technical Service Provider (TSP) for a participant enrolled in a contract through the Conservation Stewardship Program (CSP). NRCS will use the Conservation Assessment and Ranking Tool (CART) to identify all State priority resource concern categories (PRCCs) that the TSP must include in the CSP CCP. TSP develops a minimum of one conservation system alternative for one land use by each land management system included in the producer's operation. This typical scenario involves two or more agricultural enterprises and a.) 1 Land Use with up to 4 priority resource concerns, OR b.) 2-3 Land Use with 1 to 2 priority resource concern categories per land use.

Before Situation:

NRCS has identified priority resource concern categories that have not met stewardship thresholds. State priority resource concern categories need to be evaluated for one land use and each land management system.

After Situation:

TSP conducts an on-site inventory of all land uses and land management systems in the producer's operation. Assessment for each priority resource concern is completed by land use. Conservation practices, enhancements or bundles are identified. Develops a minimum of one conservation system alternative for each land use that meet the producer's objectives. Plan document follows the requirements ofE199A Guide sheet and meets Conservation Plan CPA 199 or applicable conservation activities CPA 102 CNMP or CPA 106 Forestry Plan.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $12,405.62

Scenario Cost/Unit: $12,405.62

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, agronomist	1295	Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner.	Hours	$103.89	30	$3,116.70
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	16	$1,788.32
Cap Labor, conservation scientist	1300	Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering.	Hours	$83.34	90	$7,500.60

Practice: E199A - Comprehensive Conservation Plan

Scenario #68 - Multiple Enterprise-High

Scenario Description:

Conservation plan developed by a Technical Service Provider (TSP) for a participant enrolled in a contract through the Conservation Stewardship Program (CSP). NRCS will use the Conservation Assessment and Ranking Tool (CART) to identify all State priority resource concern categories (PRCCs) that the TSP must include in the CSP CCP. TSP develops a minimum of one conservation system alternative for one land use by each land management system included in the producer's operation. This typical scenario involves two or more agricultural enterprises and a.) 2-3 Land Use with 3 to 4 priority resource concern categories per land use, OR b.) 2-3 Land Use with 4 or more priority resource concerns, OR c.) 4 or more Land Use with any amount of priority resource concerns

Before Situation:

NRCS has identified priority resource concern categories that have not met stewardship thresholds. State priority resource concern categories need to be evaluated for one land use and each land management system.

After Situation:

TSP conducts an on-site inventory of all land uses and land management systems in the producer's operation. Assessment for each priority resource concern is completed by land use. Conservation practices, enhancements or bundles are identified. Develops a minimum of one conservation system alternative for each land use that meet the producer's objectives. Plan document follows the requirements ofE199A Guide sheet and meets Conservation Plan CPA 199 or applicable conservation activities CPA 102 CNMP or CPA 106 Forestry Plan.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $14,277.92

Scenario Cost/Unit: $14,277.92

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, agronomist	1295	Conservation Activity Plan labor to conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants or trees, shrubs, and nursery stock, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity. May provide on-site consulting services to help growers troubleshoot nutrient and pest problems, establish appropriate agronomic sampling programs and implement management recommendations in a cost-effective and environmentally sound manner.	Hours	$103.89	40	$4,155.60
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	16	$1,788.32
Cap Labor, conservation scientist	1300	Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering.	Hours	$83.34	100	$8,334.00

Practice: E199A - Comprehensive Conservation Plan

Scenario #84 - Comprehensive Conservation Plan for Operation with > 2 land uses and 2 or more resource concerns

Scenario Description:

Conservation plan developed by a Technical Service Provider (TSP) for a participant enrolled in a contract through the Conservation Stewardship Program (CSP). NRCS will use the Conservation Assessment and Ranking Tool (CART) to identify all State priority resource concern categories (PRCCs) that the TSP must include in the CSP CCP. TSP develops a minimum of one conservation system alternative for the identified land uses by each land management system included in each of the producer's operations. Does not include livestock waste storage planning or evaluation of existing components.

Before Situation:

NRCS has identified priority resource concern categories that have not met stewardship thresholds. State priority resource concern categories need to be evaluated for all land uses and each land management system for each enterprise or farm operation.

After Situation:

Planner conducts an on-site inventory of all land uses and land management systems in the producer's operation. Assessment for each priority resource concern is completed by land use. Conservation practices, enhancements or bundles are identified. Develops a minimum of one conservation system alternative for each land use that meet the producer's objectives. Plan document follows the requirements of E199A Guidesheet.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $3,811.06

Scenario Cost/Unit: $3,811.06

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	8	$894.16
Cap Labor, conservation scientist	1300	Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering.	Hours	$83.34	35	$2,916.90

Practice: E199A - Comprehensive Conservation Plan

Scenario #100 - Comprehensive Conservation Plan on 2 or more Land Use

Scenario Description:

Conservation plan developed by a Technical Service Provider (TSP) for a participant enrolled in a contract through the Conservation Stewardship Program (CSP). NRCS will use the Conservation Assessment and Ranking Tool (CART) to identify all State priority resource concern categories (PRCCs) that the TSP must include in the CSP CCP. TSP develops a minimum of one conservation system alternative for the identified land uses by each land management system included in the producer's operation. Does not include livestock waste storage planning or evaluation of existing components.

Before Situation:

NRCS has identified priority resource concern categories that have not met stewardship thresholds. State priority resource concern categories need to be evaluated for 2 land uses and each land management system for each enterprise or farm operation.

After Situation:

Planner conducts an on-site inventory of all land uses and land management systems in the producer's operation. Assessment for each priority resource concern is completed by land use. Conservation practices, enhancements or bundles are identified. Develops a minimum of one conservation system alternative for each land use that meet the producer's objectives. Plan document follows the requirements of E199A Guidesheet.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $3,394.36

Scenario Cost/Unit: $3,394.36

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	8	$894.16
Cap Labor, conservation scientist	1300	Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering.	Hours	$83.34	30	$2,500.20

Practice: E199A - Comprehensive Conservation Plan

Scenario #116 - Basic Comprehensive Conservation Plan-One Land Use

Scenario Description:

Conservation plan developed by a Technical Service Provider (TSP) for a participant enrolled in a contract through the Conservation Stewardship Program (CSP). NRCS will use the Conservation Assessment and Ranking Tool (CART) to identify all State priority resource concern categories (PRCCs) that the TSP must include in the CSP CCP. TSP develops a minimum of one conservation system alternative for one land use by each land management system included in the producer's operation. Does not include livestock waste storage planning or evaluation of existing components.

Before Situation:

NRCS has identified priority resource concern categories that have not met stewardship thresholds. State priority resource concern categories need to be evaluated for one land use and each land management system.

After Situation:

Planner conducts an on-site inventory of all land uses and land management systems in the producer's operation. Assessment for each priority resource concern is completed by land use. Conservation practices, enhancements or bundles are identified. Develops a minimum of one conservation system alternative for each land use that meet the producer's objectives. Plan document follows the requirements ofE199A Guidesheet.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $2,560.96

Scenario Cost/Unit: $2,560.96

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
CAP Labor, professional engineer	1297	Conservation Activity Plan labor to apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products. Cost associated with this component includes overhead and benefits (market price).	Hours	$111.77	8	$894.16
Cap Labor, conservation scientist	1300	Conservation Activity Plan labor to manage, improve, and protect natural resources to maximize their use without damaging the environment. Interprets resource information and assess resource conditions to provide conservation practice alternatives to producers to make decisions on the treatment of their soil, water, air, plant, animal, and energy resources. May instruct farmers, agricultural production managers, or ranchers in best ways to use crop rotation, contour plowing, or terracing to conserve soil and water; in the number and kind of livestock and forage plants best suited to particular ranges; and in range and farm improvements, such as fencing and reservoirs for stock watering.	Hours	$83.34	20	$1,666.80

Practice: E300EAP1 - Existing Activity Payment-Land Use

Scenario #4 - CSP EAP Cropland and Farmstead

Scenario Description:

This existing activity payment component (EAP1) provides a CSP participant with a payment for existing stewardship specific to the land uses included in the operation. This scenario covers the land uses cropland and farmstead.

Before Situation:

Producer implements conservation activities on cropland or farmstead to achieve a base level of stewardship.

After Situation:

Through participation in the CSP, the producer continues to maintain or improve the base level of stewardship assessed at the time of enrollment.

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 1.0

Scenario Total Cost: $7.50

Scenario Cost/Unit: $7.50

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
EAP - Cropland/Farmstead	2737	Existing Activity Payment for Cropland or Farmstead land use.	Acres	$7.50	1	$7.50

Practice: E300EAP1 - Existing Activity Payment-Land Use

Scenario #15 - CSP EAP Pasture

Scenario Description:

This existing activity payment component (EAP1) provides a CSP participant with a payment for existing stewardship specific to the land uses included in the operation. This scenario covers the land use pasture.

Before Situation:

Producer implements conservation activities on pasture to achieve a base level of stewardship.

After Situation:

Through participation in the CSP, the producer continues to maintain or improve the base level of stewardship assessed at the time of enrollment.

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 1.0

Scenario Total Cost: $3.00

Scenario Cost/Unit: $3.00

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
EAP - Pasture	2738	Existing Activity Payment for Pasture land use.	Acres	$3.00	1	$3.00

Practice: E300EAP1 - Existing Activity Payment-Land Use

Scenario #27 - CSP EAP Range

Scenario Description:

This existing activity payment component (EAP1) provides a CSP participant with a payment for existing stewardship specific to the land uses included in the operation. This scenario covers the land use range.

Before Situation:

Producer implements conservation activities on range to achieve a base level of stewardship.

After Situation:

Through participation in the CSP, the producer continues to maintain or improve the base level of stewardship assessed at the time of enrollment.

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 1.0

Scenario Total Cost: $1.00

Scenario Cost/Unit: $1.00

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
EAP - Range	2739	Existing Activity Payment for Range land use.	Acres	$1.00	1	$1.00

Practice: E300EAP1 - Existing Activity Payment-Land Use

Scenario #43 - CSP EAP NIPF

Scenario Description:

This existing activity payment component (EAP1) provides a CSP participant with a payment for existing stewardship specific to the land uses included in the operation. This scenario covers the land uses non-industrial private forest land (NIPF).

Before Situation:

Producer implements conservation activities on NIPF to achieve a base level of stewardship.

After Situation:

Through participation in the CSP, the producer continues to maintain or improve the base level of stewardship assessed at the time of enrollment.

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 1.0

Scenario Total Cost: $0.50

Scenario Cost/Unit: $0.50

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
EAP - Non-Industrial Private Forestland (NIPF)	2740	Existing Activity Payment for Non-Industrial Private Forestland (NIPF).	Acres	$0.50	1	$0.50

Practice: E300EAP1 - Existing Activity Payment-Land Use

Scenario #59 - CSP EAP AAL

Scenario Description:

This existing activity payment component (EAP1) provides a CSP participant with a payment for existing stewardship specific to the land uses included in the operation. This scenario covers the land use associated agricultural land (AAL).

Before Situation:

Producer implements conservation activities on AAL to achieve a base level of stewardship.

After Situation:

Through participation in the CSP, the producer continues to maintain or improve the base level of stewardship assessed at the time of enrollment.

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 1.0

Scenario Total Cost: $0.50

Scenario Cost/Unit: $0.50

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
EAP - Associated Agricultural Land (AAL)	2741	Existing Activity Payment for Associated Agricultural Land (AAL)	Acres	$0.50	1	$0.50

Practice: E300EAP2 - Existing Activity Payment-Resource Concern

Scenario #4 - CSP EAP RC met at time of enrollment

Scenario Description:

This existing activity payment component (EAP2) provides a CSP participant with a payment for existing stewardship specific to the number of resource concerns met at the time of enrollment.

Before Situation:

Producer implements conservation activities across all land uses included in the operation to meet a minimum of two resource concerns at the time of enrollment.

After Situation:

Through participation in the CSP, the producer continues to maintain or improve the resource concerns met at the time of enrollment.

Feature Measure: Resource Concern Met

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $300.00

Scenario Cost/Unit: $300.00

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
EAP - Resource Concern	2742	Existing Activity Payment for Resource Concern(s).	Number	$300.00	1	$300.00

Practice: E300GCI - Grassland Conservation Initiative

Scenario #4 - Grassland Conservation Initiative Activity

Scenario Description:

The Grassland Conservation Initiative Activity assists producers in protecting grazing uses; conserving and improving soil, water, and wildlife resources; and achieving related conservation values by conserving eligible land through grassland conservation contracts. Producers participating in the GCI must agree to meet or exceed planning criteria for at least one of the priority resource concerns: Soil Erosion, Soil Quality Degradation, Water Quality Degradation, Fish and Wildlife Habitat Improvement, Air Quality Impacts, Degraded Plant Condition, and/or Livestock Production Limitation.

Before Situation:

Eligible base acres have been maintained and reported as grass, idle, or fallow for all years between January 2009 and December 2017.

After Situation:

Through participation in the GCI, the producer will meet or exceed the planning criteria for at least one priority resource concern by managing the enrolled land to maintain grassland values even if the producer chooses to plant a crop on the enrolled acres.

Feature Measure: Acres

Scenario Unit: Acres

Scenario Typical Size: 1.0

Scenario Total Cost: $18.00

Scenario Cost/Unit: $18.00

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Grassland Conservation Initiative - Labor	2736	Labor to assist producers protect grazing uses through grassland conservation contracts.	Acres	$18.00	1	$18.00

Practice: E314A - Brush management to improve wildlife habitat

Scenario #1 - Brush management to improve wildlife habitat

Scenario Description:

Brush management is employed to create a desired plant community, consistent with the related ecological site steady state, which will maintain or enhance the wildlife habitat desired for the identified wildlife species. It will be designed to provide plant structure, density and diversity needed to meet those habitat objectives. This enhancement does not apply to removal of woody vegetation by prescribed fire or removal of woody vegetation to facilitate a land use change.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 314 - Brush Management

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 314 - Brush Management

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $1,629.95

Scenario Cost/Unit: $16.30

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Acquisition of Technical Knowledge						
Training, Workshops	294	Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants.	Each	$100.83	1	$100.83
Foregone Income						
FI, Grazing AUMs	2079	Grazing is the Primary Land Use	Animal Unit Month	$19.44	12	$233.28
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	32	$961.60
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	8	$334.24

Practice: E315A - Herbaceous weed treatment to create plant communities consistent with the ecological site

Scenario #1 - Herbaceous weed treatment to create plant communities consistent with the ecological site

Scenario Description:

Mechanical, chemical, or biological, herbaceous weed treatment will be employed to control targeted, herbaceous weeds so as to create, release, or restore desired plant communities that are consistent with achievable, ecological site, steady state descriptions.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 315 - Herbaceous Weed Control

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 315 - Herbaceous Weed Control

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 10.0

Scenario Total Cost: $136.62

Scenario Cost/Unit: $13.66

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Chemical, spot treatment, single stem application	964	Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included.	Hours	$68.31	2	$136.62

Practice: E327A - Conservation cover for pollinators and beneficial insects

Scenario #5 - Conservation cover for pollinators and beneficial insects

Scenario Description:

Seed or plug nectar and pollen producing plants in non-cropped areas such as field borders, vegetative barriers, contour buffer strips, grassed waterways, shelterbelts, hedgerows, windbreaks, conservation cover, and riparian forest and herbaceous buffers.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 327 Conservation Cover.

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 327 Conservation Cover.

Feature Measure: acre planted

Scenario Unit: Acres

Scenario Typical Size: 50.0

Scenario Total Cost: $22,800.88

Scenario Cost/Unit: $456.02

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	11	$261.14
Mower, Bush Hog	940	Equipment and power unit costs. Labor not included.	Hours	$49.85	8	$398.80
Tillage, Primary	946	Includes heavy disking (offset) or chisel plow. Includes equipment, power unit and labor costs.	Acres	$15.95	50	$797.50
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	26	$602.68
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	6	$558.24
Materials						
Native Perennial Grasses, Legumes and/or Forb Mix for Targeted Wildlife/Pollinator Habitat or Ecological Restoration, moderate commercial availability	2619	Diverse mix of native perennial grasses, legumes and forbs, less than 50% grasses, may include biennials and a small percentage of annual species for establishment purposes and/or if allowed by the CPS. This is a mix composed of species required to meet specific wildlife/pollinator habitat or ecological requirements. Seed is moderately easy to purchase commercially. Includes materials and shipping.	Acres	$396.82	50	$19,841.00
Mobilization						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	2	$341.52

Practice: E327B - Establish Monarch butterfly habitat

Scenario #1 - Establish Monarch butterfly habitat

Scenario Description:
Seed or plug milkweed (Asclepias spp.), and high-value monarch butterfly nectar plants on marginal cropland, field borders, contour buffer strips, and similar areas.

Before Situation:
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 327 - Conservation Cover

After Situation:
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 327 - Conservation Cover

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 1.0

Scenario Total Cost: $769.10

Scenario Cost/Unit: $769.10

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Mower, Bush Hog	940	Equipment and power unit costs. Labor not included.	Hours	$49.85	1	$49.85
Chemical, spot treatment, single stem application	964	Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included.	Hours	$68.31	2	$136.62
Cultipacking	1100	Includes equipment, power unit and labor costs.	Acres	$9.21	1	$9.21
Labor						
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	2	$83.56
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	1	$93.04
Materials						
Native Perennial Grasses, Legumes and/or Forb Mix for Targeted Wildlife/Pollinator Habitat or Ecological Restoration, moderate commercial availability	2619	Diverse mix of native perennial grasses, legumes and forbs, less than 50% grasses, may include biennials and a small percentage of annual species for establishment purposes and/or if allowed by the CPS. This is a mix composed of species required to meet specific wildlife/pollinator habitat or ecological requirements. Seed is moderately easy to purchase commercially. Includes materials and shipping.	Acres	$396.82	1	$396.82

Practice: E328A - Resource conserving crop rotation

Scenario #1 - Resource conserving crop rotation

Scenario Description:

Establish a Resource Conserving Crop Rotation. Rotation must include AT LEAST one resource conserving crop as determined by the State Conservationist in a minimum three year crop rotation. The crop rotation will reduce soil erosion (water and wind), improve soil health, improve soil moisture efficiency, and reduce plant pest pressures.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 328 - Conservation Crop Rotation

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 328 - Conservation Crop Rotation

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $1,302.56

Scenario Cost/Unit: $13.03

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	14	$1,302.56

Practice: E328B - Improved resource conserving crop rotation

Scenario #1 - Improved resource conserving crop rotation

Scenario Description:

Improve an existing Resource Conserving Crop Rotation. Must enrich an existing rotation which already includes AT LEAST one resource conserving crop as determined by the State Conservationist in a minimum three year crop rotation. The crop rotation will reduce soil erosion (water and wind), improve soil health, improve soil moisture efficiency, and reduce plant pest pressures.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 328 - Conservation Crop Rotation

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 328 - Conservation Crop Rotation

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $465.20

Scenario Cost/Unit: $4.65

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	5	$465.20

Practice: E328C - Conservation crop rotation on recently converted CRP grass/legume cover

Scenario #1 - Conservation crop rotation on recently converted CRP grass/legume cover for water erosion

Scenario Description:

Implement a crop rotation management system on crop land acres that have recently converted from CRP grass/legume conservation cover to annual planted crops. Crop rotation minimizes disturbance resulting in a Soil Tillage Intensity Rating (STIR) less than 10 and reduces soil erosion from water or wind to below soil tolerance (T) level. The current NRCS wind and water erosion prediction technologies must be used to document the rotation, soil erosion estimate, and STIR calculations. *This enhancement is limited to acres where the conversion event took place not more than 2 years prior. Enhancement not applicable on hayland.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 328 - Conservation Crop Rotation

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 328 - Conservation Crop Rotation

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $279.12

Scenario Cost/Unit: $2.79

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	3	$279.12

Practice: E328D - Leave standing grain crops unharvested to benefit wildlife

Scenario #1 - Leave standing grain crops unharvested to benefit wildlife

Scenario Description:
Implement a crop rotation which allows a portion of grain crops to be left in fields un-harvested to provide food and cover for wildlife during winter months.

Before Situation:
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 328 - Conservation Crop Rotation

After Situation:
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 328 - Conservation Crop Rotation

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 40.0

Scenario Total Cost: $147.73

Scenario Cost/Unit: $3.69

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Foregone Income						
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acres	$287.72	0.17	$48.91
FI, Soybeans Dryland	1961	Dryland Soybeans is Primary Crop	Acres	$225.71	0.17	$38.37
FI, Wheat Dryland	1963	Dryland Wheat is Primary Crop	Acres	$109.80	0.17	$18.67
Labor						
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	1	$41.78

Practice: E328E - Soil health crop rotation

Scenario #1 - Soil health crop rotation

Scenario Description:

Implement a crop rotation which addresses all four principle components of soil health: increases diversity of the cropping system; maintains residue throughout the year; keeps a living root; and minimizes soil chemical, physical and biological disturbance. The rotation will include at least 4 different crop and/or cover crop types (crop types include cool season grass, warm season grass, cool season broadleaf, warm season broadleaf) grown in a sequence that will produce a positive trend in the Organic Matter (OM) sub factor value over the life of the rotation, as determined by the Soil Conditioning Index (SCI). The current NRCS wind and water erosion prediction technologies must be used to document the rotation and SCI calculations.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 328 - Conservation Crop Rotation

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 328 - Conservation Crop Rotation

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $465.20

Scenario Cost/Unit: $4.65

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	5	$465.20

Practice: E328F - Modifications to improve soil health and increase soil organic matter

Scenario #1 - Modifications to improve soil health and increase soil organic matter

Scenario Description:

Use of soil health assessment to evaluate impact of current conservation crop rotation in addressing soil organic matter depletion (primary assessment made in Year 1). Modifications to the crop rotation and/or crop management will be made as a result of the assessment results (adding a new crop and/or cover crop to the rotation; making changes to planting and/or tillage system, harvest timing of crops, or termination timing of cover crops). During Year 3 a follow up assessment will be completed to allow time for the modifications to show increased soil organic matter. Modified system must produce a positive trend in the Organic Matter (OM) sub factor value over the life of the rotation, as determined by the Soil Conditioning Index (SCI). The current NRCS wind and water erosion prediction technologies must be used to document the rotation and SCI calculations.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 328 - Conservation Crop Rotation

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 328 - Conservation Crop Rotation

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $211.98

Scenario Cost/Unit: $2.12

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	1	$93.04
Materials						
Test, Soil Health, Basic Package	2734	Basic soil health laboratory assessment for soil organic carbon, aggregation, bioavailable nitrogen, respiration, and active carbon according to technical note 450-03. Includes shipping and handling.	Number	$118.94	1	$118.94

Practice: E328G - Crop rotation on recently converted CRP grass/legume cover for soil organic matter improvement

Scenario #1 - Crop rotation on recently converted CRP grass/legume cover for soil organic matter improvement

Scenario Description:

Crop rotation on acres converted, no more than 2 years prior, from CRP grass/legume cover to annual crops. Diverse rotation with living roots and residue cover throughout year and minimal disturbance. Enhancement not applicable on hayland.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 328 - Conservation Crop Rotation

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 328 - Conservation Crop Rotation

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $465.20

Scenario Cost/Unit: $4.65

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	5	$465.20

Practice: E328H - Conservation crop rotation to reduce the concentration of salts

Scenario #1 - Conservation crop rotation to reduce the concentration of salts

Scenario Description:

Implement a crop rotation to reduce the concentration of salts and other chemicals from saline seeps. The rotation should include at least 3 crops and/or cover crops grown in a sequence in the recharge areas of saline seeps that have rooting depths and water requirements adequate to fully utilize all available soil water. Do not use summer fallow. Use an approved water balance procedure to determine crop selection and sequence. Select crops with a tolerance to salinity levels that match the salinity of the discharge area. (See state lists)

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 328 - Conservation Crop Rotation

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 328 - Conservation Crop Rotation

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $372.16

Scenario Cost/Unit: $3.72

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	4	$372.16

Practice: E328I - Forage harvest to reduce water quality impacts by utilization of excess soil nutrients

Scenario #1 - Forage harvest to reduce water quality impacts by utilization of excess soil nutrients

Scenario Description:

Establish a forage crop (single species or mix) following a primary annual crop to take up excess soil nutrients. Select forage known to effectively utilize and scavenge nutrients. Forage shall be harvested for forage, but not be grazed or burned.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 328 - Conservation Crop Rotation

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 328 - Conservation Crop Rotation

Feature Measure: Acres of Cropland with New Crop R

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $435.66

Scenario Cost/Unit: $4.36

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	4	$372.16
Materials						
Test, Soil Test, Standard	299	Includes materials, shiping, labor, and equipment costs.	Each	$12.70	5	$63.50

Practice: E328J - Improved crop rotation to provide benefits to pollinators

Scenario #1 - Improved crop rotation to provide benefits to pollinators

Scenario Description:

Improve the existing crop rotation by adding pollinator friendly crops into the rotation. The crop rotation shall include a minimum of three different crops in a minimum five year crop rotation. Each year, the pollinator friendly crop will be planted on a minimum of 5% of cropland acres contained within the agricultural operation. Use of insecticides is limited for the pollinator friendly crop.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 328 - Conservation Crop Rotation

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 328 - Conservation Crop Rotation

Feature Measure: Acres planted to pollinator rotation

Scenario Unit: Acres

Scenario Typical Size: 5.0

Scenario Total Cost: $372.16

Scenario Cost/Unit: $74.43

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	4	$372.16

Practice: E328K - Multiple crop types to benefit wildlife

Scenario #4 - Multiple crop types to benefit wildlife

Scenario Description:

Alternating crops in a systematic arrangement of strips across a field to provide diverse rotations of crops that provide wildlife food. At least two crops will be planted in adjacent strips a minimum of 0.5 acres in size.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard 328 - Conservation Crop Rotation.

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard 328 - Conservation Crop Rotation.

Feature Measure: Acres

Scenario Unit: Acres

Scenario Typical Size: 20.0

Scenario Total Cost: $93.04

Scenario Cost/Unit: $4.65

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	1	$93.04

Practice: E328L - Leaving tall crop residue for wildlife

Scenario #4 - Leaving tall crop residue for wildlife

Scenario Description:

Fields may be harvested but must leave crop residue standing a minimum of 14 inches. Residue will be left through winter and into spring, providing valuable winter cover and forage for wildlife spanning late summer and through the following winter.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 328 - Conservation Crop Rotation.

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 328 - Conservation Crop Rotation.

Feature Measure: acres with small grain stubble/resid

Scenario Unit: Acres

Scenario Typical Size: 40.0

Scenario Total Cost: $372.16

Scenario Cost/Unit: $9.30

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	4	$372.16

Practice: E328M - Diversify crop rotation with canola or sunflower to provide benefits to pollinators

Scenario #20 - Diversify crop rotation with canola or sunflower to provide benefits to pollinators

Scenario Description:

Diversify the existing crop rotation by adding canola or sunflower into the rotation. Canola or sunflower must be planted on a minimum of 5% of cropland acres. Pesticide use is limited to pre-bloom or bloom and in accordance with IPM and industry best management practices.

Before Situation:

Resources are protected at the minimum level for the Conservation Practice Standard (CPS) 328- Conservation Crop Rotation.

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 328-Conservation Crop Rotation

Feature Measure: Acres planned

Scenario Unit: Acres

Scenario Typical Size: 40.0

Scenario Total Cost: $372.16

Scenario Cost/Unit: $9.30

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	4	$372.16

Practice: E328N - Intercropping to Improve Soil Health

Scenario #4 - Intercropping to improve soil health

Scenario Description:

This enhancement involves the use of intercropping principles (i.e., growing two or more crops in close proximity to each other during part or all of their life cycles) to promote interactions that improve soil health, plant health, reduce inputs via increased biodiversity and contribute to pest management. Incorporating intercropping principles into an agricultural operation increases diversity and interaction between plants, arthropods, mammals, birds and microorganisms resulting in a more stable crop-ecosystem and a more efficient use of space, water, sunlight and nutrients. Furthermore, soil health is benefited by increasing ground coverage with living vegetation which reduces erosion and by increasing the quantity and diversity of root exudates which enhances soil fauna. This collaborative type of crop management mimics nature and is subject to fewer pest outbreaks, improved nutrient cycling and crop nutrient uptake, and increased water infiltration and moisture retention. This enhancement cannot be used for annual hay or silage crops. It is for grain/seed production only.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 328 - Conservation Crop Rotation.

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 328 - Conservation Crop Rotation.

Feature Measure: acres

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $465.20

Scenario Cost/Unit: $4.65

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	5	$465.20

Practice: E328O - Perennial Grain Conservation Crop Rotation

Scenario #4 - Perennial Grain Rotation

Scenario Description:

This practice payment is provided to the producer for the time needed to plan and implement the logistics of changing the rotation to effectively implement a conservation crop rotation on a cropland farm by adding a perennial grain as the third crop to their cropping system. The crop is intended to be a harvested and must be grown for at least 2 years after planting. No foregone income. Cost represents typical situations for conventional and organic producers. In this region this practice may be part of a conservation management system on both organic and non-organic operations that: (1) Reduces erosion; (2) Improves soil fertility and tilth; (3) Interrupts pest cycles; and (4) Builds soil organic matter. In applicable areas, reduces depletion of soil moisture or otherwise reduces the need for irrigation.

Before Situation:

Resources are protected at the minimum level for the Conservation Practice Standard (CPS) 328- Conservation Crop Rotation.

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 328-Conservation Crop Rotation.

Feature Measure: Area Planted

Scenario Unit: Acres

Scenario Typical Size: 40.0

Scenario Total Cost: $5,593.29

Scenario Cost/Unit: $139.83

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Acquisition of Technical Knowledge						
Training, Workshops	294	Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants.	Each	$100.83	3	$302.49
Equipment Installation						
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	40	$831.60
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	40	$927.20
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	40	$1,671.20
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	20	$1,860.80

Practice: E329A - No till to reduce soil erosion

Scenario #1 - No till to reduce soil erosion

Scenario Description:

Establish no till system to reduce sheet and rill erosion soil loss. Field(s) must have a soil loss at or below the soil tolerance (T) level for water and wind erosion for the crop rotation and a Soil Tillage Intensity Rating (STIR) of no greater than 10 for each crop in the planned rotation. The current NRCS wind and water erosion prediction technologies must be used to calculate soil loss and STIR.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 329 - Residue and Tillage Management - No-Till/ Strip Till/ Direct Seed

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 329 - Residue and Tillage Management - No-Till/ Strip Till/ Direct Seed

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $279.12

Scenario Cost/Unit: $2.79

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	3	$279.12

Practice: E329B - No till to reduce tillage induced particulate matter

Scenario #1 - No till to reduce tillage induced particulate matter

Scenario Description:

Establish no till system to reduce tillage induced particulate matter. Field(s) must have a soil loss at or below the soil tolerance (T) level for the crop rotation and a Soil Tillage Intensity Rating (STIR) of no greater than 10 for each crop in the planned rotation. The current NRCS wind and water erosion prediction technologies must be used to document soil loss and STIR calculations.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 329 - Residue and Tillage Management - No-Till/ Strip Till/ Direct Seed

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 329 - Residue and Tillage Management - No-Till/ Strip Till/ Direct Seed

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $279.12

Scenario Cost/Unit: $2.79

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	3	$279.12

Practice: E329C - No till to increase plant-available moisture

Scenario #1 - No till to increase plant-available moisture

Scenario Description:

Establish a no till system to increase plant-available moisture. Each crop in the crop rotation shall have a Soil Tillage Intensity Rating (STIR) of no greater than 20. The current NRCS wind and water erosion prediction technologies must be used to document STIR calculations. Maintain a minimum 60 percent surface residue cover throughout the year to reduce evaporation from the soil surface.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 329 - Residue and Tillage Management - No-Till/ Strip Till/ Direct Seed

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 329 - Residue and Tillage Management - No-Till/ Strip Till/ Direct Seed

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $279.12

Scenario Cost/Unit: $2.79

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	3	$279.12

Practice: E329D - No till system to increase soil health and soil organic matter content

Scenario #1 - No till system to increase soil health and soil organic matter content

Scenario Description:

Establish a no till system to increase soil health and soil organic matter content. Each crop in the crop rotation shall have a Soil Tillage Intensity Rating (STIR) of no greater than 20. The crop rotation must achieve a soil conditioning index (SCI) of zero or higher. The current NRCS wind and water erosion prediction technologies must be used to document STIR and SCI calculations. Residue shall not be burned, grazed, or harvested.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 329 - Residue and Tillage Management - No-Till/ Strip Till/ Direct Seed

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 329 - Residue and Tillage Management - No-Till/ Strip Till/ Direct Seed

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $372.16

Scenario Cost/Unit: $3.72

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	4	$372.16

Practice: E329E - No till to reduce energy

Scenario #1 - No till to reduce energy

Scenario Description:

Establish a no till system which reduces total energy consumption associated with field operations by at least 25% compared to current tillage system (benchmark). Each crop in the crop rotation shall have a Soil Tillage Intensity Rating (STIR) of no greater than 20. The current NRCS wind and water erosion prediction technologies must be used to document STIR calculations and energy consumption.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 329 - Residue and Tillage Management - No-Till/ Strip Till/ Direct Seed

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 329 - Residue and Tillage Management - No-Till/ Strip Till/ Direct Seed

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $372.16

Scenario Cost/Unit: $3.72

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	4	$372.16

Practice: E334A - Controlled traffic farming to reduce compaction

Scenario #1 - Controlled traffic farming to reduce compaction

Scenario Description:

Establish a controlled traffic system where no more than 25% of the surface is tracked with heavy axel loads to minimize soil compaction. For row crops (e.g. corn in 30-inch rows) no tire should run on a row except for flotation tires on combines and/or fertilizer and lime spreading trucks. If wide flotation tires are used, they must be big enough that the inflation pressure will be below 18 psi to minimize compaction on trafficked rows.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 334 - Controlled Traffic Farming

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 334 - Controlled Traffic Farming

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $697.00

Scenario Cost/Unit: $6.97

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	10	$231.80
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	5	$465.20

Practice: E338A - Strategically planned, patch burning for grazing distribution and wildlife habitat

Scenario #1 - Strategically planned, patch burning for grazing distribution and wildlife habitat

Scenario Description:

Patch burn grazing is the application of prescribed fires on portions of an identified grazing unit at different times of the year. Patch burn grazing allows grazing animals to select where they want to graze creating a mosaic of vegetation structures and diversity that will maintain or enhance the wildlife habitat desired for the identified wildlife species and maintain livestock production.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 338 - Prescribed Burning

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 338 - Prescribed Burning

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $688.25

Scenario Cost/Unit: $6.88

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Acquisition of Technical Knowledge						
Training, Workshops	294	Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants.	Each	$100.83	1	$100.83
Equipment Installation						
Dozer, 140 HP	927	Track mounted Dozer with horsepower range of 125 to 160. Equipment and power unit costs. Labor not included.	Hours	$97.92	4	$391.68
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	2	$46.36
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	4	$107.60
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	1	$41.78

Practice: E338B - Short-interval burns to promote a healthy herbaceous plant community

Scenario #1 - Short-interval burns to promote a healthy herbaceous plant community

Scenario Description:

The controlled use of fire is applied in a forest to restore fire-adapted plants while improving wildlife habitat, wildlife food supply, and reducing the risk of damage from intense, severe wildfires. The ideal interval between prescribed burns is not often achieved. To improve the effectiveness of prescribed burning, the frequency of prescribed burning is increased appropriately, for a specified time period, to help restore ecological conditions in forests and woodlands. Short return interval prescribed burning is used to regenerate desirable tree species, improve the condition of fire-adapted plants and native herbaceous vegetation, improve wildlife food supply, create wildlife habitat (snags and den/cavity trees), limit encroachment of competing vegetation including non-native species, and reduce the future risk of damage from intense, severe wildfires.

Before Situation:

The site has a mixture of woody sprouts and some herbaceous vegetation in the forest understory.

After Situation:

The site has a mixture of warm season perennial vegetation and cool-season annual forages. Grazing is occurring to manage the herbaceous vegetation and keep undesirable woody vegetation from occupying the forest understory.

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 40.0

Scenario Total Cost: $3,335.57

Scenario Cost/Unit: $83.39

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Dozer, 80 HP	929	Track mounted Dozer with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$54.51	8	$436.08
Truck, water	1448	Water tanker truck. Equipment only. Labor not included.	Hours	$145.96	8	$1,167.68
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	24	$556.32
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	8	$215.20
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	8	$334.24
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	4	$372.16
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: E338C - Sequential patch burning

Scenario #1 - Sequential patch burning

Scenario Description:

Conduct prescribed under burning beneath a forest canopy (ground fire), burning a portion of the area each year to create a mosaic of vegetation in several stages of development, to provide a more diverse understory and contribute to wildlife habitat. The health of conifer and oak-conifer forests, particularly longleaf pine with a characteristic herbaceous understory, is dependent on fire or another means of controlling encroaching woody vegetation. A healthy longleaf or shortleaf pine, or pine-oak forest, can support a wide array of wildlife including pollinators and several endangered or threatened species.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 338 - Prescribed Burning

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 338 - Prescribed Burning

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 10.0

Scenario Total Cost: $1,524.58

Scenario Cost/Unit: $152.46

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	2	$47.48
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hours	$18.07	2	$36.14
Water tank, portable	1602	Portable water tank transported in a pick up truck. Typically with 200 gallon capacity includes tank with pump, hose and sprayer. Does not include the pickup truck. Equipment only.	Hours	$13.82	2	$27.64
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	16	$480.80
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	2	$46.36
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	2	$83.56
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	3	$279.12
Materials						
Fuel, ignition fuel mixture	1596	Mixture of gasoline and diesel for ignition of prescribed burns. Materials only.	Gallons	$3.14	5	$15.70
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: E340A - Cover crop to reduce soil erosion

Scenario #1 - Cover crop to reduce soil erosion

Scenario Description:

Cover crop added to current crop rotation to reduce soil erosion from water and wind to below soil tolerance (T) level. Cover crops grown during critical erosion period(s). Species are selected that will have physical characteristics to provide adequate erosion protection.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 340 - Cover Crop

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 340 - Cover Crop

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $662.45

Scenario Cost/Unit: $6.62

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	1	$30.05
Materials						
Annual Grasses	2730	Annual grasses, one or more species, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping.	Acres	$31.62	20	$632.40

Practice: E340B - Intensive cover cropping to increase soil health and soil organic matter content

Scenario #1 - Intensive cover cropping to increase soil health and soil organic matter content

Scenario Description:

Implementation of cover crop mix to provide soil coverage during ALL non-crop production periods in an annual crop rotation. Cover crop shall not be harvested or burned. Planned crop rotation including cover crops and associated management activities must achieve a soil conditioning index (SCI) of zero or higher. The current NRCS wind and water erosion prediction technologies must be used to document SCI calculations.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 340 - Cover Crop

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 340 - Cover Crop

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $1,129.28

Scenario Cost/Unit: $11.29

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	2	$186.08
Materials						
Annual Grasses, Legumes or Forbs	2732	A mix of annual grasses, legumes and/or forbs, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping.	Acres	$47.16	20	$943.20

Practice: E340C - Use of multi-species cover crops to improve soil health and increase soil organic matter

Scenario #1 - Use of multi-species cover crops to improve soil health and increase soil organic matter

Scenario Description:

Implement a multi-species cover crop to add diversity and increase biomass production to improve soil health and increase soil organic matter. Cover crop mix must include a minimum of 4 different species. The cover crop mix will increase diversity of the crop rotation by including crop types currently missing, e.g. Cool Season Grass (CSG), Cool Season Broadleaves (CSB), Warm Season Grasses (WSG), Warm Season Broadleaves (WSB).

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 340 - Cover Crop

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 340 - Cover Crop

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $1,003.30

Scenario Cost/Unit: $10.03

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	2	$60.10
Materials						
Annual Grasses, Legumes or Forbs	2732	A mix of annual grasses, legumes and/or forbs, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping.	Acres	$47.16	20	$943.20

Practice: E340D - Intensive orchard/vineyard floor cover cropping to increase soil health

Scenario #1 - Intensive orchard/vineyard floor cover cropping to increase soil health

Scenario Description:

Implement orchard or vineyard floor cover crops. Cover crop shall not be harvested, grazed, or burned. Must achieve a soil conditioning index of zero or higher and produce a positive trend in the Organic Matter subfactor over the life of the rotation.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 340 - Cover Crop

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 340 - Cover Crop

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $1,003.30

Scenario Cost/Unit: $10.03

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	2	$60.10
Materials						
Annual Grasses, Legumes or Forbs	2732	A mix of annual grasses, legumes and/or forbs, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping.	Acres	$47.16	20	$943.20

Practice: E340E - Use of soil health assessment to assist with development of cover crop mix to improve soil health

Scenario #1 - Use of soil health assessment to assist with development of cover crop mix to improve soil health

Scenario Description:

Soil health assessment (year 1) to evaluate current crop rotation in addressing soil organic matter depletion. Results are utilized to select a multi-species cover crop mix to add to the current crop rotation. Follow up assessment completed (year 3).

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 340 - Cover Crop

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 340 - Cover Crop

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $289.19

Scenario Cost/Unit: $2.89

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	1	$30.05
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	1	$93.04
Materials						
Annual Grasses, Legumes or Forbs	2732	A mix of annual grasses, legumes and/or forbs, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping.	Acres	$47.16	1	$47.16
Test, Soil Health, Basic Package	2734	Basic soil health laboratory assessment for soil organic carbon, aggregation, bioavailable nitrogen, respiration, and active carbon according to technical note 450-03. Includes shipping and handling.	Number	$118.94	1	$118.94

Practice: E340F - Cover crop to minimize soil compaction

Scenario #1 - Cover crop to minimize soil compaction

Scenario Description:

Establish a cover crop mix that includes plants with both fibrous root and deep rooted systems. Fibrous to treat and prevent both near surface (0-4”) and deep (>4”) soil compaction and deep rooted to break up deep compacted soils. Cover crop shall not be harvested, grazed, or burned.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 340 - Cover Crop

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 340 - Cover Crop

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $973.25

Scenario Cost/Unit: $9.73

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	1	$30.05
Materials						
Annual Grasses, Legumes or Forbs	2732	A mix of annual grasses, legumes and/or forbs, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping.	Acres	$47.16	20	$943.20

Practice: E340G - Cover crop to reduce water quality degradation by utilizing excess soil nutrients

Scenario #1 - Cover crop to reduce water quality degradation by utilizing excess soil nutrients

Scenario Description:

Establish a cover crop mix to take up excess soil nutrients. Select cover crop species for their ability to effectively utilize nutrients. Terminate the cover crop as late as practical to maximize plant biomass production and nutrient uptake. Cover crop shall not be harvested, grazed, or burned.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 340 - Cover Crop

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 340 - Cover Crop

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $973.25

Scenario Cost/Unit: $9.73

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	1	$30.05
Materials						
Annual Grasses, Legumes or Forbs	2732	A mix of annual grasses, legumes and/or forbs, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping.	Acres	$47.16	20	$943.20

Practice: E340H - Cover crop to suppress excessive weed pressures and break pest cycles

Scenario #1 - Cover crop to suppress excessive weed pressures and break pest cycles

Scenario Description:

Establish a cover crop mix to suppress excessive weed pressures and break pest cycles. Select cover crop species for their life cycles, growth habits, and other biological, chemical and/or physical characteristics. Select cover crop species that do not harbor pests or diseases of subsequent crops in the rotation. Cover crop shall not be harvested, grazed, or burned.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 340 - Cover Crop

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 340 - Cover Crop

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $1,003.30

Scenario Cost/Unit: $10.03

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	2	$60.10
Materials						
Annual Grasses, Legumes or Forbs	2732	A mix of annual grasses, legumes and/or forbs, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping.	Acres	$47.16	20	$943.20

Practice: E340I - Using cover crops for biological strip till

Scenario #4 - Using cover crops for biological strip till

Scenario Description:

Establish alternating strips of cover crops in which one strip acts as a biological strip-tiller and the adjacent strip promotes soil health with high residue cover crops. This will facilitate planting of the subsequent cash crop into the biologically strip-tilled row without the need for mechanical disturbance.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard 340 - Cover Crop.

After Situation:

The adoption of this enhancement will provide protection above the minimum level as described in Conservation Practice Standard 340 - Cover Crop.

Feature Measure: Acres

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $1,093.45

Scenario Cost/Unit: $10.93

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	5	$150.25
Materials						
Annual Grasses, Legumes or Forbs	2732	A mix of annual grasses, legumes and/or forbs, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping.	Acres	$47.16	20	$943.20

Practice: E345A - Reduced tillage to reduce soil erosion

Scenario #1 - Reduced tillage to reduce soil erosion

Scenario Description:

Establish a reduced tillage system to reduce soil loss. Field(s) must have a soil loss at or below the soil tolerance (T) level for water and wind erosion for the crop rotation and a Soil Tillage Intensity Rating (STIR) of no greater than 40 for each crop in the planned rotation. The current NRCS wind and water erosion prediction technologies must be used to calculate soil loss and STIR.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 345 - Residue and Tillage Management, Reduced Till

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 345 - Residue and Tillage Management, Reduced Till

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $372.16

Scenario Cost/Unit: $3.72

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	4	$372.16

Practice: E345B - Reduced tillage to reduce tillage induced particulate matter

Scenario #1 - Reduced tillage to reduce tillage induced particulate matter

Scenario Description:

Establish a reduced tillage system to reduce tillage induced particulate matter. Field(s) must have a soil loss at or below the soil tolerance (T) level for the crop rotation and a Soil Tillage Intensity Rating (STIR) of no greater than 40 for each crop in the planned rotation. The current NRCS wind and water erosion prediction technologies must be used to document soil loss and STIR calculations.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 345 - Residue and Tillage Management, Reduced Till

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 345 - Residue and Tillage Management, Reduced Till

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $279.12

Scenario Cost/Unit: $2.79

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	3	$279.12

Practice: E345C - Reduced tillage to increase plant-available moisture

Scenario #1 - Reduced tillage to increase plant-available moisture

Scenario Description:

Establish a reduced till system to increase plant-available moisture. Each crop in the crop rotation shall have a Soil Tillage Intensity Rating (STIR) of no greater than 80. The current NRCS wind and water erosion prediction technologies must be used to document STIR calculations. Maintain a minimum 60 percent surface residue cover throughout the year to reduce evaporation from the soil surface.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 345 - Residue and Tillage Management, Reduced Till

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 345 - Residue and Tillage Management, Reduced Till

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $279.12

Scenario Cost/Unit: $2.79

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	3	$279.12

Practice: E345D - Reduced tillage to increase soil health and soil organic matter content

Scenario #1 - Reduced tillage to increase soil health and soil organic matter content

Scenario Description:

Establish a reduced till system to increase soil health and soil organic matter content. Each crop in the crop rotation shall have a Soil Tillage Intensity Rating (STIR) of no greater than 80. The crop rotation must achieve a soil conditioning index (SCI) of zero or higher and produce a positive trend in the Organic Matter (OM) subfactor over the life of the crop rotation. The current NRCS wind and water erosion prediction technologies must be used to document STIR and SCI calculations. Residue shall not be burned, grazed, or harvested.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 345 - Residue and Tillage Management, Reduced Till

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 345 - Residue and Tillage Management, Reduced Till

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $372.16

Scenario Cost/Unit: $3.72

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	4	$372.16

Practice: E345E - Reduced tillage to reduce energy use

Scenario #1 - Reduced tillage to reduce energy use

Scenario Description:

Establish a reduced tillage system which reduces total energy consumption associated with field operations by at least 25% compared to conventional tillage systems (benchmark). Each crop in the crop rotation shall have a Soil Tillage Intensity Rating (STIR) of no greater than 80. The current NRCS wind and water erosion prediction technologies must be used to document STIR calculations and energy consumption.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 345 - Residue and Tillage Management, Reduced Till

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 345 - Residue and Tillage Management, Reduced Till

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $279.12

Scenario Cost/Unit: $2.79

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	3	$279.12

Practice: E373A - Dust suppressant re-application for stabilization

Scenario #20 - Dust Suppressant Re-application, Once per Year

Scenario Description:

Limit dust emissions by maintaining the surfaces of unpaved roads and areas in a stabilized condition. The periodic re-application of dust suppressants to unpaved surface areas will limit dust generation from vehicle and machinery activities or wind action.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 373 - Dust Control on Unpaved Roads and Surfaces.

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 373 - Dust Control on Unpaved Roads and Surfaces.

Feature Measure: Square Feet

Scenario Unit: Square Feet

Scenario Typical Size: 15,840.0

Scenario Total Cost: $3,525.93

Scenario Cost/Unit: $0.22

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$6.00	0.36	$2.16
Motor Grader, 200 HP	1782	Motor Grader or Maintainer, 200 hp. Typical of equipment with HP in range of 170-225. Equipment cost, does not include labor.	Hours	$163.69	3	$491.07
Labor						
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	3	$80.70
Materials						
Chemical, dust control, road oil, petroleum-based	1339	Petroleum-based road oil, such as SC-250 or SC-800. Includes materials and shipping only.	Gallons	$3.28	900	$2,952.00

Practice: E374A - Install variable frequency drive(s) on pump(s)

Scenario #1 - Install variable frequency drive(s) on pump(s)

Scenario Description:
Install Variable Frequency Drive(s) (VFD) on Pumping Plant (Conservation Practice Standard CPS 533) with the correct sensors, on all pumps indicated in the energy audit.

Before Situation:
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 374 - Farmstead Energy Improvement

After Situation:
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 374 - Farmstead Energy Improvement

Feature Measure: Each

Scenario Unit: Brake Horse Power

Scenario Typical Size: 50.0

Scenario Total Cost: $5,834.50

Scenario Cost/Unit: $116.69

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Materials						
Variable Speed Drive, 50 HP	1288	Variable speed drive for 50 Horsepower electric motor. Does not include motor. Materials only.	Horsepower	$116.69	50	$5,834.50

Practice: E374B - Switch fuel source for pump motor(s)

Scenario #1 - Switch fuel source for pump motor(s)

Scenario Description:
Switch the fuel source for the pump motor(s) indicated in the energy audit to a renewable source (wind, solar, geothermal, etc.). (CPS 533 Pumping Plant)

Before Situation:
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 374 - Farmstead Energy Improvement

After Situation:
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 374 - Farmstead Energy Improvement

Feature Measure: Horsepower

Scenario Unit: Horsepower

Scenario Typical Size: 5.0

Scenario Total Cost: $15,849.13

Scenario Cost/Unit: $3,169.83

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	1	$23.74
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	12	$360.60
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	2	$186.08
Materials						
Pump, <= 5 HP, pump and motor, fixed cost portion	1009	Fixed cost portion of a pump less than or equal to 5 HP pump and motor. This portion is the base cost and is not dependent on horsepower. The total cost of any pump will include this fixed cost plus a variable cost portion. Includes the motor and controls for materials and shipping only.	Each	$1,075.23	1	$1,075.23
Pump, <= 5 HP, pump and motor, variable cost portion	1010	Variable cost portion of a pump less than or equal to 5 HP pump and motor. This portion is dependent on the total horsepower for the pump. The total cost of any pump will include this variable cost plus the fixed cost portion. Includes the motor and controls for materials and shipping only.	Horsepower	$393.98	5	$1,969.90
Solar Panels, fixed cost portion	1031	Fixed cost portion of the Solar Panels. This portion is a base cost for all Solar Panels and is not dependant on KiloWatt. The total cost of any Solar Panels will include this fixed cost plus a variable cost portion. The completed Solar Panels will include all materials (electrical, controllers, service drops and etc). This cost will include material, labor and equipment.	Each	$261.66	5	$1,308.30
Solar Panels, variable cost portion	1135	Variable cost portion of the Solar Panels. This portion IS dependent on the total Kilowatt for the Solar Panels. The total cost of any Solar Panels will include this variable cost plus the fixed cost portion. The completed Solar Panels will include all materials (electrical, controllers, and service drop, etc). This cost will include material, labor and equipment.	Kilowatt	$2,731.32	4	$10,925.28

Practice: E376A - Modify field operations to reduce particulate matter

Scenario #1 - Modify field operations to reduce particulate matter

Scenario Description:
Modify tillage and/or harvest operations to reduce particulates by at least 20 percent below the required levels.

Before Situation:
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 376 - Field Operations Emissions Reduction

After Situation:
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 376 - Field Operations Emissions Reduction

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $279.12

Scenario Cost/Unit: $2.79

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	3	$279.12

Practice: E381A - Silvopasture to improve wildlife habitat

Scenario #1 - Silvopasture to improve wildlife habitat

Scenario Description:

Establishing a combination of trees or shrubs and compatible forages on the same acreage, providing forage, shade, and/or shelter for livestock that include a purpose of enhancing wildlife cover and shelter.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 381 - Silvopasture

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 381 - Silvopasture

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $7,659.24

Scenario Cost/Unit: $76.59

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$6.00	20	$120.00
Foregone Income						
FI, Grazing AUMs	2079	Grazing is the Primary Land Use	Animal Unit Month	$19.44	200	$3,888.00
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	16	$370.88
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	2	$83.56
Materials						
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$8.98	20	$179.60
Shrub, Seedling, Large	1508	Bare root shrub seedling, 36 to 60 inches tall; includes containerized seedlings larger than 20 cubic inches. Includes materials and shipping only.	Each	$2.85	200	$570.00
Tree, Conifer, Seedling, Large	1515	Containerized conifer seedlings, 15 or 20 cubic inches; or bare root conifer seedlings 2+1 (three-year old seedlings that grew two years in the original seedbed and another year in a transplant bed) or bare root seedlings 3+0 and older (three-year or older seedlings grown in their original seedbed, or transplanted seedlings). Includes materials and shipping only.	Each	$1.48	100	$148.00
Native Perennial Grasses, Low Density	2750	Native perennial grasses, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Includes material and shipping.	Acres	$114.96	20	$2,299.20

Practice: E382B - Installing electrical fence offsets and wire for cross-fencing to improve grazing management

Scenario #4 - Installing electrical fence offsets and wire for cross-fencing to improve grazing management

Scenario Description:
Retrofitting conventional fences such as barb wire, with new electrical offsets and electrical wire to facilitate cross-fencing for improved grazing management.

Before Situation:
Resources are protected at the minimum level of the Conservation Practice Standard 382 - Fence

After Situation:
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard 382 - Fence

Feature Measure: Feet

Scenario Unit: Feet

Scenario Typical Size: 2,640.0

Scenario Total Cost: $1,275.19

Scenario Cost/Unit: $0.48

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	16	$480.80
Materials						
Wire, High Tensile, 12.5 Gauge, 4,000' roll	2	High Tensile 12.5 gauge, 4,000' roll. Includes materials and shipping only.	Each	$123.90	1	$123.90
Electric, Ground Rods	20	Electric, Ground Rod for electric fence. Includes materials and shipping only.	Each	$12.55	3	$37.65
Electric, Insulated cable	23	Electric, Insulated cable for electric fence. Typically in spools of 100 to 200 feet. Includes materials and shipping only.	Each	$39.07	2	$78.14
Electric, Power Surge Protector	24	Electric, Power Surge Protector for electric fence. Includes materials and shipping only.	Each	$15.80	1	$15.80
Electric, Cutoff Switch	25	Electric, Cutoff Switch for electric fence. Includes materials and shipping only.	Each	$10.00	1	$10.00
Electric, Tester	26	Electric, Tester for electric fence. Includes materials and shipping only.	Each	$50.23	1	$50.23
Electric, Energizer, 6 joule	29	Electric, Energizer, 6 joule for electric fence. Includes materials and shipping only.	Each	$399.47	1	$399.47
Fence, Wire Assembly, High Tensile, Electric, 1 Strand	32	Brace pins, springs, strainers, battens, clips, crimp sleeves, staples, insulators, wrap around sleeves. Includes materials and shipping only.	Feet	$0.03	2640	$79.20

Practice: E383A - Grazing-maintained fuel break to reduce the risk of fire

Scenario #1 - Grazing-maintained fuel break to reduce the risk of fire

Scenario Description:

The area has existing fuel break(s) of 30 to 60 feet in width, supporting a mixture of woody sprouts and some herbaceous vegetation. Warm-season perennial vegetation will be established on the fuel breaks, and will be over-seeded with cool-season annual forages in the fall. Grazing will be managed on the fuel breaks to remove or modify the fine fuel vegetation, thus reducing the risk of fire spread from ground fires. Ground cover will be maintained to control soil erosion and facilitate prescribed burning.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 383 - Fuel Break

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 383 - Fuel Break

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 10.0

Scenario Total Cost: $2,305.58

Scenario Cost/Unit: $230.56

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Fertilizer, ground application, dry bulk	950	Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$7.35	10	$73.50
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	10	$207.90
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	24	$556.32
Materials						
Nitrogen (N), Urea	71	Price per pound of N supplied by Urea. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.48	1000	$480.00
Annual Grasses, Legumes or Forbs	2732	A mix of annual grasses, legumes and/or forbs, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping.	Acres	$47.16	10	$471.60
Introduced Perennial Grasses, Legumes and/or Forbs, Low Density	2747	Introduced perennial grasses, legumes, and/or forbs, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Includes material and shipping.	Acres	$34.55	10	$345.50
Mobilization						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	1	$170.76

Practice: E384A - Biochar production from woody residue

Scenario #5 - Biochar production from woody residue

Scenario Description:

The adoption of this enhancement will go above the minimum level of woody residue treatment by creating a product that improves air quality by storing carbon, decreases fuel loads and fire hazard, and can improves soil quality. It will utilize woody debris remaining after a silvicultural practice or natural disturbance to create biochar. Biochar stores carbon and is a useful soil amendment that improves SOM and water-holding capacity.

Before Situation:

Area has woody residue that is unmerchantable and available for creation of quality biochar. Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 384 - Woody Residue Treatment

After Situation:

Woody debri has been coverted to biochar.

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 2.5

Scenario Total Cost: $10,186.90

Scenario Cost/Unit: $4,074.76

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Hydraulic Excavator, .5 CY	930	Track mounted hydraulic excavator with bucket capacity range of 0.3 to 0.8 CY. Equipment and power unit costs. Labor not included.	Hours	$61.38	40	$2,455.20
Chainsaw	937	Equipment and power unit costs. Labor not included.	Hours	$7.00	40	$280.00
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	15	$356.10
Water tank, portable	1602	Portable water tank transported in a pick up truck. Typically with 200 gallon capacity includes tank with pump, hose and sprayer. Does not include the pickup truck. Equipment only.	Hours	$13.82	80	$1,105.60
Biochar Kiln, open fire	2681	Open fire kiln or metal container used to produce biochar/charcoal production. Daily rental rate. Includes all material and equipment	Hours	$7.28	200	$1,456.00
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	40	$1,202.00
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	80	$1,854.40
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	40	$1,012.40
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	5	$465.20

Practice: E386A - Enhanced field borders to reduce soil erosion along the edge(s) of a field

Scenario #1 - Enhanced field borders to reduce soil erosion along the edge(s) of a field

Scenario Description:

Enhance existing field borders to a width of at least 30 feet and establish a single species or mixture of species that provide a dense ground cover along the edge(s) of the field.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 386 - Field Border

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 386 - Field Border

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 1.0

Scenario Total Cost: $575.07

Scenario Cost/Unit: $575.07

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acres	$11.35	1	$11.35
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$6.00	1	$6.00
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	1	$20.79
Cultipacking	1100	Includes equipment, power unit and labor costs.	Acres	$9.21	1	$9.21
Foregone Income						
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acres	$287.72	0.41	$117.97
FI, Soybeans Dryland	1961	Dryland Soybeans is Primary Crop	Acres	$225.71	0.36	$81.26
FI, Wheat Dryland	1963	Dryland Wheat is Primary Crop	Acres	$109.80	0.23	$25.25
Materials						
Introduced Perennial Grasses, Legumes and/or Forbs, Medium Density	2748	Introduced perennial grasses, legumes, and/or forbs, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at medium to higher density (41-60 pure live seeds/sq ft). Includes material and shipping.	Acres	$49.36	1	$49.36
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: E386B - Enhanced field borders to increase carbon storage along the edge(s) of the field

Scenario #1 - Enhanced field borders to increase carbon storage along the edge(s) of the field

Scenario Description:

Enhance existing field borders to a width of at least 30 feet and establish a single species or mixture of species that provide a dense ground cover and dense rooting system along the edge(s) of the field.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 386 - Field Border

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 386 - Field Border

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 1.0

Scenario Total Cost: $660.00

Scenario Cost/Unit: $660.00

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acres	$11.35	1	$11.35
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$6.00	1	$6.00
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	1	$20.79
Cultipacking	1100	Includes equipment, power unit and labor costs.	Acres	$9.21	1	$9.21
Foregone Income						
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acres	$287.72	0.41	$117.97
FI, Soybeans Dryland	1961	Dryland Soybeans is Primary Crop	Acres	$225.71	0.36	$81.26
FI, Wheat Dryland	1963	Dryland Wheat is Primary Crop	Acres	$109.80	0.23	$25.25
Materials						
Native and Introduced Perennial Grasses, Legumes and/or Forbs, Medium Density	2756	A mix of native and introduced perennial grasses, legumes, and/or forbs, grasses typically greater than 50% of the mix, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at medium to high density (41-60 pure live seeds/sq ft). Includes material and shipping.	Acres	$134.29	1	$134.29
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: E386C - Enhanced field borders to decrease particulate emissions along the edge(s) of the field

Scenario #1 - Enhanced field borders to decrease particulate emissions along the edge(s) of the field

Scenario Description:
Enhance existing field borders to a width of at least 40 feet and establish a mixture of species that decrease the particulate emissions along the edge(s) of the field.

Before Situation:
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 386 - Field Border

After Situation:
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 386 - Field Border

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 1.0

Scenario Total Cost: $589.88

Scenario Cost/Unit: $589.88

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acres	$11.35	1	$11.35
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$6.00	1	$6.00
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	1	$20.79
Cultipacking	1100	Includes equipment, power unit and labor costs.	Acres	$9.21	1	$9.21
Foregone Income						
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acres	$287.72	0.41	$117.97
FI, Soybeans Dryland	1961	Dryland Soybeans is Primary Crop	Acres	$225.71	0.36	$81.26
FI, Wheat Dryland	1963	Dryland Wheat is Primary Crop	Acres	$109.80	0.23	$25.25
Materials						
Introduced Perennial Grasses, Legumes and/or Forbs, High Density	2749	Introduced perennial grasses, legumes, and/or forbs, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at high density (greater than 60 pure live seeds/sq ft). Includes material and shipping.	Acres	$64.17	1	$64.17
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: E386D - Enhanced field borders to increase food for pollinators along the edge(s) of a field

Scenario #1 - Enhanced field borders to increase food for pollinators along the edge(s) of a field

Scenario Description:
Enhance existing field borders to a width of at least 40 feet and establish a mixture of species that provide food for pollinators along the edge(s) of the field.

Before Situation:
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 386 - Field Border

After Situation:
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 386 - Field Border

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 1.0

Scenario Total Cost: $660.00

Scenario Cost/Unit: $660.00

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acres	$11.35	1	$11.35
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$6.00	1	$6.00
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	1	$20.79
Cultipacking	1100	Includes equipment, power unit and labor costs.	Acres	$9.21	1	$9.21
Foregone Income						
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acres	$287.72	0.41	$117.97
FI, Soybeans Dryland	1961	Dryland Soybeans is Primary Crop	Acres	$225.71	0.36	$81.26
FI, Wheat Dryland	1963	Dryland Wheat is Primary Crop	Acres	$109.80	0.23	$25.25
Materials						
Native and Introduced Perennial Grasses, Legumes and/or Forbs, Medium Density	2756	A mix of native and introduced perennial grasses, legumes, and/or forbs, grasses typically greater than 50% of the mix, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at medium to high density (41-60 pure live seeds/sq ft). Includes material and shipping.	Acres	$134.29	1	$134.29
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: E386E - Enhanced field borders to increase wildlife food and habitat along the edge(s) of a field

Scenario #1 - Enhanced field borders to increase wildlife food and habitat along the edge(s) of a field

Scenario Description:

Enhance existing field borders to a width of at least 40 feet and establish a mixture of species that provide wildlife food and habitat along the edge(s) of the field. The extended field border will also provide enhanced wildlife habitat continuity.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 386 - Field Border

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 386 - Field Border

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 1.0

Scenario Total Cost: $660.00

Scenario Cost/Unit: $660.00

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acres	$11.35	1	$11.35
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$6.00	1	$6.00
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	1	$20.79
Cultipacking	1100	Includes equipment, power unit and labor costs.	Acres	$9.21	1	$9.21
Foregone Income						
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acres	$287.72	0.41	$117.97
FI, Soybeans Dryland	1961	Dryland Soybeans is Primary Crop	Acres	$225.71	0.36	$81.26
FI, Wheat Dryland	1963	Dryland Wheat is Primary Crop	Acres	$109.80	0.23	$25.25
Materials						
Native and Introduced Perennial Grasses, Legumes and/or Forbs, Medium Density	2756	A mix of native and introduced perennial grasses, legumes, and/or forbs, grasses typically greater than 50% of the mix, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at medium to high density (41-60 pure live seeds/sq ft). Includes material and shipping.	Acres	$134.29	1	$134.29
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: E390A - Increase riparian herbaceous cover width for sediment and nutrient reduction

Scenario #1 - Increase riparian herbaceous cover width for sediment and nutrient reduction

Scenario Description:

Where an existing herbaceous riparian buffer is located along a river, stream, pond, lake, or other waterbody, increase the width of the buffer in order to allow a greater percentage of sediment and nutrient removal from surface and subsurface flows.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 390 - Riparian Herbaceous Cover

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 390 - Riparian Herbaceous Cover

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 2.0

Scenario Total Cost: $910.93

Scenario Cost/Unit: $455.46

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$6.00	2	$12.00
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	2	$41.58
Foregone Income						
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acres	$287.72	0.82	$235.93
FI, Soybeans Dryland	1961	Dryland Soybeans is Primary Crop	Acres	$225.71	0.72	$162.51
FI, Wheat Dryland	1963	Dryland Wheat is Primary Crop	Acres	$109.80	0.46	$50.51
Materials						
Herbicide, Imazapyr	336	Pre and post-emergent, non-selective herbicide for control of undesirable vegetation in non-crop areas. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$39.97	2	$79.94
Native Perennial Grasses, Medium Density	2751	Native perennial grasses, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at medium to higher density (41-60 pure live seeds/sq ft). Includes material and shipping.	Acres	$164.23	2	$328.46

Practice: E390B - Increase riparian herbaceous cover width to enhance wildlife habitat

Scenario #1 - Increase riparian herbaceous cover width to enhance wildlife habitat

Scenario Description:

Where an existing herbaceous riparian buffer is located along a river, stream, pond, lake, or other waterbody, increase the diversity of native species, control invasive species, install fencing and relocate equipment operations, trails, and livestock, and increase the width of the buffer.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 390 - Riparian Herbaceous Cover

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 390 - Riparian Herbaceous Cover

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 4.0

Scenario Total Cost: $1,281.90

Scenario Cost/Unit: $320.47

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$6.00	4	$24.00
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	2	$41.58
Foregone Income						
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acres	$287.72	1	$287.72
FI, Soybeans Dryland	1961	Dryland Soybeans is Primary Crop	Acres	$225.71	1	$225.71
FI, Wheat Dryland	1963	Dryland Wheat is Primary Crop	Acres	$109.80	0.46	$50.51
Materials						
Herbicide, Imazapyr	336	Pre and post-emergent, non-selective herbicide for control of undesirable vegetation in non-crop areas. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$39.97	4	$159.88
Native Perennial Grasses, Legumes and/or Forbs, Medium Density	2754	A mix of native perennial grasses, legumes, and/or forbs, Grasses typically greater than 50% of the mix, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at medium to higher density (41-60 pure live seeds/sq ft). Species typically easy to purchase. Includes material and shipping.	Acres	$246.25	2	$492.50

Practice: E391A - Increase riparian forest buffer width for sediment and nutrient reduction

Scenario #1 - Increase riparian forest buffer width for sediment and nutrient reduction

Scenario Description:

Where an existing forested riparian area is located along a river, stream, pond, lake, or other waterbody, increase the width of the buffer in order to allow a greater percentage of sediment and nutrient removal from surface and subsurface flows.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 391 - Riparian Forest Buffer

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 391 - Riparian Forest Buffer

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 2.0

Scenario Total Cost: $3,767.55

Scenario Cost/Unit: $1,883.77

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	16	$379.84
Mower, Bush Hog	940	Equipment and power unit costs. Labor not included.	Hours	$49.85	2	$99.70
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$6.00	2	$12.00
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hours	$22.62	4	$90.48
Hand tools, tree planting	1590	Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included.	Hours	$12.58	16	$201.28
Foregone Income						
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acres	$287.72	0.82	$235.93
FI, Soybeans Dryland	1961	Dryland Soybeans is Primary Crop	Acres	$225.71	0.72	$162.51
FI, Wheat Dryland	1963	Dryland Wheat is Primary Crop	Acres	$109.80	0.46	$50.51
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	16	$370.88
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	4	$101.24
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	4	$167.12
Materials						
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$8.98	1	$8.98
Herbicide, Sulfometuron & metsulfuron	344	A residual sulfonylurea herbicide that kills broadleaf weeds and some annual grasses. It is a systemic compound with foliar and soil activity. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$12.27	1	$12.27
Herbicide, Surfactant	1095	Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$1.81	1	$1.81
Tree, Hardwood, Seedling, Medium	1510	Bare root hardwood seedlings 18 to 36 inches tall; includes tropical containerized seedlings of 10 to 20 cubic inches. Includes materials and shipping only.	Each	$1.17	872	$1,020.24

Tree shelter, solid tube type, 4 in. x 48 in.	1566	4 inch x 48 inch tree tube for protection from animal damage. Materials only.	Each	$5.02	100	$502.00
Stakes, wood, 1 in. x 1 in. x 48 in.	1578	1 in. x 1 in. x 48 in. wood stakes to fasten items in place. Includes materials only.	Each	$1.80	100	$180.00
Mobilization						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	1	$170.76

Practice: E391B - Increase stream shading for stream temperature reduction

Scenario #1 - Increase stream shading for stream temperature reduction

Scenario Description:
Riparian area tree canopy cover density is increased and the extent of the forested riparian area is increased to provide greater stream shading.

Before Situation:
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 391 - Riparian Forest Buffer

After Situation:
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 391 - Riparian Forest Buffer

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 2.0

Scenario Total Cost: $3,813.91

Scenario Cost/Unit: $1,906.95

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	16	$379.84
Mower, Bush Hog	940	Equipment and power unit costs. Labor not included.	Hours	$49.85	2	$99.70
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$6.00	2	$12.00
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hours	$22.62	4	$90.48
Hand tools, tree planting	1590	Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included.	Hours	$12.58	16	$201.28
Foregone Income						
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acres	$287.72	0.82	$235.93
FI, Soybeans Dryland	1961	Dryland Soybeans is Primary Crop	Acres	$225.71	0.72	$162.51
FI, Wheat Dryland	1963	Dryland Wheat is Primary Crop	Acres	$109.80	0.46	$50.51
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	18	$417.24
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	4	$101.24
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	4	$167.12
Materials						
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$8.98	1	$8.98
Herbicide, Sulfometuron & metsulfuron	344	A residual sulfonylurea herbicide that kills broadleaf weeds and some annual grasses. It is a systemic compound with foliar and soil activity. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$12.27	1	$12.27
Herbicide, Surfactant	1095	Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$1.81	1	$1.81
Tree, Hardwood, Seedling, Medium	1510	Bare root hardwood seedlings 18 to 36 inches tall; includes tropical containerized seedlings of 10 to 20 cubic inches. Includes materials and shipping only.	Each	$1.17	872	$1,020.24
Tree shelter, solid tube type, 4 in. x 48 in.	1566	4 inch x 48 inch tree tube for protection from animal damage. Materials only.	Each	$5.02	100	$502.00

Stakes, wood, 1 in. x 1 in. x 48 in.	1578	1 in. x 1 in. x 48 in. wood stakes to fasten items in place. Includes materials only.	Each	$1.80	100	$180.00
Mobilization						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	1	$170.76

Practice: E391C - Increase riparian forest buffer width to enhance wildlife habitat

Scenario #1 - Increase riparian forest buffer width to enhance wildlife habitat

Scenario Description:

Where an existing riparian forest buffer is located along a river, stream, pond, lake, or other waterbody, increase the diversity of native species, control invasive species, install fencing and relocate equipment operations, trails, and livestock to increase the functional width of the buffer.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 391 - Riparian Forest Buffer

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 391 - Riparian Forest Buffer

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 2.0

Scenario Total Cost: $3,813.91

Scenario Cost/Unit: $1,906.95

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	16	$379.84
Mower, Bush Hog	940	Equipment and power unit costs. Labor not included.	Hours	$49.85	2	$99.70
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$6.00	2	$12.00
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hours	$22.62	4	$90.48
Hand tools, tree planting	1590	Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included.	Hours	$12.58	16	$201.28
Foregone Income						
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acres	$287.72	0.82	$235.93
FI, Soybeans Dryland	1961	Dryland Soybeans is Primary Crop	Acres	$225.71	0.72	$162.51
FI, Wheat Dryland	1963	Dryland Wheat is Primary Crop	Acres	$109.80	0.46	$50.51
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	18	$417.24
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	4	$101.24
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	4	$167.12
Materials						
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$8.98	1	$8.98
Herbicide, Sulfometuron & metsulfuron	344	A residual sulfonylurea herbicide that kills broadleaf weeds and some annual grasses. It is a systemic compound with foliar and soil activity. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$12.27	1	$12.27
Herbicide, Surfactant	1095	Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$1.81	1	$1.81
Tree, Hardwood, Seedling, Medium	1510	Bare root hardwood seedlings 18 to 36 inches tall; includes tropical containerized seedlings of 10 to 20 cubic inches. Includes materials and shipping only.	Each	$1.17	872	$1,020.24

Tree shelter, solid tube type, 4 in. x 48 in.	1566	4 inch x 48 inch tree tube for protection from animal damage. Materials only.	Each	$5.02	100	$502.00
Stakes, wood, 1 in. x 1 in. x 48 in.	1578	1 in. x 1 in. x 48 in. wood stakes to fasten items in place. Includes materials only.	Each	$1.80	100	$180.00
Mobilization						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	1	$170.76

Practice: E393A - Extend existing filter strip to reduce water quality impacts

Scenario #1 - Extend existing filter strip to reduce water quality impacts

Scenario Description:

Extend existing filter strips for water quality protection. Extend the existing buffer for a total of 60 feet or more to enhance water quality functions. The extended buffers must be composed of at least 5 species of non-noxious, wildlife friendly grasses and/or perennial forbs best suited to site conditions. Include species that provide pollinator food and habitat where possible.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 393 - Filter Strip

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 393 - Filter Strip

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 1.0

Scenario Total Cost: $846.08

Scenario Cost/Unit: $846.08

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acres	$11.35	1	$11.35
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$6.00	1	$6.00
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	1	$20.79
Cultipacking	1100	Includes equipment, power unit and labor costs.	Acres	$9.21	1	$9.21
Foregone Income						
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acres	$287.72	0.41	$117.97
FI, Soybeans Dryland	1961	Dryland Soybeans is Primary Crop	Acres	$225.71	0.36	$81.26
FI, Wheat Dryland	1963	Dryland Wheat is Primary Crop	Acres	$109.80	0.23	$25.25
Labor						
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	2	$186.08
Materials						
Native and Introduced Perennial Grasses, Legumes and/or Forbs, Medium Density	2756	A mix of native and introduced perennial grasses, legumes, and/or forbs, grasses typically greater than 50% of the mix, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at medium to high density (41-60 pure live seeds/sq ft). Includes material and shipping.	Acres	$134.29	1	$134.29
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: E395A - Stream habitat improvement through placement of woody biomass

Scenario #1 - Stream habitat improvement through placement of woody biomass

Scenario Description:

Flexible placement of wood (unanchored/unpinned) in small, 1st and 2nd order streams to improve stream habitat conditions for aquatic species and natural stream processes.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 395 - Stream Habitat Improvement and Management

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 395 - Stream Habitat Improvement and Management

Feature Measure: Bankfull width X Length

Scenario Unit: Acres

Scenario Typical Size: 1.0

Scenario Total Cost: $18,962.84

Scenario Cost/Unit: $18,962.84

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Hydraulic Excavator, 2 CY	932	Track mounted hydraulic excavator with bucket capacity range of 1.5 to 2.5 CY. Equipment and power unit costs. Labor not included.	Hours	$126.60	16	$2,025.60
Truck, dump, 12 CY	1215	Dump truck for moving bulk material. Typically capacity is 16 ton or 12 cubic yards. Includes equipment only.	Hours	$77.81	8	$622.48
Labor						
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12 in., Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hours	$26.90	24	$645.60
Materials						
Aggregate, Sand, Graded, Washed	45	Sand, typical ASTM C33 gradation, includes materials, equipment and labor to transport and place	Cubic Yards	$38.81	20	$776.20
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic Yards	$39.34	30	$1,180.20
Compost	265	A mixture of decaying organic matter, as from leaves and manure, used to improve soil structure and provide nutrients.	Ton	$60.26	1	$60.26
Tree & Shrub, Woody, Cuttings, Large	1309	Woody pole cuttings or posts 2 to 6 inches in diameter and 6 ft. long. Includes materials and shipping only.	Each	$10.66	300	$3,198.00
Boulder	1761	Rock boulders (approximately 5 ft dia. 6.67 Tons) Inlcudes materials and delivery (up to 100 miles) only.	Ton	$82.31	40	$3,292.40
Steel, rebar	1832	Steel rebar, grade 60. Materials only.	Pound	$0.54	50	$27.00
Aggregate, river rock	1834	Well graded, rounded mineral substrates derived from local riverine settings. Includes materials and local delivery	Ton	$34.98	15	$524.70
Log, un-anchored	2035	Price of log picked up at the Mill. Includes material only.	Ton	$182.79	30	$5,483.70
Root Wad	2045	Tree stump buried into the streambank with the roots left exposed. Includes material only.	Ton	$7.86	20	$157.20
Mobilization						
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$484.75	2	$969.50

Practice: E399A - Fishpond management for native aquatic and terrestrial species

Scenario #1 - Fishpond management for native aquatic and terrestrial species

Scenario Description:
Pond rehabilitation, buffer, and watershed management actions are taken to improve habitat for native species of fish, amphibians, and shorebirds.

Before Situation:
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 399 - Fishpond Management

After Situation:
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 399 - Fishpond Management

Feature Measure: Pond area + buffer area

Scenario Unit: Acres

Scenario Typical Size: 2.0

Scenario Total Cost: $2,524.45

Scenario Cost/Unit: $1,262.23

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	4	$94.96
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$6.00	1	$6.00
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	1	$20.79
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	3	$90.15
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	32	$741.76
Materials						
Herbicide, Imazapyr	336	Pre and post-emergent, non-selective herbicide for control of undesirable vegetation in non-crop areas. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$39.97	1	$39.97
Herbicide, Diquat dibromide	1820	Aquatic herbicide and plant growth regulator. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Gallons	$103.81	1	$103.81
Native Aquatic Plants, Emergent or Submerged	2336	Native aquatic emergent or submerged. All required materials for establishing vegetation. Includes material and shipping.	Each	$1.01	1000	$1,010.00
Native Perennial Grasses, Legumes and/or Forbs, Medium Density	2754	A mix of native perennial grasses, legumes, and/or forbs, Grasses typically greater than 50% of the mix, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at medium to higher density (41-60 pure live seeds/sq ft). Species typically easy to purchase. Includes material and shipping.	Acres	$246.25	1	$246.25
Mobilization						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	1	$170.76

Practice: E412A - Enhance a grassed waterway

Scenario #4 - Waterway, reshape/extend/widen

Scenario Description:

Typical practice is 1500 ' long, 12' bottom, 8:1 side slopes, 1.1' depth. A grass waterway that is a shaped or graded channel and is established with suitable vegetation to carry surface water at a non-erosive velocity to a stable outlet. This practice addresses Concentrated Flow Erosion (Classic Gully & Ephemeral Erosion) and Excessive Sediment in surface waters. Waterway area measured from top of bank to top of bank. Seeding will be completed under the Critical Area Planting (342) Practice Standard with seeding area up to 20% greater than waterway area to account for buffer area along the waterway. Costs include excavation and associated work to construct the overall shape and grade of the waterway. This scenario would apply to Grassed Waterways without erosion control blanket or rock checks.

Before Situation:

The field has a grassed waterway, but a gully cutting upstream, downstream, or adjacent to the existing grassed waterway has formed as time goes on, so the new gully needs to be stopped or controlled. The new gully has formed in field as a result of a change in runoff amounts from the original design from subsurface drainage outlets, change in cropping techniques, change in land use, etc.

After Situation:

An installed grassed waterway has been installed that is possibly wider or longer than the original grassed waterway that wasn't functioning properly anymore. The new installed grassed waterway is 1500 ' long, 12' bottom, 8:1 side slopes, 1.1' depth. The practice is installed using a dozer and/or scraper, with final grading with motor grader. Use Critical Area Planting (342) for establishment of waterway vegetation. If erosion control blankets or mulching for seedbed establishment/protection are needed, use conservation practice Mulching (484). Drainage tile, if needed, will be installed accoring to Subsurface Drain (606).

Feature Measure: Acres of Waterway reshaped, exte

Scenario Unit: Acres

Scenario Typical Size: 1.0

Scenario Total Cost: $4,185.52

Scenario Cost/Unit: $4,185.52

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Stripping and stockpiling, topsoil	1199	Stripping and stockpiling of topsoil adjacent to stripping area. Includes equipment and labor.	Cubic Yards	$0.92	411	$378.12
Excavation, common earth, large equipment, 150 ft	1223	Bulk excavation of common earth including sand and gravel with dozer >100 HP with average push distance of 150 feet. Includes equipment and labor.	Cubic Yards	$3.85	954	$3,672.90
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	4	$92.72
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	1	$41.78

Practice: E420A - Establish pollinator habitat

Scenario #4 - Establish Pollinator Habitat

Scenario Description:

Seed or plug nectar and pollen producing plants in non-cropped areas such as field borders, vegetative barriers, contour buffer strips, shelterbelts, hedgerows, windbreaks, conservation cover, and riparian forest and herbaceous buffers.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 420 - Wildlife Habitat Planting

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 420 - Wildlife Habitat Planting

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 1.0

Scenario Total Cost: $443.18

Scenario Cost/Unit: $443.18

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	2	$46.36
Materials						
Native Perennial Grasses, Legumes and/or Forb Mix for Targeted Wildlife/Pollinator Habitat or Ecological Restoration, moderate commercial availability	2619	Diverse mix of native perennial grasses, legumes and forbs, less than 50% grasses, may include biennials and a small percentage of annual species for establishment purposes and/or if allowed by the CPS. This is a mix composed of species required to meet specific wildlife/pollinator habitat or ecological requirements. Seed is moderately easy to purchase commercially. Includes materials and shipping.	Acres	$396.82	1	$396.82

Practice: E420B - Establish monarch butterfly habitat

Scenario #4 - Establish Monarch Habitat

Scenario Description:

Seed or plug milkweed (Asclepias spp.) and high-value monarch butterfly nectar plants on marginal cropland, field borders, contour buffer strips and similar areas.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 420 - Wildlife Habitat Planting.

After Situation:

Adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 420 - Wildlife Habitat Planting.

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 1.0

Scenario Total Cost: $769.10

Scenario Cost/Unit: $769.10

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Mower, Bush Hog	940	Equipment and power unit costs. Labor not included.	Hours	$49.85	1	$49.85
Chemical, spot treatment, single stem application	964	Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included.	Hours	$68.31	2	$136.62
Cultipacking	1100	Includes equipment, power unit and labor costs.	Acres	$9.21	1	$9.21
Labor						
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	2	$83.56
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	1	$93.04
Materials						
Native Perennial Grasses, Legumes and/or Forb Mix for Targeted Wildlife/Pollinator Habitat or Ecological Restoration, moderate commercial availability	2619	Diverse mix of native perennial grasses, legumes and forbs, less than 50% grasses, may include biennials and a small percentage of annual species for establishment purposes and/or if allowed by the CPS. This is a mix composed of species required to meet specific wildlife/pollinator habitat or ecological requirements. Seed is moderately easy to purchase commercially. Includes materials and shipping.	Acres	$396.82	1	$396.82

Practice: E447A - Advanced Tailwater Recovery

Scenario #4 - Advanced Tailwater Recovery

Scenario Description:

This enhancement is for a recovery system that capture 100% of excess irrigation and drainage runoff water from the contiguous land where the activity is implemented. Runoff water is conveyed through properly designed recovery ditches to a storage structure. Each recovery ditch and storage structure have adequate capacity to store excess irrigation water and reasonable runoff water. The system is designed to incorporate the collected water back into the delivery system so that excess water is reused. The system is fully automated to operate the recovery pumps, valves, and collection system. Key elements in the system are sensors that can evaluate data and operate devices through the system in opening/closing or on /off based on scientifically determined parameters.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard 447 - Irrigation System, Tailwater Recovery.

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard 447 - Irrigation System, Tailwater Recovery.

Feature Measure: Acres

Scenario Unit: Acres

Scenario Typical Size: 200.0

Scenario Total Cost: $1,514.16

Scenario Cost/Unit: $7.57

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	8	$189.92
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hours	$18.07	24	$433.68
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	24	$556.32
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	8	$334.24

Practice: E449A - Complete pumping plant evaluation for water savings

Scenario #1 - Complete pumping plant evaluation for water savings

Scenario Description:

Evaluation of all pumping plants to determine the potential to rehabilitate/replace/reconfigure pump performance to improve water delivery efficiency 10% or more. Evaluate to determine if a Variable Frequency Drive motor controller(s) is recommended and the simple payback in terms of energy savings is less than 10 years.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 449 – Irrigation Water Management

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in the Conservation Practice Standard, (CPS) 449 – Irrigation Water Management.

Feature Measure: Acres

Scenario Unit: Acres

Scenario Typical Size: 640.0

Scenario Total Cost: $3,287.79

Scenario Cost/Unit: $5.14

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	8	$240.40
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	32	$2,977.28
Mobilization						
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	$70.11	1	$70.11

Practice: E449B - Alternated Wetting and Drying (AWD) of rice fields

Scenario #1 - Alternated Wetting and Drying (AWD) of rice fields

Scenario Description:

Rice fields are drained and allowed to “dry down” to a saturated soil condition prior to re-flooding the field. System is installed in year 1 with Scenario E449144Z8 and this scenario used in years 2-5.

Before Situation:

Resources are protected at the minimum level of the conservation Practice Standard (CPS) 449 – Irrigation Water Management.

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in the Conservation Practice Standard (CPS) 449 – Irrigation Water Management.

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 40.0

Scenario Total Cost: $1,177.88

Scenario Cost/Unit: $29.45

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	40	$927.20
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	6	$250.68

Practice: E449C - Advanced Automated IWM - Year 2-5, soil moisture monitoring

Scenario #1 - Advanced Automated IWM – Year 2-5, soil moisture monitoring

Scenario Description:
Advanced automated irrigation water management using soil moisture or water level monitoring (installed as per IWM plan) with data loggers.

Before Situation:
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 449 – Irrigation Water Management

After Situation:
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 449 - Irrigation Water Management

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 125.0

Scenario Total Cost: $2,204.72

Scenario Cost/Unit: $17.64

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	40	$1,202.00
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	24	$1,002.72

Practice: E449D - Advanced Automated IWM - Year 1, Equipment and soil moisture or water level monitoring

Scenario #1 - Advanced Automated IWM – Year 1, Equipment and soil moisture or water level monitoring

Scenario Description:
Installing and monitoring soil moisture or water leveling equipment for advanced automated irrigation water management

Before Situation:
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 449 - Irrigation Water Management

After Situation:
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 449 - Irrigation Water Management

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 120.0

Scenario Total Cost: $6,196.14

Scenario Cost/Unit: $51.63

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	30	$712.20
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	8	$240.40
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	16	$668.48
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	4	$372.16
Materials						
Switches and Controls, temp sensors	1192	Temperature and soil moisture sensors installed as part of an electronic monitoring (with or without wireless telecommunications) commonly used to control pumps and irrigation systems	Each	$611.15	3	$1,833.45
Data Logger with Telemetry System	1454	Data Logger W/Graphic Output for water management and telemetry - data communication device with power supply in a weather proof enclosure. Equipment only.	Each	$1,525.93	1	$1,525.93
Weather Station, Advanced	2550	Advance Weather Station which collects and records recording rainfall, humidity, barometric pressure, wind speed, temperature, and solar radiation from a solar powered self-standing tripod to an advance weather recording console. Used for both 449 advance irrigation water management and for Activity 202 water quality monitoring .	Each	$843.52	1	$843.52

Practice: E449F - Intermediate IWM - Year 1, Equipment with Soil or Water Level monitoring

Scenario #4 - Intermediate IWM— Year 1, Equipment with Soil moisture or Water Level monitoring

Scenario Description:

This activity involves monitoring soil moisture or water levels within a irrigated field for intermediate irrigation water management include installation of equipment year 1.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 449 - Irrigation Water Management

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 449 - Irrigation Water Management.

Feature Measure: Acres

Scenario Unit: Acres

Scenario Typical Size: 160.0

Scenario Total Cost: $6,939.29

Scenario Cost/Unit: $43.37

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	4	$94.96
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	4	$120.20
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	4	$167.12
Materials						
Switches and Controls, temp sensors	1192	Temperature and soil moisture sensors installed as part of an electronic monitoring (with or without wireless telecommunications) commonly used to control pumps and irrigation systems	Each	$611.15	1	$611.15
Flow Meter, with mechanical Index	1450	10 inch, Turbine Type Flow Meter with Mechanical Index, permanently installed. Includes material, labor and installation.	Each	$1,505.18	1	$1,505.18
Data Logger	1453	Data Logger W/Graphic Output for water management. Materials only.	Each	$682.18	4	$2,728.72
Soil Moisture Sensor	1456	Soil moisture resistance sensor with 10 foot cables. Equipment only.	Each	$72.37	12	$868.44
Weather Station, Advanced	2550	Advance Weather Station which collects and records recording rainfall, humidity, barometric pressure, wind speed, temperature, and solar radiation from a solar powered self-standing tripod to an advance weather recording console. Used for both 449 advance irrigation water management and for Activity 202 water quality monitoring .	Each	$843.52	1	$843.52

Practice: E449G - Intermediate IWM - Years 2-5, Soil or Water Level monitoring

Scenario #4 - Intermediate IWM— Years 2-5, Soil Moisture or Water Level monitoring

Scenario Description:

Field currently flooded through a cascade levee system will be converted to furrow irrigation. It is required that field is leveed on the lower end and approximately 25% up the sides for furrow irrigation prior to implementing the enhancement. After the previous year's crop is harvested, elevated planting beds and furrows will be reshaped as needed to guarantee proper irrigation of the rice crop. Layflat tubing will be utilized with the correct holes or gates installed to advance water down the furrows at the appropriate rate across the length of the field as prescribed by an NRCS "PHAUCET" design, Delta Plastic® Pipe Planner® or similar.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 449 - Irrigation Water Management

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 449 - Irrigation Water Management.

Feature Measure: Acres

Scenario Unit: Acres

Scenario Typical Size: 160.0

Scenario Total Cost: $1,286.35

Scenario Cost/Unit: $8.04

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	15	$450.75
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	20	$835.60

Practice: E449H - Intermediate IWM - Years 2 -5, using soil moisture or water level monitoring

Scenario #20 - Intermediate IWM - Years 2 - 5, using soil moisture or water level monitoring

Scenario Description:

Intermediate irrigation water management using soil moisture or water level monitoring with data loggers; specifically, multi-depth soil moisture sensors, water well and relift permanent flow meters, twice-daily water stage imaging water level devices, and quarter hour climate data element recording weather stations at approved IWM plan locations.

Before Situation:

Resources are protected at the minimum level of the CPS 449 - Irrigation Water Management.

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 449 - Irrigation Water Management.

Feature Measure: Acres

Scenario Unit: Acres

Scenario Typical Size: 40.0

Scenario Total Cost: $1,671.20

Scenario Cost/Unit: $41.78

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	40	$1,671.20

Practice: E449I - Sprinkler Irrigation Equipment Retrofit

Scenario #20 - IWM - Year 1, Retrofit Equipment with Speed Control on Sprinkler Irrigation

Scenario Description:

This activity involves installing speed control equipment to a sprinkler irrigated field for irrigation water management. The installation of the equipment is in year one. It is applicable to sprinkler irrigation systems that do not already have the functionality and are able to integrate the speed control technology.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 449 - Irrigation Water Management

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 449 - Irrigation Water Management.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $1,559.49

Scenario Cost/Unit: $1,559.49

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	8	$240.40
Materials						
Center Pivot VRI, Speed Control	2727	Center pivot irrigation system using variable rate irrigation using speed control technology. Includes controller, sensors, GPS unit, and installation.	Number	$1,319.09	1	$1,319.09

Practice: E449J - Intermediate IWM - 20% Reducing Water Usage

Scenario #4 - Intermediate IWM - 20% Reduced Water Usage

Scenario Description:

Intermediate irrigation water management involves monitoring soil moisture or water levels within an irrigated field by utilizing technological equipment to gather field specific data concerning weather, soil moisture or water levels throughout the irrigation season. The equipment will be utilized to log data through the season to be retrieved periodically so irrigation decisions can be made based on scientific data. Maximum time between data retrieval is weekly. Monitoring will be for the entire irrigation season and data gathered will be used to make sound decisions on irrigation water use. Supplimental Water usage will be reduced by 20% from previous years use and remain at that level for the remainder of the contract.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 449 – Irrigation Water Management.

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in the Conservation Practice Standard (CPS) 449 – Irrigation Water Management.

Feature Measure: Irrigated Acres

Scenario Unit: Acres

Scenario Typical Size: 125.0

Scenario Total Cost: $3,905.65

Scenario Cost/Unit: $31.25

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	8	$240.40
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	32	$2,977.28
Materials						
Soil Moisture Meter	1455	Soil Moisture Sensor Reader. Equipment only.	Each	$256.01	1	$256.01
Soil Moisture Sensor	1456	Soil moisture resistance sensor with 10 foot cables. Equipment only.	Each	$72.37	5	$361.85
Mobilization						
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	$70.11	1	$70.11

Practice: E472A - Manage livestock access to waterbodies to reduce nutrients or pathogens to surface water

Scenario #1 - Manage livestock access to waterbodies to reduce nutrients or pathogens to surface water

Scenario Description:

Installation of structures and implementation of grazing management actions that restrict livestock access to streams, ditches, and other waterbodies in order to reduce nutrient loading or reduce the introduction of pathogens from manure, bio-solids or compost to surface waters.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 472 - Access Control

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 472 - Access Control

Feature Measure: (Stream length protected * 2) + ((C

Scenario Unit: Feet

Scenario Typical Size: 1,320.0

Scenario Total Cost: $3,224.31

Scenario Cost/Unit: $2.44

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Auger, Post driver attachment	934	Auger or post driver attachment to a tractor or skidsteer. Does not include power unit. Labor not included.	Hours	$12.82	5	$64.10
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	5	$118.70
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hours	$22.62	5	$113.10
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	33	$764.94
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	5	$126.55
Materials						
Wire, Barbed, Galvanized, 12.5 Gauge, 1,320' roll	1	Galvanized 12.5 gauge, 1,320' roll. Includes materials and shipping only.	Each	$79.36	4	$317.44
Post, Wood, CCA treated, 3-4 in. x 7 ft.	9	Wood Post, Line 3-4 inch dia. X 7 ft., CCA Treated. Includes materials and shipping only.	Each	$8.06	20	$161.20
Post, Wood, CCA treated, 6 in. x 8 ft.	12	Wood Post, End 6 inch dia. X 8 ft., CCA Treated. Includes materials and shipping only.	Each	$18.55	8	$148.40
Post, Steel T, 1.33 lbs, 6 ft.	15	Steel Post, Studded 6 ft. - 1.33 lb. Includes materials and shipping only.	Each	$5.95	90	$535.50
Fence, Wire Assembly, Barbed Wire	30	Brace pins, battens, clips, staples. Includes materials and shipping only.	Feet	$0.22	1320	$290.40
Gate, Pipe, 12 ft.	1057	6 rail tube gate, 16 gauge. Includes materials and shipping only.	Each	$206.61	2	$413.22
Mobilization						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	1	$170.76

Practice: E484A - Mulching to improve soil health

Scenario #1 - Mulching to improve soil health

Scenario Description:

Implement a crop rotation which utilizes mulch and addresses all four principle components of soil health: increases diversity of the cropping system; maintains residue throughout the year; keeps a living root; and minimizes soil chemical, physical and biological disturbance. Plant-based mulching materials will be applied at least once during the rotation. The rotation will include at least 4 different crops and/or cover crops grown in a sequence that will produce a positive trend in the Organic Matter (OM) subfactor value over the life of the rotation, as determined by the Soil Conditioning Index (SCI). The current NRCS wind and water erosion prediction technologies must be used to document the rotation and SCI calculations.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 484 - Mulching

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 484 - Mulching

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $186.08

Scenario Cost/Unit: $1.86

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	2	$186.08

Practice: E484B - Reduce particulate matter emissions by using orchard or vineyard generated woody materials as mulch

Scenario #1 - Reduce particulate matter emissions by using orchard or vineyard generated woody materials as mulch

Scenario Description:

Reduce particulate matter emissions by using orchard or vineyard generated woody materials as mulch. At least 90% of all woody materials are to be used as mulch on the operation. An exception may be made when it is determined that infected material must be burned to preserve crop health.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 484 – Mulching

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 484 - Mulching

Feature Measure: Actual Acres of Crop producing Wo

Scenario Unit: Acres

Scenario Typical Size: 40.0

Scenario Total Cost: $557.60

Scenario Cost/Unit: $13.94

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	8	$185.44
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	4	$372.16

Practice: E484C - Mulching with natural materials in specialty crops for weed control

Scenario #4 - Mulching with natural materials in specialty crops for weed control

Scenario Description:
Application of straw mulch or other state approved natural material (such as wood chips, compost, green chop, dry hay or sawdust) for weed control in specialty crops.

Before Situation:
Resources are protected at the minimum level of the Conservation Practice Standard 484 - Mulching

After Situation:
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard 484 - Mulching

Feature Measure: Acres

Scenario Unit: Acres

Scenario Typical Size: 10.0

Scenario Total Cost: $391.25

Scenario Cost/Unit: $39.13

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hours	$22.62	2	$45.24
Mulcher, straw blower	1305	Straw bale mulcher/blower to mechanically spread small or large straw bales. Labor not included.	Hours	$46.38	2	$92.76
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	2	$50.62
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	1	$93.04
Materials						
Straw	1237	Small grain straw (non organic and certified organic). Includes materials only.	Ton	$73.06	1.5	$109.59

Practice: E511A - Harvest of crops (hay or small grains) using measures that allow desired species to flush or escape

Scenario #1 - Harvest of crops (hay or small grains) using measures that allow desired species to flush or escape

Scenario Description:

Harvest of crops (hay or small grains) using conservation measures that allow desired species to flush or escape. (For species list see State Wildlife Action Plan) Conservation measures include timing of harvest, idling land during the nesting or fawning period, and applying harvest techniques that reduce mortality to wildlife.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 511 - Forage Harvest Management

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 511 - Forage Harvest Management

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 50.0

Scenario Total Cost: $178.05

Scenario Cost/Unit: $3.56

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Foregone Income						
FI, Hay, General Grass	2122	General Grass Hay is Primary Land Use	Ton	$42.87	1.67	$71.59
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	2	$60.10
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	2	$46.36

Practice: E511B - Forage harvest management that helps maintain wildlife habitat cover, shelter or continuity

Scenario #1 - Forage harvest management that helps maintain wildlife habitat cover, shelter or continuity

Scenario Description:

The timely cutting and removal of forages from the field as hay, green-chop, or ensilage in such a way, and in time frames, to optimize both forage yield/quality and wildlife cover and shelter and/or continuity between otherwise disconnected habitats.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 511 - Forage Harvest Management

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 511 - Forage Harvest Management

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $527.78

Scenario Cost/Unit: $5.28

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Foregone Income						
FI, Grazing AUMs	2079	Grazing is the Primary Land Use	Animal Unit Month	$19.44	25	$486.00
Labor						
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	1	$41.78

Practice: E511C - Forage testing for improved harvesting methods and hay quality

Scenario #4 - Hay quality record keepoing for livestock producers

Scenario Description:

This enhancement results in participants obtaining hay samples and submitting them to a land grant university or other accredited lab for quality analysis. The participant will record data for multiple harvests and use the data to make future decisions. The participant will discuss the results with NRCS or with their cooperative extensions service. Technical recommendations are made to the participant based upon the test results.

Before Situation:

The participant has hay that doesn't have quality analysis or doesn't know the quality of previous hay harvests. The hay will be fed when needed.

After Situation:

The participant has hay with hay quality analysis. The participant records data based upon the results to reference and make future decisions. The participant has a better understanding on the quality of hay so that adjustments in feeding or supplementation can be made.

Feature Measure: Each

Scenario Unit: Number

Scenario Typical Size: 2.0

Scenario Total Cost: $238.20

Scenario Cost/Unit: $119.10

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	2	$46.36
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	1	$41.78
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	1	$93.04
Materials						
Test, Feed Analysis	1989	Representative sample of feed. Includes materials and shipping only.	Each	$28.51	2	$57.02

Practice: E511D - Forage Harvest Management to Improve Terrestrial Habitat for Wildlife during Over-Winter Periods

Scenario #4 - Forage Harvest Management Overwinter

Scenario Description:

Eliminate or forgo the last fall cutting of hay or haylage to optimize wildlife cover and shelter during critical over-winter periods and lengthen late season bloom period for invertebrates. Allowing late season stand maturity increases stand life and reduces risks of frost and winter damage while providing valuable wildlife habitat and an extended bloom periods.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 511-Forage Harvest Management

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in CPS - 511

Feature Measure: Acres

Scenario Unit: Acres

Scenario Typical Size: 40.0

Scenario Total Cost: $925.25

Scenario Cost/Unit: $23.13

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Acquisition of Technical Knowledge						
Training, Workshops	294	Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants.	Each	$100.83	1	$100.83
Equipment Installation						
Tractor, agricultural, 120 HP	962	Agricultural tractor with horsepower range of 90 to 140. Equipment and power unit costs. Labor not included.	Hours	$51.52	3	$154.56
Foregone Income						
FI, Hay, Alfalfa	2121	Alfalfa Hay is Primary Crop	Ton	$97.33	3	$291.99
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	3	$75.93
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	5	$208.90
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	1	$93.04

Practice: E512A - Cropland conversion to grass-based agriculture to reduce soil erosion

Scenario #1 - Cropland conversion to grass-based agriculture to reduce soil erosion

Scenario Description:

Conversion of cropped land to grass-based agriculture to reduce soil erosion. Mixtures of perennial grasses, forbs, and legume species are established on cropland where annually-seeded cash crops have been grown.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 512 - Forage and Biomass Planting

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 512 - Forage and Biomass Planting

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $774.56

Scenario Cost/Unit: $7.75

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	2	$83.56
Materials						
Introduced Perennial Grasses, Legumes and/or Forbs, Low Density	2747	Introduced perennial grasses, legumes, and/or forbs, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Includes material and shipping.	Acres	$34.55	20	$691.00

Practice: E512B - Forage and biomass planting to reduce soil erosion or increase organic matter to build soil health

Scenario #1 - Forage and biomass planting to reduce soil erosion or increase organic matter to build soil health

Scenario Description:

Establishing adapted and/or compatible species, varieties, or cultivars of herbaceous species suitable for pasture, hay, or biomass production that can provide for reduced soil erosion, improving soil health.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 512 - Forage and Biomass Planting

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 512 - Forage and Biomass Planting

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $2,382.76

Scenario Cost/Unit: $23.83

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	2	$83.56
Materials						
Native Perennial Grasses, Low Density	2750	Native perennial grasses, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Includes material and shipping.	Acres	$114.96	20	$2,299.20

Practice: E512C - Cropland conversion to grass for soil organic matter improvement

Scenario #1 - Cropland conversion to grass for soil organic matter improvement

Scenario Description:

Conversion of cropped land to grass-based agriculture. Mixtures of perennial grasses, forbs, and/or legume species are established on cropland where annually-seeded cash crops have been grown.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 512 - Forage and Biomass Planting

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 512 - Forage and Biomass Planting

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $1,109.52

Scenario Cost/Unit: $11.10

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	2	$46.36
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	4	$372.16
Materials						
Introduced Perennial Grasses, Legumes and/or Forbs, Low Density	2747	Introduced perennial grasses, legumes, and/or forbs, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Includes material and shipping.	Acres	$34.55	20	$691.00

Practice: E512D - Forage plantings that help increase organic matter in depleted soils

Scenario #1 - Forage plantings that help increase organic matter in depleted soils

Scenario Description:

Establishing adapted and/or compatible species, varieties, or cultivars of herbaceous species suitable for pasture, hay, or biomass production that can help improve soil quality of depleted sites through increase or conservation of the organic matter in the soil.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 512 - Forage and Biomass Planting

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 512 - Forage and Biomass Planting

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $1,260.56

Scenario Cost/Unit: $12.61

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Foregone Income						
FI, Grazing AUMs	2079	Grazing is the Primary Land Use	Animal Unit Month	$19.44	25	$486.00
Labor						
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	2	$83.56
Materials						
Introduced Perennial Grasses, Legumes and/or Forbs, Low Density	2747	Introduced perennial grasses, legumes, and/or forbs, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Includes material and shipping.	Acres	$34.55	20	$691.00

Practice: E512E - Forage and biomass planting that produces feedstock for biofuels or energy production.

Scenario #1 - Forage and biomass planting that produces feedstock for biofuels or energy production.

Scenario Description:

Conversion of cropped land to grass-based agriculture. Mixtures of perennial grasses, forbs, and/or legume species are established on cropland where annually-seeded cash crops have been grown.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 512 - Forage and Biomass Planting

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 512 - Forage and Biomass Planting

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $5,934.08

Scenario Cost/Unit: $59.34

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	2	$186.08
Materials						
Native Perennial Grasses, Low Density	2750	Native perennial grasses, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Includes material and shipping.	Acres	$114.96	50	$5,748.00

Practice: E512I - Establish pollinator and/or beneficial insect and/or monarch habitat

Scenario #1 - Establish pollinator and/or beneficial insect and/or monarch habitat

Scenario Description:

Establishing adapted and/or compatible species, varieties, or cultivars of herbaceous species that can provide nectar for Monarch butterflies and/or pollinators and forage and other habitat values for wildlife and livestock, particularly at times when targeted nectar, forage supply and quality, cover, and shelter are not available in other pastures.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 512 - Forage and Biomass Planting

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 512 - Forage and Biomass Planting

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $2,648.58

Scenario Cost/Unit: $26.49

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	2	$186.08
Materials						
Native Perennial Grasses, Legumes and/or Forbs, Medium Density	2754	A mix of native perennial grasses, legumes, and/or forbs, Grasses typically greater than 50% of the mix, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at medium to higher density (41-60 pure live seeds/sq ft). Species typically easy to purchase. Includes material and shipping.	Acres	$246.25	10	$2,462.50

Practice: E512J - Establish wildlife corridors to provide habitat continuity or access to water

Scenario #1 - Establish wildlife corridors to provide habitat continuity or access to water

Scenario Description:

Establishing adapted and/or compatible species, varieties, or cultivars of perennial, herbaceous species that can provide cover needed for wildlife species of concern to move from food/cover/water sources to other food/cover/water sources as needed for their life cycles, and/or to enhance the utility of underused wildlife habitat areas.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 512 - Forage and Biomass Planting

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 512 - Forage and Biomass Planting

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $1,719.16

Scenario Cost/Unit: $17.19

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Foregone Income						
FI, Grazing AUMs	2079	Grazing is the Primary Land Use	Animal Unit Month	$19.44	25	$486.00
Labor						
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	2	$83.56
Materials						
Native Perennial Grasses, Low Density	2750	Native perennial grasses, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Includes material and shipping.	Acres	$114.96	10	$1,149.60

Practice: E512K - Establishing Native Species into Forage to Improve Diversity for both Livestock and Wildlife

Scenario #4 - Establishing native species into forage base to improve diversity for both livestock and wildlife

Scenario Description:

Establishing adapted and/or compatible species, varieties, or cultivars of perennial, herbaceous native species into pastures that can provide the structure and composition needed to enhance livestock and wildlife habitat, particularly when targeted forage supply and quality, cover, and shelter are not available in other pastures.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 512 Pasture and Hay Planting

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in the Conservation Practice Standard (CPS) 512 Pasture and Hay Planting

Feature Measure: acres

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $3,675.70

Scenario Cost/Unit: $36.76

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	2	$60.10
Materials						
Native and Introduced Perennial Grasses, Legumes and/or Forbs, Low Density	2502	A mix of native and introduced perennial grasses, legumes, and/or forbs, grasses typically greater than 50% of the mix, may include biennials and a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Includes material and shipping.	Acres	$90.39	40	$3,615.60

Practice: E512L - Diversifying Forage Base with Interseeding Forbs and Legumes to Increase Pasture Quality

Scenario #4 - Diversifying forage base with interseeding forbs and legumes to increase pasture quality.

Scenario Description:

Establishing adapted and/or compatible species, varieties, or cultivars of perennial, herbaceous species that increases the diversity to enhance livestock, forage supply and quality, not available in other pastures

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 512 Pasture and Hay Planting

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in the Conservation Practice Standard (CPS) 512 Pasture and Hay Planting

Feature Measure: acres treated

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $1,787.60

Scenario Cost/Unit: $17.88

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	2	$60.10
Materials						
Introduced Perennial Grasses, Legumes and/or Forbs, Low Density	2747	Introduced perennial grasses, legumes, and/or forbs, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Includes material and shipping.	Acres	$34.55	50	$1,727.50

Practice: E512M - Forage Plantings that Improve Wildlife Habitat Cover and Shelter or Structure and Composition

Scenario #4 - Forage plantings that improve wildlife habitat cover and shelter or structure and composition

Scenario Description:

Establishing native adapted and/or compatible species, varieties, or cultivars of herbaceous species for pasture, hay, or biomass production that provide cover and shelter or structure and composition for wilddlife.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 512 Pasture and Hay Planting

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in the Conservation Practice Standard (CPS) 512 Pasture and Hay Planting

Feature Measure: Acres

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $5,231.20

Scenario Cost/Unit: $52.31

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	2	$60.10
Materials						
Native Perennial Grasses, Legumes and/or Forbs, Low Density	2753	A mix of native perennial grasses, legumes, and/or forbs, grasses typically greater than 50% of the mix, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Species typically easy to purchase. Includes material and shipping.	Acres	$172.37	30	$5,171.10

Practice: E528A - Maintaining quantity and quality of forage for animal health and productivity

Scenario #1 - Maintaining quantity and quality of forage for animal health and productivity

Scenario Description:

Managing the harvest of vegetation with grazing and/or browsing animals for the purposes of maintaining desired pasture composition/plant vigor and improving/maintaining quantity and quality of forage for the animals' health and productivity following the recommendations of a qualifying professional, as detailed in the documentation and implementation requirements.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 528 - Prescribed Grazing

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 528 - Prescribed Grazing

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 1,000.0

Scenario Total Cost: $3,743.90

Scenario Cost/Unit: $3.74

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Acquisition of Technical Knowledge						
Training, Workshops	294	Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants.	Each	$100.83	1	$100.83
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	4	$94.96
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hours	$18.07	12	$216.84
Foregone Income						
FI, Grazing AUMs	2079	Grazing is the Primary Land Use	Animal Unit Month	$19.44	36	$699.84
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	17	$394.06
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	2	$83.56
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	12	$1,116.48
Materials						
Wire, Polywire	8	Wire, Polywire for electric fence - 1,300 ft. Includes materials and shipping only.	Each	$55.14	1	$55.14
Electric, Energizer, Solar	27	Electric, Energizer, Solar for electric fence. Includes materials and shipping only.	Each	$369.77	1	$369.77
Tank, Polyethylene, 300 gallon	291	Portable heavy duty rubber stock tank.	Each	$327.90	1	$327.90
Nutritional Balance Analyzer, fecal sample analysis only	1127	NIRS fecal analysis, animal performance report. Includes materials and shipping only.	Each	$47.42	6	$284.52

Practice: E528B - Grazing management that improves monarch butterfly habitat

Scenario #1 - Grazing management that improves monarch butterfly habitat

Scenario Description:

Implement a grazing management plan that will increase the abundance and diversity of monarch nectar-producing perennial forbs, including milkweed, while maintaining ecosystem benefits for other wildlife and livestock.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 528 - Prescribed Grazing

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 528 - Prescribed Grazing

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $1,009.07

Scenario Cost/Unit: $10.09

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Acquisition of Technical Knowledge						
Training, Workshops	294	Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants.	Each	$100.83	1	$100.83
Foregone Income						
FI, Grazing AUMs	2079	Grazing is the Primary Land Use	Animal Unit Month	$19.44	2.5	$48.60
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	1	$23.18
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	1	$41.78
Materials						
Wire, Polywire	8	Wire, Polywire for electric fence - 1,300 ft. Includes materials and shipping only.	Each	$55.14	1	$55.14
Electric, Energizer, Solar	27	Electric, Energizer, Solar for electric fence. Includes materials and shipping only.	Each	$369.77	2	$739.54

Practice: E528C - Incorporating wildlife refuge areas in contingency plans for wildlife.

Scenario #1 - Incorporating wildlife refuge areas in contingency plans for wildlife.

Scenario Description:

A prescribed grazing plan that includes 12 month (or longer) rest (non-grazing period equal or greater than one year) of a grazing unit that consists of native grasses and/or legumes and/or perennial forbs for the purpose of meeting the needs for drought/disaster contingency plans that will also provide wildlife habitat or wildlife access to water for a period of time.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 528 - Prescribed Grazing

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 528 - Prescribed Grazing

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $1,735.56

Scenario Cost/Unit: $17.36

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Acquisition of Technical Knowledge						
Training, Workshops	294	Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants.	Each	$100.83	1	$100.83
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	2	$47.48
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hours	$18.07	6	$108.42
Foregone Income						
FI, Grazing AUMs	2079	Grazing is the Primary Land Use	Animal Unit Month	$19.44	15	$291.60
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	8	$185.44
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	2	$83.56
Materials						
Wire, Polywire	8	Wire, Polywire for electric fence - 1,300 ft. Includes materials and shipping only.	Each	$55.14	4	$220.56
Electric, Energizer, Solar	27	Electric, Energizer, Solar for electric fence. Includes materials and shipping only.	Each	$369.77	1	$369.77
Tank, Polyethylene, 300 gallon	291	Portable heavy duty rubber stock tank.	Each	$327.90	1	$327.90

Practice: E528D - Grazing management for improving quantity and quality of food or cover and shelter for wildlife

Scenario #1 - Grazing management for improving quantity and quality of food or cover and shelter for wildlife

Scenario Description:

Grazing management employed will provide the plant structure, density and diversity needed for improving the quantity and quality of cover, shelter and food for the desired wildlife species of concern.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 528 - Prescribed Grazing

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 528 - Prescribed Grazing

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 1,000.0

Scenario Total Cost: $518.63

Scenario Cost/Unit: $0.52

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Acquisition of Technical Knowledge						
Training, Workshops	294	Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants.	Each	$100.83	1	$100.83
Labor						
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	10	$417.80

Practice: E528E - Improved grazing management for enhanced plant structure and composition for wildlife

Scenario #1 - Improved grazing management for enhanced plant structure and composition for wildlife

Scenario Description:

Managing the harvest of vegetation with grazing and/or browsing animals for the purpose of improving the quantity and quality of the structure and composition of the plant community that is available for wildlife.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 528 - Prescribed Grazing

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 528 - Prescribed Grazing

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $333.38

Scenario Cost/Unit: $3.33

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Foregone Income						
FI, Grazing AUMs	2079	Grazing is the Primary Land Use	Animal Unit Month	$19.44	15	$291.60
Labor						
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	1	$41.78

Practice: E528F - Stockpiling cool season forage to improve structure and composition or plant productivity and health

Scenario #1 - Stockpiling cool season forage to improve structure and composition or plant productivity and health

Scenario Description:

Grazing management employed to stop grazing events of selected paddock(s) to allow pasture forages to grow to maximum vegetative biomass accumulation before the end of the growing season.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 528 - Prescribed Grazing

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 528 - Prescribed Grazing

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $2,471.04

Scenario Cost/Unit: $24.71

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Acquisition of Technical Knowledge						
Training, Workshops	294	Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants.	Each	$100.83	1	$100.83
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	2	$47.48
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hours	$18.07	6	$108.42
Foregone Income						
FI, Grazing AUMs	2079	Grazing is the Primary Land Use	Animal Unit Month	$19.44	10	$194.40
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	8	$185.44
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	2	$83.56
Materials						
Wire, Polywire	8	Wire, Polywire for electric fence - 1,300 ft. Includes materials and shipping only.	Each	$55.14	1	$55.14
Electric, Energizer, Solar	27	Electric, Energizer, Solar for electric fence. Includes materials and shipping only.	Each	$369.77	1	$369.77
Nitrogen (N), Urea	71	Price per pound of N supplied by Urea. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.48	2000	$960.00
Tank, Polyethylene, 300 gallon	291	Portable heavy duty rubber stock tank.	Each	$327.90	1	$327.90
Test, Soil Test, Standard	299	Includes materials, shiping, labor, and equipment costs.	Each	$12.70	3	$38.10

Practice: E528G - Improved grazing management on pasture for plant productivity and health with monitoring activities

Scenario #1 - Improved grazing management on pasture for plant productivity and health with monitoring activities

Scenario Description:

Managing the harvest of vegetation with grazing and/or browsing animals as adjusted when following recommendations of a qualifying professional, as detailed in the enhancement criteria, generated through pasture condition scoring (PCS).

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 528 - Prescribed Grazing

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 528 - Prescribed Grazing

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $968.06

Scenario Cost/Unit: $9.68

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Foregone Income						
FI, Grazing AUMs	2079	Grazing is the Primary Land Use	Animal Unit Month	$19.44	30	$583.20
Labor						
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	4	$372.16
Materials						
Test, Soil Test, Standard	299	Includes materials, shiping, labor, and equipment costs.	Each	$12.70	1	$12.70

Practice: E528I - Grazing management that protects sensitive areas -surface or ground water from nutrients

Scenario #1 - Grazing management that protects sensitive areas -surface or ground water from nutrients

Scenario Description:

Grazing management employed will provide cover and density needed in the watershed in order to protect sensitive areas such as sinkholes, streams, highly erodible areas, or locations with plants that cannot tolerate defoliation.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 528 - Prescribed Grazing

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 528 - Prescribed Grazing

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 1,000.0

Scenario Total Cost: $1,788.08

Scenario Cost/Unit: $1.79

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Acquisition of Technical Knowledge						
Training, Workshops	294	Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants.	Each	$100.83	1	$100.83
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	4	$94.96
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hours	$18.07	12	$216.84
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	17	$394.06
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	2	$83.56
Materials						
Wire, Polytape	7	Wire, Polytape for electric fence. Rolls of 655' to 825'. Includes materials and shipping only.	Each	$50.04	4	$200.16
Electric, Energizer, Solar	27	Electric, Energizer, Solar for electric fence. Includes materials and shipping only.	Each	$369.77	1	$369.77
Tank, Polyethylene, 300 gallon	291	Portable heavy duty rubber stock tank.	Each	$327.90	1	$327.90

Practice: E528J - Prescribed grazing on pastureland that improves riparian and watershed function

Scenario #1 - Prescribed grazing on pastureland that improves riparian and watershed function

Scenario Description:

Grazing management employed will provide cover and density needed in the watershed in order to reduce runoff, improve infiltration, provide for above ground water filtration and sustain applicable fish and wildlife species habitat.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 528 - Prescribed Grazing

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 528 - Prescribed Grazing

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $1,638.36

Scenario Cost/Unit: $16.38

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Acquisition of Technical Knowledge						
Training, Workshops	294	Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants.	Each	$100.83	1	$100.83
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	2	$47.48
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hours	$18.07	6	$108.42
Foregone Income						
FI, Grazing AUMs	2079	Grazing is the Primary Land Use	Animal Unit Month	$19.44	10	$194.40
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	8	$185.44
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	2	$83.56
Materials						
Wire, Polywire	8	Wire, Polywire for electric fence - 1,300 ft. Includes materials and shipping only.	Each	$55.14	4	$220.56
Electric, Energizer, Solar	27	Electric, Energizer, Solar for electric fence. Includes materials and shipping only.	Each	$369.77	1	$369.77
Tank, Polyethylene, 300 gallon	291	Portable heavy duty rubber stock tank.	Each	$327.90	1	$327.90

Practice: E528L - Prescribed grazing that improves or maintains riparian and watershed function-erosion

Scenario #1 - Prescribed grazing that improves or maintains riparian and watershed function-erosion

Scenario Description:

Grazing management employed will provide cover and density needed in the watershed in order to reduce runoff, improve infiltration, provide for above ground water filtration and sustain applicable fish and wildlife species habitat.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 528 - Prescribed Grazing

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 528 - Prescribed Grazing

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $1,035.50

Scenario Cost/Unit: $10.36

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Acquisition of Technical Knowledge						
Training, Workshops	294	Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants.	Each	$100.83	1	$100.83
Foregone Income						
FI, Grazing AUMs	2079	Grazing is the Primary Land Use	Animal Unit Month	$19.44	10	$194.40
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	10	$231.80
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	2	$83.56
Materials						
Wire, Polywire	8	Wire, Polywire for electric fence - 1,300 ft. Includes materials and shipping only.	Each	$55.14	1	$55.14
Electric, Energizer, Solar	27	Electric, Energizer, Solar for electric fence. Includes materials and shipping only.	Each	$369.77	1	$369.77

Practice: E528M - Grazing management that protects sensitive areas from gully erosion

Scenario #1 - Grazing management that protects sensitive areas from gully erosion

Scenario Description:

Grazing management employed will provide vegetative cover and density needed in the watershed in order to protect sensitive areas such as sinkholes, streams, highly erodible areas, or locations that cannot tolerate plant defoliation.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 528 - Prescribed Grazing

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 528 - Prescribed Grazing

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 1,000.0

Scenario Total Cost: $1,637.96

Scenario Cost/Unit: $1.64

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Acquisition of Technical Knowledge						
Training, Workshops	294	Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants.	Each	$100.83	1	$100.83
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	4	$94.96
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hours	$18.07	12	$216.84
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	17	$394.06
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	2	$83.56
Materials						
Wire, Polytape	7	Wire, Polytape for electric fence. Rolls of 655' to 825'. Includes materials and shipping only.	Each	$50.04	1	$50.04
Electric, Energizer, Solar	27	Electric, Energizer, Solar for electric fence. Includes materials and shipping only.	Each	$369.77	1	$369.77
Tank, Polyethylene, 300 gallon	291	Portable heavy duty rubber stock tank.	Each	$327.90	1	$327.90

Practice: E528O - Clipping mature forages to set back vegetative growth for improved forage quality

Scenario #4 - Clipping mature forages to set back vegetative growth for improved forage quality

Scenario Description:

Timely clipping of mature forages through mowing, swathing or some other mechanical cutting will occur to increase forage palatability by setting plants back to a vegetative state for improved grazing management and forage quality.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard 528 - Prescribed Grazing

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard 528 - Prescribed Grazing

Feature Measure: Acres

Scenario Unit: Acres

Scenario Typical Size: 80.0

Scenario Total Cost: $2,903.49

Scenario Cost/Unit: $36.29

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Mechanical cutter, chopper	943	Forestry mulcher, flail shredder, hydro axe, brush cutter, etc. Equipment and power unit costs. Labor not included.	Hours	$95.19	20	$1,903.80
Rangeland/grassland field monitoring kit	967	Miscellaneous tools needed to complete rangeland/grassland monitoring. Materials may include camera, clippers, plot frame, scale, tape measure, etc. Includes materials and shipping only.	Each	$50.73	1	$50.73
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	24	$607.44
Mobilization						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	2	$341.52

Practice: E528P - Implementing Bale or Swath Grazing to increase organic matter and reduce nutrients in surface water

Scenario #4 - Implementing bale or swath grazing to increase organic matter or reduce nutrients in surface water

Scenario Description:

Bale or swath grazing to improve organic matter, aggregate stability or soil organism habitat or to reduce nutrient risks to surface water by leaving field harvested forages on site or supplementing with off-field forages. Grazing forages in this manner, will help reduce nutrient concentrations from confined animal lots while incorporating organic matter, feeding and diversifying the microbiome, building better soil aggregation and increasing soil health.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard 528 - Prescribed Grazing

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard 528 - Prescribed Grazing

Feature Measure: Acres

Scenario Unit: Acres

Scenario Typical Size: 20.0

Scenario Total Cost: $2,783.14

Scenario Cost/Unit: $139.16

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	20	$474.80
Tractor, agricultural, 120 HP	962	Agricultural tractor with horsepower range of 90 to 140. Equipment and power unit costs. Labor not included.	Hours	$51.52	20	$1,030.40
Trailer, flatbed, small	1505	Small flatbed trailer (typically less than 30' in length) pulled by a pickup to transport materials and equipment. Truck not included.	Hours	$7.99	20	$159.80
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	40	$1,012.40
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	1	$93.04
Materials						
Test, Soil Test, Standard	299	Includes materials, shiping, labor, and equipment costs.	Each	$12.70	1	$12.70

Practice: E528Q - Use of body condition scoring for livestock on a monthly basis to keep track of herd health

Scenario #4 - Use of body condition scoring for livestock on a monthly basis to keep track of herd health

Scenario Description:

Body condition scoring (BCS) serves as a useful management tool to monitor livestock performance with respect to current and recent feeding or grazing programs. Body condition scoring is a numeric scoring system, producers can use to consistently evaluate animals' estimated body energy reserves through degree of fatness. This information can be used to adjust nutritional strategies to reach optimal BCS. Since body condition is closely associated with reproductive performance as well as feed efficiency, monitoring body condition can help producers reach production goals and increase the operation's bottom line. Knowledge and understanding of BCS will assist producers to adjust a supplemental feeding program to maintain animal health and nutrition on a-monthly-basis.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard 528 - Prescribed Grazing

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard 528 - Prescribed Grazing

Feature Measure: Acres

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $169.63

Scenario Cost/Unit: $1.70

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Acquisition of Technical Knowledge						
Training, Workshops	294	Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants.	Each	$100.83	1	$100.83
Equipment Installation						
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hours	$18.07	1	$18.07
Rangeland/grassland field monitoring kit	967	Miscellaneous tools needed to complete rangeland/grassland monitoring. Materials may include camera, clippers, plot frame, scale, tape measure, etc. Includes materials and shipping only.	Each	$50.73	1	$50.73

Practice: E528R - Management Intensive Rotational Grazing

Scenario #4 - Management Intensive Rotational Grazing

Scenario Description:

Management intensive, multi-paddock grazing system where livestock are regularly and systematically moved to fresh forage to optimize quantity and quality of forage growth, improve manure distribution, improve wildlife cover, and improve soil health.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard 528 - Prescribed Grazing

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard 528 - Prescribed Grazing

Feature Measure: Acres

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $3,710.68

Scenario Cost/Unit: $37.11

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Acquisition of Technical Knowledge						
Training, Workshops	294	Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants.	Each	$100.83	1	$100.83
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	2	$47.48
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hours	$18.07	10	$180.70
Rangeland/grassland field monitoring kit	967	Miscellaneous tools needed to complete rangeland/grassland monitoring. Materials may include camera, clippers, plot frame, scale, tape measure, etc. Includes materials and shipping only.	Each	$50.73	1	$50.73
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	15	$347.70
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	2	$83.56
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	6	$558.24
Materials						
Wire, Polywire	8	Wire, Polywire for electric fence - 1,300 ft. Includes materials and shipping only.	Each	$55.14	2	$110.28
Electric, Ground Rods	20	Electric, Ground Rod for electric fence. Includes materials and shipping only.	Each	$12.55	3	$37.65
Electric, Ground Rod Clamps	21	Electric, Ground Rod Clamps for electric fence. Includes materials and shipping only.	Each	$2.57	3	$7.71
Electric, Tester	26	Electric, Tester for electric fence. Includes materials and shipping only.	Each	$50.23	1	$50.23
Electric, Energizer, Solar	27	Electric, Energizer, Solar for electric fence. Includes materials and shipping only.	Each	$369.77	1	$369.77
Tank, Polyethylene, 300 gallon	291	Portable heavy duty rubber stock tank.	Each	$327.90	2	$655.80
Pipe, PE, 1 1/4 in., DR 9	998	Materials: - 1 1/4 inch - PE - 160 psi - ASTM D3035 DR 9	Feet	$1.11	1000	$1,110.00

Practice: E528S - Soil Health Improvements on Pasture

Scenario #4 - Soil health improvements on pasture

Scenario Description:

Use of soil health assessment to evaluate impact of current grazing system in addressing soil organic matter depletion, soil aggregate instability and soil organism habitat loss or degradation (primary assessment made in Year 1). Modifications to the grazing system will be made after the laboratory analysis. Modifications can be improvements to the grazing plan or changes to the forage composition. During year 4, a follow-up assessment will be completed to allow time for the modifications to show improvements to the soil health resource concerns. The follow-up sample will be taken in the same soil type, closely matched to time of year and with similar amounts of regrowth since previous grazing.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 528 - Prescribed Grazing

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (PCS) 528 - Prescribed Grazing

Feature Measure: Acres

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $940.22

Scenario Cost/Unit: $9.40

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Acquisition of Technical Knowledge						
Training, Workshops	294	Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants.	Each	$100.83	1	$100.83
Equipment Installation						
Rangeland/grassland field monitoring kit	967	Miscellaneous tools needed to complete rangeland/grassland monitoring. Materials may include camera, clippers, plot frame, scale, tape measure, etc. Includes materials and shipping only.	Each	$50.73	1	$50.73
Foregone Income						
FI, Grazing AUMs	2079	Grazing is the Primary Land Use	Animal Unit Month	$19.44	12	$233.28
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	4	$92.72
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	6	$250.68
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	1	$93.04
Materials						
Test, Soil Health, Basic Package	2734	Basic soil health laboratory assessment for soil organic carbon, aggregation, bioavailable nitrogen, respiration, and active carbon according to technical note 450-03. Includes shipping and handling.	Number	$118.94	1	$118.94

Practice: E528T - Grazing to Reduce Wildfire Risk on Forests

Scenario #4 - Improved grazing management for reduction of wildfire risks on Western forests

Scenario Description:

Managing the harvest of vegetation with grazing and/or browsing animals for the purpose of balancing forage with maintaining/improving ecological site condition and while reducing the risk of wildfire hazard on forested ecological sites.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 666 - Forest Stand Improvement

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level with the addition of CPS 528 - Prescribed Grazing

Feature Measure: acres

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $101.88

Scenario Cost/Unit: $1.02

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	2	$60.10
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	1	$41.78

Practice: E533A - Advanced Pumping Plant Automation

Scenario #4 - Advanced Pumping Plant Automation

Scenario Description:

This enhancement consists of installing a control device to a pump station that allows the user to remotely monitor and operate the pump station based on field measured data. Pumping stations may have either a combustible or electric power unit that are compatible with the control device or sensor. These devices/sensors collect field-measured data and provide this data in real time to the landowner to make irrigation decisions and adjustments to the pump operation.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard 533 - Pumping Plant.

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard 533 - Pumping Plant.

Feature Measure: Number

Scenario Unit: Number

Scenario Typical Size: 1.0

Scenario Total Cost: $5,198.83

Scenario Cost/Unit: $5,198.83

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	4	$94.96
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	4	$120.20
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	4	$92.72
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	4	$372.16
Materials						
Solar Panels, fixed cost portion	1031	Fixed cost portion of the Solar Panels. This portion is a base cost for all Solar Panels and is not dependant on KiloWatt. The total cost of any Solar Panels will include this fixed cost plus a variable cost portion. The completed Solar Panels will include all materials (electrical, controllers, service drops and etc). This cost will include material, labor and equipment.	Each	$261.66	1	$261.66
Solar Panels, variable cost portion	1135	Variable cost portion of the Solar Panels. This portion IS dependent on the total Kilowatt for the Solar Panels. The total cost of any Solar Panels will include this variable cost plus the fixed cost portion. The completed Solar Panels will include all materials (electrical, controllers, and service drop, etc). This cost will include material, labor and equipment.	Kilowatt	$2,731.32	0.1	$273.13
Switches and Controls, temp sensors	1192	Temperature and soil moisture sensors installed as part of an electronic monitoring (with or without wireless telecommunications) commonly used to control pumps and irrigation systems	Each	$611.15	1	$611.15
Switches and Controls, programmable controller	1193	Programmable logic controller (with or without wireless telecommunications) commonly used to control pumps and irrigation systems	Each	$319.93	1	$319.93
Switches and Controls, Wi-Fi system and software	1194	Software with built-in cellular or Wi-Fi communication commonly used to control pumps and irrigation systems	Each	$799.83	1	$799.83
Switches and Controls, radio system	1195	Output radio, field transmitter, and receiver commonly used to control pumps and irrigation systems	Each	$469.35	1	$469.35
Data Logger with Telemetry System	1454	Data Logger W/Graphic Output for water management and telemetry - data communication device with power supply in a weather proof enclosure. Equipment only.	Each	$1,525.93	1	$1,525.93
Safety Camera on Automated Pump	2474	Waterproof outdoor wireless IP Network security camera with housing. Includes materials only.	Each	$222.48	1	$222.48
Engine/Fuel Tank Sensor	2487	Transducer and sensors to monitor the oil pressure, oil and water temperatures, fuel flow meter with digital pulse output and fuel levels in a tank. Includes the conduit and cabling.	Each	$35.33	1	$35.33

Practice: E533B - Complete pumping plant evaluation for energy savings

Scenario #1 - Complete pumping plant evaluation for energy savings

Scenario Description:

Evaluation of all pumping plants to determine the potential to rehabilitate/replace/reconfigure pump performance to improve water delivery efficiency 10% or more. Evaluate to determine if a Variable Frequency Drive motor controller(s) is recommended and the simple payback in terms of energy savings is less than 10 years.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 449 - Irrigation Water Management

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 449 - Irrigation Water Management

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 640.0

Scenario Total Cost: $3,287.79

Scenario Cost/Unit: $5.14

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	8	$240.40
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	32	$2,977.28
Mobilization						
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	$70.11	1	$70.11

Practice: E550A - Range planting for increasing/maintaining organic matter

Scenario #1 - Range planting for increasing/maintaining organic matter

Scenario Description:

Establishment of adapted perennial or self-sustaining vegetation such as grasses, forbs, legumes, shrubs and trees for the purpose of increasing or maintaining organic matter levels in the soil.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 550 - Range Planting

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 550 - Range Planting

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $4,068.91

Scenario Cost/Unit: $40.69

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Foregone Income						
FI, Grazing AUMs	2079	Grazing is the Primary Land Use	Animal Unit Month	$19.44	15	$291.60
Labor						
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	2	$83.56
Materials						
Native Perennial Grasses, Legumes and/or Forbs, Medium Density	2754	A mix of native perennial grasses, legumes, and/or forbs, Grasses typically greater than 50% of the mix, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at medium to higher density (41-60 pure live seeds/sq ft). Species typically easy to purchase. Includes material and shipping.	Acres	$246.25	15	$3,693.75

Practice: E550B - Range planting for improving forage, browse, or cover for wildlife

Scenario #1 - Range planting for improving forage, browse, or cover for wildlife

Scenario Description:

Establishment of adapted perennial or self-sustaining vegetation such as grasses, forbs, legumes, shrubs and trees for the purpose of improving forage, browse, or cover for wildlife on areas that have been degraded beyond recovery via ecological principles, or old crop fields and pastures devoid of desirable, native rangeland species that fit within an ecological site description steady state.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 550 - Range Planting

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 550 - Range Planting

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $1,909.78

Scenario Cost/Unit: $19.10

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	2	$186.08
Materials						
Native Perennial Grasses, Legumes and/or Forbs, Low Density	2753	A mix of native perennial grasses, legumes, and/or forbs, grasses typically greater than 50% of the mix, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Species typically easy to purchase. Includes material and shipping.	Acres	$172.37	10	$1,723.70

Practice: E570A - Enhanced rain garden for wildlife

Scenario #4 - Enhanced rain garden for wildlife

Scenario Description:
Seed or plug nectar and pollen producing plants into rain gardens to provide wildlife habitat.

Before Situation:
Resources are protected at the minimum level of the Conservation Practice Standard 570 - Stormwater Runoff Control

After Situation:
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard 570 - Stormwater Runoff Control

Feature Measure: Square Feet

Scenario Unit: Square Feet

Scenario Typical Size: 1,080.0

Scenario Total Cost: $187.03

Scenario Cost/Unit: $0.17

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	1	$23.74
Site Preparation, Mechanical	944	Aerator, rolling drum chopper, etc. Includes equipment, power unit and labor costs.	Acres	$77.93	0.1	$7.79
Seeding Operation, Broadcast, Ground	959	Broadcast seed via ground operation. May require post tillage operation to incorporate seed. Includes equipment, power unit and labor costs.	Acres	$11.77	0.1	$1.18
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	4	$92.72
Materials						
Straw	1237	Small grain straw (non organic and certified organic). Includes materials only.	Ton	$73.06	0.3	$21.92
Native Perennial Grasses, Legumes and/or Forb Mix for Targeted Wildlife/Pollinator Habitat or Ecological Restoration, moderate commercial availability	2619	Diverse mix of native perennial grasses, legumes and forbs, less than 50% grasses, may include biennials and a small percentage of annual species for establishment purposes and/or if allowed by the CPS. This is a mix composed of species required to meet specific wildlife/pollinator habitat or ecological requirements. Seed is moderately easy to purchase commercially. Includes materials and shipping.	Acres	$396.82	0.1	$39.68

Practice: E578A - Stream crossing elimination

Scenario #1 - Stream crossing elimination

Scenario Description:
Existing stream crossings on an operation are consolidated into fewer crossings in order to reduce impacts to stream habitat.

Before Situation:
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 578 - Stream Crossing

After Situation:
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 578 - Stream Crossing

Feature Measure: Typical feature is 0.09 acres

Scenario Unit: Each

Scenario Typical Size: 1.0

Scenario Total Cost: $7,996.01

Scenario Cost/Unit: $7,996.01

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Dozer, 80 HP	929	Track mounted Dozer with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$54.51	16	$872.16
Hydraulic Excavator, 1 CY	931	Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included.	Hours	$111.83	8	$894.64
Seeding Operation, Broadcast, Ground	959	Broadcast seed via ground operation. May require post tillage operation to incorporate seed. Includes equipment, power unit and labor costs.	Acres	$11.77	0.1	$1.18
Truck, dump, 12 CY	1215	Dump truck for moving bulk material. Typically capacity is 16 ton or 12 cubic yards. Includes equipment only.	Hours	$77.81	16	$1,244.96
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	32	$741.76
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	32	$809.92
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	16	$668.48
Materials						
Erosion Control Blanket, biodegradable	1213	Biodegradable erosion control blanket, typically a composite of natural fibers with reinforcing polymer netting. Materials and shipping only.	Square Yard	$1.38	300	$414.00
Tree & Shrub, Woody, Cuttings, Medium	1308	Woody cuttings, live stakes or whips typically 1/4 to 1 inch diameter and 24 to 48 inches long. Includes materials and shipping only.	Each	$1.49	300	$447.00
Aggregate, river rock	1834	Well graded, rounded mineral substrates derived from local riverine settings. Includes materials and local delivery	Ton	$34.98	42	$1,469.16
Annual Grasses	2730	Annual grasses, one or more species, mostly introduced but may be native. Used for temporary cover or cover crops. Includes material and shipping.	Acres	$31.62	0.1	$3.16
Introduced Perennial Grasses, Legumes and/or Forbs, Medium Density	2748	Introduced perennial grasses, legumes, and/or forbs, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at medium to higher density (41-60 pure live seeds/sq ft). Includes material and shipping.	Acres	$49.36	0.1	$4.94
Mobilization						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	1	$170.76
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: E580A - Stream corridor bank stability improvement

Scenario #1 - Stream corridor bank stability improvement

Scenario Description:
Stream corridor bank vegetation components are established to provide additional streambank stability.

Before Situation:
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 580 - Streambank and Shoreline Protection

After Situation:
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 580 - Streambank and Shoreline Protection

Feature Measure: Area planted

Scenario Unit: Acres

Scenario Typical Size: 2.0

Scenario Total Cost: $3,850.73

Scenario Cost/Unit: $1,925.37

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	8	$189.92
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hours	$18.07	8	$144.56
Trailer, enclosed, small	1503	Small enclosed trailer (typically less than 30' in length) pulled by a pickup to transport materials and equipment. Truck not included.	Hours	$11.36	8	$90.88
Hand tools, tree planting	1590	Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included.	Hours	$12.58	8	$100.64
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	48	$1,112.64
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	8	$334.24
Materials						
Shrub, Potted, Small	1524	Potted shrub seedling, 1 quart to 1 gallon. Includes materials and shipping only.	Each	$5.63	65	$365.95
Tree, Hardwood, Potted, Small	1529	Potted hardwood seedling, 1 quart to 1 gallon. Includes materials and shipping only.	Each	$4.51	65	$293.15
Tree, Conifer, Potted, Small	1534	Potted conifer seedling, 1 quart to 1 gallon. Includes materials and shipping only.	Each	$4.44	65	$288.60
Tree shelter, mesh tree tube, 48 in.	1556	48 inch tall vexar or other open weave tubular tree shelter to protect from animal damage. Materials only.	Each	$1.43	65	$92.95
Tree shelter, solid tube type, 4 in. x 24 in.	1563	4 inch x 24 inch tree tube for protection from animal damage. Materials only.	Each	$2.46	65	$159.90
Tree shelter, solid tube type, 4 in. x 48 in.	1566	4 inch x 48 inch tree tube for protection from animal damage. Materials only.	Each	$5.02	65	$326.30
Stakes, wood, 1 in. x 1 in. x 48 in.	1578	1 in. x 1 in. x 48 in. wood stakes to fasten items in place. Includes materials only.	Each	$1.80	195	$351.00

Practice: E580B - Stream corridor bank vegetation improvement

Scenario #1 - Stream corridor bank vegetation improvement

Scenario Description:
Stream corridor bank vegetation components are established to improve ecosystem functioning and stability.

Before Situation:
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 580 - Streambank and Shoreline Protection

After Situation:
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 580 - Streambank and Shoreline Protection

Feature Measure: Area planted

Scenario Unit: Acres

Scenario Typical Size: 2.0

Scenario Total Cost: $3,850.73

Scenario Cost/Unit: $1,925.37

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	8	$189.92
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hours	$18.07	8	$144.56
Trailer, enclosed, small	1503	Small enclosed trailer (typically less than 30' in length) pulled by a pickup to transport materials and equipment. Truck not included.	Hours	$11.36	8	$90.88
Hand tools, tree planting	1590	Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included.	Hours	$12.58	8	$100.64
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	48	$1,112.64
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	8	$334.24
Materials						
Shrub, Potted, Small	1524	Potted shrub seedling, 1 quart to 1 gallon. Includes materials and shipping only.	Each	$5.63	65	$365.95
Tree, Hardwood, Potted, Small	1529	Potted hardwood seedling, 1 quart to 1 gallon. Includes materials and shipping only.	Each	$4.51	65	$293.15
Tree, Conifer, Potted, Small	1534	Potted conifer seedling, 1 quart to 1 gallon. Includes materials and shipping only.	Each	$4.44	65	$288.60
Tree shelter, mesh tree tube, 48 in.	1556	48 inch tall vexar or other open weave tubular tree shelter to protect from animal damage. Materials only.	Each	$1.43	65	$92.95
Tree shelter, solid tube type, 4 in. x 24 in.	1563	4 inch x 24 inch tree tube for protection from animal damage. Materials only.	Each	$2.46	65	$159.90
Tree shelter, solid tube type, 4 in. x 48 in.	1566	4 inch x 48 inch tree tube for protection from animal damage. Materials only.	Each	$5.02	65	$326.30
Stakes, wood, 1 in. x 1 in. x 48 in.	1578	1 in. x 1 in. x 48 in. wood stakes to fasten items in place. Includes materials only.	Each	$1.80	195	$351.00

Practice: E590A - Improving nutrient uptake efficiency and reducing risk of nutrient losses

Scenario #1 - Improving nutrient uptake efficiency and reducing risk of nutrient losses

Scenario Description:

Nutrient management encompasses managing the amount, source, placement, and timing of the application of plant nutrients and soil amendments. Nutrients are currently being applied on the farm based on the 4R nutrient stewardship principles. Enhanced nutrient use efficiency strategies or technologies are utilized to improve nutrient use efficiency and reduce risk of nutrient losses to surface and groundwater and reduce risks to air quality by reducing emissions of greenhouse gases (GHGs).

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 590 - Nutrient Management

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 590 - Nutrient Management

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $3,371.43

Scenario Cost/Unit: $33.71

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	2	$186.08
Materials						
Nitrogen-Urease inhibitor	260	Nitrogen-Urease inhibitor	Acres	$31.37	100	$3,137.00
Test, Soil Nitrogen Testing	311	Pre-Side Dress/Deep Soil Testing. Includes materials and shipping only.	Each	$9.67	5	$48.35

Practice: E590B - Reduce risks of nutrient loss to surface water by utilizing precision agriculture technologies

Scenario #1 - Reduce risks of nutrient loss to surface water by utilizing precision agriculture technologies

Scenario Description:

Precision application technology and techniques are utilized to plan and apply nutrients to improve nutrient use efficiency and reduce risk of nutrient losses.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 590 - Nutrient Management

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 590 - Nutrient Management

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $1,460.58

Scenario Cost/Unit: $14.61

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Fertilizer, precision application	952	Fertilizer application performed by light bar/GPS navigation system. Includes equipment, power unit and labor costs.	Acres	$8.30	100	$830.00
Labor						
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	2	$186.08
Materials						
Test, Soil Test, Standard	299	Includes materials, shiping, labor, and equipment costs.	Each	$12.70	35	$444.50

Practice: E590C - Improving nutrient uptake efficiency and reducing risk of nutrient losses on pasture

Scenario #4 - Improving nutrient uptake efficiency and reducing risk of nutrient losses on pasture

Scenario Description:

Nutrient management encompasses managing the amount, source, placement, and timing of the application of plant nutrients and soil amendments. Nutrients are currently being applied on the farm based on the 4R nutrient stewardship principles. Enhanced nutrient use efficiency strategies or technologies are utilized to improve nutrient use efficiency and reduce risk of nutrient losses on pasture.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard 590 - Nutrient Management

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard 590 - Nutrient Management

Feature Measure: Acres

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $1,710.16

Scenario Cost/Unit: $17.10

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Fertilizer, precision application	952	Fertilizer application performed by light bar/GPS navigation system. Includes equipment, power unit and labor costs.	Acres	$8.30	100	$830.00
Labor						
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	4	$372.16
Materials						
Test, Soil Test, Standard	299	Includes materials, shiping, labor, and equipment costs.	Each	$12.70	40	$508.00

Practice: E590D - Reduce nutrient loss by increasing setback awareness via precision technology for water quality

Scenario #4 - Reduce risks of nutrient losses to surface and groundwater by increasing setback awareness via precision technology

Scenario Description:

Precision technology and techniques are used to increase Soil/Groundwater Setbacks & Associated Application Rate Restrictions (SGS&AARR) implementation during nutrient application by providing precise, real-time location information (geo-located) in the field to the equipment operator. While operating nutrient application equipment, the operator's location is continually updated and displayed on an add-on GPS-enabled device visible to the operator at all times to reduce the risk of nutrient application in setback and/or sensitive areas. Resource concerns addressed are Water Quality, Field sediment, nutrient and pathogen loss: Nutrients transported to groundwater and surface water and Pathogens and chemicals from manure, biosolids or compost applications transported to groundwater and surface water.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 590 - Nutrient Management.

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 590 - Nutrient Management.

Feature Measure: Acres with setback for nutrient app

Scenario Unit: Acres

Scenario Typical Size: 300.0

Scenario Total Cost: $3,732.06

Scenario Cost/Unit: $12.44

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Acquisition of Technical Knowledge						
Training, Workshops	294	Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants.	Each	$100.83	2	$201.66
Equipment Installation						
Fertilizer, precision application	952	Fertilizer application performed by light bar/GPS navigation system. Includes equipment, power unit and labor costs.	Acres	$8.30	300	$2,490.00
Aerial Imagery	966	Aerial imagery. RBG (color), infrared or NDVI single image.	Acres	$1.75	260	$455.00
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	4	$120.20
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	5	$465.20

Practice: E595A - Reduce risk of pesticides in surface water by utilizing precision pesticide application techniques

Scenario #1 - Reduce risk of pesticides in surface water by utilizing precision pesticide application techniques

Scenario Description:

Utilize precision application techniques to reduce risk of pesticides in surface water by reducing total amount of chemical applied and reducing the potential for delivery of chemicals into water bodies.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 595 - Integrated Pest Management

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 595 - Integrated Pest Management

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $1,049.12

Scenario Cost/Unit: $10.49

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Chemical, precision application	949	Chemical application performed by light bar/GPS navigation system. Includes equipment, power unit and labor costs.	Acres	$7.70	100	$770.00
Labor						
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	3	$279.12

Practice: E595B - Reduce risk of pesticides in water and air by utilizing IPM PAMS techniques

Scenario #1 - Reduce risk of pesticides in water and air by utilizing IPM PAMS techniques

Scenario Description:

Utilize integrated pest management (IPM) prevent, avoidance, monitoring, and suppression (PAMS) techniques to reduce risk of pesticides in water and air. Reduce the potential for delivery of chemicals into water or ozone precursor emissions .

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 595 - Integrated Pest Management

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 595 - Integrated Pest Management

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $579.62

Scenario Cost/Unit: $5.80

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	10	$300.50
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	3	$279.12

Practice: E595D - Increase the size requirement of refuges planted to slow pest resistance to Bt crops

Scenario #1 - Increase the size requirement of refuges planted to slow pest resistance to Bt crops

Scenario Description:

Bacillus thuringiensis (Bt) plant incorporated protectants are plants that have been genetically altered to produce proteins that are harmful to certain insect pests. Widespread implementation of Bt crops has decreased insecticide use and increased crop yields, but it must be used as part of an integrated pest management (IPM) approach to protect the crop from pest species that are not susceptible to the Bt toxin and to manage pest resistance. Crop rotation, scouting and resistance management strategies, such as planting and creating refuges of non-Bt crops, are essential when farming Bt crops. Insects have developed resistance to Bt proteins. To mitigate the development of further resistance, growers are required to plant refuges of non-transgenic crops. These refuges produce numbers of susceptible insects that will help sustain populations of non-resistant insects. The size of Refuge requirement depends on the environment, pest and strain of the crop. Size of refuge is determined by resistance risk. Most Bt corn requires that 20% of the total Bt crop planted be non-Bt. Cotton can require 50% of the crop be planted to non-Bt. A recent study published in the Journal of Integrated Pest Management revealed, compliance has been a challenge. Nearly 40% of growers surveyed did not plant the required refuge (Reisig 2017). They credit non-compliance, in part, to lack of understanding by small-scale farmers about the need for refuges.

Before Situation:

Minimal or no refuges were planted as required for Bt crops.

After Situation:

Optimum sized and located refuges are planted for Bt crops.

Feature Measure: Ac

Scenario Unit: Acres

Scenario Typical Size: 40.0

Scenario Total Cost: $486.58

Scenario Cost/Unit: $12.16

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	10	$300.50
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	2	$186.08

Practice: E595E - Eliminate use of chemical treatments to control pests and to increase the presence of dung beetles

Scenario #1 - Eliminate use of chemical treatments to control pests and to increase the presence of dung beetles

Scenario Description:

Pests and parasites can have a significant impact on the economic viability of livestock operations, by affecting the performance and health of animals. The use of broad-spectrum insecticides, pour-ons and avermectins have been shown to have a detrimental effect on dung beetle populations. Having a healthy population of dung beetles facilitates the recycling of nutrients and promotes soil and grassland health. By eliminating the application of broad-spectrum insecticides, pour-ons, and avermectins, including injectable avermectins, for pest control in and on livestock along with rotational grazing and higher stock densities has shown to increase the dung beetle population. Use of natural or alternative methods of pest control over multiple years is encouraged.

Before Situation:

Pests and parasites can have a significant impact on the economic viability of livestock operations, by affecting the performance and health of animals. The use of broad-spectrum insecticides, pour-ons and avermectins have been shown to have a detrimental

After Situation:

Having a healthy population of dung beetles facilitates the recycling of nutrients and promotes soil and grassland health. By eliminating the application of broad-spectrum insecticides, pour-ons, and avermectins, including injectable avermectins, for pest

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 500.0

Scenario Total Cost: $2,687.96

Scenario Cost/Unit: $5.38

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Acquisition of Technical Knowledge						
Training, Workshops	294	Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants.	Each	$100.83	1	$100.83
Equipment Installation						
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hours	$18.07	26	$469.82
Rangeland/grassland field monitoring kit	967	Miscellaneous tools needed to complete rangeland/grassland monitoring. Materials may include camera, clippers, plot frame, scale, tape measure, etc. Includes materials and shipping only.	Each	$50.73	1	$50.73
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	10	$300.50
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	10	$231.80
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	10	$417.80
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	12	$1,116.48

Practice: E595F - Improving Soil Organism Habitat on Agricultural Land

Scenario #4 - Improving soil organism habitat on agricultural land

Scenario Description:

To reduce or eliminate the use of seed treatments in corn and soybean cropping systems to promote beneficial organism populations and pest control. Beneficial organisms such as the Carabidae beetle are very important in the population control of common agricultural pests like the grey garden slug. Slugs are a common pest in no-till and heavily cover cropped fields. Slugs are mollusks and can ingest some treatments with no adverse effects. Beneficial organism populations can be negatively impacted when they consume slugs exposed to seed treatments. The reduction or elimination of routine seed treatments in these cash crop systems may increase beneficial insect populations.

Before Situation:

Seed treatments are used on crops.

After Situation:

Producers effectively reduce or eliminate seed treatment use in their cropping rotations either by eliminating seed treatments on corn-soybean rotations or eliminating seed treatments on corn.

Feature Measure: Acres Planted

Scenario Unit: Acres

Scenario Typical Size: 50.0

Scenario Total Cost: $465.20

Scenario Cost/Unit: $9.30

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	5	$465.20

Practice: E612A - Cropland conversion to trees or shrubs for long term improvement of water quality

Scenario #1 - Cropland conversion to trees or shrubs for long term improvement of water quality

Scenario Description:

Cropland conversion to trees and shrubs for long term erosion control and improvement of water quality. Trees and shrubs are established on cropland where annually-seeded cash crops have been grown. Tree and/or shrub species are selected for their efficacy in holding soil, and the planting design is configured to control runoff and trap sediment.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 612 - Tree/Shrub Establishment

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 612 - Tree/Shrub Establishment

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 10.0

Scenario Total Cost: $3,034.82

Scenario Cost/Unit: $303.48

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acres	$20.79	10	$207.90
Ripper or subsoiler, 16 to 36 inch depth	1235	Deep ripper or subsoiler, (16-36 inches depth) includes tillage implement, power unit and labor.	Acres	$20.81	10	$208.10
Foregone Income						
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acres	$287.72	4	$1,150.88
FI, Soybeans Dryland	1961	Dryland Soybeans is Primary Crop	Acres	$225.71	4	$902.84
FI, Wheat Dryland	1963	Dryland Wheat is Primary Crop	Acres	$109.80	2	$219.60
Materials						
Tropical species, Medium	1541	Tropical seedling, native or non-native, 1 quart to gallon pot, or containerized, 10 cubic inch. Includes materials and shipping only.	Each	$0.00	500	$0.00
Introduced Perennial Grasses, Legumes and/or Forbs, Low Density	2747	Introduced perennial grasses, legumes, and/or forbs, may include a small percentage of annual species for establishment purposes and/or if allowed by the CPS. Planted at lower to medium density (40 pure live seeds/sq ft and less). Includes material and shipping.	Acres	$34.55	10	$345.50

Practice: E612C - Establishing tree/shrub species to restore native plant communities

Scenario #1 - Establishing tree/shrub species to restore native plant communities

Scenario Description:

Establish trees and/or shrubs to restore elements of plant diversity that have been lost through past diseases or improper management. For example, disease-resistant varieties of elm and chestnut can be established to restore the ecological functions of American elm and American chestnut. At the stand level, past forest management may have eliminated certain native tree species. Restoring stand-level diversity and function addresses a wide array of resource concerns and strengthens ongoing management activities. This enhancement improves a forest that is already in good condition by increasing plant diversity, and improving health and vigor through adding plants with resistance to disease, pests, or other local hazards. Additional benefits include contributing to carbon storage, and providing diversity in wildlife habitat and food sources.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 612 - Tree/Shrub Establishment

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 612 - Tree/Shrub Establishment

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 5.0

Scenario Total Cost: $3,815.26

Scenario Cost/Unit: $763.05

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	2	$47.48
Hand tools, tree planting	1590	Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included.	Hours	$12.58	12	$150.96
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	12	$278.16
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	4	$372.16
Materials						
Shrub, Potted, Small	1524	Potted shrub seedling, 1 quart to 1 gallon. Includes materials and shipping only.	Each	$5.63	50	$281.50
Tree, Hardwood, Potted, Medium	1532	Potted hardwood seedling, 2 gallons or larger. Includes materials and shipping only.	Each	$9.28	100	$928.00
Tree, Conifer, Potted, Medium	1537	Potted conifer seedling, 2 gallons or larger. Includes materials and shipping only.	Each	$9.98	100	$998.00
Tree shelter, solid tube type, 4 in. x 60 in.	1567	4 inch x 60 inch tree tube for protection from animal damage. Materials only.	Each	$5.06	150	$759.00

Practice: E612D - Adding food-producing trees and shrubs to existing plantings

Scenario #1 - Adding food-producing trees and shrubs to existing plantings

Scenario Description:

Plant food-producing trees and shrubs for wildlife or human consumption within windbreaks, alley cropping, multi-story cropping, silvopasture systems, and/or riparian forest buffers.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 612 - Tree/Shrub Establishment

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 612 - Tree/Shrub Establishment

Feature Measure: Acres

Scenario Unit: Acres

Scenario Typical Size: 10.0

Scenario Total Cost: $1,690.90

Scenario Cost/Unit: $169.09

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	2	$47.48
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$6.00	1	$6.00
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hours	$18.07	10	$180.70
Hand tools, tree planting	1590	Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included.	Hours	$12.58	10	$125.80
Foregone Income						
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acres	$287.72	0.41	$117.97
FI, Soybeans Dryland	1961	Dryland Soybeans is Primary Crop	Acres	$225.71	0.36	$81.26
FI, Wheat Dryland	1963	Dryland Wheat is Primary Crop	Acres	$109.80	0.23	$25.25
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	10	$231.80
Materials						
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$8.98	1	$8.98
Herbicide, Sulfometuron & metsulfuron	344	A residual sulfonylurea herbicide that kills broadleaf weeds and some annual grasses. It is a systemic compound with foliar and soil activity. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$12.27	1	$12.27
Herbicide, Surfactant	1095	Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$1.81	1	$1.81
Shrub, Seedling, Medium	1507	Bare root shrub seedling, 18 to 36 inches tall; includes tropical containerized seedlings 10 to 20 cubic inches. Includes materials and shipping only.	Each	$0.83	341	$283.03
Tree, Hardwood, Seedling, Medium	1510	Bare root hardwood seedlings 18 to 36 inches tall; includes tropical containerized seedlings of 10 to 20 cubic inches. Includes materials and shipping only.	Each	$1.17	340	$397.80
Mobilization						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	1	$170.76

Practice: E612E - Cultural plantings

Scenario #1 - Cultural plantings

Scenario Description:

Plant trees and shrubs that are of cultural significance, such as those species utilized by Tribes in traditional practices, medicinal plants, species used in basket-making, etc. (e.g., paper birch, slippery elm, witch hazel).

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 612 - Tree/Shrub Establishment

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 612 - Tree/Shrub Establishment

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 1.0

Scenario Total Cost: $1,626.14

Scenario Cost/Unit: $1,626.14

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	2	$47.48
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$6.00	1	$6.00
Hand tools, tree planting	1590	Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included.	Hours	$12.58	10	$125.80
Foregone Income						
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acres	$287.72	0.41	$117.97
FI, Soybeans Dryland	1961	Dryland Soybeans is Primary Crop	Acres	$225.71	0.36	$81.26
FI, Wheat Dryland	1963	Dryland Wheat is Primary Crop	Acres	$109.80	0.23	$25.25
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	10	$231.80
Materials						
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$8.98	1	$8.98
Herbicide, Sulfometuron & metsulfuron	344	A residual sulfonylurea herbicide that kills broadleaf weeds and some annual grasses. It is a systemic compound with foliar and soil activity. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$12.27	1	$12.27
Herbicide, Surfactant	1095	Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$1.81	1	$1.81
Tree, Hardwood, Seedling, Medium	1510	Bare root hardwood seedlings 18 to 36 inches tall; includes tropical containerized seedlings of 10 to 20 cubic inches. Includes materials and shipping only.	Each	$1.17	681	$796.77
Mobilization						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	1	$170.76

Practice: E612G - Tree/shrub planting for wildlife food

Scenario #1 - Tree/shrub planting for wildlife food

Scenario Description:

Tree or shrub planting to enhance habitat for native wildlife. A minimum of five tree or shrub species will be used; they will be species that provide food and/or cover for identified wildlife species.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 612 - Tree/Shrub Establishment

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 612 - Tree/Shrub Establishment

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 1.0

Scenario Total Cost: $1,451.58

Scenario Cost/Unit: $1,451.58

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	2	$47.48
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acres	$6.00	1	$6.00
Hand tools, tree planting	1590	Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included.	Hours	$12.58	11	$138.38
Foregone Income						
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acres	$287.72	0.41	$117.97
FI, Soybeans Dryland	1961	Dryland Soybeans is Primary Crop	Acres	$225.71	0.36	$81.26
FI, Wheat Dryland	1963	Dryland Wheat is Primary Crop	Acres	$109.80	0.23	$25.25
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	11	$254.98
Materials						
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$8.98	1	$8.98
Herbicide, Sulfometuron & metsulfuron	344	A residual sulfonylurea herbicide that kills broadleaf weeds and some annual grasses. It is a systemic compound with foliar and soil activity. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$12.27	1	$12.27
Herbicide, Surfactant	1095	Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$1.81	1	$1.81
Shrub, Seedling, Medium	1507	Bare root shrub seedling, 18 to 36 inches tall; includes tropical containerized seedlings 10 to 20 cubic inches. Includes materials and shipping only.	Each	$0.83	605	$502.15
Tree, Hardwood, Seedling, Medium	1510	Bare root hardwood seedlings 18 to 36 inches tall; includes tropical containerized seedlings of 10 to 20 cubic inches. Includes materials and shipping only.	Each	$1.17	218	$255.06

Practice: E643A - Restoration of sensitive coastal vegetative communities

Scenario #1 - Restoration of sensitive coastal vegetative communities

Scenario Description:

Enhance the level of restoration in unique and diminishing coastal ecosystems by establishing native herbaceous and woody plants. Protect established vegetation, and manage to maintain floristic quality and the provision of environmental services. This enhancement is applied on unique areas with rare and declining habitat conditions, where vegetation has been detrimentally altered by human or natural events. Targeted sites are those that formerly supported vegetative communities that are now declining and/or becoming rare. The sites will vary across the continent. The enhancement will expand and elevate the process of restoring these unique areas, increasing their ecological value and benefits to wildlife. It re-establishes a select group of trees and/or shrubs that are key components in this ecosystem.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 643 - Restoration and Management of Rare and Declining Habitats

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 643 - Restoration and Management of Rare and Declining Habitats

Feature Measure: Each

Scenario Unit: Each

Scenario Typical Size: 25.0

Scenario Total Cost: $3,156.83

Scenario Cost/Unit: $126.27

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Skidsteer, 80 HP	933	Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$59.94	8	$479.52
Hand tools, tree planting	1590	Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included.	Hours	$12.58	8	$100.64
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	8	$185.44
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	8	$202.48
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	2	$83.56
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	7	$651.28
Materials						
Post, Steel T, 1.33 lbs, 6 ft.	15	Steel Post, Studded 6 ft. - 1.33 lb. Includes materials and shipping only.	Each	$5.95	50	$297.50
Tree Marking Paint	313	Trees to be cut through tree marking are physically identified through the application of paint on the tree. Typically one quart of paint is used to mark one acre of trees. Includes materials and shipping only.	Acres	$9.43	5	$47.15
Cattle Panel	1409	Welded wire cattle panel typically 1/4 inch galvanized steel rods, 50 in. high x 16 ft. long. Materials only.	Each	$28.26	25	$706.50
Tree, Hardwood, Potted, Medium	1532	Potted hardwood seedling, 2 gallons or larger. Includes materials and shipping only.	Each	$9.28	25	$232.00
Mobilization						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	1	$170.76

Practice: E643B - Restoration and management of rare or declining habitat

Scenario #1 - Restoration and management of rare or declining habitat

Scenario Description:
Provide protection from adverse environmental conditions to create refugia for documented occurrences of sensitive plant communities.

Before Situation:
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 643 - Restoration and Management of Rare and Declining Habitats

After Situation:
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 643 - Restoration and Management of Rare and Declining Habitats

Feature Measure: Feet of Fence

Scenario Unit: Feet

Scenario Typical Size: 440.0

Scenario Total Cost: $3,614.75

Scenario Cost/Unit: $8.22

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Auger, Post driver attachment	934	Auger or post driver attachment to a tractor or skidsteer. Does not include power unit. Labor not included.	Hours	$12.82	8	$102.56
Chainsaw	937	Equipment and power unit costs. Labor not included.	Hours	$7.00	2	$14.00
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	8	$189.92
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hours	$22.62	8	$180.96
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	16	$370.88
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	2	$186.08
Materials						
Wire, Woven, Galvanized, 12.5 Gauge, 48 inch	4	Galvanized 12.5 gauge, 48 in. - 330' roll. Includes materials and shipping only.	Each	$249.98	3	$749.94
Post, Wood, CCA treated, 6 in. x 12-14 ft.	13	Wood Post, Line/End 6 inch dia. X 12-14 ft., CCA Treated. Includes materials and shipping only.	Each	$31.48	38	$1,196.24
Fence, Wire Assembly, Woven Wire	35	Brace pins, twist sticks, staples. Includes materials and shipping only.	Feet	$0.14	1648	$230.72
Gate, Game, 8 ft. High X 4 ft. Wide	1082	4 Foot wide game gate (8 feet tall). Includes materials and shipping only.	Each	$222.69	1	$222.69
Mobilization						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	1	$170.76

Practice: E643C - Restore glade habitat to benefit threatened and endangered species and state species of concern

Scenario #4 - Restore glade habitat to benefit threatened and endangered species and state species of concern

Scenario Description:

Restore Glade natural communities as shown by the Ecological Site Description to conserve biodiversity. Enhancement requires reducing woody canopy cover and applying at least one prescribed fire to treated acres. Restoration of glade communities provide habitat for rare and declining species. Sites that previously or currently support the rare and declining habitat will be targeted for restoration.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard 643 - Restoration of Rare or Declining Habitat.

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard 643 - Restoration of Rare or Declining Habitat.

Feature Measure: Acres

Scenario Unit: Acres

Scenario Typical Size: 5.0

Scenario Total Cost: $5,345.88

Scenario Cost/Unit: $1,069.18

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Skidsteer, 80 HP	933	Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hours	$59.94	2	$119.88
Chainsaw	937	Equipment and power unit costs. Labor not included.	Hours	$7.00	80	$560.00
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	2.5	$59.35
Chemical, spot treatment, single stem application	964	Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included.	Hours	$68.31	1.5	$102.47
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hours	$18.07	22	$397.54
Water tank, portable	1602	Portable water tank transported in a pick up truck. Typically with 200 gallon capacity includes tank with pump, hose and sprayer. Does not include the pickup truck. Equipment only.	Hours	$13.82	2	$27.64
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	116	$3,485.80
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	$41.78	4	$167.12
Materials						
Herbicide, Triclopyor	338	Refer to WIN-PST for product names and active ingredients. Materials and shipping	Acres	$32.55	0.5	$16.28
Fuel, ignition fuel mixture	1596	Mixture of gasoline and diesel for ignition of prescribed burns. Materials only.	Gallons	$3.14	5	$15.70
Mobilization						
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	$70.11	2	$140.22
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	1	$253.89

Practice: E644A - Managing Flood-Irrigated Landscapes for Wildlife

Scenario #1 - Managing Flood-Irrigated Landscapes for Wildlife

Scenario Description:

Developing and implementing a conservation plan that supports maintenance of flood-irrigation in key landscapes to provide important foraging habitat for local breeding and migratory waterfowl and waterbirds.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 644 – Wetland Wildlife Habitat Management

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 644 – Wetland Wildlife Habitat Management

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 50.0

Scenario Total Cost: $1,188.82

Scenario Cost/Unit: $23.78

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	9	$213.66
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	22	$509.96
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	5	$465.20

Practice: E645A - Reduction of attractants to human-subsidized predators in sensitive wildlife species habitat

Scenario #1 - Reduction of attractants to human-subsidized predators in sensitive wildlife species habitat

Scenario Description:

Reduction of artificial perching sites, nest sites, food, and water available to subsidized predators in areas where human-subsidized predators are a threat to sensitive wildlife species. Human-subsidized predators may include ravens, crows, magpies, coyotes, foxes, skunks, raccoons, and other species. Activities under this enhancement may include removal of non- native or invasive trees; removal of unused power poles, corrals, windmills, buildings, and other vertical structures; and/or removal or management of watering facilities, dead livestock, road kill, garbage, animal feed, dumps, and other non-natural food sources.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 645 - Upland Wildlife Habitat Management

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 645 - Upland Wildlife Habitat Management

Feature Measure: Acre

Scenario Unit: Number

Scenario Typical Size: 40.0

Scenario Total Cost: $1,955.04

Scenario Cost/Unit: $48.88

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	24	$569.76
Trailer, enclosed, small	1503	Small enclosed trailer (typically less than 30' in length) pulled by a pickup to transport materials and equipment. Truck not included.	Hours	$11.36	24	$272.64
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	48	$1,112.64

Practice: E645B - Manage existing shrub thickets to provide adequate shelter for wildlife

Scenario #4 - Manage existing shrub thickets to provide adequate shelter for wildlife

Scenario Description:

Existing shrub thickets provide an instant and important cover for wildlife. Various wildlife species may use shrubs as winter/thermal cover, summer shade, roosting, or as escape cover from predators. Proper management ensures that these shrubs will continue to provide the desired benefits for the local wildlife. A combination of herbicide treatments, cutting and trimming branches, and removal of other competing vegetation will occur. An eligible existing shrub thicket needs to have a canopy cover of 750 square feet, with an end goal of expanding to 1500 square feet. Any existing shrub thicket (not hand planted within the last 5 years) are eligible for this enhancement. Shrub thickets found within fence rows may now be very wide, but still meet the 750 square feet, are eligible.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard 645 - Upland Wildlife Habitat Management

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard 645 - Upland Wildlife Habitat Management

Feature Measure: Acres

Scenario Unit: Acres

Scenario Typical Size: 1.0

Scenario Total Cost: $283.15

Scenario Cost/Unit: $283.15

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Chainsaw	937	Equipment and power unit costs. Labor not included.	Hours	$7.00	2	$14.00
Pruning tools, hand tools	1318	Pruning tools, hand tools, shears, loppers, pole saw, handsaw. Material costs only. Labor not included.	Hours	$2.22	2	$4.44
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	2	$60.10
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	4	$92.72
Materials						
Herbicide, Imazapyr	336	Pre and post-emergent, non-selective herbicide for control of undesirable vegetation in non-crop areas. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$39.97	1	$39.97
Herbicide, Surfactant	1095	Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$1.81	1	$1.81
Mobilization						
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	$70.11	1	$70.11

Practice: E645C - Edge feathering for wildlife cover

Scenario #4 - Edge feathering for wildlife cover

Scenario Description:

Selected trees are cut and brush clipped along the border between a wooded area and a grassland, cropland, or idle land, creating a dense woody cover of interlocking branches at ground level. The feathered edge will be an average of 30 feet wide and a minimum of 50 feet long, resulting in an area of 1500 square feet. The width of the strip will vary to follow topographic features and to create a wavy border; the design will also consider aesthetics. Vegetative composition and cover will vary within the edge, ranging from areas with no trees and shrubs to areas with scattered trees and extensive shrub cover. The variation in vegetation structure along with variable width of the edge will create feathering. The edge may include shrub plantings for wildlife food and aesthetics.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard 645 - Upland Wildlife Habitat Management

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard 645 - Upland Wildlife Habitat Management

Feature Measure: Acres

Scenario Unit: Acres

Scenario Typical Size: 1.0

Scenario Total Cost: $767.48

Scenario Cost/Unit: $767.48

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Chainsaw	937	Equipment and power unit costs. Labor not included.	Hours	$7.00	8	$56.00
Chemical, spot treatment, single stem application	964	Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included.	Hours	$68.31	2	$136.62
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	8	$240.40
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	8	$185.44
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	2	$46.36
Materials						
Herbicide, Triclopyor	338	Refer to WIN-PST for product names and active ingredients. Materials and shipping	Acres	$32.55	1	$32.55
Mobilization						
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	$70.11	1	$70.11

Practice: E645D - Wildlife Habitat Management Plan for Upland Landscapes

Scenario #9 - Wildlife Habitat Management Plan for Upland Landscapes

Scenario Description:

Develop and implement a wildlife habitat management plan that removes or significantly reduces the impact of existing land management activities occurring within agricultural landscapes (on any land use) causing chronic disturbance to wildlife during breeding, rearing, migration and over- wintering periods. Site monitoring may be necessary to identify and document sources of disturbance to wildlife. Examples of adjustments to existing management activities that can reduce disturbance to a tolerable level include: use of integrated pest management; capping of open vertical pipes; provision of wildlife-friendly water access and egress; and reduction of noise or movement within key migratory, nesting, rearing, loafing or hiding locations.

Before Situation:

The inadequate terrestrial wildlife habitat concern has been addressed under Conservation Practice Standard 645 and minimum planning criteria for the terrestrial wildlife habitat resource concern has been met. However, disturbance related impacts tied to the agricultural operation are negatively impacting wildlife.

After Situation:

Land management activities occurring within the agricultural landscape (on any land use) have been adjusted to avoid causing chronic disturbance to wildlife during breeding, rearing, migration and over- wintering periods has been addressed. Planning criteria for the terrestrial wildlife habitat resource concern exceeds minimum planning criteria.

Feature Measure: Acres of Improved Habitat

Scenario Unit: Acres

Scenario Typical Size: 40.0

Scenario Total Cost: $353.75

Scenario Cost/Unit: $8.84

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	3	$71.22
Rangeland/grassland field monitoring kit	967	Miscellaneous tools needed to complete rangeland/grassland monitoring. Materials may include camera, clippers, plot frame, scale, tape measure, etc. Includes materials and shipping only.	Each	$50.73	1	$50.73
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	10	$231.80

Practice: E646A - Close structures to capture and retain rainfall for waterfowl and wading bird winter habitat

Scenario #1 - Close structures to capture and retain rainfall for waterfowl and wading bird winter habitat

Scenario Description:

When flooded to shallow depths during fall and winter, agricultural fields provide ideal foraging habitat for myriad species of waterfowl and wading birds . In addition, flooded conditions promote establishment of aquatic invertebrate populations, thus providing protein-rich food sources for shorebirds as well as waterfowl and wading birds.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 646 - Shallow Water Development and Management

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 646 - Shallow Water Development and Management

Feature Measure: acre

Scenario Unit: Acres

Scenario Typical Size: 50.0

Scenario Total Cost: $1,313.45

Scenario Cost/Unit: $26.27

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	9	$213.66
Mower, Bush Hog	940	Equipment and power unit costs. Labor not included.	Hours	$49.85	2.5	$124.63
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	22	$509.96
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	5	$465.20

Practice: E646B - Extend retention of captured rainfall for migratory waterfowl and wading bird late winter habitat

Scenario #1 - Extend retention of captured rainfall for migratory waterfowl and wading bird late winter habitat

Scenario Description:

When flooded to shallow depths during fall and winter, agricultural fields provide ideal foraging habitat for myriad species of waterfowl and wading birds. Harvested and idled agricultural lands, notably those occurring within rice rotations, contain high densities of residual (i.e., waste) grain and natural seeds following harvest. In addition, flooded conditions promote establishment of aquatic invertebrate populations, thus providing protein-rich food sources for shorebirds as well as waterfowl and wading birds. Benefits may become greatest during late winter and early spring as birds are assimilating nutrient and fat reserves in preparation for northward migration. However, agricultural fields flooded during fall-winter are typically drained during late January or February in advance of spring planting. This often results in a rapid reduction in available habitat, and may constrain ability of migratory birds to adequately prepare for migration, with greatest impacts likely occurring during years of low winter precipitation. Retention of water on agricultural lands into early spring will produce maximum benefits to migratory waterfowl and shorebirds by providing high quality habitat during a time when habitat may otherwise be in low abundance.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 646 - Shallow Water Development and Management

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 646 - Shallow Water Development and Management

Feature Measure: acre

Scenario Unit: Acres

Scenario Typical Size: 50.0

Scenario Total Cost: $1,546.69

Scenario Cost/Unit: $30.93

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	11	$261.14
Mower, Bush Hog	940	Equipment and power unit costs. Labor not included.	Hours	$49.85	2.5	$124.63
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	26	$602.68
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	6	$558.24

Practice: E646C - Manipulate vegetation and maintain closed structures for shorebirds mid-summer habitat

Scenario #1 - Manipulate vegetation and maintain closed structures for shorebirds mid-summer habitat

Scenario Description:

Suitable shorebird habitat is limited during the summer and fall as birds migrate south post-breeding and providing shallow water and mud flat habitat will benefit a variety of shorebird species. Optimal conditions are created when water levels are slowly reduced through evaporation, which allows for propagation of invertebrates (typically insect larvae) used as food by shorebirds. Manipulation of vegetation, preferably through rolling, creates open conditions required by this suite of birds as a means to detect and avoid predators, and provides nutrient inputs for invertebrate production.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 646 - Shallow Water Development and Management

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 646 - Shallow Water Development and Management

Feature Measure: acre

Scenario Unit: Acres

Scenario Typical Size: 50.0

Scenario Total Cost: $2,552.17

Scenario Cost/Unit: $51.04

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	9	$213.66
Mower, Bush Hog	940	Equipment and power unit costs. Labor not included.	Hours	$49.85	4.5	$224.33
Tillage, Primary	946	Includes heavy disking (offset) or chisel plow. Includes equipment, power unit and labor costs.	Acres	$15.95	50	$797.50
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	22	$509.96
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	5	$465.20
Mobilization						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	2	$341.52

Practice: E646D - Manipulate vegetation and maintain closed structures for shorebird late summer habitat

Scenario #1 - Manipulate vegetation and maintain closed structures for shorebird late summer habitat

Scenario Description:

Suitable shorebird habitat is limited during the summer and fall as birds migrate south post-breeding. Providing shallow water and mud flat habitat will benefit a variety of shorebird species. Optimal conditions are created when water levels are slowly reduced through evaporation, which allows for propagation of invertebrates (typically insect larvae) used as food by shorebirds. Manipulation of vegetation, preferably through rolling, creates open conditions required by this suite of birds as a means to detect and avoid predators, and provides nutrient inputs for invertebrate production.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 646 - Shallow Water Development and Management

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 646 - Shallow Water Development and Management

Feature Measure: acre

Scenario Unit: Acres

Scenario Typical Size: 50.0

Scenario Total Cost: $2,835.26

Scenario Cost/Unit: $56.71

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	11	$261.14
Mower, Bush Hog	940	Equipment and power unit costs. Labor not included.	Hours	$49.85	5.5	$274.18
Tillage, Primary	946	Includes heavy disking (offset) or chisel plow. Includes equipment, power unit and labor costs.	Acres	$15.95	50	$797.50
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	26	$602.68
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	6	$558.24
Mobilization						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	2	$341.52

Practice: E647A - Manipulate vegetation on fields with captured rainfall for waterfowl & wading bird winter habitat

Scenario #1 - Manipulate vegetation on fields with captured rainfall for waterfowl & wading bird winter habitat

Scenario Description:

Harvested and idled agricultural lands, notably those occurring within rice rotations, contain high densities of residual (i.e., waste) grain and natural seeds following harvest. Seed densities in harvested rice fields may rival those documented in intensively managed moist-soil units, especially in the Gulf Coast and Central Valley of California. When flooded to shallow depths during fall and winter, these agricultural fields provide ideal foraging habitat for myriad species of waterfowl and wading birds. In addition, flooded conditions promote establishment of aquatic invertebrate populations, thus providing protein-rich food sources for shorebirds as well as waterfowl and wading birds. In many cases, light manipulation of dense vegetation is needed to improve the accessibility of food resources to waterfowl, wading birds, and shorebirds.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 647 - Early Successional Habitat Development and Management

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 647 - Early Successional Habitat Development and Management

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 50.0

Scenario Total Cost: $1,122.42

Scenario Cost/Unit: $22.45

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Tractor, agricultural, 120 HP	962	Agricultural tractor with horsepower range of 90 to 140. Equipment and power unit costs. Labor not included.	Hours	$51.52	8	$412.16
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	8	$202.48
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: E647B - Provide early successional shorebird habitat between first crop and ratoon crop

Scenario #1 - Provide early successional shorebird habitat between first crop and ratoon crop

Scenario Description:

Many declining suites of wildlife species rely on early successional habitats for at least part of their life cycle needs. Migratory shorebird species in particular rely on open, moist soil or shallowly flooded conditions for foraging and security. Rice farms support many migratory and resident water bird species. The first rice crop harvest often coincides with the arrival of early migrating shorebirds. This time of year is also the highest rainfall months. If standing rice stubble from the first crop is rolled to push above-ground stalks level with the soil surface, the first component of this type of habitat is met. When moisture is added to this situation, short-term habitat is available until the ratoon crop initiates growth to a height beyond that which would provide benefit to the early successional species.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 647 - Early Successional Habitat Development and Management

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 647 - Early Successional Habitat Development and Management

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 50.0

Scenario Total Cost: $1,122.42

Scenario Cost/Unit: $22.45

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Tractor, agricultural, 120 HP	962	Agricultural tractor with horsepower range of 90 to 140. Equipment and power unit costs. Labor not included.	Hours	$51.52	8	$412.16
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	8	$202.48
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.89	2	$507.78

Practice: E647C - Maintain most soil vegetation on cropland edges to enhance waterfowl and shorebird habitat

Scenario #1 - Maintain most soil vegetation on cropland edges to enhance waterfowl and shorebird habitat

Scenario Description:

The wetter or more water saturated portions of cropland fields such as areas adjacent to field drains, have the potential to produce a significant amount of moist soil plants which are a tremendously valuable source of forage and cover for many waterfowl, shorebird and wading bird species, especially during a period of time when such plants may be limited. Under normal cropland production, the native vegetation is restricted on these sites through mechanical and/or chemical control. These maintained moist soil plants also will provide filtering and improve water quality.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 647 - Early Successional Habitat Development and Management

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 647 - Early Successional Habitat Development and Management

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 50.0

Scenario Total Cost: $567.00

Scenario Cost/Unit: $11.34

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Mower, Bush Hog	940	Equipment and power unit costs. Labor not included.	Hours	$49.85	3	$149.55
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	3	$75.93
Mobilization						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	2	$341.52

Practice: E647D - Establish and maintain early successional habitat in ditches and bank borders

Scenario #1 - Establish and maintain early successional habitat in ditches and bank borders

Scenario Description:

This enhancement is to encourage the establishment of early successional, naturally occurring vegetation in ditches, side slope and bank borders to provide cover, critical nesting and brood rearing habitat as well as filtering overland flow and improving water quality. Ditches perform the critical function of removing water from agricultural lands. Allowing naturally occurring vegetation to develop along ditches, including side slopes, banks and borders, will help provide food and cover for wildlife while enhancing aquatic habitat and improving water quality. Ditches and ditch borders provide a foundation that supports a diverse wildlife community including Northern Bobwhite (Colinus virginianus) and other birds preferring early successional cover. Rabbits, furbearers, amphibians and many other species that inhabit agriculture areas will use this vegetative cover. These areas can also provide critical nesting habitat for the Mottled Duck (Anas fulvigula).

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 647 - Early Successional Habitat Development and Management

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 647 - Early Successional Habitat Development and Management

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 50.0

Scenario Total Cost: $567.00

Scenario Cost/Unit: $11.34

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Mower, Bush Hog	940	Equipment and power unit costs. Labor not included.	Hours	$49.85	3	$149.55
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	3	$75.93
Mobilization						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	2	$341.52

Practice: E666D - Forest management to enhance understory vegetation

Scenario #1 - Forest management to enhance understory vegetation

Scenario Description:

This enhancement provides for management of the understory vegetation in a forested area by mechanical, chemical, and/or manual methods to improve the plant species mix and the health of the residual vegetation. Managing the understory vegetation increases available water to the plants, minimizes runoff and erosion, and improves water quality. An adequately stocked forest provides inputs of leaves, needles, and woody twigs and stems to the forest floor, adding to soil organic matter and contributing to forest soil health. Desirable tree species and understory vegetation, with spacing that allows ground cover to develop, will allow moisture to infiltrate and be stored in the soil, releasing moisture over longer periods of time.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 666 - Forest Stand Improvement

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 666 - Forest Stand Improvement

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 20.0

Scenario Total Cost: $5,014.56

Scenario Cost/Unit: $250.73

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Mechanical cutter, chopper	943	Forestry mulcher, flail shredder, hydro axe, brush cutter, etc. Equipment and power unit costs. Labor not included.	Hours	$95.19	16	$1,523.04
Chemical, spot treatment, single stem application	964	Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included.	Hours	$68.31	16	$1,092.96
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	16	$404.96
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	11	$1,023.44
Materials						
Herbicide, Imazapyr	336	Pre and post-emergent, non-selective herbicide for control of undesirable vegetation in non-crop areas. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$39.97	20	$799.40
Mobilization						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	1	$170.76

Practice: E666E - Reduce height of the forest understory to limit wildfire risk

Scenario #1 - Reduce height of the forest understory to limit wildfire risk

Scenario Description:

Forest stand improvement that manages forest structure to reduce the risk of wildfire, and creates conditions that facilitate prescribed burning. The fire risk reduction is accomplished by reducing the height of the woody understory and midstory, creating space between the ground cover and the tree canopy. This enhancement provides for management of the understory vegetation in a forested area, using mechanical, chemical or manual methods to improve the plant species mix and the health of the residual vegetation, and reduce the risk of wildfire. In appropriate stands, the treatment creates conditions that favor prescribed burning. Forest stand improvement (FSI) activities are used to remove trees of undesirable species, form, quality, condition, or growth rate. The quantity and quality of forest for wildlife and/or timber production will be increased by manipulating stand density and structure. These treatments can also reduce wildfire hazards, improve forest health, restore natural plant communities, and achieve or maintain a desired native understory plant community for soil health, wildlife, grazing, and/or browsing.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 666 - Forest Stand Improvement

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 666 - Forest Stand Improvement

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 20.0

Scenario Total Cost: $5,014.56

Scenario Cost/Unit: $250.73

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Mechanical cutter, chopper	943	Forestry mulcher, flail shredder, hydro axe, brush cutter, etc. Equipment and power unit costs. Labor not included.	Hours	$95.19	16	$1,523.04
Chemical, spot treatment, single stem application	964	Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included.	Hours	$68.31	16	$1,092.96
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	16	$404.96
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	11	$1,023.44
Materials						
Herbicide, Imazapyr	336	Pre and post-emergent, non-selective herbicide for control of undesirable vegetation in non-crop areas. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$39.97	20	$799.40
Mobilization						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	1	$170.76

Practice: E666F - Reduce forest stand density to create open stand structure

Scenario #1 - Reduce forest stand density to create open stand structure

Scenario Description:

Reducing forest stand density creates open forest conditions with a low basal area which promotes the health and vigor of the residual trees. The open stand structure allows a significant amount of sunlight to reach the forest floor and stimulates the growth of understory vegetation. Understory vegetation management, along with the wide spacing between trees or clumps of trees, provides visual appeal, lowers the risk of wildfire, and provides habitat for many at-risk and listed wildlife species. The enhancement creates conditions that facilitate a follow-up treatment with prescribed burning.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 666 - Forest Stand Improvement

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 666 - Forest Stand Improvement

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 20.0

Scenario Total Cost: $5,769.80

Scenario Cost/Unit: $288.49

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Mechanical cutter, chopper	943	Forestry mulcher, flail shredder, hydro axe, brush cutter, etc. Equipment and power unit costs. Labor not included.	Hours	$95.19	20	$1,903.80
Chemical, spot treatment, single stem application	964	Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included.	Hours	$68.31	20	$1,366.20
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	20	$506.20
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	11	$1,023.44
Materials						
Herbicide, Imazapyr	336	Pre and post-emergent, non-selective herbicide for control of undesirable vegetation in non-crop areas. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$39.97	20	$799.40
Mobilization						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	1	$170.76

Practice: E666G - Reduce forest density and manage understory along roads to limit wildfire risk and improve habitat

Scenario #1 - Reduce forest density and manage understory along roads to limit wildfire risk and improve habitat

Scenario Description:

Opening the tree canopy along roads ("daylighting"), and providing space between ground vegetation and tree crowns minimizes the spread of wildfires that often start along roads, and improves wildlife habitat and food sources for many species. Some trees near a forest road are removed through harvesting, cutting, mulching, or another option available at the site, with the objective of creating a partially open forest canopy bordering the road. A semi-open canopy allows more sunlight to reach the forest floor to promote herbaceous understory plants, and reduces maintenance needs by allowing moisture to evaporate from roads. The reduced canopy and herbaceous understory limit woodland fuel buildup and reduce fire intensity.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 666 - Forest Stand Improvement

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 666 - Forest Stand Improvement

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 10.0

Scenario Total Cost: $2,895.94

Scenario Cost/Unit: $289.59

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Chainsaw	937	Equipment and power unit costs. Labor not included.	Hours	$7.00	8	$56.00
Mechanical cutter, chopper	943	Forestry mulcher, flail shredder, hydro axe, brush cutter, etc. Equipment and power unit costs. Labor not included.	Hours	$95.19	8	$761.52
Chemical, spot treatment, single stem application	964	Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included.	Hours	$68.31	8	$546.48
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	8	$185.44
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12 in., Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	$25.31	8	$202.48
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	8	$744.32
Materials						
Herbicide, Imazapyr	336	Pre and post-emergent, non-selective herbicide for control of undesirable vegetation in non-crop areas. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$39.97	10	$399.70

Practice: E666H - Increase on-site carbon storage

Scenario #1 - Increase on-site carbon storage

Scenario Description:

Use forest management techniques to maintain and increase on-site carbon storage. These include, but are not limited to, applying uneven-aged management, using longer rotations, retaining cavity/den trees, snags, and down woody debris, and protecting or increasing soil organic material.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 666 - Forest Stand Improvement

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 666 - Forest Stand Improvement

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 100.0

Scenario Total Cost: $1,209.52

Scenario Cost/Unit: $12.10

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Labor						
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	13	$1,209.52

Practice: E666I - Crop tree management for mast production

Scenario #1 - Crop tree management for mast production

Scenario Description:
Forest stand improvement using crop tree management techniques to increase mast production

Before Situation:
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 666 - Forest Stand Improvement

After Situation:
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 666 - Forest Stand Improvement

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 10.0

Scenario Total Cost: $3,633.41

Scenario Cost/Unit: $363.34

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Chainsaw	937	Equipment and power unit costs. Labor not included.	Hours	$7.00	25	$175.00
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	6	$142.44
Chemical, spot treatment, single stem application	964	Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included.	Hours	$68.31	25	$1,707.75
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	25	$579.50
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	8	$744.32
Materials						
Tree Marking Paint	313	Trees to be cut through tree marking are physically identified through the application of paint on the tree. Typically one quart of paint is used to mark one acre of trees. Includes materials and shipping only.	Acres	$9.43	10	$94.30
Herbicide, Picloram	337	Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$19.01	10	$190.10

Practice: E666J - Facilitating oak forest regeneration

Scenario #1 - Facilitating oak forest regeneration

Scenario Description:

Facilitate oak regeneration following a forest stand improvement treatment for natural oak regeneration (i.e., a regeneration cut). After a regeneration cut, oaks in the seedling and sapling stages are often out-competed by invasive brush and undesirable tree and shrub species. This enhancement will release seedling and sapling oaks from competing invasive plants and other undesirable species, and thin stump sprouts. A forester will monitor site conditions, treat competition, protect seedlings, and recommend additional follow-up treatments as needed. The enhancement protects investments in oak regeneration by providing for follow-up activities that require the expertise of a professional forester.

Before Situation:

Naturally regenerated oak seedlings and/or saplings are threatened by competition from undesirable vegetation.

After Situation:

Oaks in the forest stand are free from competition and have adequate space and light to allow them to grow into the forest canopy.

Feature Measure: Acres

Scenario Unit: Acres

Scenario Typical Size: 25.0

Scenario Total Cost: $14,428.13

Scenario Cost/Unit: $577.13

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Chainsaw	937	Equipment and power unit costs. Labor not included.	Hours	$7.00	6	$42.00
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	16	$379.84
Chemical, spot treatment, single stem application	964	Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included.	Hours	$68.31	10	$683.10
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	6	$180.30
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	56	$1,298.08
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	34	$3,163.36
Materials						
Tree Marking Paint	313	Trees to be cut through tree marking are physically identified through the application of paint on the tree. Typically one quart of paint is used to mark one acre of trees. Includes materials and shipping only.	Acres	$9.43	5	$47.15
Herbicide, Triclopyor	338	Refer to WIN-PST for product names and active ingredients. Materials and shipping	Acres	$32.55	5	$162.75
Herbicide, Surfactant	1095	Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$1.81	5	$9.05
Tree shelter, solid tube type, 4 in. x 48 in.	1566	4 inch x 48 inch tree tube for protection from animal damage. Materials only.	Each	$5.02	1250	$6,275.00
Cable ties, plastic	1575	Plastic cable ties (typ. 8-12 in.) to assist in securing items. Materials only.	Each	$0.07	2500	$175.00
Stakes, wood, 3/4 in. x 3/4 in. x 48 in.	1582	3/4 in. x 3/4 in. x 48 in. wood stakes to fasten items in place. Includes materials only.	Each	$1.61	1250	$2,012.50

Practice: E666K - Creating structural diversity with patch openings

Scenario #1 - Creating structural diversity with patch openings

Scenario Description:

Forest stand improvement that creates patch openings. Size, shape, and arrangement of patches will be based on natural features, and emulate patches that would result from natural disturbance regimes of wind or fire, varying geographically and by forest type, and by tree species desired from natural regeneration. The treatment will create diversity in stand composition and structure, increase pest resistance, and enhance wildlife food availability. Openings may provide regeneration sites and restore natural plant communities, and achieve or maintain a desired understory plant community for wildlife habitat.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 666 - Forest Stand Improvement

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 666 - Forest Stand Improvement

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 15.0

Scenario Total Cost: $7,674.30

Scenario Cost/Unit: $511.62

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Chainsaw	937	Equipment and power unit costs. Labor not included.	Hours	$7.00	150	$1,050.00
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	15	$356.10
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	150	$3,477.00
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	30	$2,791.20

Practice: E666L - Forest Stand Improvement to rehabilitate degraded hardwood stands

Scenario #1 - Forest Stand Improvement to rehabilitate degraded hardwood stands

Scenario Description:

Hardwood forestland has been subject to poor logging practices (“high-grading”) for decades. Without professional forestry assistance the best species and individual trees are removed, often before maturity (“diameter-limit cutting”), leaving the poorest species and individual trees to regenerate the stand. Reversing this process requires cutting or killing poor quality trees while retaining any desirable species that might still be present. A combination of 3 silvicultural methods are applied: crop tree release, group selection (all trees removed from an area 0.25 to 1.0 acre in size) and small clear-cuts (all trees removed from an area 1-3 acres in size).

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 666 - Forest Stand Improvement

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 666 - Forest Stand Improvement

Feature Measure: Acres treated

Scenario Unit: Acres

Scenario Typical Size: 10.0

Scenario Total Cost: $5,232.06

Scenario Cost/Unit: $523.21

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Chainsaw	937	Equipment and power unit costs. Labor not included.	Hours	$7.00	16	$112.00
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	2	$47.48
Chemical, spot treatment, single stem application	964	Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included.	Hours	$68.31	40	$2,732.40
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hours	$18.07	16	$289.12
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	16	$370.88
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	8	$744.32
Materials						
Tree Marking Paint	313	Trees to be cut through tree marking are physically identified through the application of paint on the tree. Typically one quart of paint is used to mark one acre of trees. Includes materials and shipping only.	Acres	$9.43	10	$94.30
Herbicide, Triazine	1321	Broad spectrum herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$67.08	10	$670.80
Mobilization						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	$170.76	1	$170.76

Practice: E666O - Snags, den trees, and coarse woody debris for wildlife habitat

Scenario #1 - Snags, den trees, and coarse woody debris for wildlife habitat

Scenario Description:

Improve wildlife habitat through creation and retention of snags, den trees, forest stand structural diversity, and coarse woody debris on the forest floor, to provide cover/shelter for native wildlife species.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 666 - Forest Stand Improvement

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 666 - Forest Stand Improvement

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 10.0

Scenario Total Cost: $507.03

Scenario Cost/Unit: $50.70

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Chainsaw	937	Equipment and power unit costs. Labor not included.	Hours	$7.00	7	$49.00
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	1	$23.74
Chemical, spot treatment, single stem application	964	Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included.	Hours	$68.31	3	$204.93
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	7	$210.35
Materials						
Herbicide, Picloram	337	Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$19.01	1	$19.01

Practice: E666P - Summer roosting habitat for native forest-dwelling bat species

Scenario #1 - Summer roosting habitat for native forest-dwelling bat species

Scenario Description:
Create new potential roost trees within upland and riparian forests to achieve desired summer habitat for forest-dwelling bat species.

Before Situation:
Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 666 - Forest Stand Improvement

After Situation:
The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 666 - Forest Stand Improvement

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 10.0

Scenario Total Cost: $2,079.37

Scenario Cost/Unit: $207.94

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Chainsaw	937	Equipment and power unit costs. Labor not included.	Hours	$7.00	13	$91.00
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	6	$142.44
Chemical, spot treatment, single stem application	964	Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included.	Hours	$68.31	13	$888.03
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	13	$301.34
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	4	$372.16
Materials						
Tree Marking Paint	313	Trees to be cut through tree marking are physically identified through the application of paint on the tree. Typically one quart of paint is used to mark one acre of trees. Includes materials and shipping only.	Acres	$9.43	10	$94.30
Herbicide, Picloram	337	Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$19.01	10	$190.10

Practice: E666Q - Increase diversity in pine plantation monocultures

Scenario #1 - Increase diversity in pine plantation monocultures

Scenario Description:

Create small openings to provide diversity in pine plantations, which are typically monocultures and inhospitable to wildlife. Small openings are one-half (0.5) to three (3) acres in size. The cleared area will have the vegetation removed through cutting, mulching, or other means compatible with the site.

Before Situation:

Resources are protected at the minimum level of the Conservation Practice Standard (CPS) 666 - Forest Stand Improvement

After Situation:

The adoption of this enhancement will provide resource protection above the minimum level as described in Conservation Practice Standard (CPS) 666 - Forest Stand Improvement

Feature Measure: Acre

Scenario Unit: Acres

Scenario Typical Size: 2.0

Scenario Total Cost: $1,023.24

Scenario Cost/Unit: $511.62

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Chainsaw	937	Equipment and power unit costs. Labor not included.	Hours	$7.00	20	$140.00
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	2	$47.48
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	20	$463.60
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	4	$372.16

Practice: E666R - Forest songbird habitat maintenance

Scenario #1 - Forest songbird habitat maintenance

Scenario Description:

Adopts guidelines and methods developed by the Forest Bird Initiative of the Vermont Audubon Society, to preserve habitat features following a forest stand improvement treatment designed to create habitat for a suite of forest-dwelling neotropical migratory songbirds. It includes developing or updating a forest management plan, inspecting and tending forest habitat, and monitoring bird populations. It protects investments in habitat creation by providing for follow-up activities that require the expertise of a professional forester or biologist. This enhancement is appropriate for states in the Atlantic Flyway and the Upper Midwest.

Before Situation:

The bird habitat of a forest stand is threatened by undesirable vegetation, including noxious and invasive plants, and tree regeneration of species not favorable to birds. Harmful insects and tree diseases may also be present, and storms may have damaged

After Situation:

The forest stand has retained its habitat features and is utilized by a diversity of neotropical migratory songbirds.

Feature Measure: Acres

Scenario Unit: Acres

Scenario Typical Size: 25.0

Scenario Total Cost: $4,443.38

Scenario Cost/Unit: $177.74

Cost Details:

Component Name	ID	Description	Unit	Cost	QTY	Total
Equipment Installation						
Chainsaw	937	Equipment and power unit costs. Labor not included.	Hours	$7.00	4	$28.00
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hours	$23.74	10	$237.40
Chemical, spot treatment, single stem application	964	Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included.	Hours	$68.31	4	$273.24
Labor						
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hours	$30.05	4	$120.20
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	$23.18	4	$92.72
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hours	$93.04	38	$3,535.52
Materials						
Tree Marking Paint	313	Trees to be cut through tree marking are physically identified through the application of paint on the tree. Typically one quart of paint is used to mark one acre of trees. Includes materials and shipping only.	Acres	$9.43	2	$18.86
Herbicide, Triclopyor	338	Refer to WIN-PST for product names and active ingredients. Materials and shipping	Acres	$32.55	4	$130.20
Herbicide, Surfactant	1095	Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acres	$1.81	4	$7.24