United States Department of Agriculture

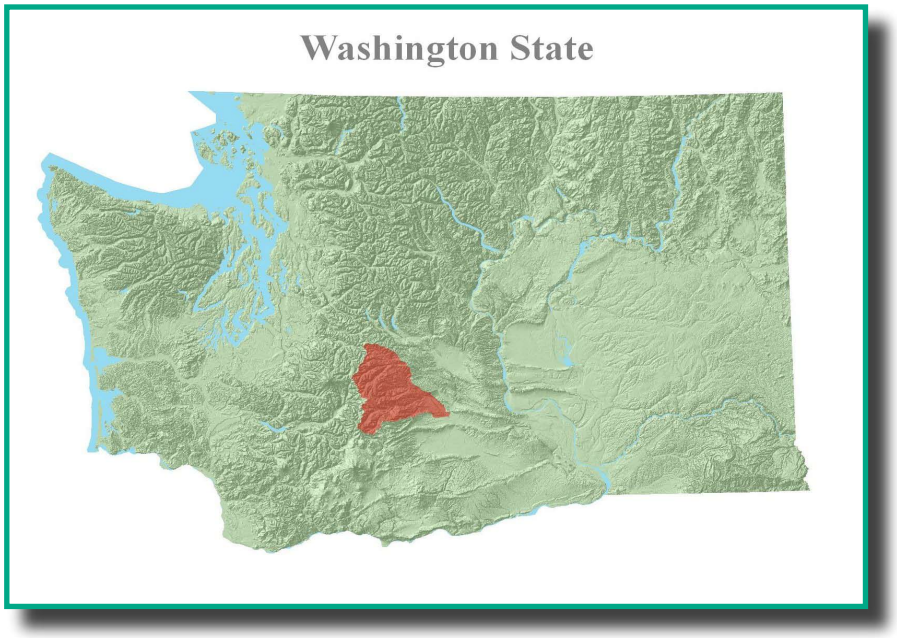
NRCS Natural Resources Conservation Service

Washington

Naches Watershed

HUC: 17030002

Rapid Watershed Assessment



This assessment involves the collection of quantitative and qualitative information to develop a watershed profile, sufficient analysis of that information to make qualitative statements as to resource concerns and conditions, and the generation of information with which to make decisions about conservation needs and recommendations. These assessments are conducted through the use of Geographic Information System (GIS) technology and by conservation planning teams working within the watershed, meeting with landowners and conservation groups, inventorying agricultural areas, assessing current levels of resource management, identifying conservation recommendations and, making qualitative estimates of the impacts of conservation on local resource concerns.

October 2, 2006

Introduction [1]

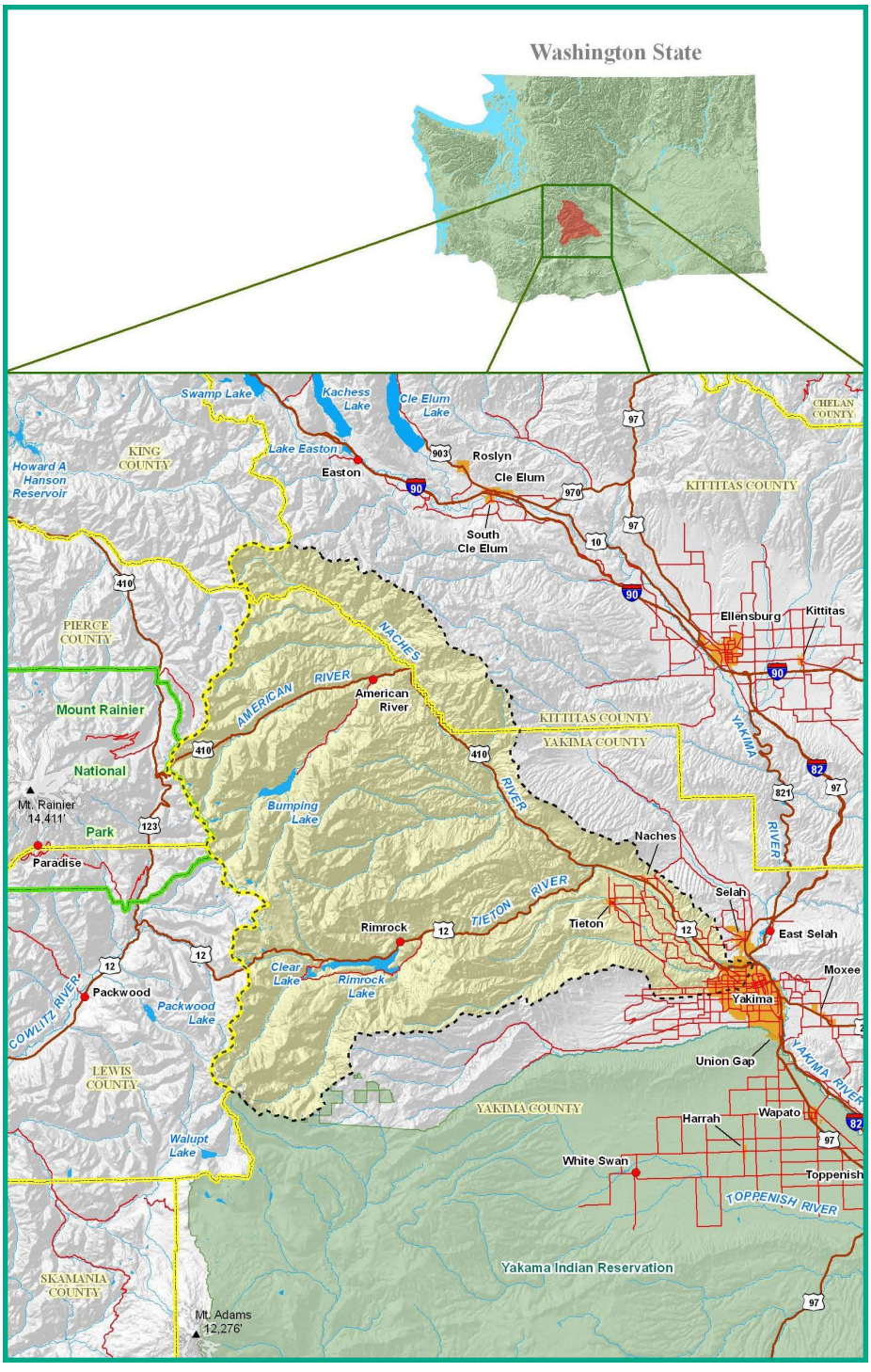
The Naches Watershed is located in the Yakima River drainage in on the east side of the Cascade Mountain range. The Naches 8-Digit Hydrologic Unit Code (HUC) subbasin is approximately 717,048 acres in size. The watershed is 20% privately owned and 80% publicly owned.

The majority of the watershed is forest and cropland. Cropland is located mostly in the lower elevations. Agricultural enterprises include hay and pasture, orchards and small beef operations.

The city of Naches makes up the largest urban area in the watershed. The majority of the watershed is located in Yakima County.

Major resource concerns are soil erosion from forest roads, streambank erosion, impaired water quality, forest health issues, invasive weeds, and poor pasture condition.

Primary natural resource technical assistance is provided by the Yakima NRCS Field Office, North Yakima Conservation District and the South Central Resource Conservation and Development Area.



Profile Content

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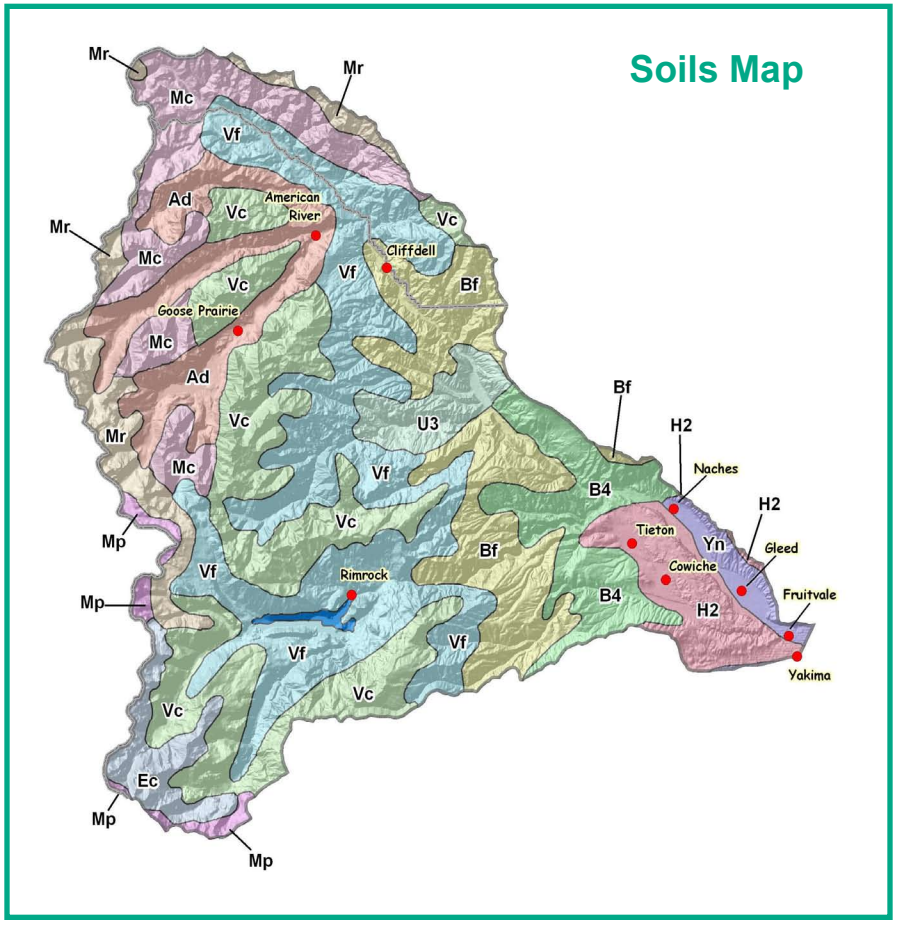
The soils in the higher elevations of the Naches watershed are dominated by surface layers of Mazama volcanic ash and to a lesser degree Mt. St. Helens and Glacier Peak volcanic ash and pumice, especially in the forested parts of the water shed. The soils have textures of ashy sandy loam, gravelly ashy sandy loam, ashy loamy sand, gravelly ashy loamy sand or medial sandy loam. The soils on the lower elevation hills and terraces have less ash with textures of loams, silt loams, cobbly loams, stony loams, and stony silt loams.

The climate pattern in this watershed provides a low risk of wind erosion although the soils are susceptible to wind and water erosion when surface residue is removed by wildfire or intensive crop/forest management practices.



Ad - Cool to cold, deep, stony, forest soils in U-shaped mountain valleys, valley bottoms and foot slopes; these soils formed in locally-derived glacial drift overlain by a mantle of volcanic ash. Xeric to Udic/Frigid and Mesic to Cryic; Nevine-Chemawa-Choralmont.

B4 - Stony rangeland and cropland soils; shallow to deep; these soils have dark-colored, humus-rich topsoils. Xeric/Mesic; Goldendale-Laufer-Clint.

Bf - Cool, stony forest soils; transitional between B5 and Vf or Vhf. Xeric/Frigid to Mesic; Loneridge-Jumpe-Berson-Para-McGowan-Gunn-Sutkin.

Ec - Cold, stony soils of the mountains, developed in volcanic ash over basalt, andesite or breccia. Udic/Cryic; Stahl-Reichel.

(General Soils descriptions continued on next page.)

H2 - Dry soils with drainage-impeding hardpans that have loess in the upper part; they formed on the flanks of hills on ancient eroded land surfaces; soils without hardpans occur as inclusions. Aridic/ Mesic; Willis-Moxee-Harwood-Gorst-Ritzville.

Mc - Medial-skeletal and medial soils, most have pumice or volcanic ash influence in the upper part and formed from glacial till or colluvium. Udic/Cryic; Playco-Kindy-Hatchet-Wollard-Getchell-Rock Outcrop.

Mp - Cindery-textured soils developed in deep, layered pumice and volcanic ash; soils have low fertility and low water-holding capacity; some are on unstable slopes. Udic/Cryic; Cattcreek-Vanson-Colter-Sinnice-Minniepeak-Goffpeak.

Mr - Rock Outcrop, snowfields, and soils formed under cold climate-stunted trees or alpine meadow vegetation. Udic/Cryic; no series mapped.

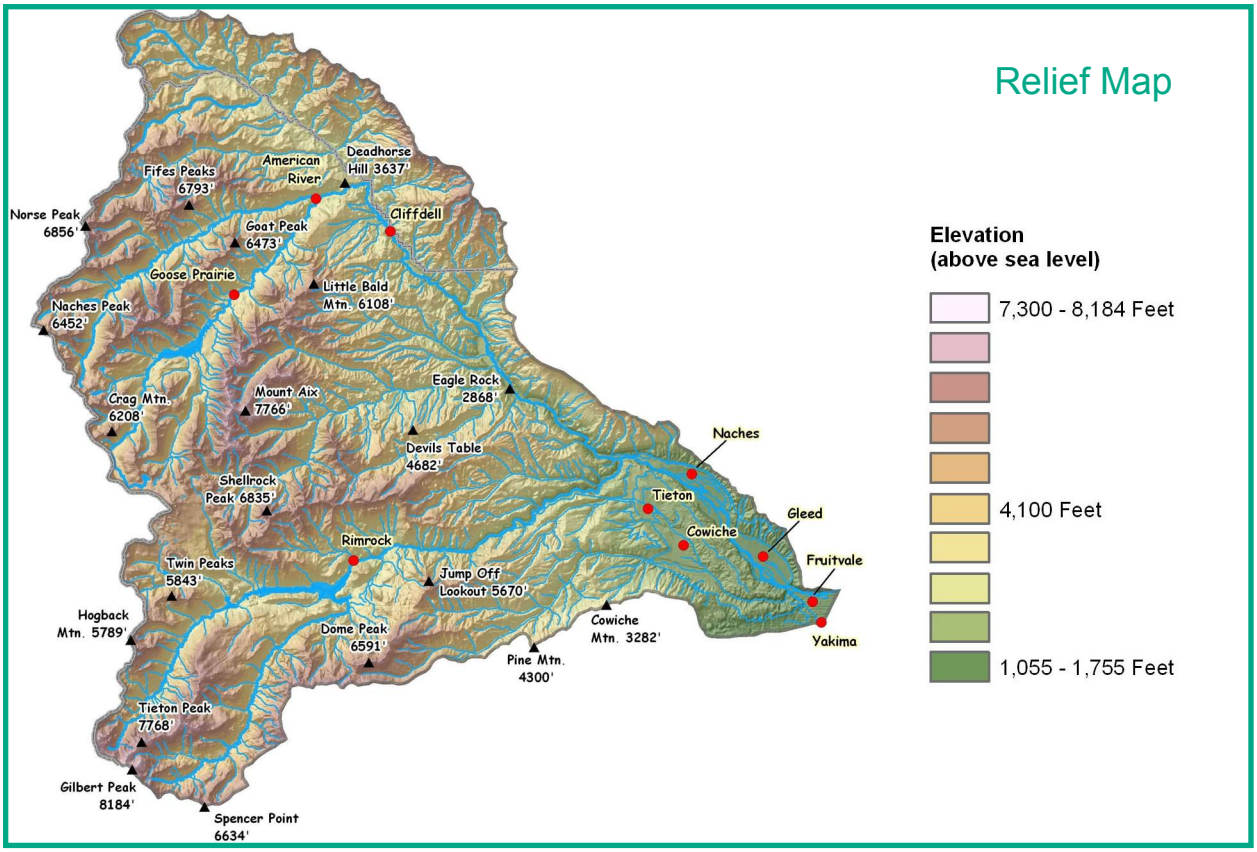
U3 - Soils on unglaciated hills; loess-influenced, but primarily derived from weathered granitic rocks, andesite, sandstone or schist; soils have dark colored humus-rich topsoils; many have clay-enriched subsoils. Xeric/Mesic; Tyee-Ginnis-Yaxon-Dinkels-Taneum-Tieton.

Vc - Cold, stony soils of mountains that stay moist all year due to late snowmelt; forest soils formed in volcanic ejecta and basalt with grassland soils formed from loess and basalt on south slopes. Udic/Cryic; Naxing-Pird-Alfir-Saydab-Darland-Ganis.

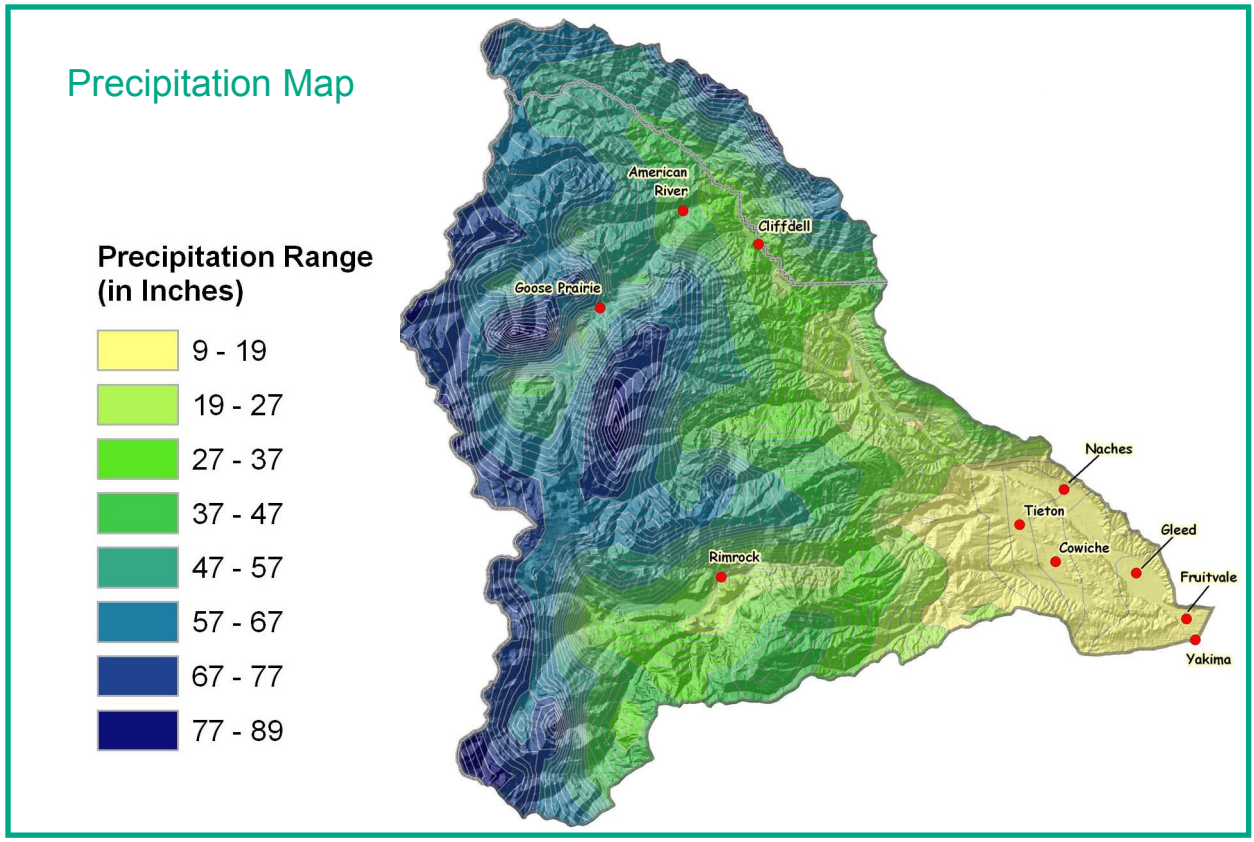
Vf - Cool, deep, stony forest soils formed in a layer of volcanic ash (or ash and pumice) over basalt. Xeric/Frigid to Mesic; Surveyors-Satus-Grandpon-MountAdams-McElroy.

Yn - Dark grassland soils that are wet and/or must be managed for salt-buildup when irrigated. Aquic/Mesic; Umapine-Toppenish-Wenas-Outlook.

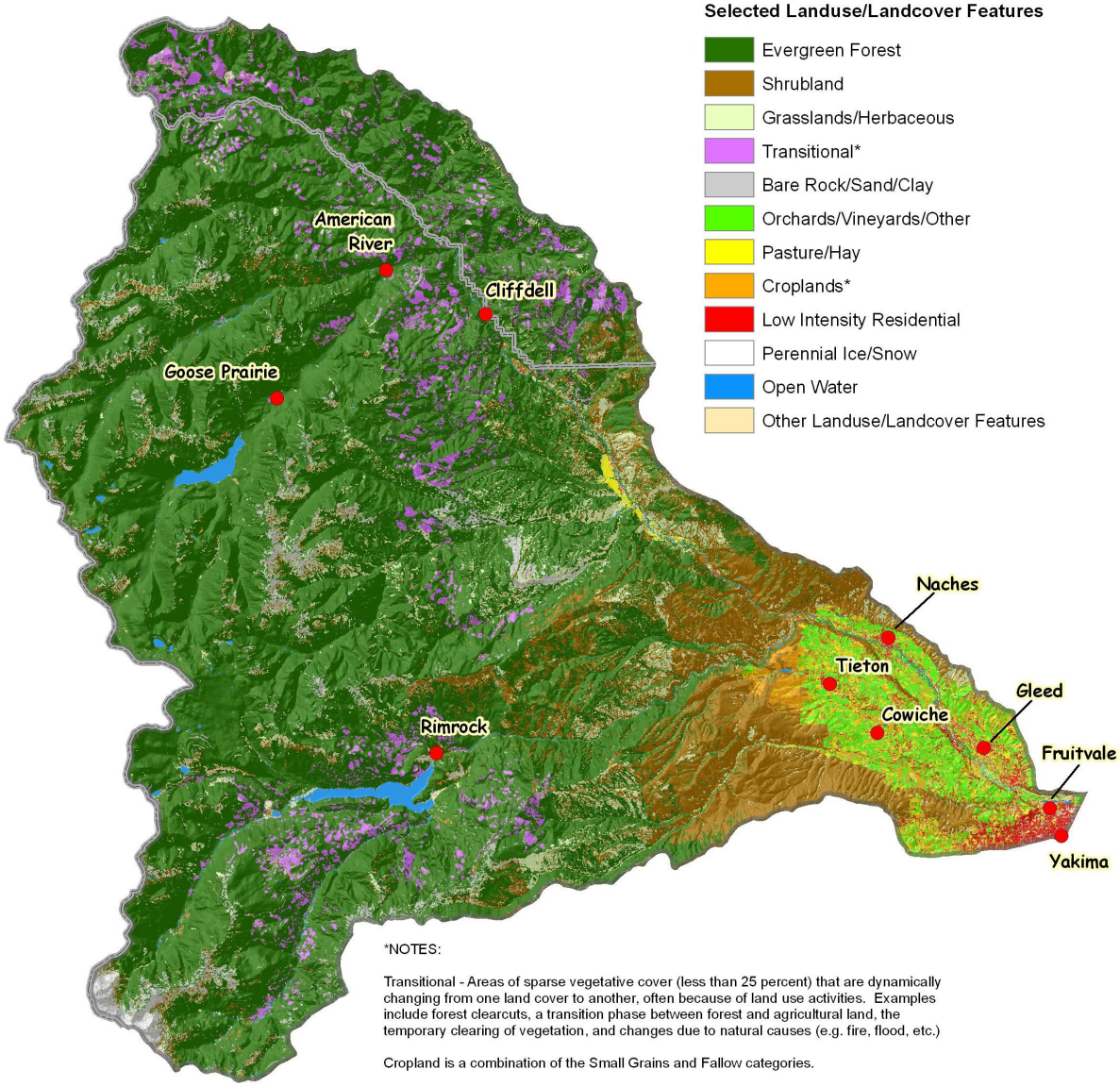
Relief Map



Precipitation Map



Landuse is a term used for a designation of a land area. NRCS uses official designations, based on use, such as cropland, forestland and rangeland. The Naches watershed map shows the primary landuse designations; Evergreen Forest, Transitional areas, Pasture/Hay, Croplands, and Grasslands/Herbaceous. These 5 major landuses make up 70% of the watershed. Minor landuses are displayed in the table.



*NOTES:

Transitional - Areas of sparse vegetative cover (less than 25 percent) that are dynamically changing from one land cover to another, often because of land use activities. Examples include forest clearcuts, a transition phase between forest and agricultural land, the temporary clearing of vegetation, and changes due to natural causes (e.g. fire, flood, etc.)

Cropland is a combination of the Small Grains and Fallow categories.

Land Use/Land Cover features in the Watershed

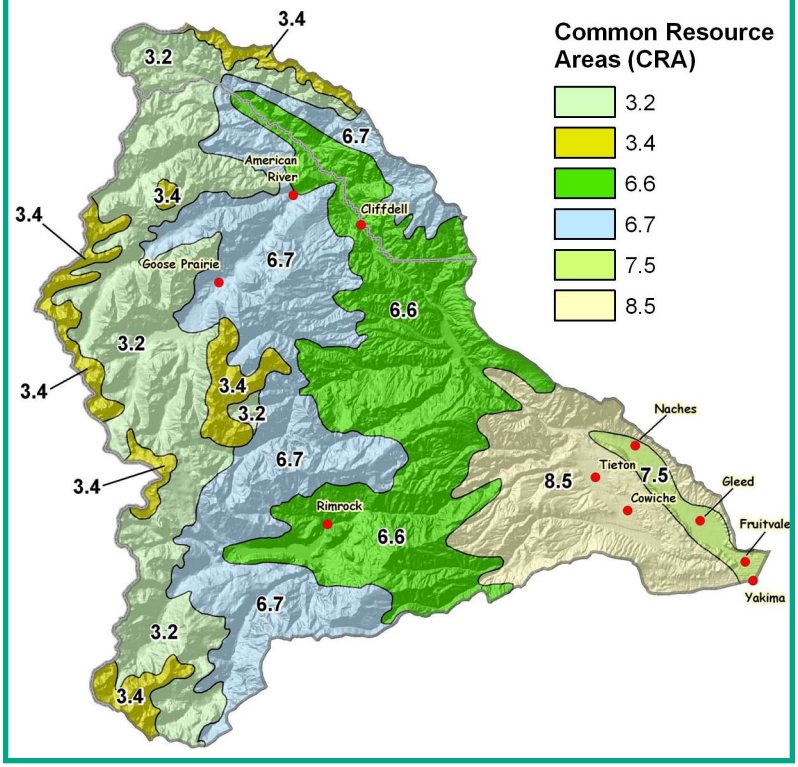
Land Use/Land Cover	Acres	% Area	Land Use/Land Cover	Acres	% Area
Evergreen Forest	482,459.55	67.29	Low Intensity Residential	5,223.28	0.73
Shrubland	91,350.50	12.74	Mixed Forest	2,312.19	0.32
Grasslands/Herbaceous	39,606.18	5.52	Commercial/Industrial/Transport	2,055.55	0.29
Transtitional*	31,217.85	4.35	Deciduous Forest	1,759.38	0.25
Bare Rock/Sand/Clay	18,870.20	2.63	Perennial Ice/Snow	1,174.88	0.16
Orchards/Vineyards/Other	17,354.89	2.48	Woody Wetlands	396.21	0.05
Pasture/Hay	8,750.29	1.22	Emergent Herbaceous Wetlands	43.54	0.01
Croplands*	7,720.80	1.08	High Intensity Residential	14.68	0.00
Open Water	6,307.00	0.88	Urban/Recreational Grasses	0.92	0.00

Certain Land Use/Land Cover features cannot be seen on the map at this scale.

3.2 – Olympic and Cascade Mountains - Western Cascades Montane Highlands. This unit comprises the mid to high elevation of the Cascade Mountains. Vegetation is Douglas-fir, western and mountain hemlock, Pacific silver fir, and noble fir. Elevation is typically above about 3,000 feet. The mountains are highly dissected with steep slopes. Temperature regime is frigid and "warm" cryic and the moisture regime is udic. It normally has a deep annual snowpack.

3.4 – Olympic and Cascade Mountains - Cascade Subalpine-Alpine. This unit is an area of high, glaciated, volcanic peaks that rise above subalpine meadows. It is characterized by bare rock outcrop, lava flows and volcanic peaks. Elevations range from 5,600 to 12,000 feet. Active glaciation occurs on the highest volcanoes and decreases from north to south. The winters are very cold and the growing season is extremely short. Flora and fauna adapted to high elevations include herbaceous and shrubby subalpine meadow vegetation and scattered patches of mountain hemlock, subalpine fir, and whitebark pine.

Common Resource Area Map



6.6 – Cascade Mountains, Eastern Slope - Yakima Plateau and Slopes. This unit was not glaciated and is characterized by plateaus, buttes, and canyons, a dry continental climate, and open woodlands dominated by ponderosa pine. Fire is an integral part of its ecosystem.

6.7 – Cascade Mountains, Eastern Slope - Grand Fir Mixed Forest. This unit is not extensive in Oregon but is in Washington. The vegetation is a mix of grand fir, Douglas-fir, and ponderosa pine. This unit is lower in elevation than the Northern Cascade Crest Montane Forest CRA. Temperature regime is frigid and the moisture regime is udic with a deep annual snowpack. It is characterized by high, glaciated plateaus and mountains.

7.5 – Columbia Basin - Yakima Valley-Pleistocene Lake Basins. This unit once contained vast temporary lakes that were created by flood waters from glacial Lake Missoula. Faint high water marks and shorelines between the 1,000 and 1,200 foot elevation contour mark the margins of the former lakes. Mean annual precipitation is 6 to 9 inches. Native vegetation consists of bluebunch wheatgrass and sagebrush on upland areas. Major irrigation projects provide Yakima River water and have allowed the conversion of large areas of sagebrush to agriculture. Valley bottom soils are dark grassland soils that are wet and/or must be managed for salt-buildup when irrigated. Water supplies are often limiting and endangered fish habitat is a major concern.

8.5 - Columbia Plateau - Moist Yakima Folds. This unit is a series of anticlinal ridges and synclinal valleys covering the western Columbia Plateau. The far eastern end of the unit enters Oregon east of Wallula Gap on the Columbia River. The ridges are composed of basalt layers up to 12,000 feet thick. Loess blankets the south-facing slopes and supports dryland wheat farming, while grazing occurs on steep, rocky north slopes. Located in the rain shadow of the Cascade Range, it receives 9 to 15 inches of precipitation. Temperature regime is mesic and the moisture regime is aridic. Sagebrush and bunchgrass associations dominate plant communities outside of heavily farmed or grazed areas.

Streams, Fish Species and Passage Barriers [7,8,9,19,20]

Naches Watershed
717,048 Total Acres
HUC# 17030002

Statewide - these fish groups are exotic (introduced): catfish, spiny-rays (perch, sunfish, bass), pike, shad, mosquitofish, killifish, weatherfish, striped bass and goby.

Fish Species distribution in the Naches Watershed

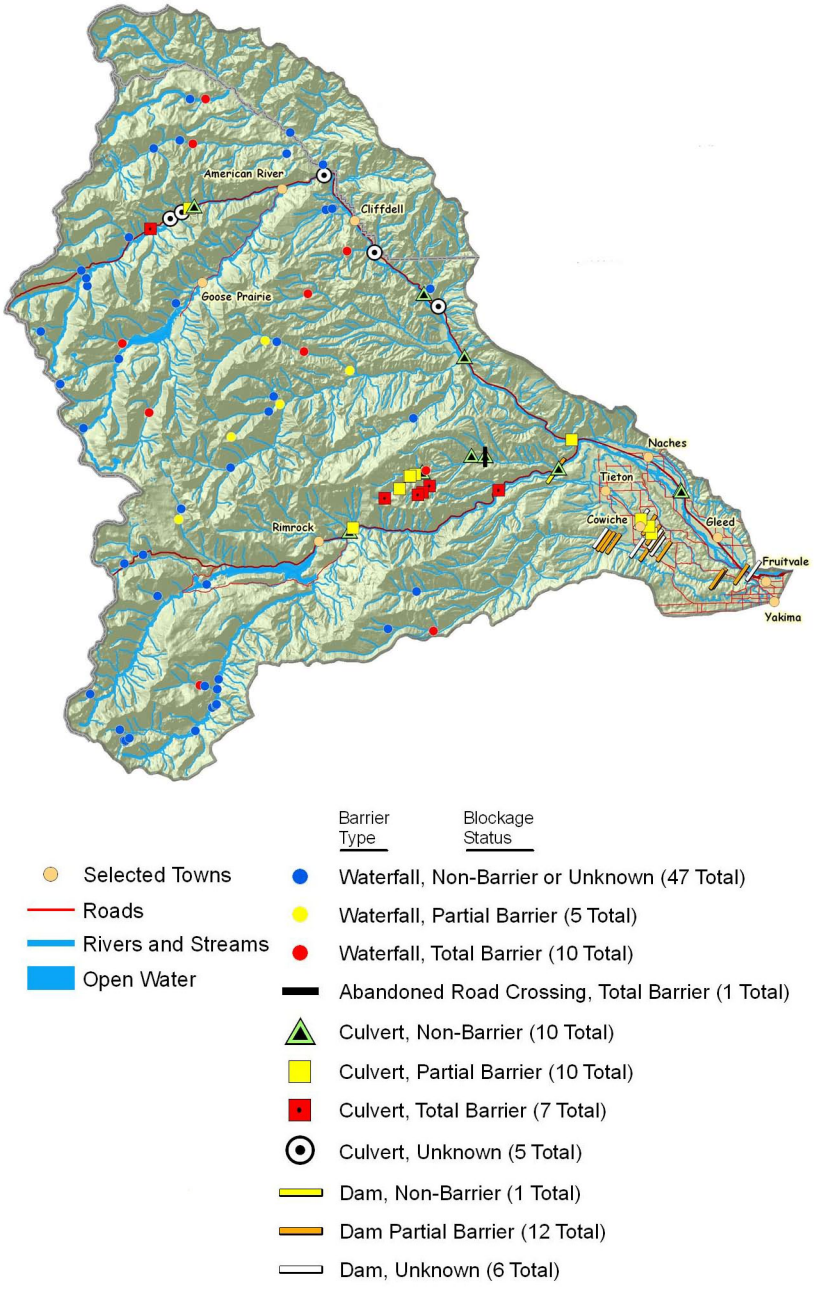
Fish Group	Native	Exotic
Burbot (freshwater cod)	1	
Catfish		1
Lamprey	1	
Minnow, carp	5	2
Perch, walleye		1
Salmonid (anadromous)	3	
Salmonid (resident)	5	2
Sculpin	4	
Stickleback	1	
Sucker	3	
Sunfish, bass, crappie		1
Watershed Total	**23**	**7**
Statewide Total	53	41

Salmonid (resident) n*ative:* rainbow, bull, westslope cutthroat trout; kokanee; mountain whitefish; e*xotic:*brook, brown trout.

Salmonid (anadromous) n*ative:*Chinook, coho salmon; steelhead.

Stream Statistics for the Naches Watershed	
Total streams	606
Named streams	146
Total stream miles	1397
Intermittent miles	521
Intermittent %	37%

Upstream Fish Passage Barriers

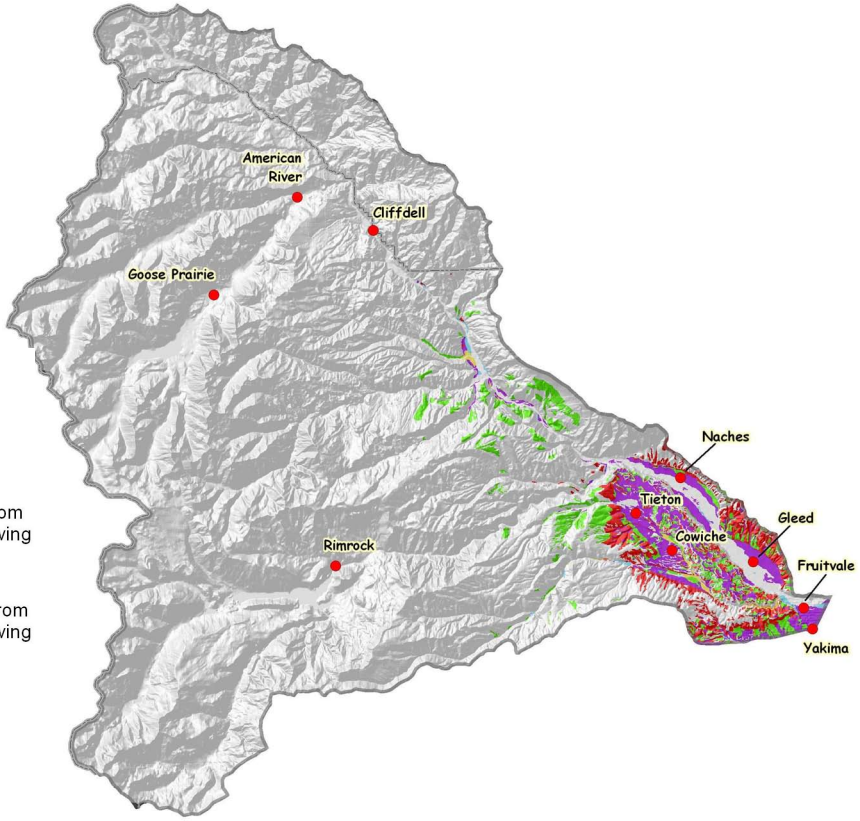


Ownership Map

General Ownership

FEDERAL GOVT.	71.40%
PRIVATE	20.02%
STATE GOVT.	8.54%
TRIBAL	0.02%
COUNTY GOVT.	0.02%

Farm Classification Map



% Area	Farmland Classification
2.2	Farmland of statewide importance
1.9	Farmland of unique importance
0.1	Prime farmland if drained
0.1	Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
2.3	Prime farmland if irrigated
0.1	Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
0.1	Prime farmland if protected from flooding or not frequently flooded during the growing season
93.2	Not prime farmland

Physical Descriptions

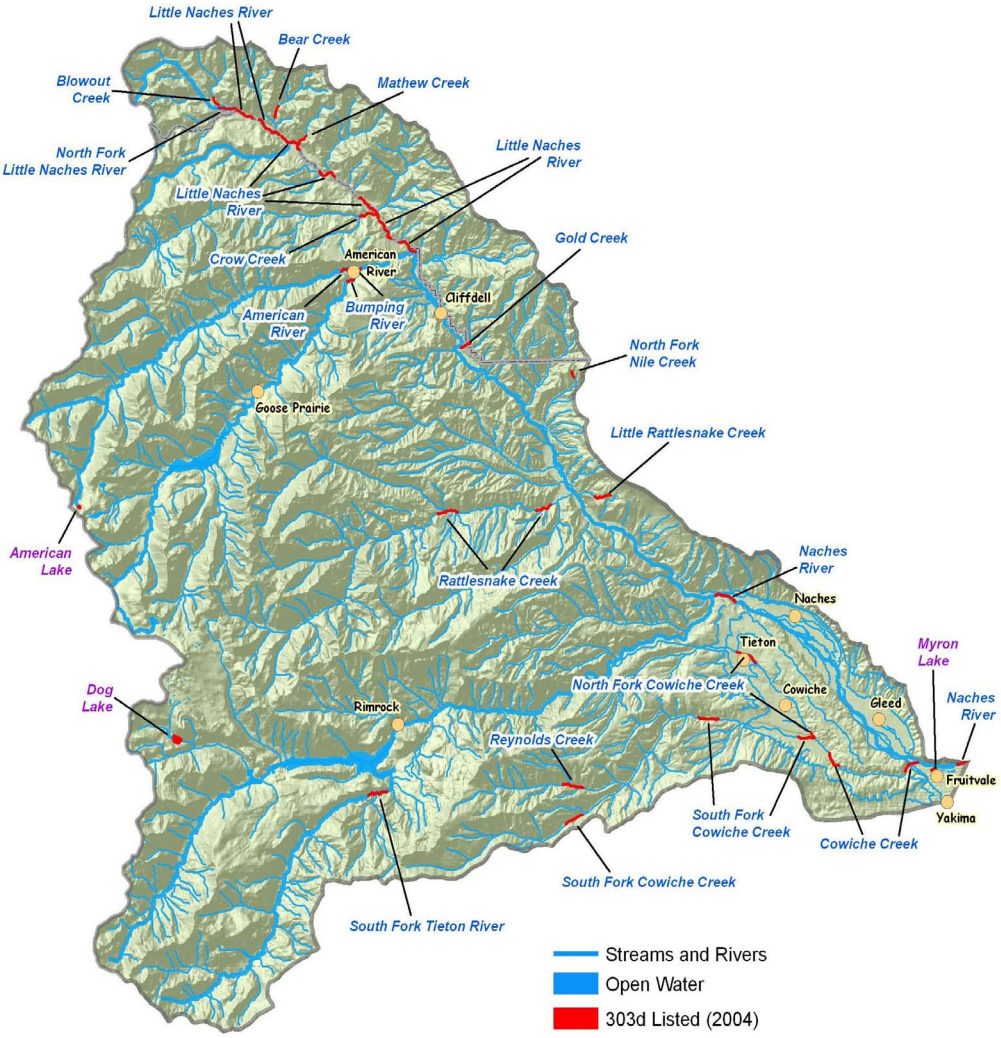
303d Listed Surface Water [12]

Section 303(d) of the Federal Clean Water Act requires each state periodically to prepare a list of all surface waters in the state for which beneficial uses of the water – such as for drinking, recreation, aquatic habitat, and industrial use – are impaired by pollutants. These are water quality limited estuaries, lakes, and streams that fall short of state surface water quality standards and are not expected to improve within the next two years.

Waters placed on the 303(d) list require the preparation of Total Maximum Daily Loads (TMDLs), a key tool in the work to clean up polluted waters. TMDLs identify the maximum amount of a pollutant that can be released into a waterbody without impairing the uses of the water. TDML's can be allocated amount among various pollution sources. In addition, even before a TMDL is completed, the inclusion of a water body on the 303(d) list can reduce the amount of pollutants allowed to be released under permits issued by Ecology.

Washington State's Water Quality Assessment lists the status of water quality for a particular location in one of 5 categories recommended by EPA.

303d Listed Surface Water Categories 4 & 5 Map [13]



(303d definitions continued on next page.)

Categories 1 – 4 represent the status of waters for the 305(b) Report, while Category 5 represents those waters placed on the 303(d) list.

Category 4: Polluted waters that do not require a TMDL is for waters that have pollution problems that are being solved in one of three ways.

Category 4a: **"has a TMDL"** is for water bodies that have an approved TMDL in place and are actively being implemented.

Category 4b: **"has a pollution control plan"** is for water bodies that have a plan in place that is expected to solve the pollution problems. While pollution control plans are not TMDLs, they must have many of the same features and there must be some legal or financial guarantee that they will be implemented.

Category 4c: **"is impaired by a non-pollutant"** is for water bodies impaired by causes that cannot be addressed through a TMDL. These impairments include low water flow, stream channelization, and dams. These problems require complex solutions to help restore streams to more natural conditions.

Category 5: Polluted waters that require a TMDL. The 303(d) list is the traditional list of impaired water bodies. Placement in this category means that Washington State Department of Ecology has data showing that the water quality standards have been violated for one or more pollutants, and there is no TMDL or pollution control plan. TMDLs are required for the water bodies in this category.

(303d continued on next page.)

303d Listed Streams and Surface Waters [13]

Water Body	Fecal Coliform	Temperature	Dissolved Oxygen	pH	Total Phosphorus	Exotic Invasive Species	Ammonia-N	In-stream Flow	Mercury	Copper	Lead	Zinc	Silver	Chromium
American River		x												
Bear Creek		x												
Blowout Creek		x												
Bumping River		x												
Cowiche Creek	x	x	x	x			x	x						
Crow Creek		x												
Gold Creek		x												
Little Naches River		x												
Little Rattlesnake Creek		x												
Mathews Creek		x												
N.F. Cowiche Creek	x	x												
N.F. Little Naches River		x												
N.F. Nile Creek		x												
Naches River	x	x	x	x				x	x	x	x	x	x	x
Rattlesnake Creek		x												
Reynolds Creek		x												
S.F. Cowiche Creek	x	x												
S.F. Tieton River		x												
American Lake					x									
Dog Lake						x								
Myron Lake							x							

(303d continued on next page.)

303d Listed Streams and Surface Waters [13]

Water Body	Endrin	Alpha-Endosulfan	2,4,6-Tricholrophenol	Penta-phlorophenol	Chlorpyrifos	Endrin Aldehyde	4,4'-DDE	Gamma-BHC (Lindane)	beta-Endosulfan	Endosulfan Sulfate	Endo-Sulfan I	Endo-Sulfan II	2,3,7,8-TCDD
American River													
Bear Creek													
Blowout Creek													
Bumping River													
Cowiche Creek	x	x	x	x	x	x	x	x	x	x			
Crow Creek													
Gold Creek													
Little Naches River													
Little Rattlesnake Creek													
Mathews Creek													
N.F. Cowiche Creek													
N.F. Little Naches River													
N.F. Nile Creek													
Naches River													
Rattlesnake Creek													
Reynolds Creek													
S.F. Cowiche Creek													
S.F. Tieton River													
American Lake											x	x	x
Dog Lake													
Myron Lake													

(303d continued on next page.)

Riparian Land Use / Land Cover [5]

The current condition and quality of riparian areas adjacent to water bodies is often times dependent on the land use and land cover characteristics.

This data set is based on a riparian width of 100 feet on each side of all streams in the watershed.

Riparian Land Use / Land Cover		
Based on a 100-foot stretch on both sides of all streams in the 100K Hydro GIS Layer	**ACRES**	**% of Buffer Area**
Evergreen Forest	26,617	70.4%
Shrubland	3,574	9.5%
Open Water	1,548	4.1%
Orchards/Vineyards/Other	1,473	3.9%
Transitional	881	2.3%
Grasslands/Herbaceous	868	2.3%
Pasture/Hay	617	1.6%
Low Intensity Residential	530	1.4%
Bare Rock/Sand/Clay	358	1.0%
Deciduous Forest	344	0.9%
Small Grains	300	0.8%
Mixed Forest	255	0.7%
Fallow	174	0.5%
Commercial/Industrial/Transportation	162	0.4%
Woody Wetlands	120	0.3%
Emergent Herbaceous	5	0.0%
Perennial Ice/Snow	2	0.0%
High Intensity Residential	1	0.0%
Total Acres of 100-Foot Stream Buffers	**37,830**	**100%**

Irrigated Cropland, Hayland and Pastureland [14]

The Natural Resource Inventory (NRI) of 1997 was used to estimate acres of irrigated and cultivated cropland, uncultivated cropland (hayland) and pastureland in the watershed.

These estimates were then verified by the Yakima office staffs.

Irrigated Lands

(1997 NRI [3] Estimates for Non-Federal Lands Only)

Type of Land	ACRES	Percent of Irrigated Lands	Percent of HUC
Cultivated Cropland	30,400	93%	4%
Uncultivated Cropland	2,400	7%	<1%
Pastureland	0	0%	0%
Total Irrigated Lands	**32,800**	**100%**	**4%**

Animal Feeding Operations

Animal Type	Dairy	Beef Feedlot	Heifer Feedlot	Poultry (Egg & Fryer)	Swine
No. of Farms	0	5	0	0	0

Cultural and Historic Sites [15]

Cultural resources are important to most residents in the watershed. Cultural Resources are considered equivalent to “historic properties” as defined in the National Historic Preservation Act. They include any prehistoric or historic district, site, building, structure or object listed in or eligible for listing in the National Register of Historic Places (maintained by the Secretary of the Interior). They also include all records, artifacts and physical remains associated with the historic properties. They may consist of the traces of all of the past activities and accomplishments of people.

Cultural resources that are also protected under other authorities (such as the American Indian Religious Freedom Act) include (1) tangible traces such as districts, sites, buildings, structures and objects; (2) less tangible traces such as dance forms, aspects of folk life, landscapes, vistas, cultural or religious practices; (3) historical documents; (4) and some landscapes, vistas, cemeteries (if they have historic or cultural value) and life ways.

Native Americans have fished, hunted and gathered plant materials from this watershed for thousands of years. Native Americans thrived on abundant fish and mammals, basing much of their culture and economy on these rich resources, particularly the multiple runs of salmon. Members of the Yakama Nation continue to utilize and mange the natural resources in the watershed.

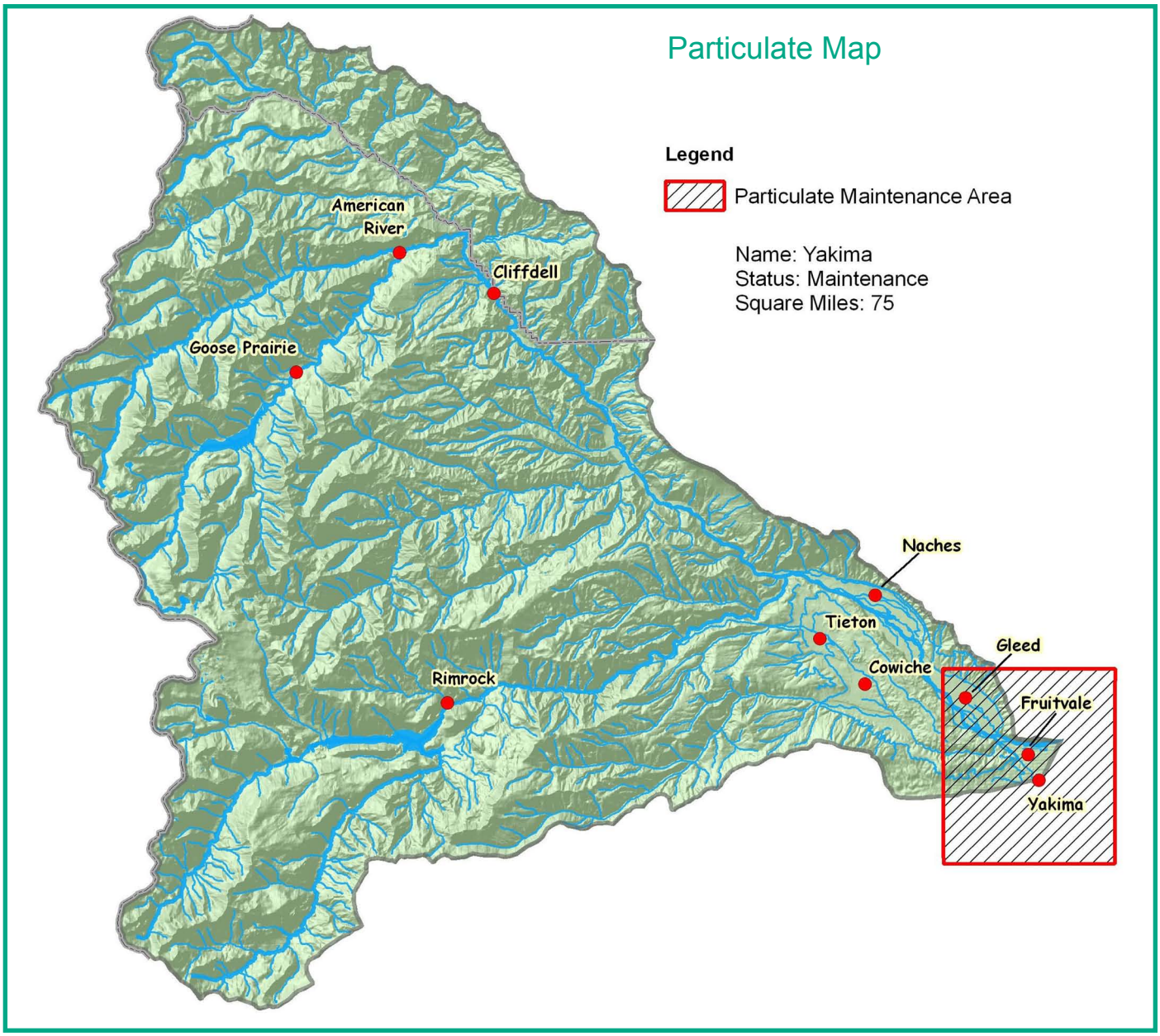
The first European settlers arrived in the 1850’s. The number of settlers significantly increased in the 1880’s as irrigation systems were being developed that allowed for agricultural development. Some mining activities were being developed as well. Early settlement occurred primarily in the Naches River valley.

Activities carried out in the watershed by Federal agencies, where the agency has control of the out come, is subject to provisions of the National Historic and Preservation Act. The Act requires Federal agencies to take into account the effects of their undertakings on any cultural resources or historic properties that meet the National Register of Historic Places criteria. Part of this process involves taking action to avoid or minimize harm to eligible resources.

Physical Descriptions

Air Quality, [16] Ground Water and Wind

A small area on east portion of this watershed is designated as a "Particulate Maintenance Area" by Washington State DOE. The maintenance area is predominantly orchard crop land along mountain valleys. Suspended smoke, fugitive dust and other urban activities are the major sources of particulate matter in this area. Air pressure inversions associated with the foothill valleys of the Cascade Mountain Range are common during each year. The amount of smoke and dust also varies throughout the year. Particulate matter concentration is variable and becomes a concern when both conditions occur at the same time.



"Air pollution affects the environment and quality of life in many ways including: damage to soils, water, crops, vegetation, manmade materials, property, animals, and wildlife; impairment of visibility, climate and weather; and hazards to transportation, as well as adversely affecting economic values and personal comfort and well-being." WDOE, 1998.

SOIL
Maintain or improve soil condition
Reduce soil erosion
Wind Erosion System
WATER
CNMP needed
Confinement areas adjacent to streams will be relocated creating buffers with livestock exclusion
Heavy use areas need stabilization to improve water quality and/or quantity
Improve ground water quality
Improve the quality and/or reducing the quantity of run-off from furrow irrigation
Improve water quality by improving a manure waste transfer system
Improve water quantity through irrigation water management
Improved irrigation efficiency on non-surface systems
Improving air quality and water quality with animal waste application by soil injection
Irrigation induced erosion
Maintain or improve water quality and quantity
Nutrient Management plan needed
Sediment to salmonid-bearing streams
Storage is needed for animal manure
Streambank stabilization
Surface Irrigation conversion to a more efficient system
AIR
Air Quality System
Improving air quality and water quality with animal waste application by soil injection
PLANT
Forest stand improvement to improve understory forage production, aesthetics, wildlife & fish habitat, recreation, hydrologic conditions; to improve or sustain timber production; to initiate forest stand regeneration; or a combination of purposes
Improve or maintain the health & vigor of the desired plant community
Improve plant condition (Health & Vigor) on forage ground
Lack of adequate water quantity or availability and/or,lack of adequate cross-fencing are limiting factors for achieving proper grazing distribution
Noxious weeds and/or woody vegetation
Prescribed grazing needed
Tree and/or Shrub Planting for forest products, long-term erosion control, aforestation, and improvement of water quality
ANIMAL
Improve or maintain animal health and productivity

Threatened and Endangered List [17,18]

The following Chart shows the listed plant and animal species under the Endangered Species Act (ESA). These species are a resource concern that must be addressed during the planning process. For additional information contact the United States Fish & Wildlife Service (USF&W) and/or the National Marine Fisheries Service (NMFS).

If planned practices will be applied in an area where potential listed species or its designated critical habitat may be affected either positively or negatively, than a Biological Assessment (BA) must be conducted.

Animal and Plant Species Included in the Endangered Species Act for the Naches Watershed		
Common Name	**Scientific Name**	**Type**
Endangered Species		
None		
Threatened Species		
Bald Eagle	*Haliaeetus leucocephalus*	*Bird*
Northern Spotted Owl	*Strix occidentalis caurina*	*Bird*
Steelhead	*Oncorhynchus mykiss*	*Fish*

Farm Bill Programs
Performance Results [21]

This section highlights the conservation application that has been reported from FY 2001 through FY 2006. Performance Results System (PRS) data was extracted from PRS reports by year, conservation systems by Hydrologic Unit Code (HUC). HUC reports were not available where NA. For additional information and other performance reports visit http://ias.sc.egov.usda.gov/prshome/.

	FY02	FY03	FY04	FY05	FY06	Total
Conservation Systems						
Total Conservation Systems Planned (acres)	12	0	NA	0	22	34
Total Conservation Systems Applied (acres)	0	6	NA	0	17	23
Conservation Treatments						
Waste Management (no.)	0	0	0	0	0	0
Buffers (acres)	0	0	0	0	0	0
Erosion Control (tons/year)	0	0	NA	0	0	0
Erosion Control (acres)	0	6	NA	0	0	6
Irrigation Management (acres)	0	12	0	0	17	29
Nutrient Management (acres)	0	0	0	0	0	0
Pest Management (acres)	0	0	0	0	0	0
Prescribed Grazing (acres)	0	0	0	0	0	0
Tree and Shrub Establishment (acres)	0	0	0	0	0	0
Wildlife Habitat (acres)	0	0	0	40	0	40
Wetlands (acres)	0	0	0	0	0	0

This table lists the farm bill program participation in the watershed during the last five years. Data was collected from Conservation Systems Planned using Farm Bill Programs from PRS reports for the hydrologic unit area. NA indicates that the information was not available.

	FY02	FY03	FY04	FY05	FY06	Total
Systems Planned Using Conservation Farm Bill Programs (acres)						
Conservation Reserve Program (CRP)	0	0	0	0	0	0
Conservation Security Program (CSP)	NA	NA	NA	NA	880	880
Environmental Quality Incentives Program - Ground and Surface Water (EQIP-GSWC)	-	0	0	0	0	0
Environmental Quality Incentives Program (EQIP)	12	0	765	0	22	799
Farmland Protection Program (FPP)	0	0	0	0	0	0
Forestry Incentives Program (FIP)	0	0	0	0	0	0
Grassland Reserve Program (GRP)	-	0	0	0	0	0
Wetlands Reserve Program (WRP)	0	0	0	0	0	0
Wildlife Habitat Incentive Program (WHIP)	0	0	232	0	0	232

Census Data - Economic Characteristics [24]

There are 3,730 farms in Yakima County, the core county comprising 97% of the agricultural operations in the watershed. An analysis of the 2002 Agricultural Census data by zip code suggests there are 618 agricultural operations in the watershed. The Yakima county average farm size in the 2002 Census of Agriculture was 450 acres.

The 2002 average market value of agricultural products sold was $226,239 with a net cash farm income of $40,313. The Yakima county net cash farm income was 119% of the statewide average.

The average farm size for Washington State in the 2002 Census of Agriculture was 426 acres with an average market value of agricultural products sold of $148,327 and an average net cash farm income of $33,925.

	Yakima		Washington	
ECONOMIC CHARACTERISTICS (Yakima County)	**Number**	**%**	**Number**	**%**
Employed civilian population 16 years and over	88,074		2,793,722	
OCCUPATION				
Management, professional, and related occupations	24,126	27	993,198	36
Service occupations	14,154	16	416,056	15
Sales and office occupations	19,782	23	723,256	26
Farming, fishing, and forestry occupations	8,189	9	43,495	2
Construction, extraction, and maintenance occupations	7,294	8	263,767	9
Production, transportation, and material moving occupations	14,529	17	353,950	13
INDUSTRY				
Agriculture, forestry, fishing and hunting, and mining	9,383	11	68,976	3
Construction	4,670	5	194,871	7
Manufacturing	10,193	12	348,646	13
Wholesale trade	6,687	8	113,526	4
Retail trade	10,017	11	338,772	12
Transportation and warehousing, and utilities	4,048	5	150,985	5
Information	1,219	1	95,669	3
Finance, insurance, real estate, and rental and leasing	3,202	4	170,622	6
Professional, scientific, management, administrative, and waste management services	4,682	5	272,466	10
Educational, health and social services	19,355	22	541,214	19
Arts, entertainment, recreation, accommodation and food services	5,735	7	221,656	8
Other services (except public administration)	4,264	5	135,379	5
Public administration	4,619	5	140,940	5

Census Data - Ethnicity [23] and Ag Census Data [22]

Population Ethnicity by County	Yakima	Washington
White persons, percent, 2004 (a)	91.0%	85.3%
Black persons, percent, 2004 (a)	1.2%	3.5%
American Indian and Alaska Native persons, percent, 2004 (a)	4.8%	1.6%
Asian persons, percent, 2004 (a)	1.1%	6.3%
Native Hawaiian and Other Pacific Islander, percent, 2004 (a)	0.2%	0.5%
Persons reporting two or more races, percent, 2004	1.7%	2.9%
Persons of Hispanic or Latino origin, percent, 2004 (b)	38.6%	8.5%
White persons, not Hispanic, percent, 2004	54.2%	77.5%

CLASS OF WORKER	Yakima		Washington	
	Number	%	Number	%
Private wage and salary workers	66,632	76	2,125,029	76
Government workers	14,751	17	459,722	17
Self-employed workers in own not incorporated business	6,377	7	199,827	7
Unpaid family workers	314	0	9,144	0
INCOME IN 1999				
Households	74,017	100	2,272,261	100
Less than $10,000	8,127	11	171,863	8
$10,000 to $14,999	5,528	8	124,848	6
$15,000 to $24,999	12,036	16	265,131	12
$25,000 to $34,999	11,488	16	284,630	13
$35,000 to $49,999	12,671	17	389,434	17
$50,000 to $74,999	13,557	18	486,392	21
$75,000 to $99,999	5,449	7	264,498	12
$100,000 to $149,999	3,515	5	188,513	8
$150,000 to $199,999	706	1	47,615	2

2002 AG CENSUS DATA	Yakima
Farms (number)	3,730
Land in farms (acres)	1,678,984
Total cropland (acres)	361,256
Irrigated land (acres)	269,127
Farms by Size	
Average size of farm (acres)	450
1 to 9 acres	895
10 to 49 acres	1,587
50 to 69 acres	246
70 to 99 acres	254
100 to 139 acres	153

Farms by Size	Yakima
140 to 179 acres	112
180 to 219 acres	73
220 to 259 acres	60
260 to 499 acres	136
500 to 999 acres	120
1,000 to 1,999 acres	43
2,000 acres or more	51
Livestock and Poultry	
Inventory - Cattle and calves (farms)	916
Inventory - Cattle and calves - Beef cows (farms)	592
Inventory - Cattle and calves - Milk cows (farms)	101
Inventory - Hogs and pigs (farms)	58
Inventory - Sheep and lambs (farms)	97
Inventory - Layers 20 weeks old and older (farms)	96
Inventory - Broilers and other meat-type chickens (farms)	10
Selected Crops Harvested (acres)	
Harvested cropland (acres)	257,921
Harvested cropland - Irrigated (acres)	237,787
Corn for grain (acres)	13,644
Corn for grain - Irrigated (acres)	13,519
Corn for silage or greenchop (acres)	16,440
Corn for silage or greenchop - Irrigated (acres)	15,994
Wheat for grain, all (acres)	25,415
Wheat for grain, all - Irrigated (acres)	12,685
Wheat for grain, all - Winter wheat for grain (acres)	17,143
Wheat for grain, all - Spring wheat for grain (acres)	8,272
Barley for grain (acres)	452
Barley for grain - Irrigated (acres)	69
Oats for grain (acres)	158
Oats for grain - Irrigated (acres)	0
Potatoes (acres)	1,737
Sugarbeets for sugar (acres)	0
Forage - land used for all hay, haylage, grass silage, and greenchop (acres)	54,413
Forage - land used for all hay, haylage, grass silage, and greenchop - Irrigated (acres)	49,009
Vegetables harvested for sale (acres)	15,077
Land in orchards (acres)	99,834
Land in orchards - Irrigated (acres)	99,061

Many natural resource and socio-economic studies have been conducted in the Naches watershed. Most of these studies are associated to Washington's WRIA 38. Many of these studies have focused on water quality issues and have been conducted in cooperation with Washington Department of Ecology.

In addition, to water quality studies, the U.S. Forest Service, Wenatchee Okanogan National Forest address resource needs on National Forest lands within the Naches as part of their Forest planning process. The Washington Department of Natural Resources conducts studies ranging from road inventories, culvert location and Habitat Conservation Plans. The following list and links are from the Washington Department of Ecology:

WRIA 38, Naches

Title	Number	Date
Yakima River Watershed Toxics Study	06-10-069	September 2006
Progress on Watershed Planning and Setting Instream Flows	05-11-038	December 2005
Quality Assurance Project Plan: Yakima Area Creeks Fecal Coliform Total Maximum Daily Load Study	05-03-101	January 2005
Quality Assurance Project Plan: Naches River Temperature Total Maximum Daily Load	04-03-110	September 2004
Wenatchee National Forest Water Temperature Total Maximum Daily Load: Technical Report	03-10-063	November 2003
Results of Sampling to Verify 303(d) Metals Listings for Selected Washington State Rivers and Creeks	02-03-039	September 2002
River and Stream Ambient Monitoring Report for Water Year 2000	01-03-042	December 2001
Screening Level Investigation of Water and Sediment Quality of Creeks in Ten Eastern Washington Mining Districts, with Emphasis on Metals	00-03-004	January 2000
Aquatic Plants Technical Assistance Program 1998 Activity Report	99-328	June 1999
Biological Assessment of Small Streams in the Coast Range Ecoregion & the Yakima River Basin	99-302	1999
Washington State Pesticide Monitoring Program: 1995 Surface Water Sampling Report	98-300	1998
A Suspended Sediment and DDT Total Maximum Daily Load Evaluation Report for the Yakima River	97-321	1997
Lake Water Quality Assessment Program, 1993	96-304	1996
Watershed Briefing Paper for the Upper and Lower Yakima Watersheds	96-336	1996

Footnotes and Bibliography

All information is provided “as is.” There are no warranties, express or implied, including the warranty of fitness for a particular purpose, accompanying this document. Use for general planning purposes only.

1. Rapid Watershed Assessment (RWA) 8-digit Hydrologic Unit (HU) boundaries are from the U.S. Geological Survey huc250k vector data layer published in 1994. The data is based on the Hydrologic Unit Maps published by the U.S. Geological Survey Office of Water Data Coordination, together with the list descriptions and the name of the region, subregion, accounting unit, and cataloging unit. The hydrologic units are encoded with an eight-digit number that indicates the hydrologic region (first two digits), hydrologic subregion (second two digits), accounting unit (third two digits), and cataloging unit (fourth two digits). The HU data was downloaded from the NRCS Geospatial Data Gateway: http://datagateway.nrcs.usda.gov/. Tribal reservation boundaries are from the Washington State Department of Ecology (WDOE) 1;100,000 scale State Tribal Lands vector data layer. This layer can be downloaded from http://www.ecy.wa.gov/services/gis/data/data.htm#tribal .

2. General Soils were derived from the General Soil Map, Washington (1:500,000 scale), by Maureen Boling, Bruce Frazier and Alan Busacca, Washington State University, 1998. The soil map is the product of the combined efforts of Washington State University and its National Cooperative Soil Survey Partners, the USDA Natural Resources Conservation Service and Forest Service. More information visit http://remotesens.css.wsu.edu/washingtonsoil/index.htm .

3. The Relief map was created using a seamless, statewide, 30-meter resolution USGS digital elevation model (DEM) raster clipped to the watershed boundary. This DEM was colored to represent relative relief and draped over a 30-meter hillshade grid derived from the statewide DEM to create a 3-D effect. The mountain peaks and town locations are from the 2004 USGS Geographic Names Information System (GNIS) Non-populated Places and Populated Places datasets. The GNIS data was downloaded from the NRCS Geospatial Data Gateway: http://datagateway.nrcs.usda.gov/ .

4. Average Annual Precipitation is from the Parameter-elevation Regressions on Independent Slopes Model (PRISM) raster data. This annual precipitation data is derived from the climato¬logical period of 1961-1990. The PRISM raster data is the underlying dataset from which the polygons and vectors were created. For more information about PRISM visit: http://www.ocs.orst.edu/prism/prism_new.html. Precipitation data was downloaded from the NRCS Geospatial Data Gateway: http://datagateway.nrcs.usda.gov/.

Footnotes and Bibliography

5. The Land Use/Land Cover data was generated from the National Land Cover Dataset (NLCD) compiled from Landsat satellite TM imagery (circa 1992) with a spatial resolution of 30 meters and supplemented by vari¬ous ancillary data (where available). The data was assembled by the USGS and published in June of 1999. The analysis and interpretation of the satellite imagery was conducted using very large, sometimes multi-state image mosaics. These data can be used in a geographic information system (GIS) for any number of purposes, such as assessing wildlife habitat, water quality, pesticide runoff, land use change, etc. For more information about NLCD visit http://landcover.usgs.gov/natllandcover.php. The data was downloaded from the NRCS Geospatial Data Gateway: http://datagateway.nrcs.usda.gov/ . For more information on Land Use designations, refer to the NRCS Planning Procedures Handbook, March 2003.

6. Common Resource Area (CRA) Map delineations are defined as geographical areas where resource concerns, problems, or treatment needs are similar. It is considered a subdivision of an existing Major Land Resource Area (MLRA) map delineation or polygon. Landscape conditions, soil, climate, human considerations, and other natural resource information are used to determine the geographic boundaries of a CRA. For more information about a CRA visit: http://soils.usda.gov/survey/geography/cra.html.

7. Fish species distribution for both streams and lakes was obtained by overlaying a clear plastic outline of Washington State, with the chosen watershed highlighted, onto a similar-sized fish-distribution map found for each fish species in the publication, “Inland Fishes of Washington”. Wydoski, R. S. and R. R. Whitney. 2003. Inland Fishes of Washington (2nd edition). American Fisheries Society and University of Washington Press. 320 pp. Many fish species are shown as living only in the mainstem Columbia or Snake Rivers. If one of these rivers runs through, or is a boundary of a target watershed, river-borne species were included in the watershed. Likewise, estuary-type fish such as starry flounders, that are often found well upstream from saltwater, are included in most watersheds that drain to salt water.

8. Fish barrier information was downloaded from the SalmonScape website at: http://wdfw.wa.gov/mapping/salmonscape/ . This Washington Department of Fish and Wildlife website offers an online source of maps at the 1:24,000 scale for planners to identify and prioritize their stream restoration and protection activities. The site merges fish presence and habitat data collected by state, federal, tribal and local biologists and presents it in an integrated system that can be readily accessed by other agencies and the public. It is part of the larger StreamNet program for Northwestern States.

9. Stream statistics were obtained from 1:100,000 scale StreamNet data layers found at: http://www.streamnet.org/pnwr/fileaccess.html. StreamNet: http://www.streamnet.org/ is a cooperative venture of the Pacific Northwest’s fish and wildlife agencies and tribes and is administered by the Pacific States Marine Fisheries Commission: http://www.psmfc.org/ . It is recognized that a 100K map scale may show less streams and less stream miles than a 24K map, but it still gives a useful comparison between watersheds.

Footnotes and Bibliographies

10. General Ownership is derived from the 1:100,000 scale Washington Public Lands (2005) layer. The layer is comprised of the best available data compiled at 1:100,000 scale. This data layer is a compilation of the Washington State Department of Natural Resources (WDNR) Managed Land Parcels layer and the Washington State Major Public Lands (Non-DNR or NDMPL) layer. The combination of these two data layers is intended to reflect the most current general ownership (and extent of public lands) digital data in Washington State at the 1:100,000 scale. These data layers were downloaded from the WDNR Available GIS Data website: http://www3.wadnr.gov/dnrapp6/dataweb/dmmatrix.html . The RWA map describes occurrences within the watershed of land ownership/management areas for federal, tribal, state, local and private entities. For current ownership status, consult official records at appropriate Federal, State, and county offices.

11. Farmland classifications were derived using the Natural Resources Conservation Service (NRCS) Soil Survey Geographic Database (SSURGO) tabular and spatial data. This information can be referenced through the NRCS Field Office Technical Guide, Section II, Soils: soils data and interpretation databases. The following surveys were used:

    Yakima County Area., WA (WA677) Published 2006 01 03
    Wenatchee National Forest, Naches Area, WA (WA680) Published 2005 07 29

    These surveys and tabular databases were downloaded from the NRCS Soil Data Mart at http://soildatamart.nrcs.usda.gov . Farmland classification layers were created using the soil surveys in the NRCS Soil Data Viewer (SDV). Visit the online Web Soil Survey at: http://websoilsurvey.nrcs.usda.gov for official and current USDA soil information as viewable maps and tables.

12. Washington Department of Ecology:
    http://www.ecy.wa.gov/programs/wq/303d/wq_assessment_cats.html.
    Washington State Water Quality Categories website:
    http://apps.ecy.wa.gov/wats/WATSQBEHome.asp
    (In the first drop-down box, click on your WRIA of interest)

13. 303d listed streams were derived from the Washington State Department of Ecology's (WDOE) 2004 Washington Water Quality Assessment/303(d) List. This information was downloaded from the WDOE Statewide Datasets website: http://www.ecy.wa.gov/services/gis/data/data.htm.

14. ESTIMATES FROM THE 1997 NRI DATABASE (REVISED DECEMBER 2000) REPLACE ALL PREVIOUS REPORTS AND ESTIMATES. Comparisons made using data published for the 1982, 1987, or 1992 NRI may produce erroneous results. This is because of changes in statistical estimation protocols and because all data collected prior to 1997 were simultaneously reviewed (edited) as 1997 NRI data were collected. All definitions are available in the glossary. In addition, this December 2000 revision of the 1997 NRI data updates information released in December 1999 and corrects a computer error discovered in March 2000. For more information: http://www.nrcs.usda.gov/technical/NRI/ .

Footnotes and Bibliographies

15. NRCS General Manual, Part 401 - Cultural Resources (Archeological and Historic Properties) http://policy.nrcs.usda.gov/scripts/lpsiis.dll/GM/GM_420_401_a.htm .

16. Particulate Maintenance Areas of Washington State were derived from the Washington State Department of Ecology's (WDOE) 1998 "pm10.shp" data layer. This layer locates areas that presently and historically did not meet particulate matter air quality standards. This applies to particulates less than 10 microns is size. The US Environmental Protection Agency sets air quality standards and defines those areas that do not meet air quality standards. This information was downloaded from the WDOE Statewide Datasets website: http://www.ecy.wa.gov/services/gis/data/data.htm.

17. USFWS website for all federally listed animals and plants in Washington State. http://ecos.fws.gov/tess_public/StateListing.do?state=WA&status=listed .

18. Washington State's Rare Plant Species Populations and Endangered Ecosystems from the Washington Natural Heritage Program WNHP (Current and Historic) Data Set (September 2005). In designing the WNHP Data Set, Washington Natural Heritage Program sought to license and distribute a GIS data set for use in land use planning and management. In order to balance the interests of data users with species protection, the precise locations of rare plant populations are not included. These locations are instead represented by 'areas-of-concern'. Occurrences of species considered critically imperiled are generalized as larger areas-of-concern polygons. Some known element occurrences have been completely removed from this data set before distribution because information on these elements is considered sensitive at this time. For more information visit the WNHP website at: www.dnr.wa.gov/nhp.

19. ESA-listed bull trout population delineations (termed by USFWS as a DPS, or Distinct Population Segment) were obtained from the following 1:100,000 scale StreamNet data layer: sp1498_Bulltrout_Icc. Similar information can be viewed in the Federal Register publication of the USFWS, 50 CFR Part 17, "Endangered and Threatened Wildlife Plants; Designation of Critical Habitat for the Bull Trout; Final Rule" September 26, 2005; page 56267: http://www.fws.gov/pacific/bulltrout/final/pdf/Bull%20Trout%20CH%20FR%20notice.pdf .

20. ESA-listed salmon and steelhead population delineations (termed by NMFS as an ESU, or Evolutionary Significant Unit) were obtained from data layers compiled by a GIS group from the Bonneville Power Administration, using written descriptions in National Marine Fisheries Service (NMFS) status reviews and mapping provided by NMFS. Drainage basin delineation and upstream barriers were based on 1:100,000 stream hydrography and available digital topography (1:250,000). General ESU maps can be found at the NMFS website: http://www.nwr.noaa.gov/ESA-Salmon-Listings/Salmon-Populations/Maps/ .

21. Performance Results System (PRS) data was extracted from PRS reports by year, conservation systems, and practices by Hydrologic Unit Code (HUC) and Farm Bill Program. HUC level reports were not available where NA is listed. For additional information and other performance reports visit http://ias.sc.egov.usda.gov/prshome/ .

Footnotes and Bibliographies

22. Ag Census data is from the National Agricultural Statistics Service (NASS) Website. For more information on individual census queries visit the NASS website at http://www.nass.usda.gov/. HUC specifica data was derived from the 2002 Agricultural Census and adjusted by percent of zip code area/county in the HUC.

23. Population ethnicity data were extracted from the Census 2000 Summary File 3 compiled by the U.S. Census Bureau for Yakima County and Washington State. For more information on census data and definitions visit: http://www.census.gov/Press-Re¬ lease/www/2002/sumfile3.html.

24. Urban population and median household income data were derived from the American FactFinder assembled by the U.S. Census Bureau. American FactFinder is a quick source for population, housing, income and geographic data. For other census items and trends visit http://factfinder.census.gov/home/saff/main.html?_lan .

25. Washington Department of Ecology website: http://www.ecy.wa.gov . Publications listed by a Watershed Resource Inventory Area, WRIA 38, Naches