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CONSERVATION EFFECTS FOR DECISIONMAKING (CED)

TRAINING WORKBOOK

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Purpose Of The CED Workbook

This workbook introduces you to the concept of Conservation Effects for Decisionmaking (CED). It is designed to teach you how to use CED without a computer. Once you are comfortable with the CED process, you can use some of the powerful computer tools in the Field Office Computing System (FOCS) that can assist you in the planning process. You will receive FOCS training separately.

Once you understand the CED concepts presented in this workbook, you can use FOCS to your best advantage to assist a client in developing and carrying out a conservation plan. You should finish this workbook before you begin FOCS software training.

Intended Audience

This workbook is for you - an SCS field office or conservation district staff member. You can use this workbook in independent study, in a class offered by your area or state trainers, and in continuing training in the field office. You should have your own copy of this workbook.

Learning Objective

The purpose of the CED training covered in this workbook is to enable you to understand the overall process of CED.

After completing this workbook, you will be able to use CED in the SCS conservation planning process to help your clients make informed conservation decisions.

Workbook Organization

The workbook is designed so you can proceed at your own pace. If you are using it in independent study, you can tailor your study around your workload. Try to complete at least one lesson each session — lessons in Section I should take from 15 to 30 minutes each. Use your own judgement on how long to spend on each part of Sections II and III.

Review Questions

Several lessons in the first section of the workbook have review questions. Use the questions to check your understanding of important points. The questions will highlight areas you may need to study further. You can also use the review questions to set your own pace.

If you are an experienced planner, you may want to look over the questions first to see how much time you need to spend in that lesson. If it has been some time since you completed a lesson, use the questions as a review before you go to the next lesson.

Two types of review questions are used: objective and discussion.

Objective questions are designed to help you check your progress. The answers to the objective questions will be listed on the next page.

Discussion questions are designed to stimulate thought and may have more than one answer. You are encouraged to discuss your views with your peers and instructor.

Sections

The CED training workbook has three main sections plus a glossary and an index. The first section explains the concept of CED. The second section gives you an example of how the CED process is used and shows some of the products you can produce for a client. The third section allows you to practice using CED on planning problems.

Glossary, Index, and User Response Card

At the end of this workbook is a glossary of terms, an index, and a user response card. When you have completed this workbook, please take a few moments to complete the response card and drop it in the mail.

What Do I Need To Complete This Workbook?

In order to start CED training, you need to know the SCS Conservation Planning Process at a Knowledge/Skills/ Ability (KSA) level of two or higher. This means that you have to understand the SCS Conservation Planning Process as it is explained in the National Planning Manual, Part 502, Subpart A - *The Planning Process* and are able to use this process "under supervision."

SECTION I



To thoroughly understand a concept, you need to know why it was developed and what it was designed to do. This lesson examines the *purpose* of CED.

Learning Objective:

At the end of this lesson you should be able to demonstrate your understanding of the purpose of CED by listing:

- Two major problems CED is designed to address.
- Six primary results that CED is designed to produce.

Introduction to CED

CED is not a complicated concept to understand. Because you already know the SCS Conservation Planning Process, you know that you should approach a planning problem in an orderly and systematic way. CED is a method to do just that. It is designed to help you give better service to the client.

Lesson Overview

This lesson is an overview of CED. It will:

1. Define CED.
 2. Give you the background of CED.
 3. Explain some of the major problems that CED is designed to address.
 4. List the objectives of CED.
 5. List the current references that implement CED.
-

CED Defined

CED is an analytical process that helps in conservation planning. It is the framework for you to help clients make better informed decisions in solving natural resource problems.

CED focuses on the producer as the decisionmaker. This focus on the client defines the type of information needed and the kinds of tools used to get that information. The people that designed CED aimed their efforts entirely at the field office. It is a process focused on the exchange of information between you and the people who make decisions about their operations.

Background

CED has two roots — changes in public law and SCS's desire to focus more on the client.

The Food Security Act (FSA) and the Food, Agriculture, Conservation and Trade Act (FACTA) had a dramatic impact on farmers, ranchers, and SCS. It mandated a greater need for farmers and ranchers to consider the social and environmental impacts of their actions.

SCS recognized that you needed additional tools to help with the increased responsibilities. CED is one of those tools.

Problems

A primary concern that drives the SCS conservation planning policy is the quality of service to the client. CED is designed to address two major problems in providing high quality service:

1. Information For Clients

***Not Enough Information.* When clients request conservation assistance from SCS on a voluntary basis, the information they receive may be insufficient for them to make an informed decision.**

Amount and Type of Information.. When clients request conservation assistance from SCS to qualify for farm program benefits, their information requirements are different than voluntary requests for help. Their requests may be more narrowly focused and they are generally less motivated to fully implement a conservation management system. Each client needs to understand the impact of the decisions they make.

Level of Detail. Depending on the planner's background and training, he or she may give a client information that is detailed in some areas, but weak in others. This is most often true of information relating to economics, social sciences, and ecological sciences. Consequently, clients do not always receive enough information about the costs and impacts to make an informed decision. CED uses a multidiscipline approach to solving a planning problem, with the emphasis on the client's needs.

2. Lack Of Useful Records

No readily usable method. SCS had no readily usable method of recording and documenting the effects of conservation treatments that field office staff observe in the field. This knowledge primarily resides "in people's heads" and is not available when these individuals are reassigned, promoted, or retire.

Consequently, new employees and transferees learn about local resource settings and the effects of conservation management systems from other staff and from observation.

A fundamental element of CED is establishing a method to store and use conservation experience.

CED Objectives

Now that you have seen the major problems that CED is designed to address, it is useful to examine what CED is intended to do. CED will help you:

- **Help the client make more informed decisions. This means establishing the client as the conservation decisionmaker; recognizing the client's values in determining the advantages and limitations of conservation treatments for the operation.**
- **Describe the use of conservation effects in a consistent, common-sense framework to aid the client in making choices.**
- **Describe different levels of information/analysis useful to the client when making choices.**
- **Help you give meaningful information to clients by providing guidance on use of experience, research data, and other information in the Field Office Technical Guide (FOTG).**
- **Involve all disciplines in an integrated approach to this aspect of conservation planning that supports the process detailed in the National Planning Manual.**
- **Direct SCS planning efforts toward client decisions — allowing the clients to really buy into the conservation plan for the farm or ranch operation.**

CED Benefits

CED is designed to help you assist the farmer or rancher in reaching an informed decision about a conservation plan by:

- Giving you a method to more easily obtain and store effects information.
- Outlining a process that helps you to present, discuss, and compare the effects of the present situation or system to any number of proposed treatments.
- Giving you a logical method of assisting the client in evaluating the conservation treatment alternatives available.

CED References

CED has been implemented in several policy and guidance documents. For your information, some of the more important CED references are:

National Planning Manual (NPM), Part 502 - Planning and Implementation Guidelines, Subpart A - *The Planning Process*. For a more detailed discussion on how CED fits into the conservation planning process in the NPM, see lesson 10 in this workbook.

Field Office Technical Guide (FOTG). The results of a CED-derived conservation treatment program are now required by General Manual (GM) 450, Part 401 to be listed in Section V - Conservation Effects, of the FOTG. For a more detailed discussion on the documentation requirements of CED, see lesson 9 in this workbook.

Field Office Computing System (FOCS). Several FOCS application programs can be used for CED. You will receive specific computer training in a separate program.

Lesson 1 Review

You may look at the information you just read on pages 7 through 11 to answer the questions. Be sure to check the answers on the next page.

1. Briefly describe the two major problems that CED was designed to address.
 - a.
 - b.
2. Briefly describe the six primary objectives of CED.
 - a.
 - b.
 - c.
 - d.
 - e.
 - f.
3. Who is the decisionmaker in CED?

Discussion Questions

1. Which problems on pages 8 and 9 do you agree with? Which problems don't you agree with?
 2. Is there one result of CED that is more important than the others?
-

Answers To Lesson 1 Review Questions

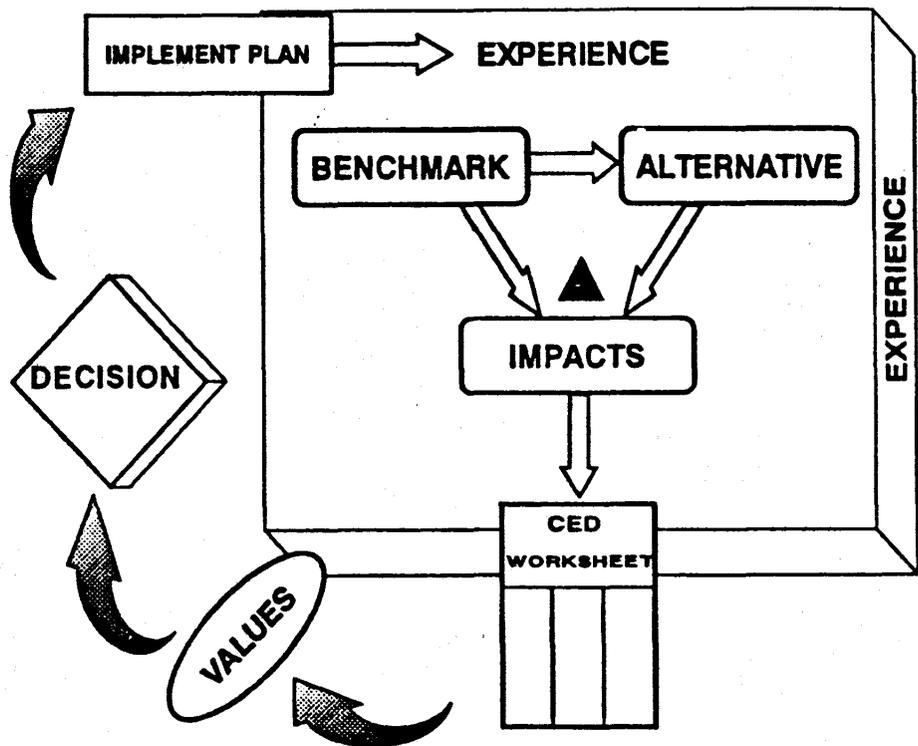
1. Briefly describe the three major problems that CED was designed to address.
 - a. **Information For Clients.**
 - (1) *Not Enough Information.* When clients request conservation assistance from SCS on a voluntary basis, the information they receive is often insufficient for them to make an informed decision.
 - (2) *Amount and Type of Information.* Clients needs differ depending on their reasons for requesting assistance.
 - (3) *Level of Detail.* Depending on the planner's background and training, they may give a client information that is detailed in some areas, but weak in others. Consequently, clients do not always receive enough information about costs and impacts to make an informed decision.
 - b. **Lack Of Useful Records.** SCS had no formal method of recording the effects of conservation treatments. New employees and transferees must rely on other staff and their own observations to learn about local resource settings and the effects of conservation management systems.
 2. Briefly describe the six primary objectives of CED.
 - a. Help the client make more informed decisions by establishing the client as the conservation decisionmaker.
 - b. Describe the use of conservation effects in a consistent, common-sense framework to aid the client in making choices.
 - c. Describe a number of different levels of information/analysis useful to the client in making choices.
 - d. Provide guidance on use of experience, data, and other information in the Field Office Technical Guide.
 - e. Involve all disciplines in an integrated approach to conservation planning that supports the process detailed in the National Planning Manual.
 - f. Direct SCS planning efforts to making decisions — allowing the producers to really buy into the conservation plan for the farm or ranch operation.
 3. Who is the decisionmaker in CED? **THE CLIENT!**
-

Once you have learned the purpose of CED, the next step is to look at the broad picture of the overall CED process and become familiar with the names of its major parts.

Learning Objective:

At the end of this lesson you should be able to demonstrate your understanding of the CED process by:

- Diagraming the CED process as shown below and correctly labeling each part.



CED Overview

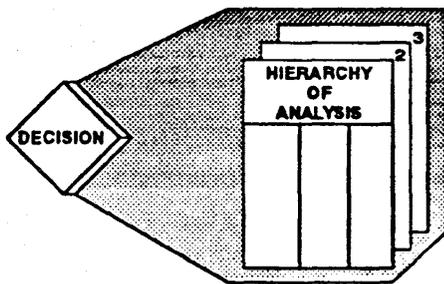
If you can draw this diagram and explain each of the major parts and their sequence, you have a good understanding of the concept of CED. Each part of the diagram is explained in more detail on the next page and in the lessons that follow.

You begin the CED process by examining and documenting the current system and effects, or **BENCHMARK**.

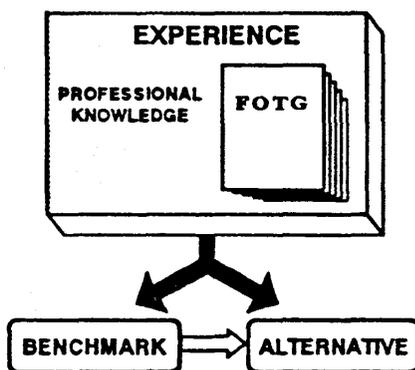
Next, you prescribe a conservation **ALTERNATIVE** and document its effects.

The differences between the Benchmark effects and Alternative effects are listed as **IMPACTS**.

The **CED WORKSHEET** lists Impacts in a clear format, allowing the client to evaluate/weigh the Impacts using his or her **VALUES**.



To make a **DECISION** about the proposed conservation plan, the client may need more information in a particular area. You can analyze Impacts in greater detail using the **HIERARCHY OF ANALYSIS**. This technique allows you to concentrate on specific areas that are important to the client.



After the client implements the plan, you can evaluate and document the results in Section V of the FOTG. This contributes to **EXPERIENCE** and assists future conservation planning.

Note that Experience forms the basis for understanding the effects of the Benchmark and Alternative.

Lesson 2 Review

Draw the CED diagram and label its major parts.

BENCHMARK

Now that you understand how CED components/elements fit together, the next step is to examine each major part of the process. You begin the CED process by establishing the Benchmark.

Learning Objective:

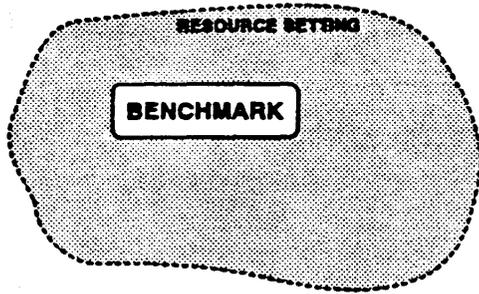
At the end of this lesson you should be able to demonstrate your understanding of the term Benchmark by:

- Describing the factors that make up the Benchmark.
- Listing examples of Benchmark effects.

What Is A Benchmark?

In the planning process, you need to estimate the difference between a starting point (Benchmark) and a result in order to gauge the effectiveness of a system.

The Benchmark is a statement of the condition or situation that exists currently or is expected to exist in the future if the current pattern of resource use and problems are not treated. The Benchmark is described within the context of the resource setting and includes the current management systems and the resulting effects.



1. Resource Setting. The resource setting is a list of attributes or characteristics used to identify areas for measuring results of different treatments. In other words, it is a list of factors that will not change with different treatments, but are important in the planning problem at hand. The resource setting you use for the Benchmark will be the same for the alternative systems you may propose. Examples of factors you may list for a resource setting are:

- Dominant soils
- Precipitation rates
- Elevation
- Range site

In your field office area, there may be a number (ranging from a few to more than a dozen) of resource settings you could use to describe the likely performance of conservation systems.



2. System. The first part of the Benchmark is a description of the current management system. The term "system" means any combination of practices and management measures used that has a bearing on the planning problem. You describe the Benchmark system by listing the conditions for which you are concerned.

Conditions noted in the Benchmark may include:

- Crops and rotation
- Management methods
- Farming operations
- Conservation practices, if any



3. Effects. A list of Effects completes the Benchmark description. Effects are the results of treatments, practices, and systems — they are results you can measure and describe.

Effects should be recorded in physical terms rather than monetary terms. For example, an effect physical description might be a USLE erosion rate of 20 tons per acre per year or a corn yield of 90 bushels per acre.

Some examples of types of effects are:

- Water/wind erosion rates
- Water quality problems
- Crop yields
- Plant conditions and grazing rates
- Soil tilth
- Other resource problems and opportunities, such as improved wildlife habitat

If needed for the client, physical effects can be converted to monetary terms. See lesson 8, *Hierarchy of Analysis* for another approach to monetary analysis.

Future Conditions

You should include in the Benchmark your assessment of the effects expected from continuing the Benchmark system without change. In other words, estimate the conditions if *no* Alternative treatments are used. For example, a headcut may be growing and will cause a loss of cropland, and will make machinery operations more difficult.

With a clear idea of the Benchmark, the next step in CED is to look at the Alternative system and its effects.

Lesson 3 Review

You may look at the information on pages 19 through 21 to answer the questions. Be sure to check the answers on the next page.

1. In your own words, define Benchmark.
2. What factors should be included in describing a Benchmark?
3. What are some examples of effects you would include in the Benchmark?

Discussion Questions

1. Why is it necessary to establish a Benchmark?
2. What guides you in your efforts to define the Benchmark condition?
3. Is defining a Benchmark a one-time task?

If not, what would cause you to revise the assessment of the Benchmark?

4. Is the Benchmark only what we can observe today? Explain.

Answers To Lesson 3 Review Questions

1. Define Benchmark.

The Benchmark is a statement of the condition or situation that exists currently or is expected to exist in the future if the current pattern of resource use and problems are not treated.

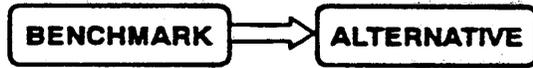
2. What factors should be included in describing a Benchmark?

The Benchmark is described in the context of the *resource setting*, and includes the current management *system* and the results of the system, or *effects*. Also included in the Benchmark is a list of future effects if the current system is not changed.

3. What are some examples of effects you would include in the Benchmark?

Some examples of effects are:

- USLE erosion rates
- Water quality problems
- Crop yields
- Plant conditions and grazing rates
- Soil tilth
- Other resource problems and opportunities, such as improved wildlife habitat



Now that you have established the Benchmark, the next step is to formulate an Alternative by describing a conservation management system and listing the expected results or effects from that system. Describe the Alternative just as you did the Benchmark, so you can evaluate the differences between them later.

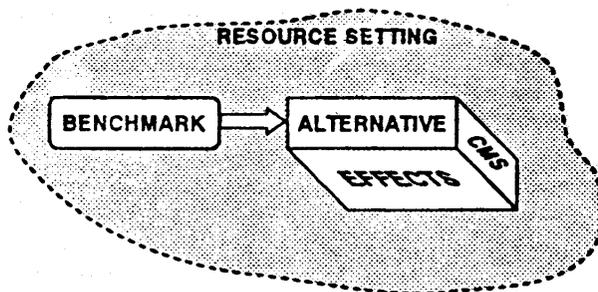
Learning Objective:

At the end of this lesson you should be able to demonstrate your understanding of the term Alternative by:

- Listing the criteria for the Alternative.
- Explaining how Alternatives are derived.

What Is An Alternative?

The Alternative provides a new picture of the unit with the proposed conservation management system in place.



The Alternative is a description of the conservation management *system* you propose to correct the problems noted in the Benchmark. It also includes a list of the *effects* resulting from that system. The Alternative takes place within the same *resource setting* as the Benchmark.

Conservation Management System (CMS)

The system you propose to correct the resource problems is called a Conservation Management System (CMS).

CMS is a term that includes any combination of conservation practices and management that achieves a level of treatment of natural resources specified by criteria contained in the FOTG for a resource management system, acceptable management system, or other program-designated systems.

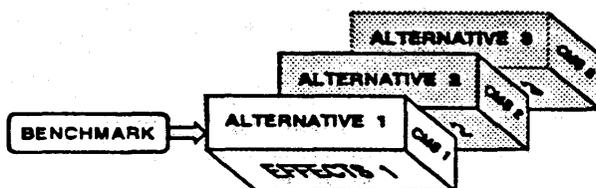
Depending on the planning problem and the resource needs, the CMS you develop may end up requiring a number of practices, a single practice, or simply an adjustment of a current farm or ranch operation.

For example, depending on the Benchmark condition, the CMS may involve a change in cropping system, land use, seeding date, tillage, structural components, or management levels, or it may be the combination of practices needed to fully treat all resource problems on the farm or ranch.

Your CMS proposal to the client should include what actions are needed to *install* and *maintain* the system. Collectively, this means the kinds, amounts, and timing of actions to address the resource problems for the operation.

Can There Be More Than One Alternative?

You can generate more than one CMS (creating multiple Alternatives), but you should evaluate one CMS at a time. The CED process depends on your ability to compare two sets of effects to measure the differences between them. Therefore, you should propose one Alternative at a time, then work through the rest of the CED process with the client.



If the client finds a part of your proposed system objectionable, it may be accepted if the client had more information.

A provision for examining parts of the Alternative is in lesson 8, *Hierarchy of Analysis*.

How Do I Determine The Effects?

Determining the effects may be one of your most difficult tasks. The more experience you have, the better you can describe the Alternative.

Effects can come from many sources: from your personal experience, from the experience of the client or neighbors, or by using the FOTG or models, such as the Universal Soil Loss Equation (USLE).

Depending on the complexity of the problem, you may need the assistance of other specialists to determine effects. This may be particularly the case for water quality or other topics where technology is changing rapidly.

Field trials, successful experiences, university data, or other research material are also useful. In some cases, you can develop a clear picture only by conducting a trial on a few acres of the unit.

Answers To Lesson 4 Review Questions

1. What should you include in describing an Alternative?

An Alternative is a description of the conservation management *system* you propose to correct the problems noted in the Benchmark. The Alternative also includes a list of the *effects* resulting from that system. It takes place within the same *resource setting* as the Benchmark.

2. What criteria governs the system (treatment, practices, or management) you propose for the Alternative?

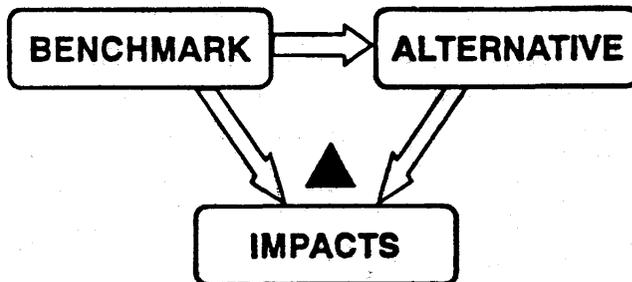
The Conservation Management System (CMS) should achieve a level of treatment of natural resources specified in the FOTG for a resource management system or an acceptable management system.

3. Can there be more than one Alternative?

You can use one Alternative at a time in the complete CED process. If more Alternatives are desired, you must modify the CMS to produce a different set of effects.

4. How do you determine the Effects for an Alternative?

Effects can be described from your personal experience, from the experience of the client or neighbors, or by using the FOTG or models, such as the Universal Soil Loss Equation (USLE).



You now have two sets of conditions — the Benchmark and the Alternative. Each condition contains a system and effects.

The next step in CED is to measure the differences between the two sets of effects. The *difference* between a Benchmark effect and an Alternative effect is called the **IMPACT**. The client can analyze the Impacts, then decide if he or she wants to implement the proposed system.

Learning Objective

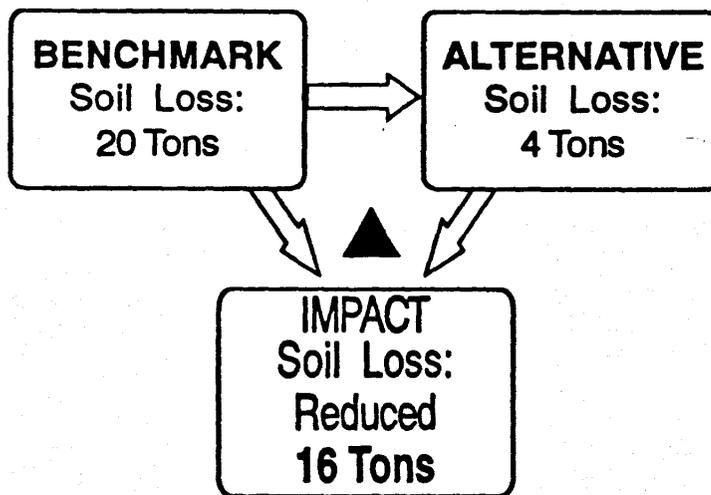
At the end of this lesson you should be able to show your understanding of Impacts in CED by:

- Defining the term Impacts.
- Explaining how Impacts are expressed.

Impact Example

Here is an example of how an Impact is derived:

A farmer has a soil erosion problem. Using USLE, you determine that the farmer is losing 20 tons of soil per acre per year. Your recommended Alternative CMS would reduce the soil loss to four tons per acre per year of sheet and rill erosion.



- The Benchmark effect is a soil loss of 20 tons per acre per year.
- The Alternative effect is a soil loss of 4 tons per acre per year.
- The Impact is "soil loss reduced 16 tons per acre per year."

Impacts Are Not Effects

Do not confuse Impacts with the term "effects." Effects are outcomes or *results*. Impacts are the *differences between the effects*.

How Are Impacts Expressed?

Impacts may be expressed in monetary, physical, or narrative terms.

Monetary and physical terms can be measured and expressed in clear and precise terms. An example of a physical term is: "soil loss from sheet and rill erosion was reduced 16 tons per acre."

A narrative term is an expression of an outcome that is not described in precise measurements — either because it can't be quantified, or it doesn't need to be measured exactly to solve the problem. An example of a narrative term would be: "water quality would be improved because of less suspended sediment."

Time Frame

In some cases, you need to pay attention to the time frame in which the Impact occurs. Certain activities, such as range improvements, may result in immediate and large costs "up front." An accurate measurement of this Impact should also include the even larger payback over a period of many years. Common examples of enterprises with large "up front" costs with larger returns over an extended time include:

- Range improvements
- Forestry
- Orchards
- Vineyards

Lesson 5 Review

You may look at the information on pages 31 through 33 to answer the questions. Be sure to check the answers on the next page.

1. In your own words, define Impacts.
2. How are Impacts expressed?
3. What is the difference between an Impact and an effect?

Discussion Questions

1. Are statements of Impact inherently good or bad, or simply statements of fact? Why?
2. If different clients consider using the same Alternative system, will the Impacts be the same? Why or why not?

Answers To Lesson 5 Review Questions

1. In your own words, define Impacts.

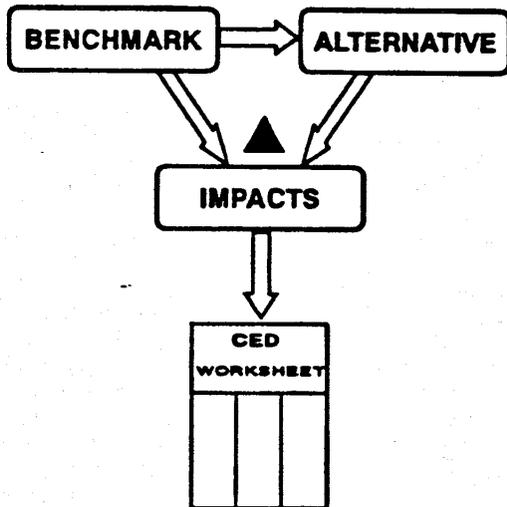
Impacts are the differences between the Benchmark effects and the Alternative effects.

2. How are Impacts expressed?

Impacts may be expressed in monetary, physical, or narrative terms.

3. What is the difference between an Impact and an effect?

Effects are outcomes or results, while Impacts are differences or changes in outcomes when the specific conservation treatments are applied.



The CED process so far has compared two sets of effects and assessed the Impacts (the differences between the two sets of effects). The next step in CED is showing your findings to the client. A convenient way to display your information is the CED Worksheet.

Learning Objective

At the end of this lesson you should be able to demonstrate your understanding of presenting information to the client by:

- Explaining the purpose and use of the CED Worksheet
- Listing the type of information that should be presented to the client.

Amount and Type Of Information

The focus of CED is to help clients make an *informed* decision, so you must give them the right *type* and *amount* of information to use. The type and amount of information depend on their needs. The clients should be able to use the information to judge the merits of the proposed Alternative and understand what the Alternative offers their total operation.

Tailor the amount and type of information to the client's needs and objectives. You do not necessarily need to provide all of the detailed data you generated when you developed the Alternative — give the client only enough information to make an informed decision.

Terms

You must also give the information to the client in terms he or she understands. In most cases, SCS jargon and terms aren't helpful to a client. Put yourself in their place and try to use terms the client understands.

If other disciplines are involved in developing your conservation plan, you may need to "translate" some economic, biological, computer (including FOCS), or other terms into language clients readily understand. Plain English never hurts, even in the most technical profession. Don't leave *any* room for misunderstandings.

Features and Benefits

So far, you have followed the Conservation Planning Process from identifying the problem and determining the client's objectives, to formulating alternative solutions. You have helped the client develop a conservation plan that meets SCS and the client's objectives, and that is within the client's means. If the client doesn't understand the plan completely, chances are slim it will be adopted or carried out properly. In a sense, you are a "salesman" for SCS.

A sales technique borrowed from other professions is to convince the buyer (client) of the "features and benefits" of your product (plan). This doesn't mean that you ignore or downplay negative aspects of your product. It means that the client understands *all* of the features (good and bad) and the good parts outweigh the bad.

Once the features and benefits are clearly understood, the client is in a position to make an informed decision. This includes, if necessary, making tradeoffs.

Features and benefits aren't necessarily concerned with money. Sometimes they can be intangible factors, such as quality of life, better ecological balance, preserving the farm or ranch for their children when they grow up, or compliance with government programs, and state and local regulations.

CED Worksheet

If the amount of information you need to present is small, present it verbally. However, in most cases, the proposed conservation plan is complex and needs to be presented in writing. A simple way to structure your presentation is to use a CED Worksheet.

There is no standard format for you to display the information on a CED Worksheet. Use a format that is comfortable for you, but keep in mind that the focus of the presentation is on the client's needs.

CED Worksheet Contents

| CED WORKSHEET | | |
|--------------------|-------------|---------|
| CLIENT INFORMATION | | |
| BENCHMARK | ALTERNATIVE | |
| SYSTEM | SYSTEM | △ |
| EFFECTS | EFFECTS | IMPACTS |
| | | |

An effective CED Worksheet includes the initial conditions (Benchmark system and effects), the expected future conditions (Alternative system and effects), and the differences between the two conditions (Impacts).

CED Worksheet Example

An example of a CED Worksheet produced with FOCS is on the next page. Section II of this workbook demonstrates how to construct a worksheet manually.

UNITED STATES DEPARTMENT OF AGRICULTURE
 SOIL CONSERVATION SERVICE
 LIMA FIELD OFFICE

CONSERVATION EFFECTS WORKSHEET

CLIENT: Joe Decisionmaker
 BUSINESS: Happy Farms, Inc.
 ADDRESS: RFD Rt. 2, Box 999

CITY: Lima STATE: OH ZIP: 99999

LAND UNIT(S) DESCRIPTION: South 40

EXISTING OR CURRENT TREATMENT

Conventional tillage for corn and
 and beans, wheat drilled in lightly
 disked bean residue. No waterways.

EFFECTS OF EXISTING OR CURRENT TREATMENT

SOIL/EROSION/SHEET & RILL
 soil loss 12 tons/acre/year

SOIL/EROSION/CLASSIC GULLY
 three small gullies enlarging

SOIL/CONDITION/TILTH, CRUSTING
 soil tilth will decline

WATER/QUALITY/GROUNDWATER/NUTRIENTS
 nitrates in tile flows in the Spring

WATER/QUALITY/SURFACE/PESTICIDES
 traces of pesticides in surface water

WATER/QUALITY/SURFACE/NUTRIENTS
 P205 in runoff causing algae bloom
 in farm pond contributes to pollution
 in Lake Erie

ANIMAL/HABITAT/COVER
 fence rows and field edges bare

PLANTS/MANAGEMENT/ESTABLISHMENT
 yields expect to decline over time

PLANTS/MANAGEMENT/PESTS
 no scouting

PROPOSED OR ALTERNATIVE TREATMENT

Grassed waterway, terraces, conservation
 cropping sequence (C-Sb-W),
 conservation tillage (NT corn &
 beans, MT wheat), post management,
 nutrient management. This is a
 resource management system (RMS)

EFFECTS OF THIS PROPOSED TREATMENT

SOIL/EROSION/SHEET & RILL
 soil loss 3 tons/acre/year

SOIL/EROSION/CLASSIC GULLY
 waterway mitigates gullies

SOIL/CONDITION/TILTH, CRUSTING
 residue improves tilth

WATER/QUALITY/GROUNDWATER/NUTRIENTS
 less leaching of nitrates

WATER/QUALITY/SURFACE/PESTICIDES
 pesticide application reduced

WATER/QUALITY/SURFACE/NUTRIENTS
 nutrient pollution reduced
 phosphorus runoff reduced

ANIMAL/HABITAT/COVER
 1/2 ac. wildlife habitat (waterway)

PLANTS/MANAGEMENT/ESTABLISHMENT
 loss 1/2 acre of cropland, chemical use
 increased, equipment needs decreased

PLANTS/MANAGEMENT/PESTS
 scouting for pests needed

IMPACTS

(THIS COLUMN SHOWS THE CHANGES IN THE
 RESOURCE SITUATION OR CONDITION THAT
 CAN BE EXPECTED ON THIS LAND UNIT IF
 THIS PROPOSED TREATMENT IS FULLY
 IMPLEMENTED)

IMPACTS OF THIS PROPOSED TREATMENT

SOIL/EROSION/SHEET & RILL
 reduced 9 tons/acre/year

SOIL/EROSION/CLASSIC GULLY
 less equipment damage

SOIL/CONDITION/TILTH, CRUSTING
 infiltration increased, less soil
 compaction

WATER/QUALITY/GROUNDWATER/NUTRIENTS
 nutrient pollution reduced

WATER/QUALITY/SURFACE/PESTICIDES
 better quality of water

WATER/QUALITY/SURFACE/NUTRIENTS
 pond will clear up

ANIMAL/HABITAT/COVER
 habitat improved

PLANTS/MANAGEMENT/ESTABLISHMENT
 yields will be maintained, fuel/
 labor reduced, burn-down herbicide needed

PLANTS/MANAGEMENT/PESTS
 time required for scouting

Lesson 6 Review

You may look at the information on pages 37 through 41 to answer the questions. Be sure to check the answers on the next page.

1. What is the purpose of presenting the information to the client?
2. What type and amount of information should be included in the CED Worksheet?
3. Should a CED Worksheet only contain cost data? Why or why not?

Discussion Questions

1. What are the most important pieces of information you can present to a client? Are they the same in all cases?
2. What is the best way to present a proposal to a client that you have seen? Will it work in all cases?

Answers To Lesson 6 Review Questions

1. What is the purpose of presenting the information to the client?

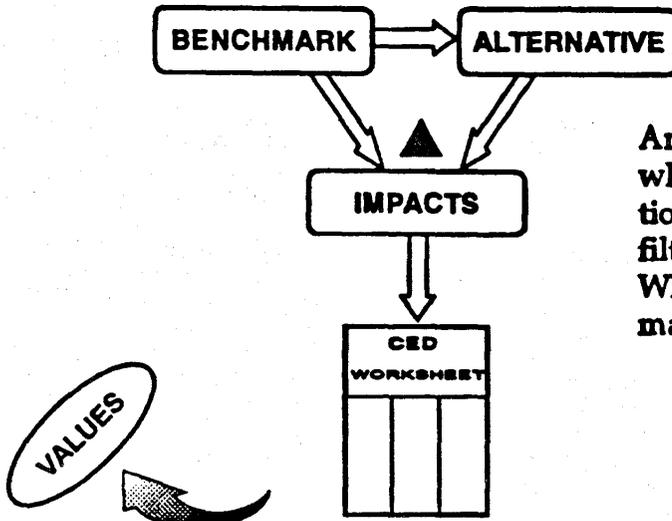
The CED Worksheet is the method you use to “sell” the plan to the client. Because the focus of CED is to help clients make an *informed* decision, you must give them the right *amount* and *type* of information to use to make that decision. The clients should be able to use the information to judge the merits of the proposed Alternative and understand what it can offer their total operation.

2. What type and amount of information should be included in the CED Worksheet?

The type and amount of information depend on the client needs, and should be tailored to meet these needs. It isn't necessary to give clients all of the data you generated when you developed the Alternative. They need only enough information to make an informed decision. An effective CED Worksheet includes the initial conditions (Benchmark system and effects), the expected future conditions (Alternative system and effects), and the differences between the two conditions (Impacts).

3. Should a CED Worksheet only contain cost data? Why or why not?

The “features and benefits” information in the CED Worksheet isn't necessarily concerned with money. Sometimes it can be intangible factors, such as quality of life, better ecological balance, preserving the farm or ranch for their children when they grow up, or compliance with government programs, and state and local regulations.



An important factor must be considered when preparing and presenting information to the client — the information is filtered through the client's Value system. What may be unimportant to one person may be a deciding factor to another.

Learning Objective

At the end of this lesson you should be able to explain how the Values of the client are used in CED.

What Are Values?

Values are the whole of a client's ideals, intuitions, and concerns used to judge whether an Impact is favorable or unfavorable.

The key word here is *client*. The Values that determine if the proposed Alternative CMS will be implemented belong to the client, not the planner. The Values that belong to society, SCS, and you are factors that shape the type of CMS you propose to the client, but the client ultimately determines how much gets done.

An Alternative CMS that incorporates the client's Values stands the best chance of adoption and enthusiastic installation. As long as the Alternative CMS meets SCS criteria, society's Values are incorporated as well.

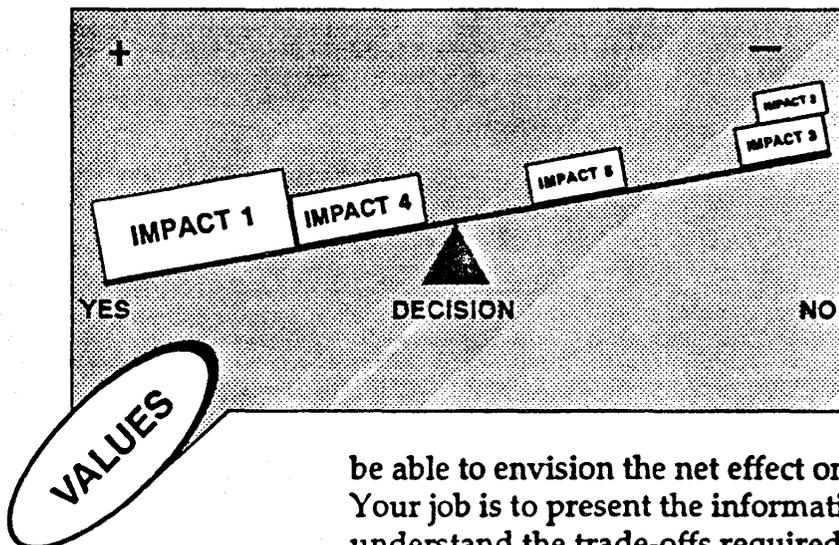
Each person's set of Values will affect the merits of any Impact. To one person, ten additional pheasants might be a positive Impact — to another, the additional pheasants may be of no value.

In the CED process, your most direct contact with the client's Values will probably come when you present the CED Worksheet for a decision. You should expect differences in judgement so be prepared to provide further information.

How Are Values Used?

The client judges each Impact by using his or her Value system. The client has to decide if the Impact is important and, if so, how important. The type of system the client uses to rate the Impacts is not important. What is important is that the client is able to understand and compile the Impacts in a manner that leads to an informed decision. The most simple rating method is using a plus and minus against each Impact. Another method could be using numbers on a scale selected by the client, 1 to 10, for example.

The client has to consider not only the relative importance of each Impact, but also the overall balance of all the Impacts. A proposed CMS may generate several Impacts the client considers to be negative, and just a few



positive Impacts. However, the few positive Impacts may be important enough for the client to accept the CMS with the accompanying negative Impacts. The client has to weigh each Impact using his or her own Values and

be able to envision the net effect on his or her operation. Your job is to present the information so the client can understand the trade-offs required.

Lesson 7 Review

You may look at the information on pages 45 and 46 to answer the questions. Be sure to check the answers on the next page.

1. In your own words, define Values.
2. How are Values used in CED?
3. Whose Values are used?

Discussion Question

1. If Values differ in priority or importance, how is that difference accounted for in CED?

Answers To Lesson 7 Review Questions

1. In your own words, define Values.

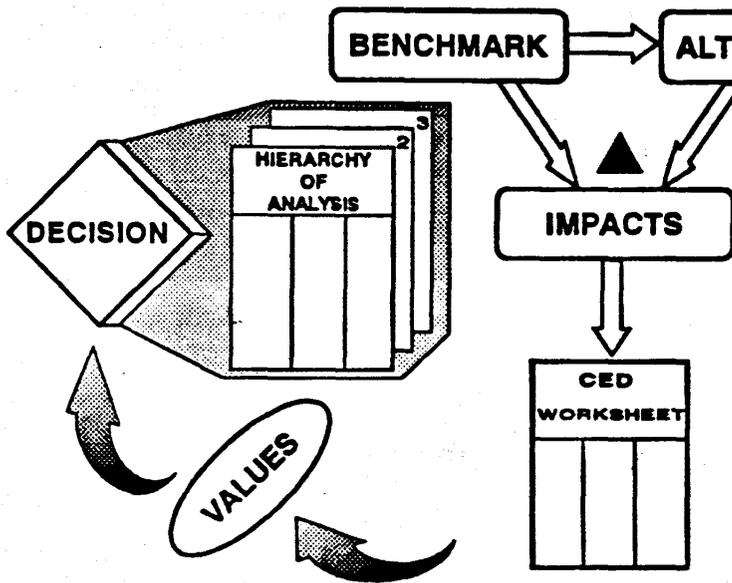
Values are the whole of a client's ideals, intuitions, and concerns used to judge whether an Impact is favorable or unfavorable.

2. How are Values used in CED?

Each Impact is judged by the client using his or her set of personal, family, and societal Values. The client has to decide if the Impact is important and, if so, how important.

3. Whose Values are used?

THE CLIENT'S (Society's Values are incorporated when the CMS complies with the quality criteria from the FOTG)



In some cases clients will require more information before they can "feel comfortable" in making a decision. They may need greater detail on some of the Impacts or an analysis of a new concern.

You can develop the CED Worksheet to provide additional details; this is called the Hierarchy of Analysis.

Learning Objective

At the end of this lesson you should be able to demonstrating your understanding of Hierarchy of Analysis by:

- Explaining how different levels of analysis are used.
- Describing how Hierarchy of Analysis is used in the CED process.

What Is Hierarchy of Analysis?

The Hierarchy of Analysis is a technique you can use to provide the right amount of information to assist the farmer or rancher in making a decision. The chief principle of the Hierarchy of Analysis simple: give the clients only what they need. It is a process in which you refine, clarify, or expand information that is important to the client in well defined steps. Don't waste resources on information that won't be used, but spend as much time and effort as necessary on information the client will use to make a decision.

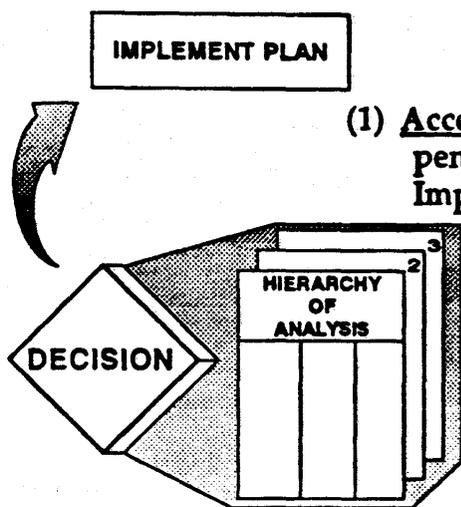
When using the Hierarchy of Analysis use the following guidelines:

1. Start simple and progress to the more complex. (Use your judgement to decide how simple the starting point should be.)
2. Let the *client* define the areas where more information is needed.
3. Develop more detailed information in steps (levels of analysis).
4. Continue the process until the client has enough information to make a decision.

There are no specific guidelines to identify how many levels of analysis are needed. In most cases, you identify the cost of a system and describe necessary maintenance. In many situations one or two levels of analysis are sufficient. Occasionally, a complex analysis is necessary.

Hierarchy of Analysis Process

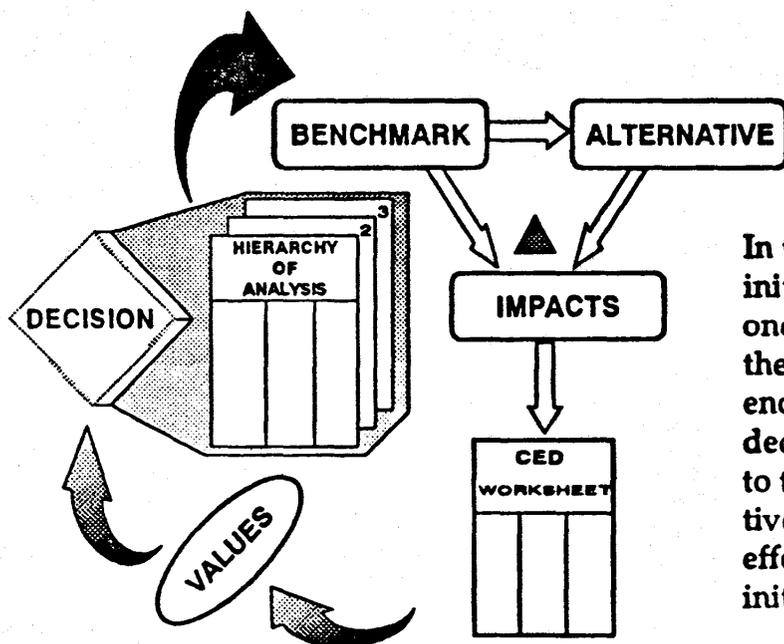
Once you give the client the CED Worksheet with your initial (first level) analysis of the Impacts, the client can:



- (1) Accept the Alternative as proposed. If this happens, you have saved time by not analyzing each Impact to the fullest extent possible.

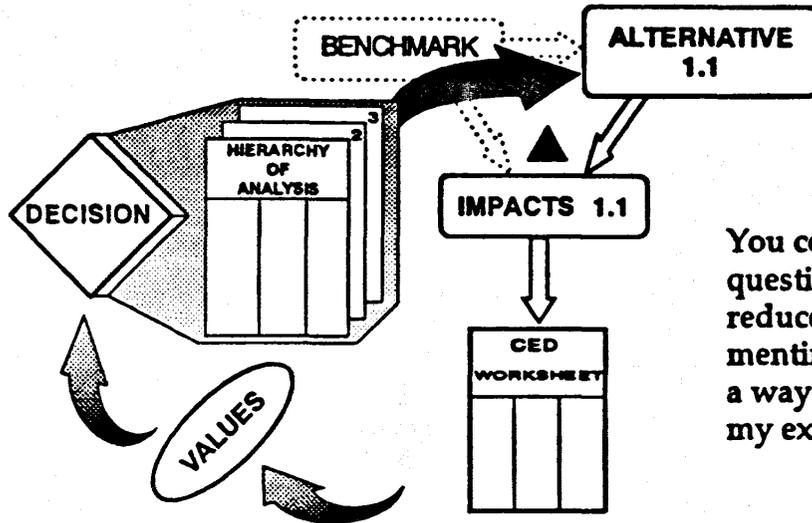
- (2) Request more information. The client may want to explore parts of the proposed Alternative for:

- (a) More information on specific Impacts. The client may want more detail, for example, on costs and maintenance of the proposed CMS.



In this case, you progress from an initial level of analysis to a second, third, or higher levels until the client is satisfied there is enough information to make a decision. You may have to return to the Benchmark and Alternative if the client is interested in an effect not considered in your initial analysis.

- (b) **Modify parts** of the Alternative. A client may understand and like most parts of the Alternative you are proposing, but some parts of either the system or the effects may be better from the client's point of view.

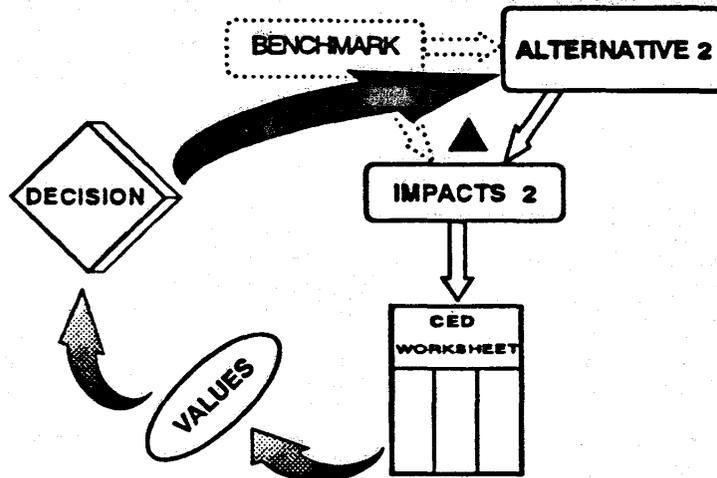


You could be working to answer questions such as "How can I reduce some of the cost of implementing this system?", or "Is there a way to do the same thing with my existing equipment?"

In this case you are *changing* the initial data that needs to be analyzed, instead of analyzing the same data to a greater detail. You are going back further in the CED process to the Alternative and effects instead of starting at the Impacts step. If the modifications to the system are extensive, use your judgement to decide if you should consider it a new Alternative.

Modifying parts of the Alternative is part of the conservation planning process. In effect, this method is a method of "tailoring" the Alternative to the client. Because clients have a chance to participate in the process, they are more likely to feel they "own" the plan and do a better job of implementing it. The Alternative, including modifications, must conform to SCS standards, so an acceptable level of conservation will be taking place.

(3) **Reject the Alternative System**, and ask for another system. Again, you have saved time by finding out early in the process what is unacceptable to the client. You can devote your time to developing another Alternative system. The next step in the CED process is to develop another Alternative system.



Higher levels of analysis means analyzing the same data in more and more detail. At times, this means refining the effect data for the Benchmark as well as the Alternative being considered. The more levels of analysis required, the more complex and sophisticated your tools need to be, particularly your economic and production models.

In the CED process, you cycle through the Impacts, Values, and CED Worksheet steps until the client has enough information to make a decision. The benefit is that you and the client are focusing your efforts in areas that most concern the client.

Lesson 8 Review

You may look at the information on pages 49 through 53 to answer the questions. Be sure to check the answers on the next page.

1. In the Hierarchy of Analysis technique, what is the first level of analysis?
2. How do you determine how much analysis is needed?
3. Do you always use the Hierarchy of Analysis the same way?
Why or why not?

Discussion Questions

1. Who determines if more analysis or more information is needed?
2. Is SCS solely responsible for analysis to support decisionmaking?
If not, who else could be involved, and under what circumstances?

Answers To Lesson 8 Review Questions

1. In the Hierarchy of Analysis technique, what is the first level of analysis?

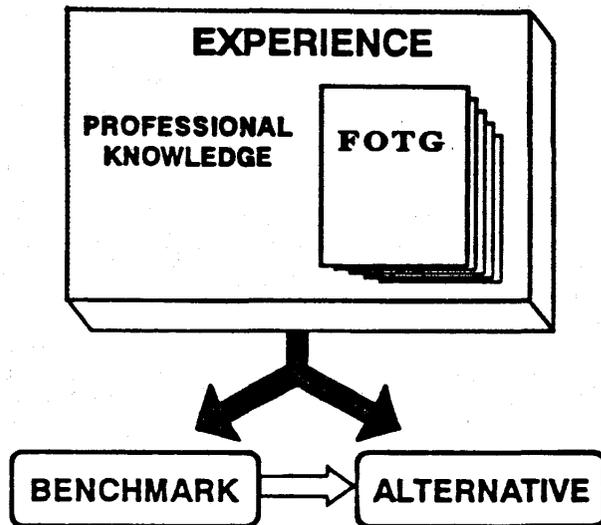
The first level of analysis is in the first CED Worksheet (or equivalent) that you give the client. The CED Worksheet has a summary of the Benchmark system and effects, the Alternative system and effects, and a list of the Impacts.

2. How do you determine how much analysis is needed?

You need to give the client only enough information to make an informed decision. The amount of detail about the Impacts (level of analysis) in the first level of analysis is determined by the judgement of the planner. The judgement is based on the planner's estimate of the needs and experience level of the client.

3. Do you always use the Hierarchy of Analysis the same way? Why or why not?

No. Several different outcomes may result from presenting information to a client. If the client accepts or rejects the proposed Alternative System after receiving the initial level of analysis, the Hierarchy of Analysis is not needed. If the client wants more information or wants to see the effects of making changes to the proposed Alternative System, you use the Hierarchy of Analysis to develop and present the amount of detail needed for the client to make a decision.



The foundation of the CED process is Experience. In CED the term Experience incorporates the process of collecting and storing information for future plans.

Learning Objective

At the end of this lesson you should be able to demonstrate your understanding of the term Experience by:

- Defining Experience as it is used in CED.
- Listing sources of data that should be stored in Section V of the Field Office Technical Guide (FOTG).

What Is Experience?

Experience is professional knowledge about conservation. It directs the assessment, determines the Benchmark, helps formulate the Alternatives, and identifies the expected effects and refines the Impacts.

Experience includes not only your personal knowledge, but also all the knowledge available to use. Experience comes from your background, the knowledge of the farmers and ranchers (and their neighbors), the knowledge of your fellow conservationists, and the information available to you in SCS materials.

FOTG, Section V - Conservation Effects

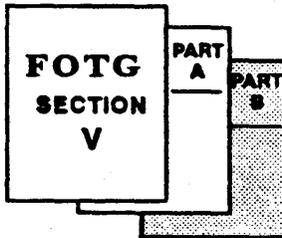
A critical part of CED is building an experience base to use for future planning. The experience base needs to be kept in a place where others may use it, and in a format that others can understand.

As you work with a farmer or rancher, you gain knowledge about what works and what doesn't work. Ideally, your knowledge is recorded in Section V of the FOTG, where it is available to others now and in the future.

The information in Section V forms the basis for formulating Conservation Management Systems that are responsive to the resource problems. The better your experience and the more care you use to record it, the better your service will be to future clients.

Section V - Part A

Part A, "*Effects for Conservation Management System (CMS) Formulation*," is where you store the conservation practice physical effects used in planning CMS's.



This section also contains displays of the effects associated with the option illustrated on guidance documents. Guidance documents are developed in accordance with FOTG policy to show examples of conservation management system options to treat the most common resource problems for each locally applicable land use. For each guidance document developed, a display of the effects will be filed in Section V. These effect displays will supplement, for general situations, the effect information that will be available for specific case studies.

Section V - Part B

Part B, "*Effects for Decisionmaking*," is where the conservation effect information is stored. These are the effects on ALL of the landowner's concerns -- not merely those that are related to resolving resource problems.

Format

The specific format of Part B is up to you. Use a format that makes the greatest use of CED and works best for you. However, the format you adopt must:

- Be specific for a named soil group and for a specific conservation practice or system of practices.
- Provide information on the effects on the soil, water, air, plant, and animal resource as appropriate and the other considerations that are important to the client.
- Provide effect information that is useful to the client -- it should be specific, factual, and expressed in qualitative, quantitative, or narrative terms. It should enable the client to determine what the suggested Alternative means to his or her particular circumstance.

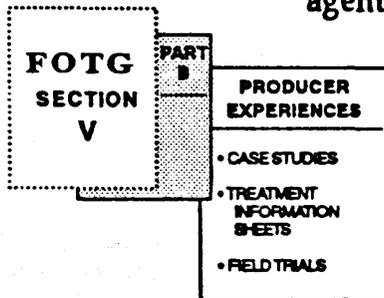
Kinds of Data To Collect

The kinds of data you should collect fall into two broad categories: producer experiences and other sources.

Producer Experiences

First try to collect -- directly from the clients -- information about the most common situations in your area.

According to recent research, the farmers' most preferred source for information about new technology, laws, procedures, and practices, is other farmers. Government agents were far down on the list.



If you want to be effective at informing farmers about the effects of conservation, say something like: "Sally Jones over on County Line Road has soils exactly like yours. She tried this new tillage system, and she is sold. I'm going to tell you exactly how it turned out. When we're done, if you have any questions, I'd like you to talk to her directly. Sally told me that she'll be happy to discuss this with you."

The number one priority for data in Part B of Section V is information gained directly from the land users. Data collected directly by the user is called primary data. It is generally more reliable (and trusted by the client) than information from others who in turn got it from someone else.

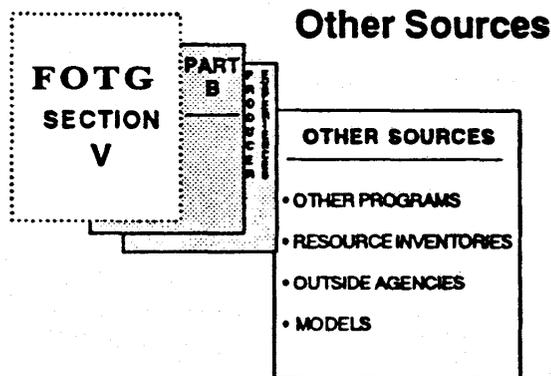
Sources of Producer Experiences

Case Study. A case study is an example of how a recommended conservation treatment worked out with a farmer. You record all the information about his or her goals or objectives, how they currently farm, and what conservation management system they implemented. After installation, you go back and follow up on what actually happened. A case study is one of the best ways to capture producer experience data.

Treatment Information Sheet. As you know, treatment information sheets are a structured approach to recording the effects of conservation as an

integral part of the planning process. Typically, a treatment information sheet is an "expanded" set of conservation planning notes that captures key data about the cooperators' operation. A successful treatment information sheet collected from an agreeable farmer or rancher can be expanded into a case study.

Field Trials. Field trials are instances where you, and perhaps other local resource leaders get together to try something (i.e., to cause a field test or trial of some practice to occur) and then record the effect information resulting from this field trial.



Data should also be collected from other sources, including other programs, the local resource inventory, other agency studies, and system models.

Evaluations for Other Programs

Other programs include, for example, studies that support watershed protection projects. In many field offices, the backup data from these studies may be the only written information about particular conservation effects that is available. Any such studies should be reviewed to determine whether they will be useful in working with clients.

Resource Inventories

Local resource inventories may provide another source of information about conservation effects that are specific to certain resource and cropping situations.

Studies by Outside Agencies

Studies conducted by outside agencies, such as a local university or Extension Service, can shed light on the effects of conservation and on the problems and opportunities of new technologies. These studies should be carefully reviewed for information that can be used in Section V.

Models

Occasionally, pieces of information are difficult to measure, particularly through onsite observation or working with farmers or ranchers. Some of these pieces of information may be valuable in selling farmers or ranchers on the benefits of certain conservation systems. They can often be obtained through modeling of the system. Some examples of models are:

- AGNPS (Agricultural Non-Point Source Pollution Program)
- GLA (Grazing Lands Application)
- USLE (Universal Soil Loss Equation)

Lesson 9 Review

You may look at the information on pages 57 through 62 to answer the questions. Be sure to check the answers on the next page.

1. In your own words, define Experience.
2. What are some sources of producer Experience data that should be collected and stored in Part B of Section V in the FOTG?
3. What other sources produce data that should be collected and stored in Part B of Section V in the FOTG?

Discussion Questions

1. Why is it important to document your information in the FOTG?
2. Are any other sources of Experience valuable to you?

Answers To Lesson 9 Review Questions

1. In your own words, define Experience.

Experience is your professional knowledge about conservation. It directs the assessment, determines the Benchmark, helps formulate the package of Alternatives, and identifies the expected Impacts.

2. What are some sources of producer Experience data that should be collected and stored in Part B of Section V in the FOTG?

- Case Study -- one of the best sources of data
- Treatment Information Sheet -- can be expanded into a case study
- Field trial -- can be an important source of data

3. What other sources produce data that should be collected and stored in Part B of Section V in the FOTG?

- Evaluations from other programs
- Resource inventories from the local area
- Studies by outside agencies
- Models

As an SCS conservation planner, you will use the SCS Conservation Planning Process. Now that you have seen the CED process, you need to understand how the two fit together.

Learning Objective

At the end of this lesson you should be able to understand how CED relates to the SCS Conservation Planning Process by:

- Comparing the nine steps of the SCS Conservation Planning Process to the major parts of the CED process.

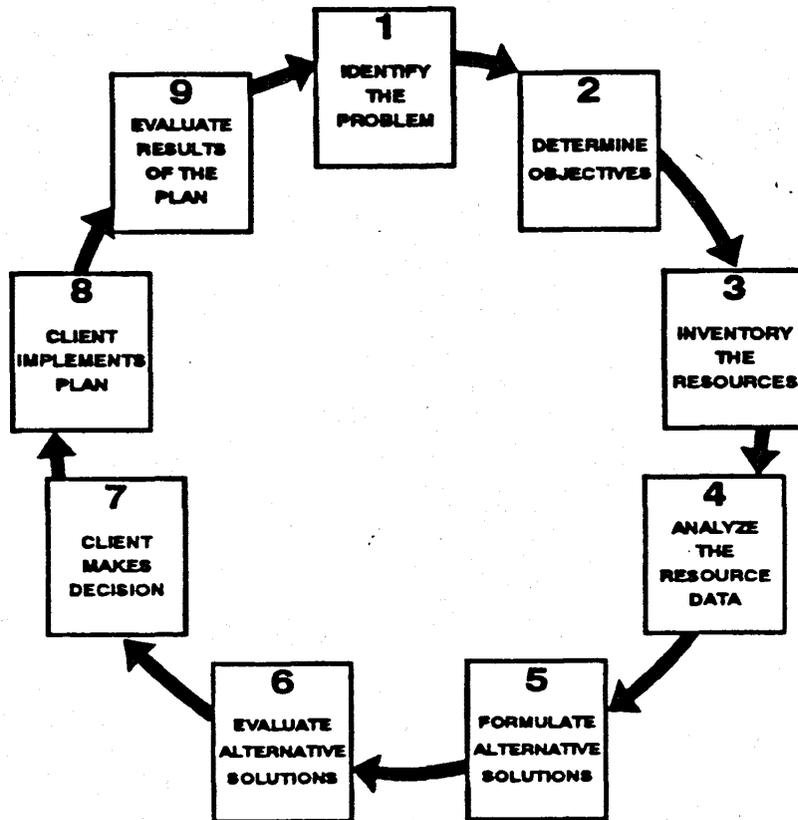
SCS Policy

The Conservation Planning Process is the broad, comprehensive SCS policy statement of what you must accomplish in conservation planning. It is a logical, orderly approach to problem solving that applies to almost any discipline.

You *must* use the SCS Conservation Planning Process. The National Planning Manual (NPM) states that the SCS Conservation Planning Process "... will be used in all instances where SCS employees are involved as planners, regardless of the problem or program assisted."

CED does not replace the SCS Conservation Planning Process, nor is it a substitute for any part of it. CED operates *within* the Conservation Planning Process and offers several tools for you to use to carry it out. CED is one *way* you can offer quality service to a client within the conservation planning process.

SCS Conservation Planning Process



Steps In SCS Planning

Although there are nine sequential steps in the planning process, in a real problem you do not always have a neat and orderly flow that starts on step one and ends on step nine with the problem solved.

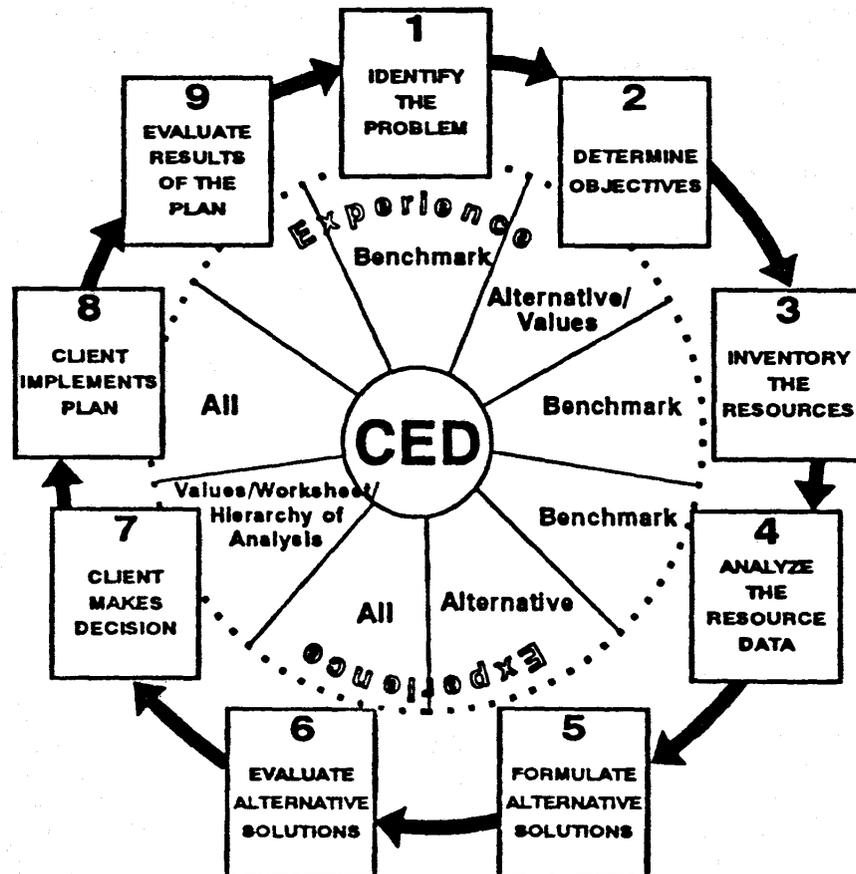
Some steps may need little or no attention, while others may consume a greater amount of time and resources. Also, one or more steps may have to be repeated, or subsequent steps may reveal more information that starts the process over, from the beginning or somewhere in the middle.

CED

In trying to understand how the CED process fits in the conservation planning process, keep in mind that both the CED process, and conservation planning are cyclical.

Rather than comparing the two processes as a whole, it may be more useful describing how the major parts of CED relate to the steps of the conservation planning process. Also note that one part of the CED process may relate to more than one step of the conservation planning process and, in fact, may incorporate several steps, depending on the problem.

CED within the SCS Planning Process



| <p>CONSERVATION PLANNING</p> | <p>CED PROCESS</p> |
|--|--|
| <p>(Extracted from the NPM)</p> <p>STEP 1</p> <p>Identify the Problem</p> <p>All significant resource problems relating to the five resources (soil, water, air, plants, and animals) are identified and documented.</p> | <p>Benchmark/Experience</p> <p>The Benchmark part of CED also starts with identifying the problem. A key factor in CED is the necessity to document the current conditions for later comparison with the Alternative, or future conditions to determine Impacts.</p> <p>The CED Benchmark part also overlaps Steps 2, 3, and 4, <i>Determine the Objectives and Inventory the Resources, and Analyze the Resource Data.</i></p> <p>Experience, especially individual experience, is required in every part of CED that calls for judgement.</p> |
| <p>STEP 2</p> <p>Determine the Objectives</p> <p>This step involves scoping to establish the level of detail of the planning effort based on the objectives. The client's objectives are clearly documented. This step includes determining the client's expectations, capabilities, characteristics, tenure, values, and limitations; SCS policy and technical requirements; community traditional values; financial constraints; and legal requirements.</p> | <p>Alternative/Values/Experience</p> <p>The client's objectives are needed in CED for you to produce an Alternative, or future condition. The client's Values also affect the choice of which Conservation Management System to try.</p> |
| <p>STEP 3</p> <p>Inventory the Resources</p> <p>Factual data sufficient to analyze problems and to develop and evaluate alternatives are available and recorded in suitable formats.</p> | <p>Benchmark/Experience</p> <p>Recording factual data in a suitable format can be considered the end product of establishing the Benchmark in CED. Experience is used to decide what kind of data is important to record.</p> |

STEP 4**Analyze the Resource Data**

Data must be analyzed to verify the problems, determine the causes of the problems, and determine if the data is sufficient to use in formulating proposed solutions to the problems. Data are analyzed to quantify identified problems and to forecast conditions and effects of resource problems without action.

Benchmark/Experience

Benchmark. Quantifying problems and forecasting conditions and effects of resource problems is a part of the Benchmark process.

Experience. A CED contribution to this step of the conservation planning process is the use of user experience documentation from Section V of the FOTG.

STEP 5**Formulate Alternative Solutions**

Alternative solutions are developed that produce the effects of solving or alleviating identified problems and meeting the client's objectives.

Alternative/Experience

If the client does not like the results of a proposed CMS, a new Alternative CMS is proposed and the CED process is cycled through again.

STEP 6**Evaluate Alternative Solutions**

Alternative solutions are analyzed and compared, using CED and other tools, to determine if they meet the client's objectives, SCS policy, and technical and legal requirements. Effects of alternatives are evaluated individually and compared to Benchmark conditions as to their ability to solve or alleviate the problems and meet the client's objectives.

CED

This is the most important part of the CED process.

STEP 7**Client Determines a Course of Action**

The alternative solution selected is based on the client's clear understanding of the effects of each alternative, and the selected solution is recorded in the proper format.

**Values/ CED Worksheet/
Hierarchy of Analysis/
Experience**

The intended result of the CED process using Values, CED Worksheet, Hierarchy of Analysis, and Experience are all geared to providing the client a clear understanding of effects of the proposed Alternative and how it would impact the operation.

STEP 8**Client Implements the Plan**

Client has adequate information to implement, operate, and maintain the planned treatments. Completion of this step alleviates or solves the problem.

CED

The CED goal is to involve the client in the decision process so the client is fully committed to carrying out the conservation plan.

STEP 9**Evaluation of the Results
of the Plan**

This step, which could also be called monitoring or followup, assesses the success of the SCS assistance in solving the identified problems and meeting the client's objectives. It includes recording the client's experience with the plan as implemented. This provides SCS with effects information for use with other clients with similar resource problems.

Experience

The Experience part of CED directly relates to this step of the conservation planning process. Because the CED process documents the effects in Section V of the FOTG, it will provide a growing base of experience to

Lesson 10 Review

You may look at the information on pages 65 through 70 to answer the questions. Be sure to check the answers on the next page.

1. List the nine steps of the SCS Conservation Planning System.
2. Which step(s) in the SCS Conservation Planning Process does CED replace?
3. Compare the CED process with the SCS Conservation Planning Process step of the "Client Determines a Course of Action."

Discussion Questions

1. SCS already has a planning process outlined in the NPM. What does CED add?
2. Are there examples of conservation planning problems where CED could or should not be used?

Answers To Lesson 10 Review Questions

1. List the nine steps of the SCS Conservation Planning System.

- (1) Identify the Problem
- (2) Determine the Objectives
- (3) Inventory the Resources
- (4) Analyze the Resource Data
- (5) Formulate Alternative Solutions
- (6) Evaluate Alternative Solutions
- (7) Client Determines a Course of Action
- (8) Client Implements the Plan
- (9) Evaluation of the Results of the Plan

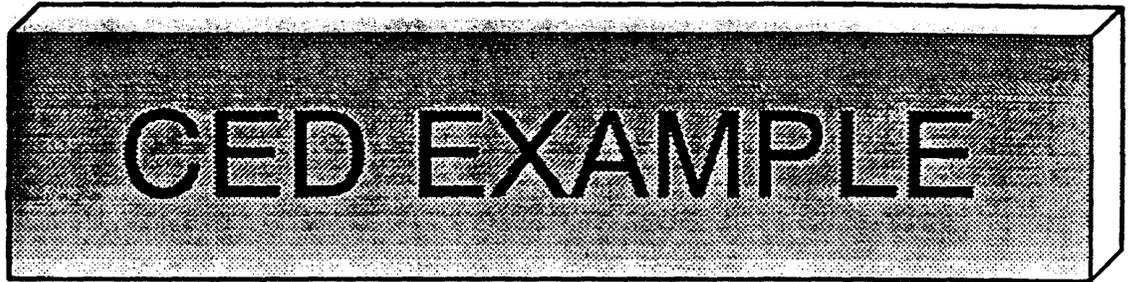
2. Which step(s) in the SCS Conservation Planning Process does CED replace?

CED does not replace the SCS Conservation Planning Process, nor is it a substitute for any part of it. CED operates *within* the Conservation Planning Process, and offers several tools for you to use to carry it out. It is a *way* you can offer quality service to a client within the conservation planning process.

3. Compare the CED process with the SCS Conservation Planning Process step of the "Client Determines a Course of Action."

| SCS Planning Process | CED |
|--|--|
| The alternative solution selected is based on the client's clear understanding of the effects of each alternative, and the selected solution is recorded in the proper format. | While not a distinct step in the CED process, Values, CED Worksheet, Hierarchy of Analysis, and Experience are all geared to help you present the necessary information for the client to make an informed decision on a course of action. |

SECTION II



Learning Objective

At the end of this section you should be able to demonstrate your understanding of the overall concept of CED by following a step-by-step example.

Purpose of this Example

This example shows how you might use the CED process. It is intended to demonstrate the process of using CED to assist a client with a fairly typical resource conservation problem.

Much of the data in this section came from a case study of a farm in Lima, Ohio. The district conservationist used CED and documented the effects.

Some information, however, has been changed for instructional purposes. Do not get bogged down in the details — just follow the flow of information.

Roadmap

Scenario

1. First, you are given a short scenario that describes the problem.

Benchmark Notes

2. Next you are given a set of Benchmark Notes. These notes fill in much of the detail about the farmer's operation that you would need to start the CED process. The term "Benchmark Notes" is used in this example to indicate the form you would use to collect information in the field. You may be using a different form in your office — the format or name of this form is not important. This set of notes simulates your information collection in the field.

CED Worksheet

3. The remaining pages display each step of the CED process in a CED Worksheet. Again, there is no formal format for a CED Worksheet. The one displayed here is an example you may find useful.

Scenario

Joe Decisionmaker, of Lima, Ohio, has a problem. One of his fields is being eroded by runoff. The problem is compounded by nutrients (and probably pesticides) in the runoff. These are contaminating his neighbor's pond that provides water for livestock.

Nutrient and pesticide residues in runoff are a matter of growing concern in the region. Landowners and state officials are placing increased emphasis on reducing pollution of Lake Erie.

Mr. Decisionmaker requests your help.

Benchmark Notes

The first step in the CED process is to establish the Benchmark. The information you need to describe Mr. Decisionmaker's Benchmark is summarized in the Benchmark Notes shown on the next three pages.

The Benchmark Notes are in no particular format – it is merely data you collected on the current conditions. Your task is to determine what information you will need later, then compile the information in a usable format.

Examine the Benchmark Notes and identify the:

- Benchmark system
- Benchmark effects

The next step in this example will be to document the Benchmark on a CED Worksheet.

Benchmark Notes

Name: Joe Decisionmaker

Address: RFD Rt. 2, Box 999

City: Lima

State: OH

Zip: 99999

Business: Happy Farms, Inc.

Land Unit(s) Description: South 40

SOIL:

Blount-Morley soils, moderately sloping
Excess sheet and rill, three small gullies (will enlarge)
Soil loss 12 tons/ac. (calculated using USLE)
Soil tilth will decline

WATER QUALITY:

P_2O_5 in runoff causing algae bloom in farm pond and contributes to
pollution in Lake Erie
Traces of pesticides in surface water
Nitrates in tile flows in the spring

Benchmark Notes (continued)

PRESENT MANAGEMENT SYSTEM

- Conventional tillage for corn and beans.
- Wheat drilled in lightly disked bean residue.

CORN:

Apply N, P and K in the fall
Fall plow wheat stubble
Disk
Apply Lariat (Atrex-Lasso)
Field Cultivate to incorporate herbicides
Plant
Rotary hoe
Spray Banvel +2,4-D amine as needed
Row cultivate once

BEANS:

Plow in the fall
Disk twice
Plant and spray Turbo
Double back for 15" rows
Rotary hoe

WHEAT IN BEAN STUBBLE:

Disk once
Drill wheat

MACHINERY:

125 hp tractor
moldboard plow
disk
field cultivator
planter
rotary hoe
rowcrop cultivator

CHEMICALS:**Corn:**

Lariat .88 gal./ac.

Banvel 1/4 pt./ac.

Beans:

Turbo 1 qt./ac.

Wheat:

None

FERTILIZER:**Corn:**

N 140 lb./ac.

P₂O₅ 60 lb./ac.K₂O 90 lb./ac.**Beans:**P₂O₅ 40 lb./ac.K₂O 120 lb./ac.**Wheat:**

N 75 lb./ac.

P₂O₅ 45 lb./ac.K₂O 80 lb./ac.**FUEL:**

Corn 8.3 gal./ac.

Beans 7.0 gal./ac.

Wheat 5.5 gal./ac.

LABOR: (no scouting)

Corn 9.8 hrs./ac.

Beans 8.8 hrs./ac.

Wheat 5.0 hrs./ac.

YIELDS: (expect to decline over time)

Corn 143 bu./ac.

Beans 42 bu./ac.

Wheat 60 bu./ac.

CED Worksheet

Format

The CED Worksheet shown on the opposite page is similar to the format of the CED Worksheet that will be produced in FOCS. You may use a different format; keep in mind that the purpose of the CED Worksheet is to produce information in a format that the client can understand.

Major Sections

Client Information

At the top of the page, fill in the client information, such as name, address, and description of the land unit. For this example, exact terminology is not important. When you take FOCS software training, however, pay close attention to how terms are defined and used, because client information and land unit descriptions are used in several applications.

CED Columns

The rest of the CED Worksheet is divided into sections that correspond to the major parts of the CED process. You will be able to follow the CED process as you complete the CED Worksheet.

CONSERVATION EFFECTS WORKSHEET

CLIENT: Joe Decisionmaker

BUSINESS: Happy Farms, Inc.

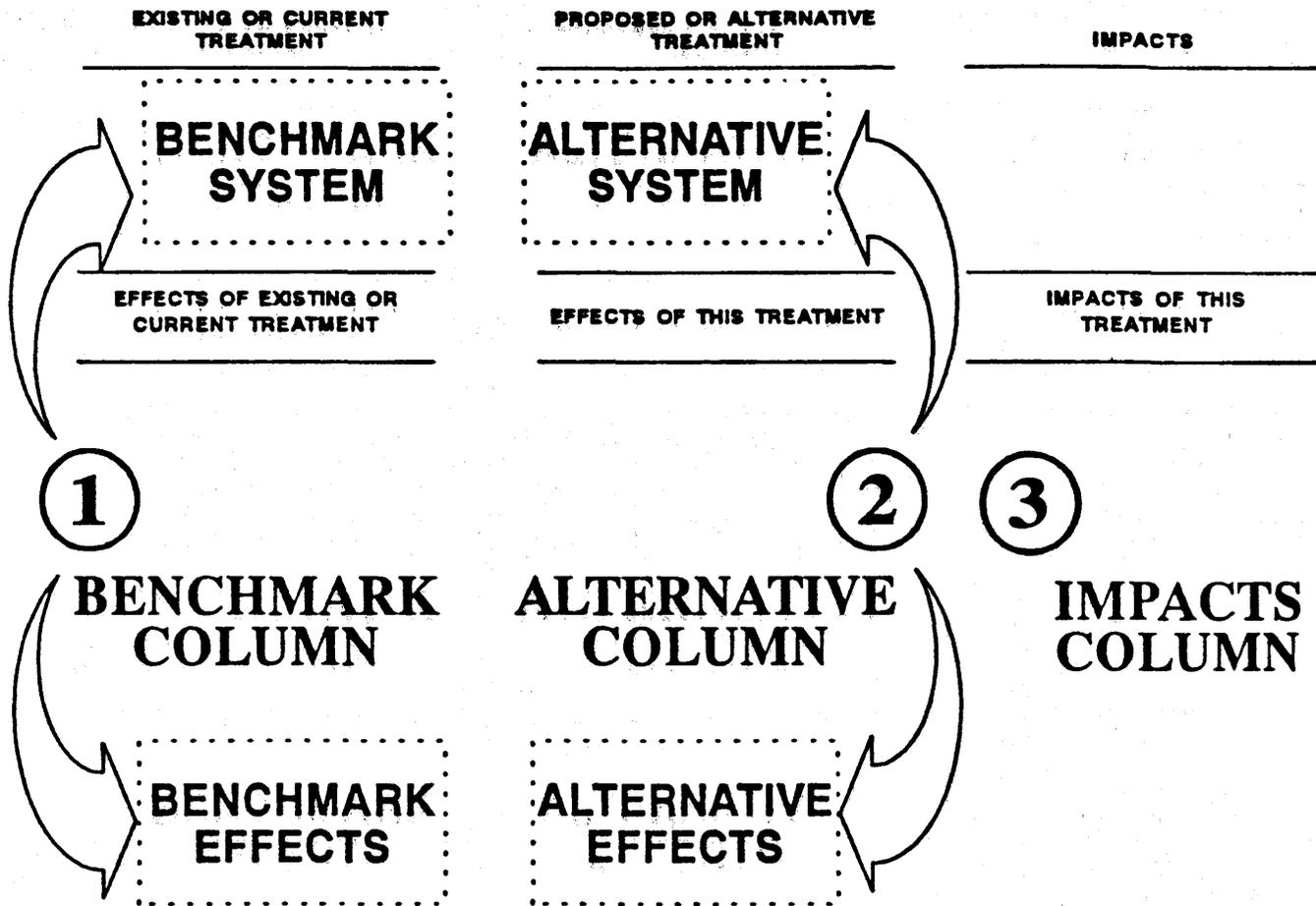
ADDRESS RFD Rt. 2, Box 999

CITY: Lima

STATE: Ohio

ZIP: 99999

LAND UNIT(S) DESCRIPTION:



Benchmark - System

Benchmark System

The first step in the CED process is to document the Benchmark or current conditions.

To document the Benchmark, first describe the Benchmark system (*shown on the opposite page*).

The next step in constructing the CED Worksheet will be to document the Benchmark effects.

CONSERVATION EFFECTS WORKSHEET

CLIENT: Joe Decisionmaker

BUSINESS: Happy Farms, Inc.

ADDRESS RFD Rt. 2, Box 999

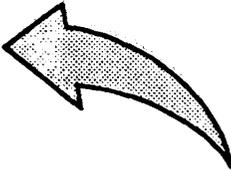
CITY: Lima

STATE: Ohio

ZIP: 99999

**ESTABLISHING THE
BENCHMARK
SYSTEM**

LAND UNIT(S) DESCRIPTION: South 40

| EXISTING OR CURRENT TREATMENT | PROPOSED OR ALTERNATIVE TREATMENT | IMPACTS |
|---|---|---------|
| Conventional tillage for corn and beans, wheat drilled in, lightly disked bean residue. No waterways. |  | |
| EFFECTS OF EXISTING OR CURRENT TREATMENT | <div style="border: 1px solid black; padding: 10px; text-align: center; margin: 10px auto; width: 80%;"> DESCRIBE THE EXISTING, OR CURRENT SYSTEM </div> | |

Benchmark - Effects

After you have described the Benchmark system, you are ready to list the effects of the current system.

Use the information from the Benchmark Notes and your Experience to list the effects of the current treatment. You must use your judgement on which effects should be shown.

The Benchmark effects for our example are shown on the opposite page.

Note that both factual narrative (three small gullies enlarging) and specific data (soil loss 12 tons/acre/year) are used in the CED Worksheet.

Also note that some *future* effects can be shown in the Benchmark column (soil tilth will decline), because the Benchmark includes effects that result if no changes are made in the current system.

CONSERVATION EFFECTS WORKSHEET

CLIENT: Joe Decisionmaker

BUSINESS: Happy Farms, Inc.

ADDRESS RFD Rt. 2, Box 999

CITY: Lima

STATE: Ohio

ZIP: 99999

**ESTABLISHING
THE BENCHMARK
EFFECTS**

LAND UNIT(S) DESCRIPTION: South 40

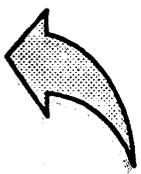
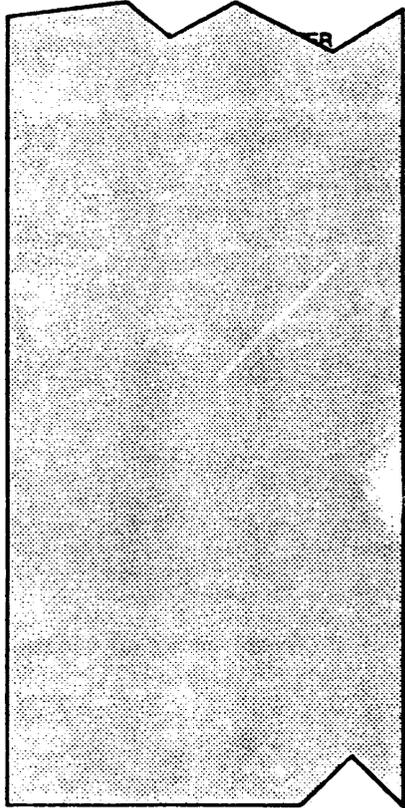
| EXISTING OR CURRENT TREATMENT | PROPOSED OR ALTERNATIVE TREATMENT | IMPACTS |
|--|-----------------------------------|---------|
| <p>Conventional tillage for corn and beans, wheat drilled in, lightly disked bean residue. No waterways.</p> | | |

EFFECTS OF EXISTING OR CURRENT TREATMENT

soil loss 12 tons/acre/year

three small gullies enlarging

soil tilth will decline



LIST THE EFFECTS RESULTING FROM THE CURRENT SYSTEM (INFORMATION FROM THE BENCHMARK NOTES)

Benchmark - Effects Categories

If you are creating the CED Worksheet manually, you are done with the Benchmark column when you have documented the current system and effects. If you plan to use FOCS, you must label the effects to enter them in the computer. In the example in this section, the effects are put into categories to make it easier for you to enter the data into FOCS.

Each effect on the CED Worksheet can be put in a category. These effects are currently categorized in terms of Natural Resource Concerns and Human Considerations in General Manual (GM), Part 401, *Technical Guides*.

Codes

Major Categories

The Effects Categories are:

1. Soil
2. Water
3. Air
4. Plants
5. Animals
6. Human Considerations

Minor Parts

Each of the major categories is broken down into minor parts. For example, the major category of Soil is further divided into:

1.0 SOIL

1.1 Erosion

1.2 Condition

1.3 Deposition

Minor Part Descriptions

The minor parts can contain several descriptions. For example, the minor part of [Soil] erosion is further described by:

1.0 SOIL

1.1 Erosion

1.1.01 Sheet & Rill

1.1.02 Wind

and so on. There are nine descriptions for soil erosion, including "other."

The other major categories (Water, Air, Plants, Animals, and Human Considerations) have similar divisions.

Example

The example on the opposite page has soil erosion of 12 tons/acre/year caused by sheet and rill erosion.

CONSERVATION EFFECTS WORKSHEET

CLIENT: Joe Decisionmaker

BUSINESS: Happy Farms, Inc.

ADDRESS RFD Rt. 2, Box 999

CITY: Lima

STATE: Ohio

ZIP: 99999

INSERTING THE EFFECTS CATEGORIES

LAND UNIT(S) DESCRIPTION: South 40

EXISTING OR CURRENT TREATMENT

PROPOSED OR ALTERNATIVE TREATMENT

IMPACTS

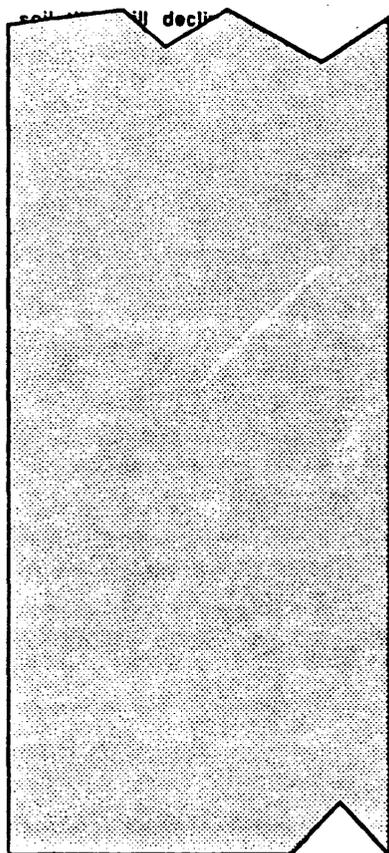
Conventional tillage for corn and beans, wheat drilled in, lightly disked bean residue. No waterways.

EFFECTS OF EXISTING OR CURRENT TREATMENT

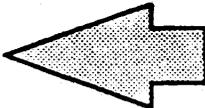
SOIL/EROSION/SHEET & RILL
soil loss 12 tons/acre/year

SOIL/EROSION/CLASSIC GULLY
three small gullies enlarging

SOIL/CONDITION/TILTH, CRUSTING,
WATER INFILTRATION, ORGANIC
MATERIAL



INSERT THE EFFECTS CATEGORIES FROM THE FOCS APPLICATION, "CONSERVATION PLANNING"



Benchmark - Completed Worksheet

The CED Worksheet on the opposite page shows the completed Benchmark information.

The Benchmark column lists the:

1. Benchmark system
2. Benchmark effects
3. Effects categorized under the Resource Considerations from Part 401 of the GM

Once you have documented the Benchmark, your next step is to describe the Alternative.

CONSERVATION EFFECTS WORKSHEET

CLIENT: Joe Decisionmaker

BUSINESS: Happy Farms, Inc.

ADDRESS RFD Rt 2, Box 999

CITY: Lima

STATE: Ohio

ZIP: 99999

BENCHMARK

LAND UNIT(S) DESCRIPTION: South 40

| EXISTING OR CURRENT TREATMENT | PROPOSED OR ALTERNATIVE TREATMENT | IMPACTS |
|---|---|---|
| <p>Conventional tillage for corn and beans, wheat drilled in, lightly disked bean residue. No waterways.</p> <hr/> <p style="text-align: center;">EFFECTS OF EXISTING OR CURRENT TREATMENT</p> <hr/> <p>SOIL/EROSION/SHEET & RILL soil loss 12 tons/acre/year</p> <p>SOIL/EROSION/CLASSIC GULLY three small gullies enlarging</p> <p>SOIL/CONDITION/TILTH, CRUSTING, WATER INFILTRATION, ORGANIC MATERIAL soil tilth will decline</p> <p>WATER/QUALITY/GROUND WATER CONTAMINANTS/NUTRIENTS AND ORGANICS nitrates in tile flows in the spring</p> <p>WATER/QUALITY/SURFACE WATER CONTAMINANTS/PESTICIDES traces of pesticides in surface water</p> <p>WATER/QUALITY/SURFACE WATER CONTAMINANTS/NUTRIENTS AND ORGANICS P, O, in runoff causing algae bloom in farm pond contributes to pollution in Lake Erie</p> <p>ANIMAL/HABITAT/COVER fence rows and field edges bare</p> <p>PLANTS/MANAGEMENT/ESTABLISHMENT, GROWTH, AND HARVEST yields expect to decline over time</p> <p>PLANTS/MANAGEMENT/PESTS no scouting</p> | <hr/> <p style="text-align: center;">EFFECTS OF THIS TREATMENT</p> <hr/> | <hr/> <p style="text-align: center;">IMPACTS OF THIS TREATMENT</p> <hr/> |

WORKSHEET WITH COMPLETED BENCHMARK INFORMATION

Alternative - CMS

Conservation Management System

Once a Benchmark has been established, continue the planning process, using the FOTG to develop a Conservation Management System (CMS). Using personal experience, previous documented cases, and the criteria for a CMS in the FOTG, you have developed a CMS to address Mr. Decisionmaker's problem.

The proposed CMS in this example was taken from the FOTG. It meets Resource Management Systems (RMS) criteria, and includes a grassed waterway, conservation cropping sequence, conservation tillage, pest management, and nutrient management.

The proposed CMS is on the next page.

CONSERVATION MANAGEMENT SYSTEM (CMS)

(extracted from a case study in the FOTG, Section V, Part B)

GRASSED WATERWAY

- Construct and seed to smooth brome grass

NUTRIENT MANAGEMENT

- See actions by crop below

PEST MANAGEMENT

- Scout for economic pest levels
- Select alternate control measures
- Use less mobile chemicals

NO-TILL CORN IN WHEAT RESIDUE

- Chop stubble (August)
- Soil test in March or April
- Apply P & K one week prior to planting
- Plant and spray
 - Bladex
 - Gramoxone
 - Isotox seed treater
- Knife in anhydrous ammonia
- Spray broadleaf weeds
 - Banvel
 - 2,4-D

NO-TILL BEANS IN CORN STALKS

- Spray preplant herbicides
- Spot spray for thistle, with Roundup
- Plant and spray Turbo & Gramoxone double back for 15" rows
- Spot spray quackgrass with Fusilade
- Spot spray thistles with Basagran as needed

MULCH-TILL WHEAT IN BEAN STUBBLE

- Disk bean stubble
- Drill wheat
- Apply nitrogen in late February

CED Worksheet - CMS

The CED Worksheet with the Actions part filled in is on the opposite page.

CONSERVATION EFFECTS WORKSHEET

CLIENT: Joe Decisionmaker

BUSINESS: Happy Farms, Inc.

ADDRESS: RFD Rt. 2, Box 999

CITY: Lima

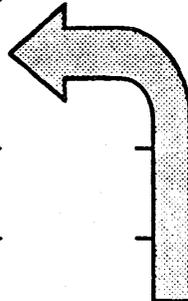
STATE: Ohio

ZIP: 99999

**ALTERNATIVE
SYSTEM**

LAND UNIT(S) DESCRIPTION: South 40

| EXISTING OR CURRENT TREATMENT | PROPOSED OR ALTERNATIVE TREATMENT | IMPACTS |
|--|--|---|
| <p>Conventional tillage for corn and beans, wheat drilled in, lightly disked bean residue. No waterways.</p> | <p>Grassed waterway, terrace, conservation cropping sequence (C-Sb-W), conservation tillage (NT corn & beans, MT wheat), pest management, nutrient management.</p> | <p></p> |
| <p>EFFECTS OF EXISTING OR CURRENT TREATMENT</p> | <p>EFFECTS OF THIS TREATMENT</p> | <p>IMPACTS OF THIS TREATMENT</p> |
| <p>SOIL/EROSION/SHEET & RILL soil loss 12 tons/acre/year</p> <p>SOIL/EROSION/CLASSIC GULLY three small gullies enlarging</p> <p>SOIL/CONDITION/TILTH, CRUSTING, WATER INFILTRATION, ORGANIC MATERIAL soil tilth will decline</p> <p>WATER/QUALITY/GROUND WATER CONTAMINANTS/NUTRIENTS AND ORGANICS nitrates in tile flows in the spring</p> <p>WATER/QUALITY/SURFACE WATER CONTAMINANTS/PESTICIDES traces of pesticides in surface water</p> <p>WATER/QUALITY/SURFACE WATER CONTAMINANTS/NUTRIENTS AND ORGANICS P₂O₅ in runoff causing algae bloom in farm pond contributes to pollution in Lake Erie</p> <p>ANIMAL/HABITAT/COVER fence rows and field edges bare</p> <p>PLANTS/MANAGEMENT/ESTABLISHMENT, GROWTH, AND HARVEST yields expect to decline over time</p> <p>PLANTS/MANAGEMENT/PESTS no scouting</p> | <p></p> | <p></p> |



**BRIEF DESCRIPTION OF THE
CONSERVATION MANAGEMENT
SYSTEM (CMS)**

Alternative - Effects (1)

Using Experience to estimate the effects that would occur if the Conservation Management System (CMS) is implemented by the farmer, you can describe the resulting effects.

The opposite page shows how you enter an Alternative effect on the CED Worksheet.

CONSERVATION EFFECTS WORKSHEET

CLIENT: Joe Decisionmaker

BUSINESS: Happy Farms, Inc.

ADDRESS RFD Rt. 2, Box 999

CITY: Lima

STATE: Ohio

ZIP: 99999

**ALTERNATIVE
EFFECTS**

LAND UNIT(S) DESCRIPTION: South 40

| EXISTING OR CURRENT TREATMENT | PROPOSED OR ALTERNATIVE TREATMENT | IMPACTS |
|---|---|------------------------------|
| Conventional tillage for corn and beans, wheat drilled in, lightly disked bean residue. No waterways. | Grassed waterway, terrace, conservation cropping sequence (C-Sb-W), conservation tillage (NT corn & beans, MT wheat), pest management, nutrient management. | |
| EFFECTS OF EXISTING OR CURRENT TREATMENT | EFFECTS OF THIS TREATMENT | IMPACTS OF THIS TREATMENT |
| SOIL/EROSION/SHEET & RILL soil loss 12 tons/acre/year | SOIL EROSION/SHEET & RILL soil loss 3 tons/acre/year | |

**EFFECTS OF THE
ALTERNATIVE
SYSTEM**



Alternative - Effects (2)

In this example, the proposed CMS will reduce soil erosion to 3 tons/acre/year.

Consider each Benchmark effect against the CMS, then list the resulting effects in the Alternative column.

The information on the effects that result from the CMS are on the next two pages.

ALTERNATIVE EFFECTS DESCRIPTION*(extracted from a case study in the FOTG, Section V, Part B)*

| | |
|---|--|
| <p>Soil</p> <ul style="list-style-type: none"> - Waterway eliminated gully - Lose 1/2 acre of cropland - Soil loss 3 tons/acre - Residue improves tilth - Nutrients better utilized | <p>Fertilizer</p> <p>Corn:</p> <p>N 40 lb. 80-100 lb. NH₄</p> <p>P₂O₅ 60 lb./ac.</p> <p>K₂O 90 lb./ac.</p> <p>Beans:</p> <p>P₂O₅ 40 lb./ac.</p> <p>K₂O 120 lb./ac.</p> <p>Wheat:</p> <p>N 75 lb./ac.</p> <p>P₂O₅ 45 lb./ac.</p> <p>K₂O 80 lb./ac.</p> |
| <p>Water Quality</p> <ul style="list-style-type: none"> - Nutrient pollution reduced - Sedimentation potential reduced - Increased runoff | |
| <p>Pest Management</p> <ul style="list-style-type: none"> - Less mobile herbicides used - Scouting for pests needed | <p>Fuel</p> <p>Corn: 6.5 gal./ac.</p> <p>Beans: 4.8 gal./ac.</p> <p>Wheat: 4.7 gal./ac.</p> |
| <p>Machinery</p> <ul style="list-style-type: none"> - 75 Hp tractor - No-till planter - Chopper | <p>Labor</p> <p>Corn: 7.4 hrs./ac.</p> <p>Beans: 5.5 hrs./ac.</p> <p>Wheat: 4.2 hrs./ac.</p> |
| <p>Chemicals</p> <p>Corn:</p> <p>Gramoxone 2 pt./ac.</p> <p>Bladex 3 qt./ac.</p> <p>Banvel 1/4 pt./ac.</p> <p>2,4-D 1/4 pt./ac.</p> <p>Beans:</p> <p>Gramoxone 1 pt./ac.</p> <p>Turbo 1 qt./ac.</p> <p>Wheat: none</p> | <p>Yields</p> <p>Corn: 143 bu./ac.</p> <p>Beans: 42 bu./ac.</p> <p>Wheat: 60 bu./ac.</p> |

CONSERVATION EFFECTS WORKSHEET

CLIENT: Joe Decisionmaker

BUSINESS: Happy Farms, Inc.

ADDRESS RFD Rt. 2, Box 999

CITY: Lima

STATE: Ohio

ZIP: 99999

ALTERNATIVE

LAND UNIT(S) DESCRIPTION:

| EXISTING OR CURRENT TREATMENT | PROPOSED OR ALTERNATIVE TREATMENT | IMPACTS |
|---|---|---|
| Conventional tillage for corn and beans, wheat drilled in, lightly disked bean residue. No waterways. | Grassed waterway, terrace, conservation cropping sequence (C-Sb-W), conservation tillage (NT corn & beans, MT wheat), pest management, nutrient management. | |
| EFFECTS OF EXISTING OR CURRENT TREATMENT | EFFECTS OF THIS TREATMENT | IMPACTS OF THIS TREATMENT |
| SOIL/EROSION/SHEET & RILL soil loss 12 tons/acre/year | SOIL EROSION/SHEET & RILL soil loss 3 tons/acre/year | <div style="border: 1px solid black; padding: 10px; margin: 0 auto; width: 80%;"> WORKSHEET WITH COMPLETED BENCHMARK AND ALTERNATIVE INFORMATION </div> |
| SOIL/EROSION/CLASSIC GULLY three small gullies enlarging | SOIL EROSION/CLASSIC GULLY waterway mitigates gullies | |
| SOIL/CONDITION/TILTH, CRUSTING, WATER INFILTRATION, ORGANIC MATERIAL soil tilth will decline | SOIL/CONDITION/TILTH, CRUSTING, WATER INFILTRATION, ORGANIC MATERIAL residue improves tilth | |
| WATER/QUALITY/GROUND WATER CONTAMINANTS/NUTRIENTS AND ORGANICS nitrates in tile flows in the spring | WATER/QUALITY/GROUND WATER CONTAMINANTS/NUTRIENTS AND ORGANICS less leaching of nitrates | |
| WATER/QUALITY/SURFACE WATER CONTAMINANTS/PESTICIDES traces of pesticides in surface water | WATER/QUALITY/SURFACE WATER CONTAMINANTS/PESTICIDES pesticide application reduced | |
| WATER/QUALITY/SURFACE WATER CONTAMINANTS/NUTRIENTS AND ORGANICS P ₂ O ₅ in runoff causing algae bloom in farm pond contributes to pollution in Lake Erie | WATER/QUALITY/SURFACE WATER CONTAMINANTS/NUTRIENTS AND ORGANICS nutrient pollution reduced phosphorus runoff reduced | |
| ANIMAL/HABITAT/COVER fence rows and field edges bare | ANIMAL/HABITAT/COVER 1/2ac. wildlife habitat (waterway) | |
| PLANTS/MANAGEMENT/ESTABLISHMENT, GROWTH, AND HARVEST yields expect to decline over time | PLANTS/MANAGEMENT/ESTABLISHMENT, GROWTH, AND HARVEST lose 1/2 acre of cropland chemical use increased equipment needs decreased | |
| PLANTS/MANAGEMENT/PESTS no scouting | PLANTS/MANAGEMENT/PESTS scouting for pests needed | |

Impacts

Compare the effects in the Alternative column with the effects with the Benchmark column, then list the difference in the Impacts column.

In this example:

| | |
|------------------------|---------------------|
| Benchmark soil loss: | 12 tons/ac/yr |
| Alternative soil loss: | <u>3 tons/ac/yr</u> |
| Difference (Impact): | -9 tons/ac/yr |

You can use the CED Worksheet to list the Benchmark effect, Alternative effect and Impact as shown on the opposite page.

CONSERVATION EFFECTS WORKSHEET

CLIENT: Joe Decisionmaker

BUSINESS: Happy Farms, Inc.

ADDRESS RFD Rl. 2, Box 999

CITY: Lima

STATE: Ohio

ZIP: 99999

**ESTABLISHING
THE IMPACT**

LAND UNIT(S) DESCRIPTION: South 40

| EXISTING OR CURRENT TREATMENT | PROPOSED OR ALTERNATIVE TREATMENT | IMPACTS |
|--|--|--|
| <p>Conventional tillage for corn and beans, wheat drilled in, lightly disked bean residue. No waterways.</p> | <p>Grassed waterway, terrace, conservation cropping sequence (C-Sp-W), conservation tillage (NT corn & beans, MT wheat), pest management, nutrient management.</p> | <p style="text-align: center;">THIS COLUMN SHOWS THE CHANGES IN THE RESOURCE SITUATION OR CONDITION THAT CAN BE EXPECTED ON THIS LAND UNIT IF THIS PROPOSED TREATMENT IS FULLY IMPLEMENTED</p> |
| EFFECTS OF EXISTING OR CURRENT TREATMENT | EFFECTS OF THIS TREATMENT | IMPACTS OF THIS TREATMENT |
| <p>SOIL/EROSION/SHEET & RILL soil loss 12 tons/acre/year</p> | <p>SOIL EROSION/SHEET & RILL soil loss 3 tons/acre/year</p> | <p>SOIL EROSION/SHEET & RILL reduced 9 tons/acre/year</p> |

IMPACT

**COMPARE THE
EFFECTS OF THE
BENCHMARK WITH THE
EFFECTS OF THE
ALTERNATIVE TO
DETERMINE THE
IMPACTS**

Impacts - Completed CED Worksheet

Now you are ready to list the Impacts on the CED Worksheet. Complete this step for each effect category. The CED Worksheet is easier to understand if you line up the same effect categories across the sheet.

A completed CED Worksheet with the Benchmark, Alternative, and Impacts columns is shown on the opposite page.

CONSERVATION EFFECTS WORKSHEET

CLIENT: Joe Decisionmaker

BUSINESS: Happy Farms, Inc.

ADDRESS RFD Rt. 2, Box 999

IMPACTS

WORKSHEET WITH COMPLETED BENCHMARK, ALTERNATIVE, AND IMPACTS INFORMATION

| EXISTING OR CURRENT TREATMENT | PROPOSED OR ALTERNATIVE TREATMENT | IMPACTS |
|---|---|---|
| Conventional tillage for corn and beans, wheat drilled in, lightly disked bean residue. No waterways. | Grassed waterway, terrace, conservation cropping sequence (C-Sb-W), conservation tillage (NT corn & beans, MT wheat), pest management, nutrient management. | THIS COLUMN SHOWS THE CHANGES IN THE RESOURCE SITUATION OR CONDITION THAT CAN BE EXPECTED ON THIS LAND UNIT IF THIS PROPOSED TREATMENT IS FULLY IMPLEMENTED |
| EFFECTS OF EXISTING OR CURRENT TREATMENT | EFFECTS OF THIS TREATMENT | IMPACTS OF THIS TREATMENT |
| SOIL/EROSION/SHEET & RILL soil loss 12 tons/acre/year | SOIL EROSION/SHEET & RILL soil loss 3 tons/acre/year | SOIL EROSION/SHEET & RILL reduced 9 tons/acre/year |
| SOIL/EROSION/CLASSIC GULLY three small gullies enlarging | SOIL EROSION/CLASSIC GULLY waterway mitigates gullies | SOIL EROSION/CLASSIC GULLY less equipment damage |
| SOIL/CONDITION/TILTH, CRUSTING, WATER INFILTRATION, ORGANIC MATERIAL soil tith will decline | SOIL/CONDITION/TILTH, CRUSTING, WATER INFILTRATION, ORGANIC MATERIAL residue improves tith | SOIL/CONDITION/TILTH, CRUSTING, WATER INFILTRATION, ORGANIC MATERIAL infiltration increased less soil compaction |
| WATER/QUALITY/GROUND WATER CONTAMINANTS/NUTRIENTS AND ORGANICS nitrates in tile flows in the spring | WATER/QUALITY/GROUND WATER CONTAMINANTS/NUTRIENTS AND ORGANICS less leaching of nitrates | WATER/QUALITY/GROUND WATER CONTAMINANTS/NUTRIENTS AND ORGANICS nutrient pollution reduced |
| WATER/QUALITY/SURFACE WATER CONTAMINANTS/PESTICIDES traces of pesticides in surface water | WATER/QUALITY/SURFACE WATER CONTAMINANTS/PESTICIDES pesticide application reduced | WATER/QUALITY/SURFACE WATER CONTAMINANTS/PESTICIDES better quality of water |
| WATER/QUALITY/SURFACE WATER CONTAMINANTS/NUTRIENTS AND ORGANICS P ₂ O ₅ in runoff causing algae bloom in farm pond contributes to pollution in Lake Erie | WATER/QUALITY/SURFACE WATER CONTAMINANTS/NUTRIENTS AND ORGANICS nutrient pollution reduced phosphorus runoff reduced | WATER/QUALITY/SURFACE WATER CONTAMINANTS/NUTRIENTS AND ORGANICS pond will clear up |
| ANIMAL/HABITAT/COVER fence rows and field edges bare | ANIMAL/HABITAT/COVER 1/2ac.wildlife habitat (waterway) | ANIMAL/HABITAT/COVER habitat improved |
| PLANTS/MANAGEMENT/ESTABLISHMENT, GROWTH, AND HARVEST yields expect to decline over time | PLANTS/MANAGEMENT/ESTABLISHMENT, GROWTH, AND HARVEST lose 1/2 acre of cropland chemical use increased equipment needs decreased | PLANTS/MANAGEMENT/ESTABLISHMENT, GROWTH, AND HARVEST yields will be maintained fuel/labor reduced burn-down herbicide needed |
| PLANTS/MANAGEMENT/PESTS no scouting | PLANTS/MANAGEMENT/PESTS scouting for pests needed | PLANTS/MANAGEMENT/PESTS time required for scouting |

Values

Once you have completed the CED Worksheet, you are ready to present it to the client.

The client can compare the Benchmark with the Alternative, assess the Impacts, and make judgements. He or she can use the CED Worksheet or any other system that is comfortable to rate the Impacts.

Example

In the example shown on the opposite page, Joe Decisionmaker has assigned a plus or minus rating to each Impact. He likes the reduction in soil loss and improved quality of water. He doesn't like the poorer weed control, the need for a burn-down herbicide, and the increased time required for scouting.

CONSERVATION EFFECTS WORKSHEET

CLIENT: Joe Decisionmaker

BUSINESS: Happy Farms, Inc.

ADDRESS RFD Rt 2, Box 999

CITY: Lima

STATE: Ohio

ZIP: 99999

VALUES

LAND UNIT(S) DESCRIPTION: South 40

| EXISTING OR CURRENT TREATMENT | PROPOSED OR ALTERNATIVE TREATMENT | | IMPACTS |
|--|---|-------------------|--|
| Conventional tillage for corn and beans, wheat drilled in, lightly disked bean residue. No waterways. | Grassed waterway, terrace, conservation cropping sequence (C-Sb-W), conservation tillage (NT corn & beans, MT wheat), pest management, nutrient management. | | <p>IN THIS EXAMPLE, THE DECISIONMAKER'S JUDGEMENT OF EACH EFFECT IS LISTED IN THE IMPACT COLUMN AS A PLUS OR MINUS</p> |
| EFFECTS OF EXISTING OR CURRENT TREATMENT | EFFECTS OF THIS TREATMENT | | IMPACTS OF THIS TREATMENT |
| SOIL/EROSION/SHEET & RILL soil loss 12 tons/acre/year | SOIL EROSION/SHEET & RILL soil loss 3 tons/acre/year | (+) | SOIL EROSION/SHEET & RILL reduced 9 tons/acre/year |
| SOIL/EROSION/CLASSIC GULLY three small gullies enlarging | SOIL EROSION/CLASSIC GULLY waterway mitigates gullies | (+) | SOIL EROSION/CLASSIC GULLY less equipment damage |
| SOIL/CONDITION/TILTH, CRUSTING, WATER INFILTRATION, ORGANIC MATERIAL soil tillth will decline | SOIL/CONDITION/TILTH, CRUSTING, WATER INFILTRATION, ORGANIC MATERIAL residue improves tillth | (+) | SOIL/CONDITION/TILTH, CRUSTING, WATER INFILTRATION, ORGANIC MATERIAL infiltration increased less soil compaction |
| WATER/QUALITY/GROUND WATER CONTAMINANTS/NUTRIENTS AND ORGANICS nitrates in tile flows in the spring | WATER/QUALITY/GROUND WATER CONTAMINANTS/NUTRIENTS AND ORGANICS less leaching of nitrates | (+) | WATER/QUALITY/GROUND WATER CONTAMINANTS/NUTRIENTS AND ORGANICS nutrient pollution reduced |
| WATER/QUALITY/SURFACE WATER CONTAMINANTS/PESTICIDES traces of pesticides in surface water | WATER/QUALITY/SURFACE WATER CONTAMINANTS/PESTICIDES pesticide application reduced | (+) | WATER/QUALITY/SURFACE WATER CONTAMINANTS/PESTICIDES better quality of water |
| WATER/QUALITY/SURFACE WATER CONTAMINANTS/NUTRIENTS AND ORGANICS P ₂ O ₅ in runoff causing algae bloom in farm pond contributes to pollution in Lake Erie | WATER/QUALITY/SURFACE WATER CONTAMINANTS/NUTRIENTS AND ORGANICS nutrient pollution reduced phosphorus runoff reduced less mobile herbicides used | (+) (-) | WATER/QUALITY/SURFACE WATER CONTAMINANTS/NUTRIENTS AND ORGANICS pond will clear up poorer weed control |
| ANIMAL/HABITAT/COVER fence rows and field edges bare | ANIMAL/HABITAT/COVER 1/2ac.wildlife habitat (waterway) | (+) | ANIMAL/HABITAT/COVER habitat improved |
| PLANTS/MANAGEMENT/ESTABLISH- MENT, GROWTH, AND HARVEST yields expect to decline over time | PLANTS/MANAGEMENT/ESTABLISH- MENT, GROWTH, AND HARVEST lose 1/2 acre of cropland chemical use increased equipment needs decreased | (+) (+) (-) | PLANTS/MANAGEMENT/ESTABLISH- MENT, GROWTH, AND HARVEST yields will be maintained fuel/labor reduced burn-down herbicide needed |
| PLANTS/MANAGEMENT/PESTS no scouting | PLANTS/MANAGEMENT/PESTS scouting for pests needed | (-) | PLANTS/MANAGEMENT/PESTS time required for scouting |

Hierarchy of Analysis

Request for More Information

Joe Decisionmaker has found that he doesn't have enough information about two areas shown on the CED Worksheet. He would like more information on Chemicals and Equipment.

The CED Worksheet shown on the opposite page highlights the areas on which he has focused.

CONSERVATION EFFECTS WORKSHEET

CLIENT: Joe Decisionmaker
 BUSINESS: Happy Farms, Inc.
 ADDRESS RFD Rt. 2, Box 999
 CITY: Lima STATE: Ohio

REQUEST FOR MORE INFORMATION

LAND UNIT(S) DESCRIPTION: South 40

| EXISTING OR CURRENT TREATMENT | PROPOSED OR ALTERNATIVE TREATMENT | IMPACTS |
|---|--|---|
| <p>Conventional tillage for corn and beans, wheat drilled in, lightly disked bean residue. No waterways.</p> | <p>Grassed waterway, terrace, conservation cropping sequence (C-Sb-W), conservation tillage (NT corn & beans, MT wheat), pest management, nutrient management.</p> | |
| EFFECTS OF EXISTING OR CURRENT TREATMENT | EFFECTS OF THIS TREATMENT | IMPACTS OF THIS TREATMENT |
| <p>SOIL/EROSION/SHEET & RILL soil loss 12 tons/acre/year</p> | <p>SOIL EROSION/SHEET & RILL soil loss 3 tons/acre/year</p> | <p>(+) SOIL EROSION/SHEET & RILL reduced 9 tons/acre/year</p> |
| <p>SOIL/EROSION/CLASSIC GULLY three small gullies enlarging</p> | <p>SOIL EROSION/CLASSIC GULLY waterway mitigates gullies</p> | <p>(+) SOIL EROSION/CLASSIC GULLY less equipment damage</p> |
| <p>SOIL/CONDITION/TILTH, CRUSTING, WATER INFILTRATION, ORGANIC MATERIAL</p> | <p>SOIL/CONDITION/TILTH, CRUSTING, WATER INFILTRATION, ORGANIC MATERIAL</p> | <p>(+) SOIL/CONDITION/TILTH, CRUSTING, WATER INFILTRATION, ORGANIC MATERIAL filtration increased</p> |
| <div style="border: 2px solid black; padding: 10px; width: fit-content; margin: 0 auto;"> <p>THE FARMER REQUESTS MORE DETAILS ABOUT CHEMICALS AND EQUIPMENT</p> </div> | | |
| <p>ANIMAL/HABITAT/COVER fence rows and field edges bare</p> | <p>ANIMAL/HABITAT/COVER 1/2ac. wildlife habitat (waterway)</p> | <p>(+) ANIMAL/HABITAT/COVER habitat improved</p> |
| <p>PLANTS/MANAGEMENT/ESTABLISHMENT, GROWTH, AND HARVEST yields expect to decline over time</p> | <p>PLANTS/MANAGEMENT/ESTABLISHMENT, GROWTH, AND HARVEST lose 1/2 acre of cropland chemical use increased equipment needs decreased</p> | <p>(+) (+) (-) PLANTS/MANAGEMENT/ESTABLISHMENT, GROWTH, AND HARVEST yields will be maintained fuel/labor reduced burn-down herbicide needed</p> |
| <p>PLANTS/MANAGEMENT/PESTS no scouting</p> | <p>PLANTS/MANAGEMENT/PESTS scouting for pests needed</p> | <p>(-) PLANTS/MANAGEMENT/PESTS time required for scouting</p> |

Second Level of Analysis

An example of a second level of analysis carried out for the client is on the opposite page.

The machinery, fuel, and labor analyses have been carried through from the Benchmark to the Impacts column to present a more complete picture to the client.

Third Level of Analysis

A higher level of analysis on fuel savings using the farmer's own price estimates would be easy to do. Using the fuel figures from the example on the opposite page, the planner can estimate the cost savings for fuel [Over a three year rotation: Corn/Beans/Wheat]:

Gallons of fuel saved per acre: 4.8 gal

| | |
|----------|----------------|
| Corn: | 1.8 gal |
| + Beans: | 2.2 gal |
| + Wheat: | <u>0.8 gal</u> |
| | 4.8 gal |

Total gallons of fuel saved: 192 gal

| |
|-------------------|
| 4.8 gal |
| <u>x 40 acres</u> |
| 192 gal |

Total dollars saved for fuel: \$172.80

| |
|-------------------------|
| 192 gal |
| <u>x \$0.90 per gal</u> |
| \$172.80 |

There is no specified format for the Hierarchy of Analysis. You should use what will work best to display the information.

CONSERVATION EFFECTS WORKSHEET

CLIENT: Joe Decisionmaker

BUSINESS: Happy Farms, Inc.

ADDRESS RFD Rt. 2, Box 999

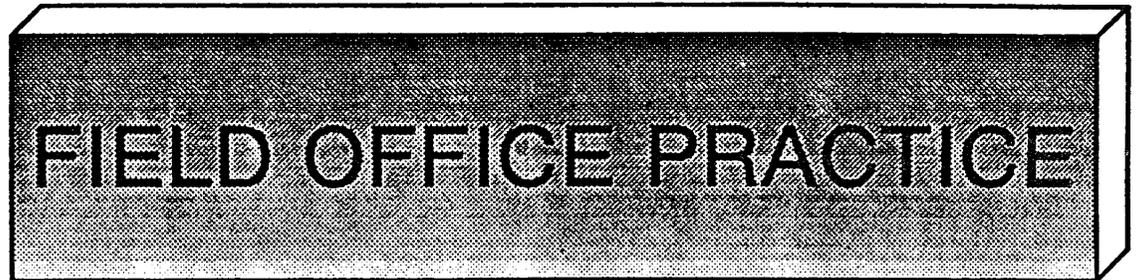
CITY: Lima STATE: Ohio

HIERARCHY OF ANALYSIS

LAND UNIT(S) DESCRIPTION:

| EXISTING OR CURRENT TREATMENT | PROPOSED OR ALTERNATIVE TREATMENT | IMPACTS |
|--|--|---|
| <p>Conventional tillage for corn and beans, wheat drilled in, lightly disked bean residue. No waterways.</p> | <p>Grassed waterway, terrace, conservation cropping sequence (C-Sb-W), conservation tillage (NT corn & beans, MT wheat), pest management, nutrient management.</p> | |
| EFFECTS OF EXISTING OR CURRENT TREATMENT | EFFECTS OF THIS TREATMENT | IMPACTS OF THIS TREATMENT |
| <p>CHEMICALS</p> <p>Corn: Lariat .88 gal/ac Banvel .25 pt/ac</p> <p>Beans: Turbo 1 qt/ac</p> <p>Wheat: none</p> | <p>CHEMICALS</p> <p>Corn: Gramoxone 2 pts/ac Bladex 3 qt/ac Banvel .25 pt/ac 2,4-D .25 pt/ac</p> <p>Beans: Gramoxone 1 pt/ac Turbo 1 qt/ac</p> <p>Wheat: none</p> | <div style="border: 2px solid black; padding: 10px; margin: 10px auto; width: 80%;"> <p>THIS IS AN EXAMPLE OF A SECOND LEVEL OF ANALYSIS ON ITEMS SELECTED BY THE DECISIONMAKER</p> </div> |
| <p>MACHINERY</p> <p>125 hp tractor moldboard plow disk field cultivator planter rotary hoe rowcrop cultivator</p> | <p>MACHINERY</p> <p>75 hp tractor No-till planter Chopper</p> | <p>MACHINERY</p> <p>power needs reduced 50 hp</p> <p>Eliminate: Moldboard plow Field cultivator Rotary hoe Row cultivator</p> |
| <p>FUEL</p> <p>Corn: 8.3 gal/ac Beans: 7.0 gal/ac Wheat: 5.5 gal/ac</p> | <p>FUEL</p> <p>Corn: 6.5 gal/ac Beans: 4.8 gal/ac Wheat: 4.7 gal/ac</p> | <p>FUEL SAVINGS</p> <p>Corn: 1.8 gal/ac Beans: 2.2 gal/ac Wheat: 0.8 gal/ac</p> |
| <p>LABOR</p> <p>Corn: 9.8 hrs/ac Beans: 8.8 hrs/ac Wheat: 5.0 hrs/ac</p> | <p>LABOR</p> <p>Corn: 7.4 hrs/ac Beans: 5.5 hrs/ac Wheat: 4.2 hrs/ac</p> | <p>LABOR SAVINGS</p> <p>Corn: 2.4 hrs/ac Beans: 3.3 hrs/ac Wheat: 0.8 hrs/ac</p> |

SECTION III



Field Office Practice

You have seen the theory behind CED (Section I, *CED Concept*) and an example of CED use (Section II, *CED Example*). Now it is time for you to use CED in your office.

Learning Objective

At the end of this section you should be able to use CED in actual planning problems. Your training supervisor will evaluate your progress.

Purpose

The purpose of this section is to give you practice to become proficient using CED.

Procedure

You will use several cases from your office to practice using CED. Select cases that you can readily get information. The best case to use at first would be one that does not present complex or multiple problems. Use problems that your office has now or has worked on in the past.

Try to start with cases that present a fairly "typical" problem for your area. Generally, usually six to eight problems are recurring for a field office. The more proficient you become at documenting these problems, the better service you will give to your clients. This will have the added benefit of building a comprehensive data base in Section V of your FOTG for future use.

If you select an incomplete case or one lacking treatment results, you will need to predict the outcomes as well as the client's reactions. This could be a beneficial exercise, particularly in a group setting where you can take advantage of the expertise of your peers.

Requirements

Once you select the case you want to use, work through the stages of the planning process using CED.

Your example should clearly demonstrate the following sections:

1. BENCHMARK

a. Benchmark System

b. Benchmark Effects

2. ALTERNATIVE

a. Conservation Management System (CMS)

b. CMS Effects

3. IMPACTS

4. CED WORKSHEET

Use either your own format or the blank CED Worksheet on the next page

5. VALUES

a. Agency values

b. Decisionmaker values

6. HIERARCHY OF ANALYSIS (if required)

7. DOCUMENTATION

(FOTG, Section V requirements)

CONSERVATION EFFECTS WORKSHEET

CLIENT:

BUSINESS:

ADDRESS

CITY:

STATE:

ZIP:

LAND UNIT(S) DESCRIPTION:

**EXISTING OR CURRENT
TREATMENT**

**PROPOSED OR ALTERNATIVE
TREATMENT**

IMPACTS

**EFFECTS OF EXISTING OR
CURRENT TREATMENT**

EFFECTS OF THIS TREATMENT

**IMPACTS OF THIS
TREATMENT**

Alternative

(Used in the context of Conservation Effects for Decisionmaking) The activities or the conservation treatment proposed to correct problems or take advantage of opportunities in the Benchmark conditions. Includes the practices applied and the methods of farming or ranching (Conservation Management System) for the unit to be treated. A description of the Alternative includes the Conservation Management System proposed by the planner and a list of the conservation effects resulting from the system. (*See also Conservation Practice, Conservation Management System, Conservation Treatment, and System*).

Application Method

The method or frequency of practice application. Requires annual application or the practice endures over a number of years.

Assistance Notes

A record of assistance provided to individuals, groups, corporations, organizations, units of government or tribes of the opportunities, potentials, and problems related to natural resource use.

Benchmark

The condition or situation that exists currently or is expected to exist in the future if the current pattern of resource use and problems are not treated. In CED the Benchmark description includes the current system (including treatments, practices, and management operations) and the effects resulting from that system.

Client

A customer of the field office. May be a person, organization, corporation, group, unit of government, or tribe.

Compliance Plan (FSA Conservation Compliance Plan)

An approved conservation plan that when actively applied, keeps the producer in compliance with Food Security Act regulations.

Conservation Effect

The anticipated or experienced results of applying one or more conservation treatments on a planning unit in a particular resource setting or set of conditions. Conservation effects include onsite and off-site results of applied conservation treatments. Conservation effects are measures of a stage or level of outcome and may be expressed in physical, biological, sociological, monetary, or other terms.

Conservation effects should not be confused with Impacts. Conservation effects are the outcome, or results of treatments, and Impacts are the differences or changes in outcome if specific conservation management systems are applied. (*See also Impact*).

Conservation Effects for Decisionmaking (CED)

A term which identifies an analytical process for carrying out conservation planning in SCS. The process is directed at the client as the decisionmaker for protecting resources on the land unit. The CED process draws upon information and tools from the Field Office Technical Guide (FOTG) to determine the effects for the Benchmark and Alternative systems, then provides impact information to enable the client to make an informed decision. CED is included in the National Planning Manual and the General Manual governing Field Office Technical Guides.

Conservation Effects Worksheet (CED Worksheet)

A method for presenting necessary information to the client, enabling him or her to make an informed decision about a conservation treatment.

Conservation Management System (CMS)

A term that includes any combination of conservation practices and management that achieves a level of treatment of natural resources specified by criteria contained in the FOTG for a resource management system, acceptable management system, or other program-designated system.

Conservation Practice

A specific (conservation) treatment commonly used to meet a specific need in planning and carrying out soil and water conservation programs for which standards and specifications have been developed. Standards and specifications for conservation practices are in Section IV of the FOTG.

Conservation Treatment

Any and all conservation practices, management measures, works of improvement, or other actions that have the purpose of solving or alleviating natural resource problems.

Conservation Treatment Unit (CTU)

A field, group of fields, or other units of land with similar soil and water conservation problems requiring similar combinations of land use and conservation treatment. A CTU identifies a unit of land and/or water that will be used as the basis for defining problems and causes, setting objectives, and planning and applying conservation treatments.

Decisionmaker

An individual, group of people, or representative(s) of a unit of government with responsibility for making conservation decisions with respect to land/water use and treatment on a defined unit of land/water.

Effect

See Conservation effect.

Effect Category

One of the sets of categories used to organize and present conservation effect data.

Experience

(As used in the context of CED) The professional knowledge about conservation. Used to direct the assessment, determine the Benchmark, formulate the conservation management system, envision the effects of the treatment for the resource setting, and identify the expected Impacts. Experience combines the professional knowledge of the conservation planner, the farmers and ranchers in the area, and the information available in SCS materials. Experience is stored in Section V of the FOTG. *(See also Followup)*

Followup

The process of checking on the actual results of the conservation management system applied on a specific conservation treatment unit. It provides the means for gauging success of the treatment as well as obtaining factual data on effects that are needed for carrying out the planning process with other clients.

Hierarchy of Analysis

A concept of systematic focusing and refinement of conservation effect and impact information to best address the needs and concerns of the client.

Impacts

The differences between anticipated effects of treatment in comparison to existing or benchmark conditions. Differences may be expressed in narrative, quantitative, visual, or other means. Impacts are used as a basis for making informed conservation decisions.

Land Unit

Any area of land that is of concern to the field office. This is typically a client's tract, field, or other parcel of land. Land units can be related to each other in a hierarchy. For example, a tract can be one or more fields, and

fields can include subfields. The types of land units that can be defined and the relations among them can be adjusted to suit the needs of the planner and the type of application program used.

Practice

An SCS approved conservation practice. Conservation measures developed under Food Security Act (FSA) compliance are included. Practices prescribed by agencies other than SCS are not included.

Range Site

An area of rangeland where climate, soil, and topography produce a distinct plant community. A range site differs from adjacent areas in the kinds of proportions of plant species it produces and/or in total annual yield.

Resource Management System (RMS)

A combination of conservation practices and management identified by land or water uses that, when installed, prevent resource degradation and permit sustained use by meeting criteria established in the FOTG for treatment of soil, water, air, plant, and animal resources.

Resource Setting

Attributes or characteristics of resource situations that are commonly used by conservation planners in identifying areas for similar conservation treatments and can be expected to exhibit similar results of applied conservation treatments. Typical resource settings may be descriptive of dominant soils on a CTU, precipitation rates, elevation, vegetative conditions, and the like. A range site, for example, may be used as a descriptor of resource setting. The resource setting is identified during the resource inventory element of the planning process.

Soil Inventory

A listing of soils and their extent found within a land unit.

System

A description of the treatment of a particular resource setting at one of several phases in the system's life.

Values

Used in CED, values reflect the ideals, beliefs, and customs of the client, and reflect the relative worth of the Impacts.

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8. The example in Section II is similar to my caseload.

1 2 3 4 5
Strongly Agree Strongly Disagree

9. I feel better equipped to do conservation planning.

1 2 3 4 5
Strongly Agree Strongly Disagree

10. I intend to use CED in my work.

1 2 3 4 5
Strongly Agree Strongly Disagree

11. The workbook did a good job of teaching me CED.

1 2 3 4 5
Strongly Agree Strongly Disagree

12. I did not need help completing the workbook.

1 2 3 4 5
Strongly Agree Strongly Disagree

13. Formal CED training in a classroom is required.

1 2 3 4 5
Strongly Agree Strongly Disagree

14. The most helpful part of this workbook was:

15. The least helpful part of this workbook was:

16. CED training can be most improved by:

When you have completed the form, please mail it to:

USDA Soil Conservation Service
Programs Systems Staff/200
2625 Redwing Road, Suite 110
Fort Collins, CO 80526

Attn: CED Training Development Team