Kittitas County Voluntary Stewardship Program

Approved Work Plan

May 2018

ANCHOR QEA

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Approved Work Plan

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ABBREVIATIONS

ALEA	Aquatic Lands Enhancement Account
CAO	Critical Areas Ordinance
CARA	critical aquifer recharge area
County	Kittitas County
CPPE	Conservation Practices Physical Effects
CRP	Conservation Reserve Program
FEMA	Federal Emergency Management Agency
FFA	frequently flooded area
FSA	Farm Service Agency
GHA	geologically hazardous areas
GMA	Growth Management Act
HCA	fish and wildlife habitat conservation areas
KCCD	Kittitas County Conservation District
KRD	Kittitas Reclamation District
NRCS	Natural Resources Conservation Services
NRI	Natural Resources Inventory
PHS	Priority Habitat and Species
PIT	passive integrated transponder
RCW	Revised Code of Washington
TMDL	Total Maximum Daily Load
USDA	U.S. Department of Agriculture
USGS	U.S. Geological Survey
VSP	Voluntary Stewardship Program
Watershed Group	Kittitas County VSP Watershed Group
Work Plan	Kittitas County VSP Work Plan
WRIA	Water Resource Inventory Area
WSCC	Washington State Conservation Commission
Yakima Basin Integrated Plan	Yakima River Basin Integrated Water Resource Management Plan
YTAHP	Yakima Tributary Access and Habitat Program

1 Introduction

1.1 Voluntary Stewardship Program Overview

The Washington State Growth Management Act (GMA) was adopted by the Washington State Legislature in 1990. The GMA requires citizens, communities, local governments, and the private sector to cooperate and coordinate in comprehensive land-use planning. The GMA requires county and local governments to adopt development regulations that protect critical areas.

Prior to 2011, agricultural activities were exempt from critical areas protection regulations under the GMA. In 2011, the Legislature amended the GMA with the intent to protect and voluntarily enhance critical areas in places where agricultural activities are conducted, while maintaining and enhancing the long-term viability of agriculture. This amendment established the Voluntary Stewardship Program (VSP), a new, non-regulatory, and incentive-based approach that balances the protection of critical areas on agricultural lands while promoting agricultural viability, as an alternative to managing agricultural activities in Kittitas County (County) under the Critical Areas Ordinance (CAO). VSP is not a replacement for compliance with other local, state, or federal laws and regulations, but participation in VSP will help to show how much effort the

Critical Areas per RCW 36.70A.020(5) Include:

- Wetlands
- Fish and wildlife habitat conservation areas
- Critical aquifer recharge areas
- Geologically hazardous areas
- Frequently flooded areas

Under VSP, critical areas on lands where agricultural activities are conducted are managed under this voluntary program. Lands used for non-agricultural purposes are regulated under Kittitas County's CAO.

County's agricultural producers are investing in meeting these requirements and to document the benefits of these efforts in protecting and enhancing critical area functions and values (Figure 1-1).

Figure 1-1
Balanced Approach of Critical Areas Protection and Agricultural Viability

VSP presents a unique opportunity to address an important environmental topic that has been a source of controversy in recent decades—how to protect critical areas on agricultural lands while keeping agriculture economically viable (Schultz and Vancil 2016).

Opting into VSP
In 2012, the Board of County Commissioners of Kittitas County passed a resolution to "opt-into" the VSP as an alternative to the traditional regulatory approaches to protecting critical areas on lands where agricultural activities are conducted.

What are considered "agricultural activities" under VSP?
VSP applies to lands where agricultural activities are conducted, as defined in RCW 90.58.065.
Agricultural activities mean agricultural uses and practices including, but not limited to:

- Producing, breeding, or increasing agricultural products, including livestock
- Rotating and changing agricultural crops
- Allowing land used for agricultural activities to lie fallow in which it is plowed and tilled but left unseeded
- Allowing land used for agricultural activities to lie dormant as a result of adverse agricultural market conditions
- Allowing land used for agricultural activities to lie dormant because the land is enrolled in a local, state, or federal conservation program, or the land is subject to a conservation easement
- Conducting agricultural operations
- Maintaining, repairing, and replacing agricultural equipment; maintaining, repairing, and replacing agricultural facilities, provided the replacement facility is no closer to the shoreline than the original facility
- Maintaining agricultural lands under production or cultivation.

1.2 Work Plan Elements

The guiding document for the VSP is this Kittitas County VSP Work Plan (Work Plan), the goal of which is to protect critical areas while maintaining the viability of agriculture in the County. The Work Plan was developed by the Kittitas County VSP Watershed Group (Watershed Group), convened by the County and comprised of agricultural producers, local government elected officials and staff, agency representatives, the Yakama Nation, and interest groups.

1.2.1 Work Plan Goals

One of the main goals of the Work Plan is to identify stewardship practices that are implemented under existing programs or voluntarily implemented through producer-funded practices and identify goals and benchmarks for continued protection and enhancement of the County's critical area functions and values.

Producer participation is a key component of Work Plan implementation and program success. **Failure of the Work Plan in meeting protection goals will trigger a regulatory approach to protecting critical areas under the GMA,** such as applying buffers and setbacks along streams or wetlands. Additionally, the regulatory approach for protecting critical areas on agricultural lands would not have the equally important VSP goal of maintaining and enhancing agricultural viability. Neither would it necessarily encourage outreach or technical assistance for agricultural operators. Therefore, producer participation will be encouraged as a central component of the Work Plan, through new and continued implementation of stewardship strategies and practices, to help ensure the success of VSP and protect agricultural viability.

Stewardship Practices

Examples of practices that protect critical area functions and values and promoting agricultural viability include:

- Irrigation water management
- Managed grazing
- Nutrient Management

See the **Self-Assessment Checklist** for additional examples of voluntary stewardship practices, and resources for additional information and potential incentive funding.

Agricultural field in Kittitas County

Producer participation is a key component of Work Plan implementation and success of the program. The Watershed Group developed a *Kittitas County VSP Overview and Checklist* to provide a summary overview of VSP and the Work Plan, including frequently asked questions and a Self-Assessment Checklist, as an outreach and implementation tool to help assess how the VSP could apply to individual agricultural producer's lands. The Self-Assessment Checklist includes additional examples of stewardship practices that protect and enhance critical areas and promote agricultural viability.

1.2.2 Work Plan Organization

This Work Plan, including its appendices, includes detailed information intended to fulfill the state requirements outlined under the Revised Code of Washington (RCW) 36.70A.720(1)(a through l), which requires Work Plans to include critical area protection and enhancement goals with measurable benchmarks, and an implementation, reporting, and tracking framework.

Kittitas VSP Work Plan Organization

- **Section 1 – Introduction:** Background on VSP regulation and how it applies to the County
- **Section 2 – Kittitas County Regional Setting:** Overview of County conditions, including description of critical areas
- **Section 3 – Baseline and Existing Conditions:** Description of county-wide critical areas presence and functions and values as of 2011
- **Section 4 – Protection and Enhancement Strategies:** Description of currently implemented stewardship practices that protect and enhance critical areas functions and values
- **Section 5 – Goals, Benchmarks, and Adaptive Management:** Description of VSP goals for critical area protection and enhancements, measurable benchmarks, and indicators and methods for adaptive management
- **Section 6 – Implementation:** Detailed plan outlining implementation of VSP actions by the VSP Lead
- **Appendices:** The following documents are included in the appendices as part of this Work Plan:
    - Appendix A: Self-Assessment Checklist
    - Appendix B: Baseline Conditions Summary (B-1 through B-6)
    - Appendix C: Benchmarks – Methods and Initial Results
    - Appendix D: Existing and Related Plans, Programs, and Regulations
    - Appendix E: Kittitas County Outreach Plan

1.3 Work Plan Development – Roles and Responsibilities

RCW 36.70A.705 identifies roles and responsibilities for state agencies, counties, and VSP watershed groups. Table 1-1 provides a summary of these roles and responsibilities, adapted to the Work Plan development process. Administrative, technical, and collaborative roles and responsibilities are included in the Work Plan development process spanning state, county, and local levels. Kittitas County designated the Kittitas County Conservation District (KCCD) to manage and facilitate the VSP process. The KCCD, under direction of the Watershed Group and supported by Anchor QEA, led the development of the Work Plan for Kittitas County. The Work Plan was developed through a series of

18 Watershed Group meetings and 3 Technical Committee meetings, beginning on March 9, 2016 through February 15, 2018 (see Appendix E for full list). Meeting agenda and materials were emailed to Watershed Group members and the VSP interested parties/contact list including tribes for all Watershed Group meetings and posted on the VSP webpage on the KCCD's website[1]. Additional outreach was conducted to seek input from agencies and stakeholders through community meetings, newsletters, individual meetings, and other methods as described the Kittitas County VSP Outreach Plan (Appendix E).

Implementation roles and responsibilities for the Work Plan are further described in Section 6.

Table 1-1
VSP Roles and Responsibilities for Plan Development

State – Approval and Administration	
WSCC	Administers VSP statewide; approves/rejects locally developed work plans
VSP Technical Panel [1]	Provides technical guidance and assistance, reviews draft work plans, makes recommendations on whether to approve or reject the work plan
VSP Statewide Advisory Committee [2]	Works with the WSCC to revise rejected draft work plans
Local – Administration and Work Plan Development	
Kittitas County	Administers VSP funding and grants for work plan development
Kittitas County VSP Watershed Group	Develops and proposes a work plan for approval by WSCC
Kittitas County Conservation District	Provides technical information to support work plan development and manages and facilitates the VSP process
Other Technical Providers	Provides technical input during work plan development
Agricultural Producers – Outreach Focus	
Landowners/Operators/Others	Provide input to the draft work plan

Notes:

1. The VSP Technical Panel members include representatives from Washington State Department of Ecology, Washington Department of Fish and Wildlife, Washington State Department of Agriculture, and the WSCC.
2. The Committee includes two representatives each from environmental interests, agriculture, and counties; two tribal representatives are also invited to participate.

[1] VSP materials can be found at http://www.kccd.net/VoluntaryStewardship.htm

2 Kittitas County Regional Setting

2.1 Kittitas County Profile

Kittitas County is located in central Washington and bound by the Cascade Mountains to the west and the Columbia River to the east. **More than 70% of the County is publicly owned.** Approximately two thirds of the public lands are managed by federal agencies including the U.S. Forest Service (Okanogan-Wenatchee National Forest) and the U.S. Army (Yakima Training Center). The remaining one third of publicly owned land is split primarily between the Washington Department of Natural Resources and Washington Department of Fish and Wildlife. Private lands are highly influenced by the availability of irrigation water in Kittitas County. Like the rest of the Yakima River watershed, irrigation infrastructure including reservoirs and delivery systems, maintained by the U.S. Bureau of Reclamation, irrigation districts, and companies, provide water to agricultural lands allowing for significant crop production. Additionally, private lands are influenced by significant winds, especially in the Kittitas Valley.

This section provides a County profile description for the following items:

- Water resources and precipitation
- Soils and terrain
- Land ownership
- Land use and landcover

2.1.1 Water Resources

The County includes portions of three watersheds, which are known as Water Resource Inventory Areas (WRIAs). Most of the County is within the Upper Yakima (WRIA 39), which drains into the Yakima River, and a small portion of the eastern County is in the Alkali-Squilchuck (WRIA 40), which drains into the Columbia River. Additionally, a small portion of the County is within the Naches (WRIA 38); however, this watershed was not designated by the County to be within the VSP because it is nearly all publicly owned with no known agricultural practices (Figure 2-1).

Yakima River Basin Integrated Water Resource Management Plan

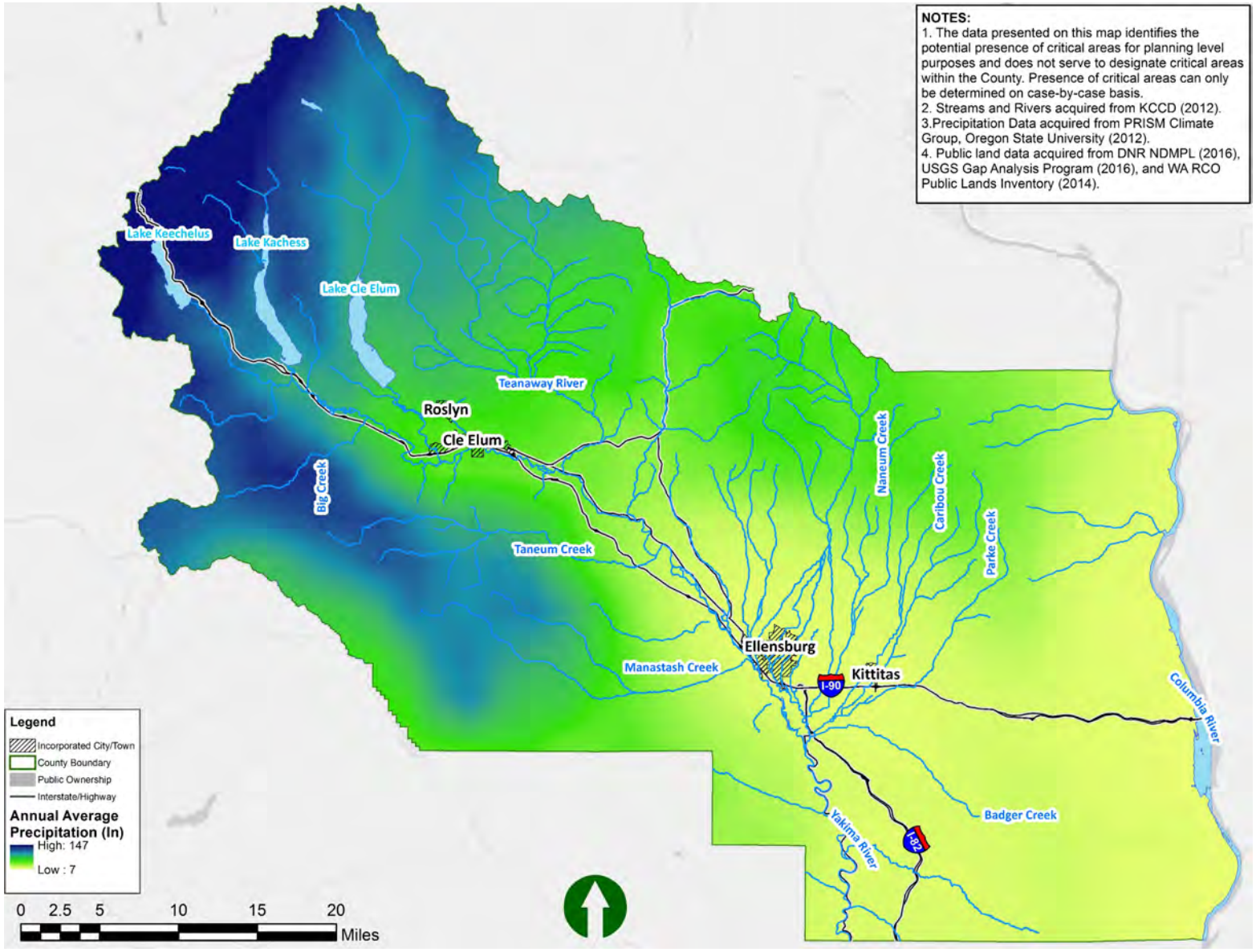
The Yakima Basin Integrated Plan was created in response to the lack of capacity for the Yakima River to support the demands for fish and wildlife habitat, irrigation, and municipal water. The Yakima Basin Integrated Plan addresses these issues through installation of fish passage at existing reservoirs, funding of habitat protections and enhancements, structural water storage modifications, and water conservation efforts.

These actions will act to ensure a stable supply of irrigation water into the future which is a crucial component of agricultural viability. Additionally, efforts to reduce agricultural water use and installation of habitat protection and enhancement projects will have a dual benefit with goals and benchmarks of the Kittitas VSP Work Plan.

Lake Cle Elum Dam

Water available for irrigation in the Yakima River watershed has been confirmed through the State's largest stream adjudication. The historic determining and confirming all surface water rights in the Yakima River Basin will soon be final (Ecology 2017a). Under the threat of drought in 1977, the Washington State Department of Ecology filed a petition for an adjudication to determine the legality of all claims for use of surface water in the Yakima River Basin. Adjudication is a legal process to determine who has a valid water right, how much water can be used, and who has priority during shortages. The resulting court case began a thorough and binding review of all historical facts and evidence associated with each claim for rights to surface water use in the basin, including Kittitas, Yakima, Benton, and parts of Klickitat counties.

In 2017, a Yakima Superior Court judge proposed the final decree which included a draft schedule of rights set to be confirmed. Evidence has been provided to support nearly 2,500 water rights in 31 sub-basins (tributary watersheds) for individuals and about 30 major claimants, including irrigation districts, cities, federal projects (U.S. Bureau of Reclamation and U.S. Forest Service) and the Yakama Nation. Of that total, over 1,100 water rights in 13 sub-basins were addressed in Kittitas County (Ecology 2017a). These water rights are primarily for the purposes of irrigation and stockwater.



Source: Kittitas County Conservation District

Figure 2-1
Water Resources and Precipitation in Kittitas County

Work Plan
Kittitas County Voluntary Stewardship Program

Precipitation ranges from 7 inches of annual precipitation in the eastern portion of the County to 129 inches in the western portion of the County (Figure 2-1). Most of the agriculture that occurs within the County is located in areas that receive between 7 inches and 42 inches of precipitation per year (Figure 2-1).

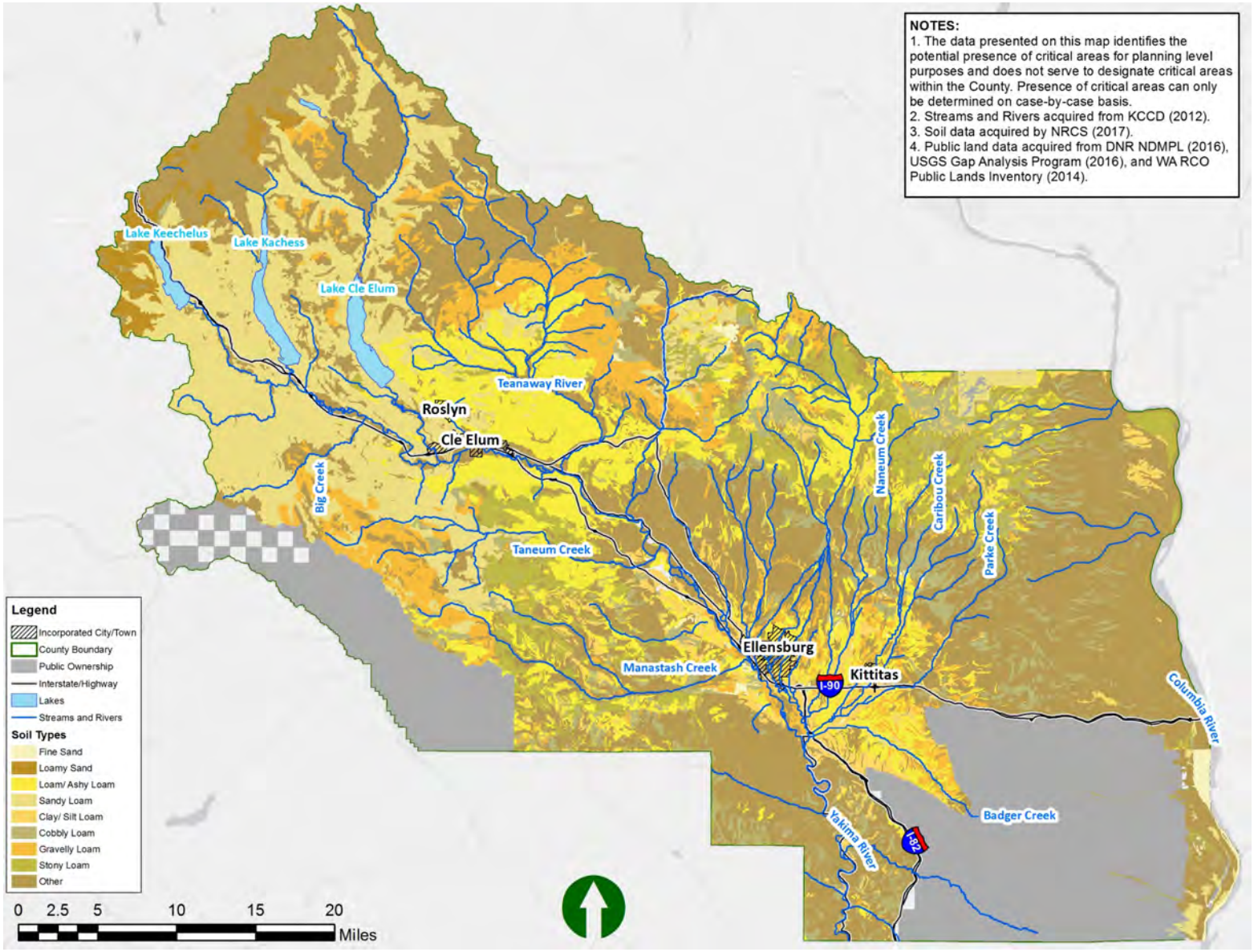
2.1.2 Terrain and Soils

Three distinct regions are found in the County which include the Cascades, Eastern Cascades Slopes and Foothills, and Columbia Plateau. The Cascade region is located in the western portion of the County and is characterized by glaciated valleys and high peaks. The Cascade region is mainly forested and within the Okanogan-Wenatchee National Forest. The Eastern Cascades Slopes and Foothills region comprises the majority of the central portion of the County and is characterized by open forests, mainly ponderosa pine. The Columbia Plateau region is located to the east of the Eastern Cascades Slopes and Foothills and is characterized as the Yakima River Valley and the Columbia River Valley. Much of the area in the Yakima River Valley has been converted to irrigated agriculture. Shrub-steppe habitat is also prominent within the Columbia Plateau region.

Soils in the mountainous areas in the County are characterized as basalt and glacial deposits. These soils are eroded and deposited in the Yakima River Valley as alluvium. Upland of the Columbia River, basalt forms steep talus slopes with large particle sizes (ranging from sand to boulders). The shoreline of the Columbia River is characterized by natural alluvium and sand dunes, but some areas have been modified by riprap and artificial fill (Kittitas County et al. 2013).

2.1.3 Land Ownership

A large portion of the County is publicly owned (72%) and therefore not included in the VSP. Much of the publicly-owned land is managed by the U.S. Forest Service and includes the Okanogan-Wenatchee National Forest, Snoqualmie National Forest, and Alpine Lakes Wilderness (31% of the County). Additionally, the Department of Defense manages 10% of the County as the U.S. Army Yakima Training Center located in the southeast portion of the County. Only approximately half of this 327,000-acre military installation is in Kittitas County, with the other half in Yakima County. State owned lands (28% of the County) are managed primarily by the Washington Department of Fish and Wildlife and Washington Department of Natural Resources and include the Teanaway Community Forest, Naneum Ridge State Forest, Colockum Wildlife Area, and LT Murray Wildlife Area. **Privately-held land comprises only 28% of the land base in Kittitas County**, which includes a mixture of rural development, agriculture, and commercial forestry (Kittitas County et al. 2013).



Source: Kittitas County Conservation District

Figure 2-2
Soil Types in Kittitas County

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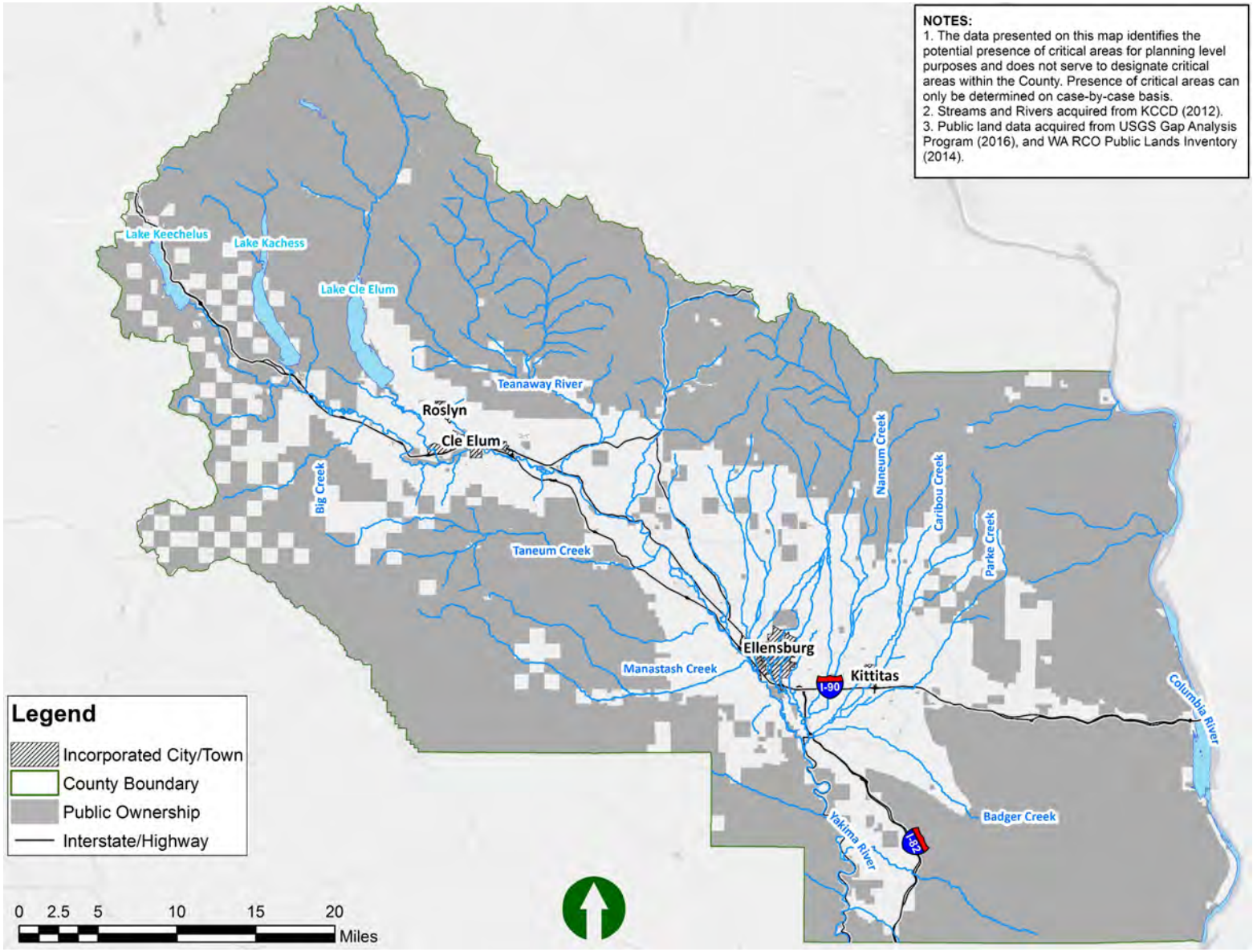
Kittitas County Voluntary Stewardship Program



Source: Kittitas County Conservation District

Figure 2-3
Land Ownership in Kittitas County

Work Plan
Kittitas County Voluntary Stewardship Program

2.1.4 Agricultural Land Use and Landcover

Agriculture on privately-owned lands comprises approximately 13% of the County's landcover, which is generally associated with one of these four categories: 1) irrigated crops and pasture; 2) dryland crops; 3) orchards and vineyards; and 4) rangelands (Table 2-1, Figure 2-4).

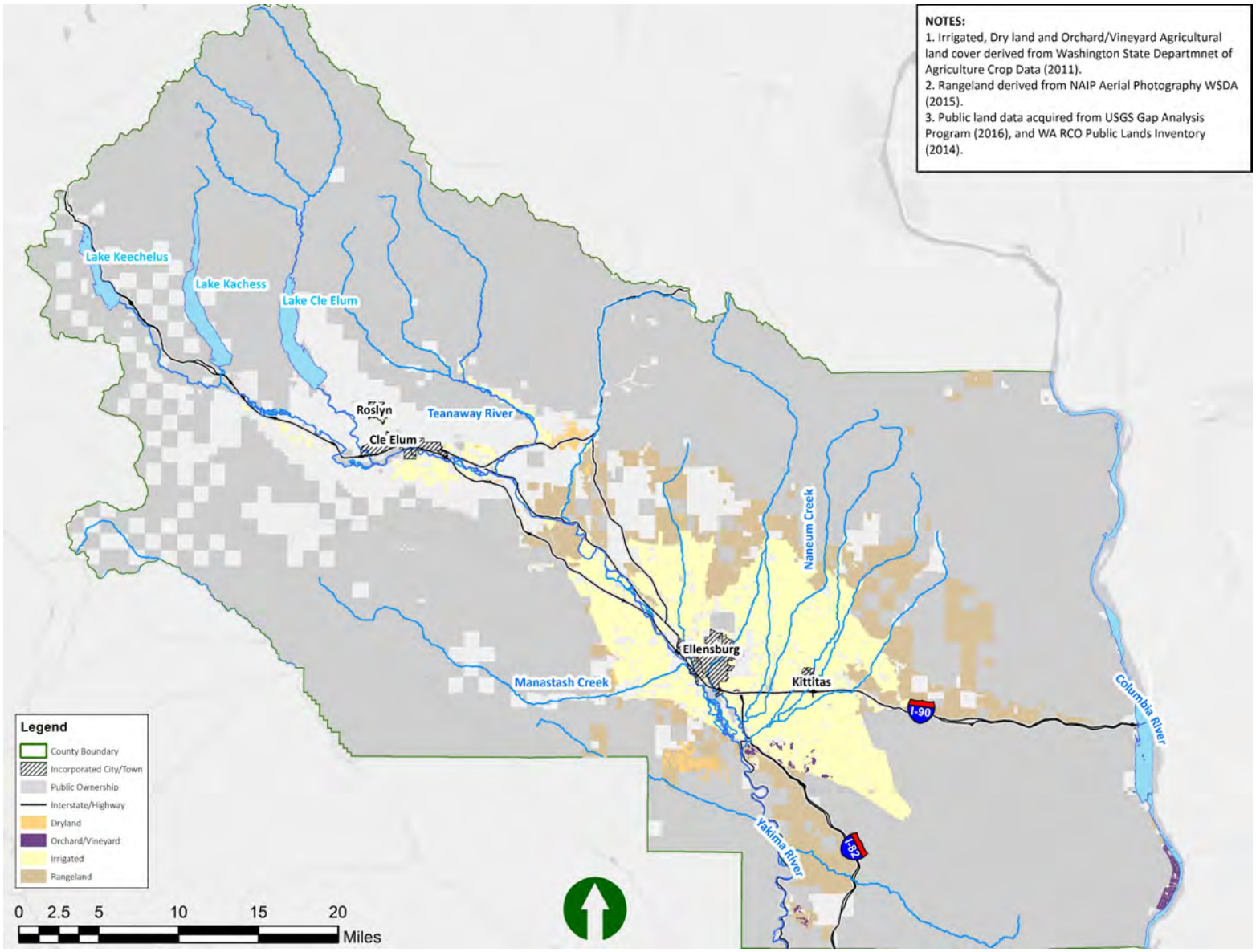
Table 2-1
Agricultural Landcover Summary

Landcover		Acres	Percent of County
Total Area in County[1]		1,494,400	
Agricultural Landcover[2]		228,128	15.3%
Irrigated	Cropland	76,537	5.1%
	Pasture	22,440	1.5%
Orchard/Vineyard		3,265	<1%
Dryland		3,463	<1%
Rangeland	Shrub-Steppe	83,461	5.6%
	Forested	38,962	2.6%

Note:
1. Includes all lands in Kittitas County, including Urban Growth Areas and incorporated areas
2. Privately-owned agricultural lands data methods are described in Appendix B-1

Types of Rangeland in Kittitas County

Rangelands are areas that are primarily kept in a natural or semi-natural state to facilitate grazing of livestock. These areas are essential for production of livestock, but also provide value to many wildlife species by preventing conversion to more intensive land uses. In Kittitas County, there are two types of rangeland practices, forested rangeland and shrub-steppe rangeland. Forested rangeland occurs mostly in the foothills of the Cascade Mountains and is characterized by livestock that graze on vegetation underneath forest. Grazing in these areas often has the additional benefit of reducing fuel for forest fires. Shrub-steppe rangelands are located on the Columbia Plateau and often overlap with shrub-steppe habitat. Stewardship practices on these rangelands aim to support vegetation growth, maintain healthy soils, and reduce fuels for wildland fires. These actions help protect critical areas functions and values and maintain agricultural viability.



Source: Kittitas County Conservation District

Figure 2-4
Agricultural Land Cover in Kittitas County

2.2 Agricultural Activities

Agriculture is the major land use in the County. The Work Plan's goals and measurable benchmarks for voluntary landowner participation apply to agricultural producers on privately-owned land in unincorporated areas of the County, which comprise approximately 13% of the County's lands.

Kittitas County has highly productive irrigated agricultural lands due to the water supply from the upper Yakima River watershed, favorable climate (including prevailing winds), and highly productive soils. Private agricultural crop and pasture lands can be split into three categories, irrigated, dryland, and orchard/vineyard crops. Irrigated crop and pasture comprise 6.5% of the County, and both dryland crops and orchard and vineyard areas comprise less than 1% of the County respectively. Kittitas County crop lands produce approximately 68% of the value of products sold in the County (USDA 2012). Rangelands account for 6.4% of County land, and County-wide livestock sales account for approximately 32% of the value of products sold (USDA 2012).

According to the U.S. Department of Agriculture's (USDA) Census of Agriculture (2012), Kittitas County produces approximately $68 million in market value from agricultural products statewide. See Table 2-2 for summary of agricultural landcover and major agricultural products within the County. There are approximately 1,000 farms in the County that vary in size ranging from relatively small, with agricultural product sales of less than $1,000, to large, with agricultural product sales of greater than $500,000. A majority of County farms are small (Table 2-3).

Table 2-2
Agricultural Activity and Products

Agricultural Type	% of Agriculture in County	Primary Crops/Livestock	
Irrigated	50%	• Hay • Small grains	• Vegetables • Seed crops • Livestock
Dryland	<1%	• Wheat • CRP	
Orchards/ Vineyards	<1%	• Tree fruit (e.g., apples) • Vineyards	
Rangeland	49%	• Cattle • Sheep	
Total	**100%***		

Notes:
* Agricultural lands cover approximately 13% of the County.
Sources: WSDA Agricultural Landcover Data 2011; USDA 2012; Kittitas County 2017

Table 2-3
Size of Farms in Kittitas County Based on Agricultural Product Sales

Farm Agricultural Product Sales (Dollars)	% of Farms
Less than 1,000	32%
1,000 to 10,000	32%
10,000 to 100,000	23%
100,000 to 250,000	6%
250,000 to 500,000	3%
Greater than 500,000	4%

2.3 Critical Areas

2.3.1 Critical Areas Definitions

The five critical areas that are specifically defined under the GMA (RCW 36.70A.030) include: 1) wetlands; 2) fish and wildlife habitat conservation areas (HCAs); 3) critical aquifer recharge areas (CARAs); 4) geologically hazardous areas (GHAs); and 5) frequently flooded areas (FFAs). Critical areas perform key environmental functions (e.g., water quality and fish and wildlife habitat) and provide protections from hazards (e.g., flood, erosion, or landslide hazards). The development of this Work Plan, coincides with Kittitas County's process to update the CAO. The current draft CAO (November 2014) includes identification and designation criteria for these five critical areas, which are summarized below and included in Appendix B-3. The plan is consistent with both the existing and current draft CAO.

Major Resource Concern

Water availability is a major concern in Kittitas County. In some years the demand for irrigation water exceeds the supply resulting in prorationing for proratable, or junior, water right holders. This means that the amount of water delivered to junior water right holders is equally reduced based on the total water available. Stewardship practices that reduce the overall water consumption benefit the farmers that rely on irrigation water while increasing the amount of water available for fish and wildlife.

Sprinkler Irrigation

Wetlands

Wetlands are areas inundated or saturated by surface water or groundwater for at least part of the growing season and support vegetation adapted for life in saturated soil conditions.

Some irrigation-influenced artificial wetlands may be exempt from this designation (see Washington State Department of Ecology guidance[2]).

Functions: Water quality, hydrology, and habitat

Fish and Wildlife Habitat Conservation Areas (HCAs)

HCAs are lands and waters that provide habitat to support fish and wildlife species throughout their life stages. These include ranges and habitat elements where endangered, threatened, and sensitive species may be found, and areas that serve a critical role in sustaining needed habitats and species for the functional integrity of the ecosystem, and which, if altered, may reduce the likelihood that the species will persist over the long term. HCAs do not include man-made irrigation ditches or canals.

Functions: Water quality, hydrology, soil, and habitat

Critical Aquifer Recharge Areas (CARAs)

CARAs are areas that have a critical recharging effect on aquifers used for drinking water, including aquifers vulnerable to contamination or that could reduce supply by reducing recharge rates and water availability. There are currently no CARAs designated in Kittitas County; however, they are included in the current draft CAO, therefore, will be designated when the updated CAO is adopted. The functions and values that CARAs provide will be addressed in this Work Plan.

Functions: Water quality and hydrology

Geologically Hazardous Areas (GHAs)

GHAs are areas susceptible to erosion, sliding, and other geological events, such as channel migration. In the draft CAO for Kittitas County, GHAs are designated to protect structures as well as minimize impacts to water quality and fish and wildlife. Steep slopes and erosion hazards are discussed under GHA in this VSP due to their potential impacts to water quality and fish and wildlife habitat, which are critical area functions.

Functions: Water quality, hydrology, soil, and habitat

[2] Washington State Department of Ecology guidance on irrigation influenced wetlands available at https://fortress.wa.gov/ecy/publications/documents/1006015.pdf.

Frequently Flooded Areas (FFAs)

FFAs include 100-year floodplains, floodways, and channel migration zones, and often include the low-lying areas adjacent to rivers and lakes that are prone to inundation during heavy rains and snowmelt.

Functions: Water quality, hydrology, soil, and habitat

2.3.2 Critical Areas Functions and Values

VSP legislation requires that work plans develop goals and benchmarks to protect and enhance critical area **functions and values** (RCW 36.70A.720(1)(e)). The key functions and values provided by the five critical areas in the County can be summarized into four major functions, which include: 1) water quality, 2) hydrology, 3) soil, and 4) habitat (Figure 2-1). Each critical area provides one or more of these key functions and values (Table 2-4). This section provides an overview of the functions and values and Section 3 will further describe the relationship between critical areas and their functions and values.

Table 2-4
Critical Areas Functions

Critical Areas	Key Functions			
	Water Quality	Hydrology	Soil Function	Habitat
Wetlands	●	●		●
Fish and Wildlife Habitat Conservation Areas	●	●	●	●
Critical Aquifer Recharge Areas	●	●		
Geologically Hazardous Areas (Erosion)	●	●	●	●
Frequently Flooded Areas	●	●	●	●

Water Quality

Critical areas, such as stream channels, riparian areas, and wetlands, are part of the aquatic ecosystem which filters and retains excess fine sediments and cycles out excessive nutrients (such as phosphorus and nitrogen) and other pollutants. These functions provide the clean water that is essential for supporting habitat for fish and other aquatic species. Functioning critical areas also help moderate water temperatures by providing vegetative shade and cooler water from recharged

groundwater, which helps maintain cooler in-water temperatures and dissolved oxygen levels needed to support aquatic species.

Hydrology

Hydrology is the process of water delivery, movement, and storage. In an ecosystem, hydrology is affected by landform, geology, soil characteristics and moisture content, and climate (including precipitation). Water is delivered to streams primarily from surface and shallow subsurface runoff and, in some cases, from groundwater. Stream channels, riparian areas, and wetlands are also a part of the aquatic ecosystem that stores and transports water and sediment, maintains base flows, and can support vegetation and microorganism communities.

Soil Function

Soil provides an underground living ecosystem, which is essential for preserving plants, animals, and human life. Soil conservation is essential in the County to support healthy soils that have the following characteristics:

- Reduce susceptibility to erosion
- Hold and slowly release water
- Filter pollutants and, in many cases, detoxify them
- Store, transform, and cycle nutrients
- Physically support plants

Fish and Wildlife Habitat

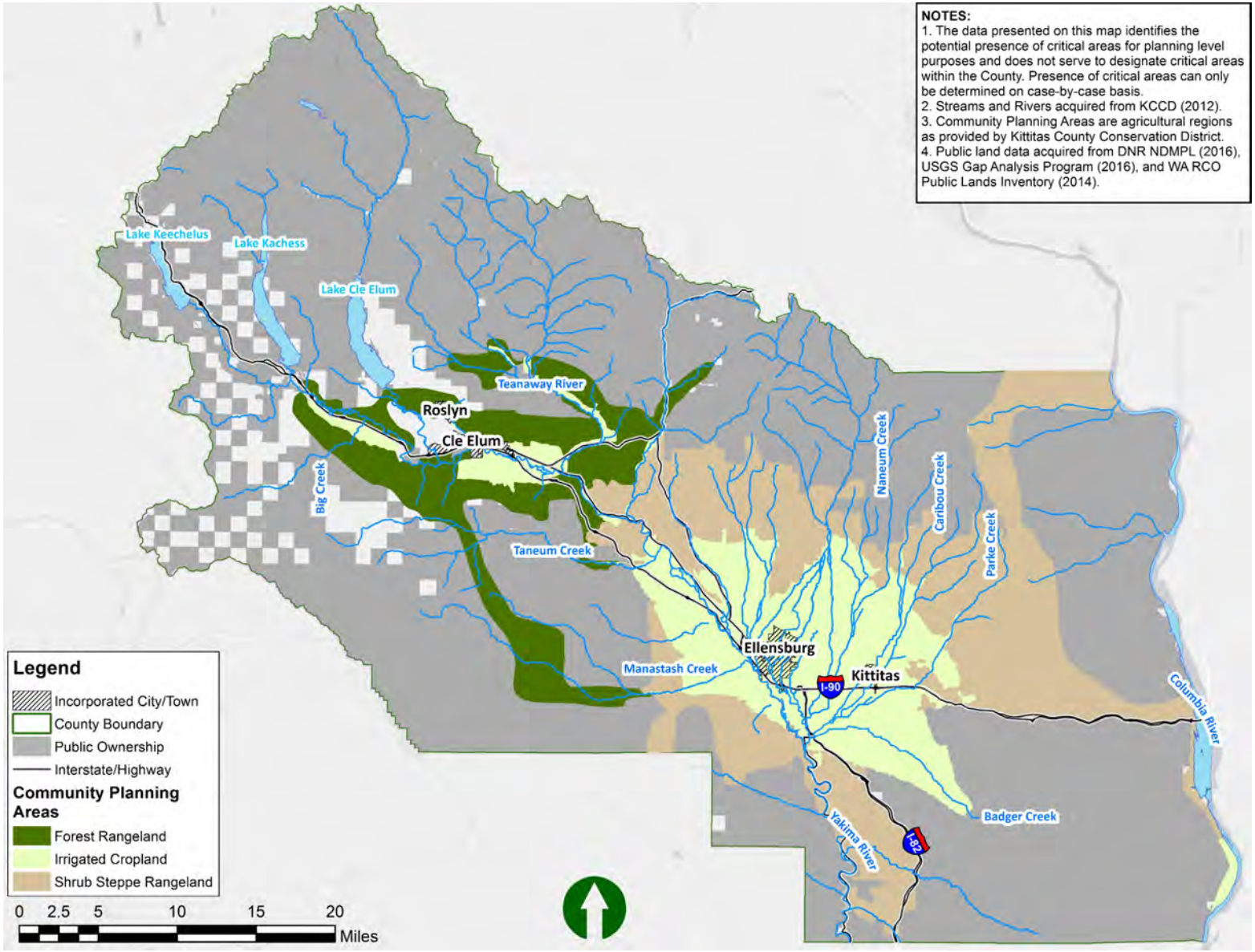
Critical areas only address habitat for fish and wildlife species. Habitats are the natural environment in which a particular species or population can live. The habitat requirements are unique for different species and can be unique for different life stages of a species. Habitat loss is the primary threat to the survival of many native species.

2.4 Community Planning Areas

For the purposes of the Work Plan, the Watershed Group identified three community planning areas within the County. These planning areas facilitate developing localized approaches during Work Plan implementation. Community Planning Areas were chosen instead of WRIAs for the purposes of focusing planning efforts on areas of similar agricultural types, which facilitates goal setting, outreach, and implementation. The boundaries of each Community Planning Area were determined based on the main type of agricultural operations within each area. Having Community Planning Areas with similar agricultural operations helps to focus efforts on stewardship practices specific to those operations during implementation. The Community Planning Areas are Kittitas Valley, Forest Upland, and Shrub-Steppe Upland (Figure 2-5). The agricultural activities conducted in each Community Area are summarized in Table 2-5.

Table 2-5
Agricultural Acres Within Each Community Planning Area

Agricultural Type		Kittitas Valley	Forested Upland	Shrub-Steppe Upland
Irrigated	Cropland	76,371	82	84
	Pasture	22,113	19	308
Orchard/Vineyard		1,942	0	1,323
Dryland		104	1,420	1,939
Rangeland	Shrub-Steppe	1,924	115	81,422
	Forested	891	32,950	5,121
Total		**103,345**	**34,586**	**90,197**



Source: Kittitas County Conservation District

Figure 2-5
Community Planning Areas

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3 Baseline and Existing Conditions

Establishing baseline conditions is necessary to measure changes in the critical areas functions and values protected under the VSP. The effective date of the VSP legislation, July 22, 2011, serves as the baseline date for accomplishing the following items (RCW 36.70A.700):

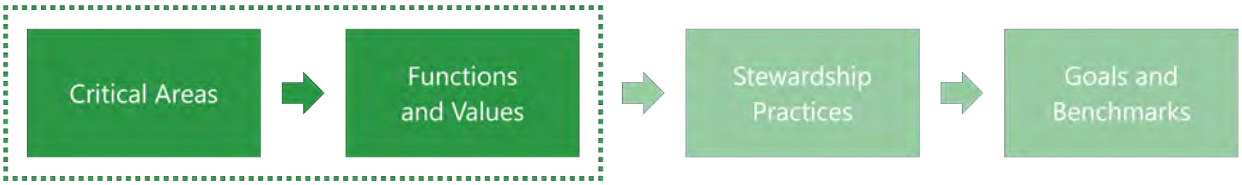
- Protecting critical area functions and values
- Providing incentive-based voluntary enhancements to critical area functions and values
- Maintaining and enhancing the viability of agriculture in the County

To be successful, this Work Plan must protect critical area functions and values as they existed on July 22, 2011, as described in this section. The 2011 baseline sets the conditions from which the County will measure progress in implementing the Work Plan and meeting measurable benchmarks (see Section 5). On agricultural lands, any improvement of critical area functions and values through stewardship strategies will be considered enhancement under VSP regulations.

It's important to note that changes to baseline conditions outside of VSP are likely to occur due to effects from climate change, natural events (e.g., wild fires), or other changes outside of the scope of VSP. These changes will be documented through the reporting and adaptive management process discussed in Sections 5 and 6.

Stewardship strategies and practices have been implemented since 2011 to improve agricultural productivity, reduce erosion, and improve water and soil quality and are discussed in Section 4. Both protection of baseline conditions, as described in this section, and improvements of critical area functions and values, as described in Section 4, direct the setting of goals and benchmarks, described in Section 5 (Figure 3-1).

Figure 3-1
Critical Areas Connection with Functions and Values



3.1 Baseline (2011) and Existing Conditions

The overlap between agricultural land use and critical areas generally accounts for only a small percentage of the total agricultural land in the County. However, critical areas provide benefit to the four functions and values beyond their physical locations. These functions and values are water quality, hydrology, soil function, and fish and wildlife habitat. County-wide, the portion of agricultural lands that physically intersects with critical areas is small (Table 3-1). However, areas that have the potential to affect critical area functions and values are more widespread and will be addressed in the goals and benchmarks.

Use of Maps and Data

The data sources and maps that were used to assess the potential presence of critical areas within the County and intersection with agricultural lands were used for planning-level purposes only. Actual critical areas presence is determined on a case-by-case basis. For more information on data used to establish baseline conditions see Appendix B-1.

Although protection of physical critical areas is important, protection of critical area functions and values means even producers without a defined critical area on their property can participate in VSP to help the County reach its goals. Both critical area locations within the County and their connection to critical area functions and values are described in this section.

Table 3-1
Critical Areas Within Kittitas County Agricultural Activities

Critical Area Type		Acres Within Agricultural Lands[1]	% of Total Agricultural Lands[1]
Wetlands (all types)		4,954	2%
Fish and Wildlife Habitat Conservation Areas[2] *(Also includes about 1,374 stream miles)*		114,772	50%
Critical Aquifer Recharge Area[3]		9	<1%
Geologically Hazardous Areas[4]	Hazard Slopes (25% to 50%)	35,983	16%
	Hazard Slopes (>50%)	4,603	2%
Frequently Flooded Areas		9,327	4%

Notes:

1. Agricultural areas included in this summary are limited to privately-owned lands. Publicly-owned land is not managed under VSPs.
2. These areas include sensitive, candidate, and threatened species and habitats mapped in Washington Department of Fish and Wildlife's PHS data and maps. Candidate species refer to those species with sufficient evidence to propose them as either threatened or endangered under either state or federal laws.
3. There are currently no designated Critical Aquifer Recharge Areas in Kittitas County. However, they will be designated in the updated CAO; therefore, this approximates areas that have the potential to affect aquifer recharge based on a 100-foot buffer on Group A and B wells.
4. There are currently no designated Geologically Hazardous Areas that pertain to agricultural lands in Kittitas County. However, they will be designated in the updated CAO; therefore, this approximates areas that have the potential to affect geologic hazards based on hazard slopes.

Climate Change

Climate change may cause impacts to critical areas functions and values such as changes to the peak and average stream temperature and the frequency and duration of floods and droughts. These types of impacts to critical areas functions and values would be considered a change in baseline conditions under the VSP since they are not attributed to changes in agricultural practices. However, stewardship practices implemented through VSP can help increase resilience to climate change impacts for both agricultural viability and critical areas functions and values. Changes in baseline conditions due to climate change will be reviewed and discussed in VSP reporting and adaptive management.

3.1.1 Wetlands

Characteristics and functions overview: Wetlands in Kittitas County provide a range of functions for water quality, hydrology, and fish and wildlife habitat. Wetlands are characterized as areas that are inundated with water and are surrounded by vegetation adapted to saturated soil conditions. Wetlands act to reduce siltation and erosion by catching particles in vegetation or allowing sediment to settle on the bottom. Filtration of water also occurs as water is filtered through wetland vegetation. Wetland vegetation also provides shade, which acts to moderate water temperature. Additionally, wetlands act as water storage which moderates flooding and contributes to base flow. Wetlands also provide aquatic and woody vegetated habitat for fish and wildlife. Non-native, weedy vegetation can hinder wetlands ability to provide these functions (particularly habitat functions) and

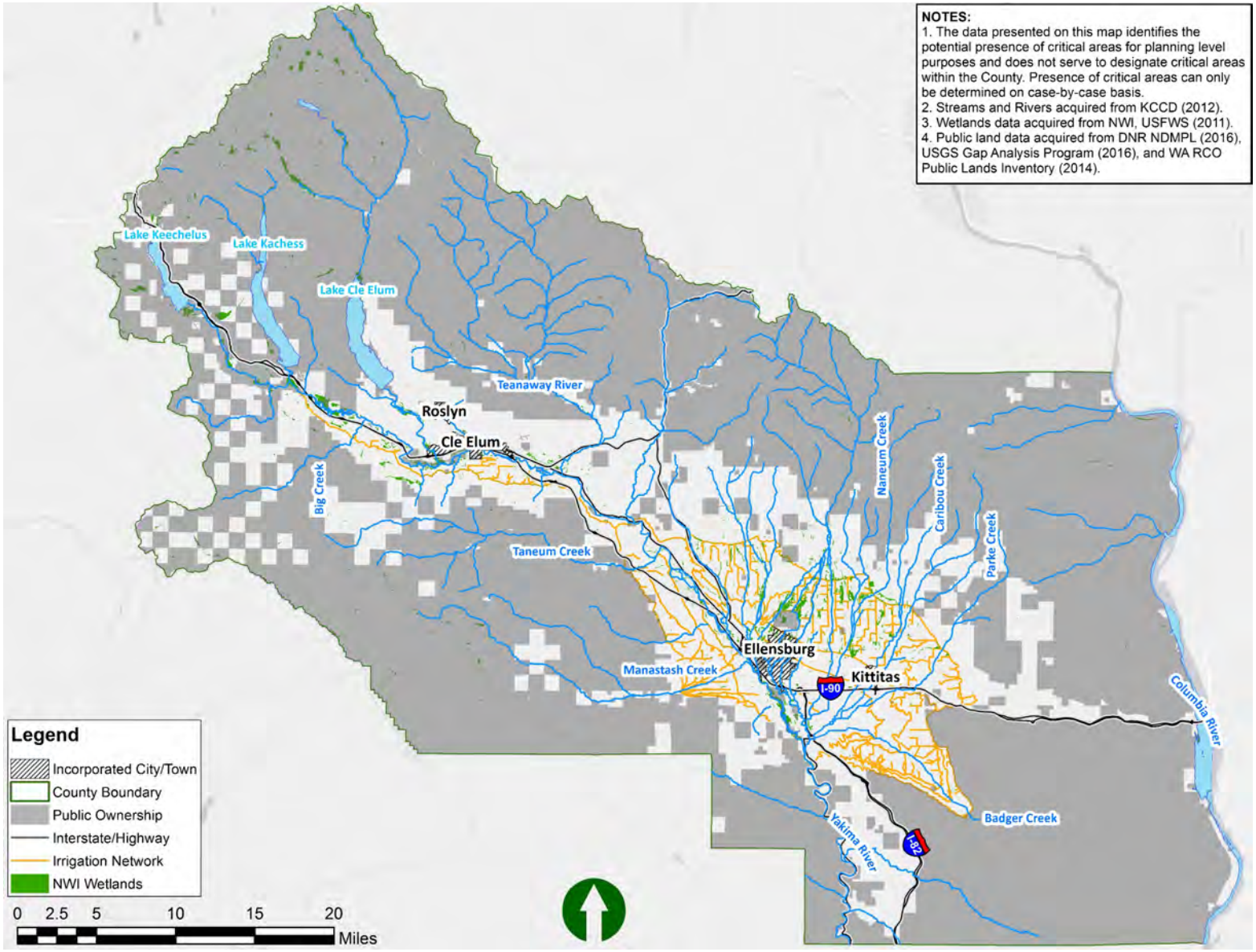
add to farm costs. Invasive vegetation, such as reed canary grass, can form a monoculture, reducing habitat complexity and increasing localized flooding.

Intersections on agricultural lands: In Kittitas County, wetlands are found within 2% of the County's total agricultural lands (Figure 3-2). These wetlands are concentrated near streams and waterways that are correlated with agricultural areas, meaning most wetlands in the County are associated with agricultural activities or large river floodplains. They are mostly associated with irrigated areas with only a small amount in rangelands. There are no mapped wetlands present in either drylands or orchard and vineyards. The extent of wetlands within the County are subject to ongoing water management practices, including water efficiency and stewardship practices for the delivery and use of water for irrigation, which will affect the volume and timing of surface water available to support some wetlands. Improving water management practices affects the size and number of wetlands and associated habitats within the County.

Wetlands on Agricultural Lands in Kittitas County	
General locations/ distribution	• Concentrated along the Yakima River and its tributaries. • Few wetlands along the Columbia River.
Characteristics	• Large freshwater emergent wetlands located in irrigated areas northeast of Ellensburg. • Freshwater forested/shrub wetlands are concentrated along rivers.

Irrigation-Influenced Wetlands

Irrigation directly and indirectly causes the formation of many of the wetlands within the County through water management actions and associated facilities. Many wetlands are considered unintentional wetlands, resulting from localized conditions such as seepage from irrigation ditches. These types of wetlands are considered wetlands regulated by state wetland law. Improving water management practices (such as implementation of water conservation practices), which is happening through projects and practices implemented in Kittitas County each year, affects the size and number of wetlands and associated habitats within the County. However, if the irrigation practices are changed (such as implementation of water conservation practices like sprinkler conversions or pipelines) and the wetland dries up and no longer performs wetland functions, then no mitigation is required (Ecology 2010).



Source: Kittitas County Conservation District

Figure 3-2
Distribution of Wetlands in Kittitas County

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3.1.2 Fish and Wildlife Habitat Conservation Areas

Characteristics and functions overview: HCAs include streams, riparian vegetation, and upland habitats that provide water quality, hydrology, soil, and fish and wildlife habitat functions. HCAs provide migration corridors; breeding and reproduction areas; forage, cover, and refugia space; and wintering habitat for wildlife species. Streams provide a key habitat, and streamside vegetation functions as a source of organic material, habitat structures and cover, streambank stabilization, and shade to help regulate water temperatures.

Habitats and Species in Kittitas County

In the County, habitats include wetlands, rivers, and streams that support aquatic and terrestrial species.

Common fish and wildlife species and habitats in Kittitas County include:

- Steelhead
- Bull trout
- Spring Chinook salmon
- Golden eagle
- Greater sage grouse
- Burrowing owl
- Grey wolf
- Elk and mule deer
- Various bats
- Biodiversity corridors and areas

Large HCAs provide for species that require large spaces or range for migration, forage, and cover. Habitats of local importance may support sensitive species throughout their lifecycle, or are areas that are of limited availability, or high vulnerability to alteration. HCAs (riparian areas and wetlands) also help improve water quality, affect hydrology, contribute to soil health, and provide a variety of habitats. Shrub-steppe habitats are an important feature in the County because they provide habitat for sage grouse, ground squirrel, and other birds. The typical vegetation in these communities are open sagebrush and shrub plains with understory grasses.

Agriculture practices impacted natural habitats by replacing them with an intensely managed landscape, and although agriculture lands can provide vast tracts of semi-natural habitat, species biodiversity is typically higher in the remnant natural areas in the County. It has been shown that farmers who provide greater landscape variability can provide meaningful benefit to many different species (Weibull et al. 2002). Farming practices provide a variety of habitat functions, including providing cover.

Streams and Riparian Areas

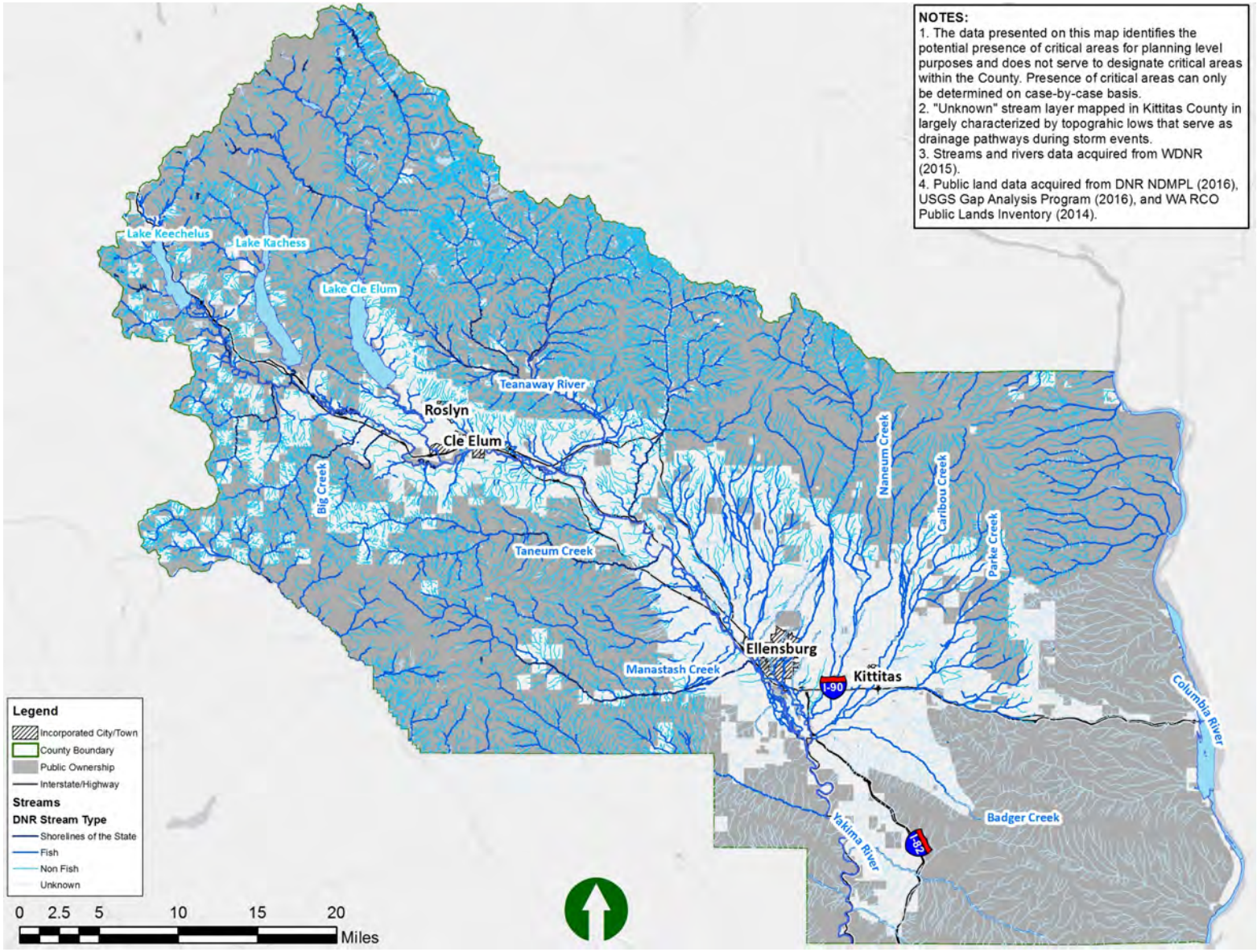
Intersections on agricultural lands: In Kittitas County there are two large river systems, the Yakima River and the Columbia River. There are 1,374 stream miles which flow across agricultural lands in the County. Known fish bearing streams make up 26% of these, 28% are not considered fish bearing and 46% are unconfirmed, possibly man-made canals, or do not meet the statutory definition of a stream (Figure 3-3). Many of these streams support fish species such as spring Chinook salmon, steelhead, and bull trout. Specifically, there are 26 miles of bull trout, 62 miles of summer steelhead, and 59 miles of spring Chinook salmon Priority Habitats and Species (PHS) mapped habitat that intersect with agricultural areas.

Some systems in the County have exceeded state standards for pollutants such as pH, dissolved oxygen, bacteria, and temperature (Ecology 2017b; see Appendix B-6 for full list). Most of the systems that exceed standards for pH and bacteria are small creeks and irrigation canals (e.g., Cascade Irrigation District Canal, KRD Main Canal, Manastash Creek). Agriculture can affect water quality through excess nutrients from fertilizers, bacteria from livestock and wildlife (e.g., fecal coliform), toxins from chemical inputs, and sediment from soil erosion. However, fertilizer, sediment, and toxin inputs are also associated with urban, paved, or turfed landscapes and septic systems and can contribute to fecal coliform issues. Additionally, agriculture preserves lands from more intensive development, such as high density residential development.

	Streams and Riparian on Agricultural Lands in Kittitas County
General locations/ distribution	**Streams:** See Section 2.1 for discussion of water resources within the County **Riparian vegetation:** • Vegetation associated with the interaction between water resources (streams and irrigation waterways) and upland vegetation • Typically associated with a specific vegetation composition that is different from upland vegetation • This vegetation has important functions for water quality, habitat, and hydrology
Characteristics	**Streams:** • Historically the Yakima River supported large quantities of anadromous salmon • Spring Chinook salmon, steelhead, coho salmon, sockeye, and lamprey spawn in the Yakima River and tributaries • Many streams, particularly in the Kittitas Valley, have an upside-down hydrograph with much higher than natural flows through the irrigation season and low flows in the fall and winter due to the volume of water being stored and conveyed into the sub-basins for irrigation. Additionally, water management can result in low flows in dry years, especially in the upper reaches. • Large woody debris has been removed from systems due to reduced conveyance and increased bank erosion from scour. **Riparian Vegetation:** • Provide important habitat for many species of birds and mammals • Forest riparian areas provide specialized habitat such as snag for woodpeckers and cavity nesting animals • Large woody debris is often removed from systems due to its interference with irrigation systems (Kittitas County et al. 2013)

Riparian Vegetation

Riparian habitat is defined as the area adjacent to rivers, perennial or intermittent streams, seeps, springs etc. that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other. Riparian habitat encompasses the area beginning at the ordinary high water line and extending to the portion of the terrestrial landscape that directly influences the aquatic ecosystem by providing shade, fine or large woody material, nutrients, organic and inorganic debris, terrestrial insects, and/or habitat for riparian-associated wildlife. This includes the entire extent of the floodplain because that area significantly influences and is influenced by the stream system during flood events. Riparian habitat encompasses the entire extent of vegetation adapted to wet conditions as well as adjacent upland plant communities that directly influence the stream system. In Kittitas County's agricultural areas, natural riparian areas are typically forested with trees and shrubs, including species like black cottonwood, water birch, ponderosa pine, black hawthorne, and pacific willow (Kittitas County et al. 2013). Riparian vegetation provides forage and breeding habitat for fish and wildlife, reduced siltation though trapping sediments, and moderated in-water temperatures by providing vegetative shade.



Source: Kittitas County Conservation District

Figure 3-3
Distribution of Streams in Kittitas County

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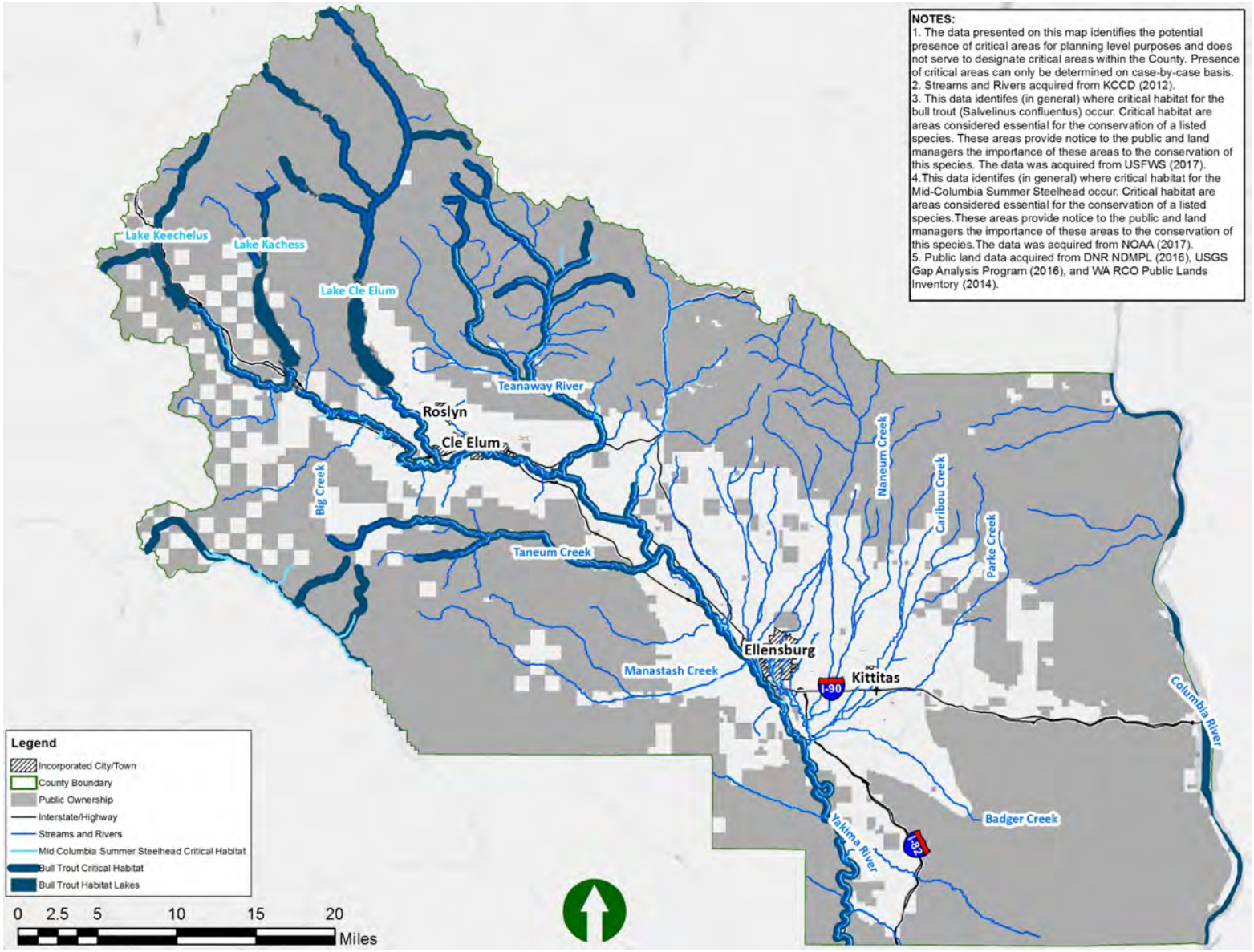

Source: Kittitas County Conservation District

Figure 3-4
Distribution of Fish in Kittitas County

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Priority Habitats and Species

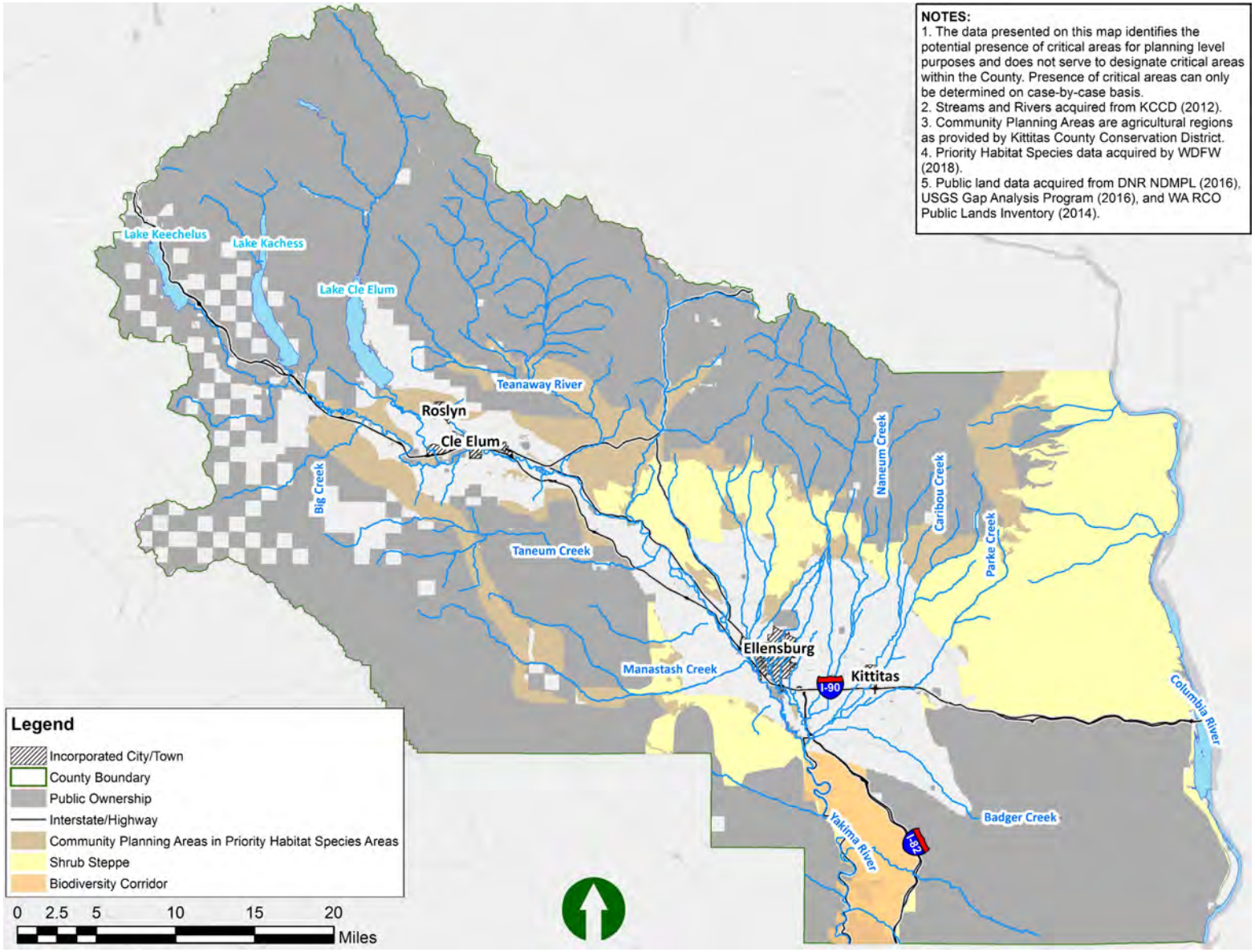
Intersections on agricultural lands: PHS mapped areas are the largest critical area found within the County and are found within 50% of agricultural lands (Figure 3-4). A majority of the PHS area in the County is associated with large mammals such as mule deer and elk (30% and 23% of agricultural land respectively). Much of this occurs in the Forested and Shrub-Steppe Upland community areas and is mostly concentrated on rangelands. Shrub-steppe habitat covers a large portion of the agricultural lands in the County (30% or 69,500 acres) and covers a majority of the Shrub-Steppe Upland Community Area (76%). Greater sage grouse, which is critical keystone species[3] for shrub-steppe habitat, is found on approximately 1% of agricultural lands (approximately 2,500 acres) and intersects solely with rangelands.

Priority Habitats and Species on Agricultural Lands in Kittitas County	
General locations/ distribution	• Large mammals associated mostly with the Shrub-Steppe Upland Community Area • Small areas of bird habitat located mostly along the Yakima River • Isolated instance of talus and cliff habitat along the Columbia River but mostly outside of agricultural areas
Characteristics	• Biodiversity corridors, which support a variety of wildlife including amphibians, birds, and mammals, cover approximately 7% of the agricultural area (approximately 16,000 acres) • Includes approximately 70,000 acres of shrub-steppe habitat, which is concentrated on rangelands • Includes habitat for threatened and endangered species and species of concern such as the greater sage grouse, burrowing owl, northern spotted owl, and others

Historic Conditions and Shrub-Steppe Habitat

It is not the intent of VSP to restore natural resources to pre-development conditions, but to protect critical area functions and values that existed in 2011. Prior to cultivation, much of the County was covered with shrub-steppe habitat. The typical vegetation in these communities consisted of open sagebrush and shrub plains with an understory of perennial grasses. These areas are important habitat for species such as western ground squirrel, burrowing owl, and other bird species. Conversion to cropland, overgrazing, and invasion by exotic species have resulted in the loss and fragmentation of these habitats.

[3] Keystone species are species on which the ecosystem or other species depend and if they were removed the ecosystem would change drastically



Source: Kittitas County Conservation District

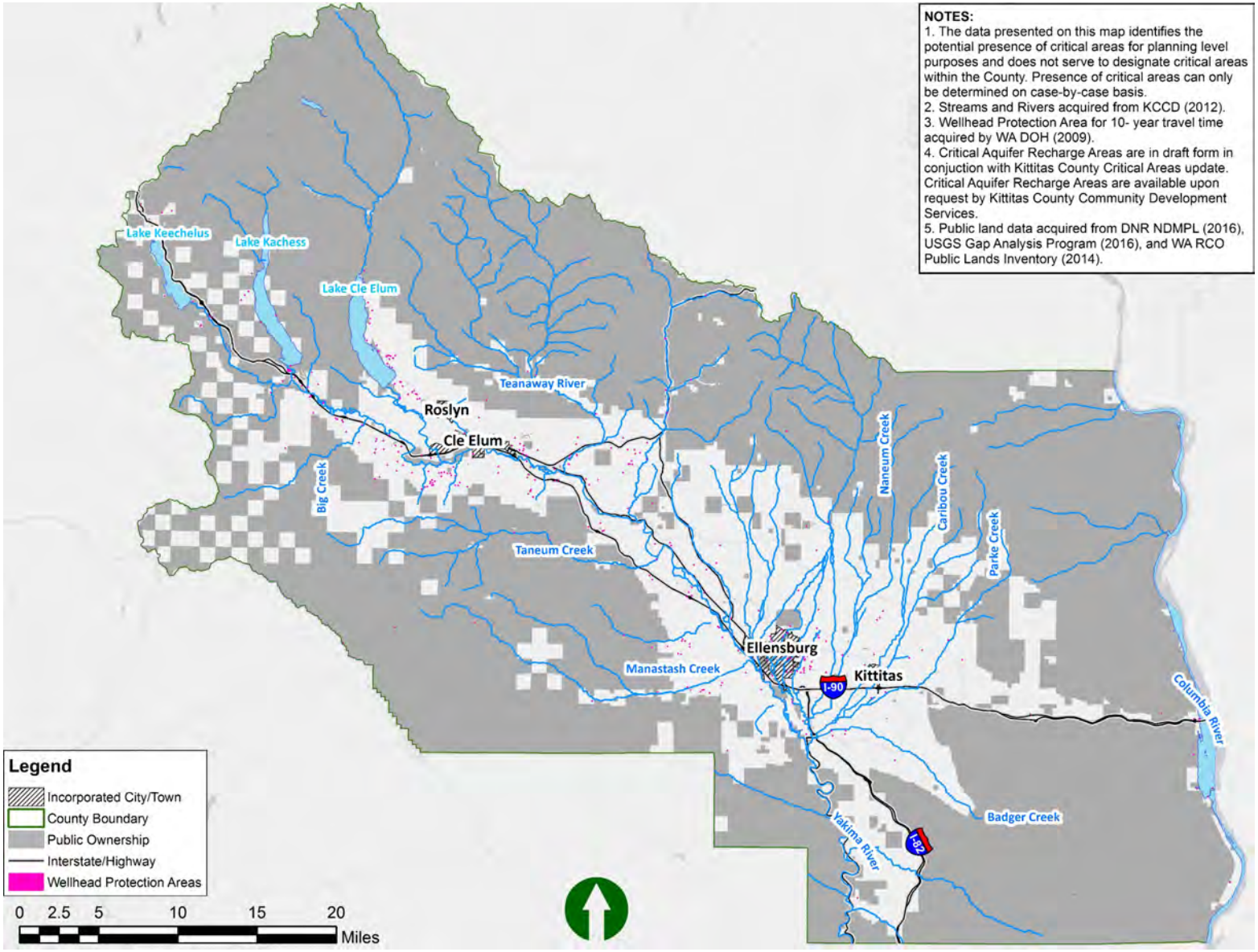
Figure 3-5
Distribution of Priority Habitats and Species in Kittitas County

3.1.3 Critical Aquifer Recharge Areas

Characteristics and functions overview: CARAs provide clean and safe public drinking water supplies by protecting areas near public drinking water supplies from contamination through ground infiltration.

Intersections on agricultural lands: There are currently no CARAs designated in Kittitas County; however, they are included in the current draft CAO, therefore, will be designated when the updated CAO is adopted. Aquifer and groundwater recharge areas are important to both critical areas functions and agricultural viability and will be discussed in this section. Since no CARAs are currently designated, wellhead protection areas were used to approximate the intersection between agricultural activated and CARAs. Wellhead protection areas act to protect groundwater immediately adjacent to drinking wells (approximated as a 100-foot buffer around Group A and B wells) and are found on less than 1% 9 acres) of the County's total agricultural lands.

Critical Aquifer Recharge Areas on Agricultural Lands in Kittitas County	
General locations/ distribution	• Most are within irrigated agricultural lands close to municipal water supplies; these are concentrated around cities and towns • Areas within incorporated cities and towns are not subject to VSP, but any portions extending into agricultural lands of unincorporated Kittitas County are included
Characteristics	• Where recharge areas are present there is a potential for contaminants on the land surface, such as fuel, pesticide, or fertilizer, to infiltrate into drinking water supplies



Source: Kittitas County Conservation District

Figure 3-6
Distribution of Critical Aquifer Recharge Areas in Kittitas County

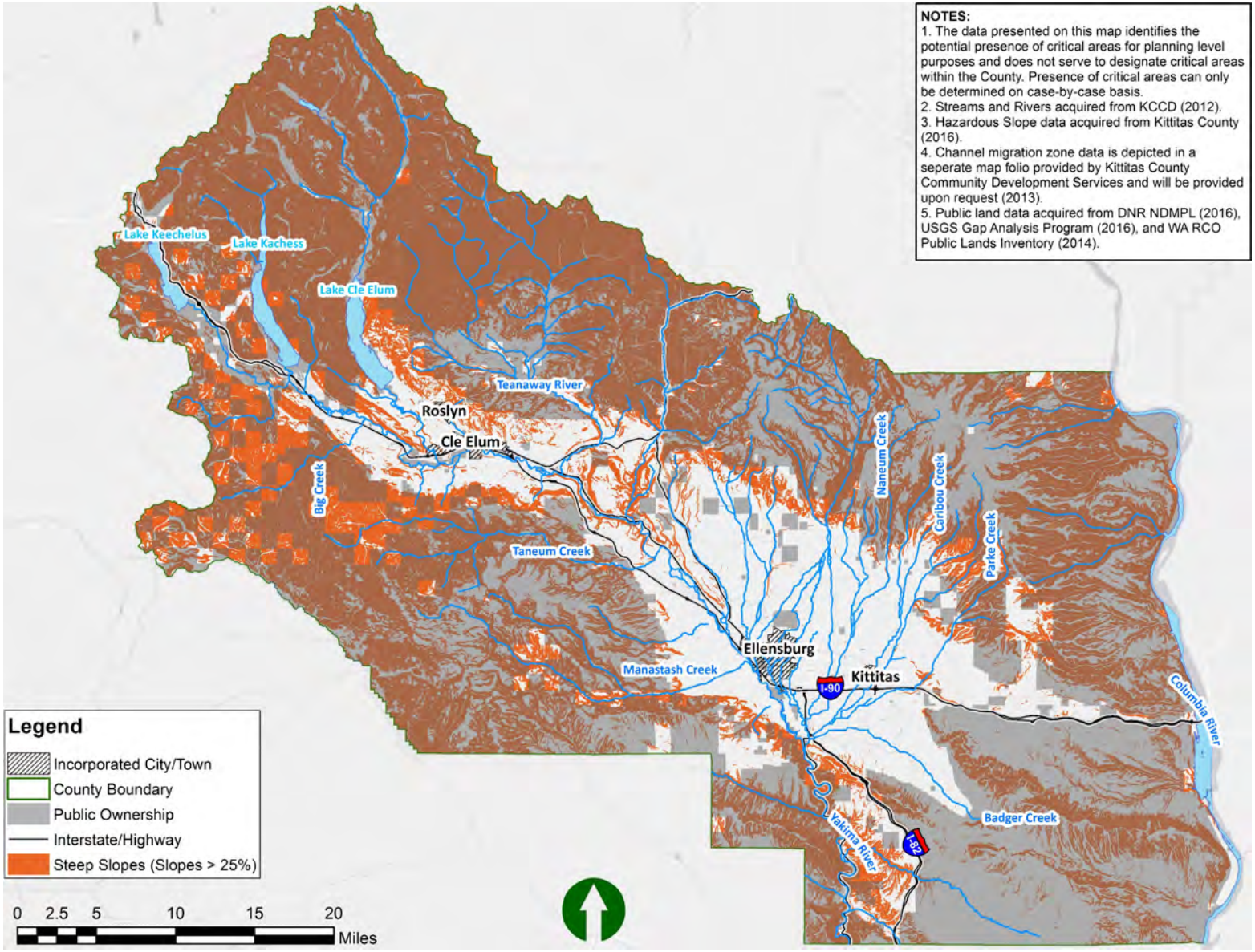
3.1.4 Geologically Hazardous Areas

Characteristics and functions overview: This Work Plan addresses only a narrow focus for geologic hazards related to instability of steep slopes and potential for water and wind erosion. These are included for maintaining agricultural viability by keeping productive soils in fields used to produce crops, improving water quality, and maintaining habitat. This is different from protecting inherent functions and values of other types of critical areas. Water erosion and wind erosion hazards, are considered in this Work Plan for soil conservation and to reduce the risk of erosion effects on other functions such as surface water quality, water infiltration into soil to improve groundwater conditions, and soil health. Steep slopes are included and mainly associated with maintaining soil health in steep rangeland areas. In developed areas (outside of VSP), GHAs can determine where constructing structures may not be suitable due to landslide, earthquake, or other geologic risks, such as channel migration zones.

Intersections on agricultural lands: Currently there are no designated GHAs that pertain to agricultural areas. However, the draft CAO designates GHAs to protect structures as well as minimize impacts to water quality and fish and wildlife. Steep slopes and erosion hazards as they pertain to agricultural lands are discussed under GHA in this VSP due to their potential impacts to water quality and fish and wildlife habitat, which are critical area functions.

Since updated GHA mapping is not yet available, this Work Plan uses hazardous slopes (25% slope or greater) to approximate the intersection of GHAs and agricultural lands. Overall, these areas cover 18% of agricultural land in the County. Steep slopes are mainly concentrated in County rangeland areas; these areas are also associated with high incidence of landslides (Kittitas County et al. 2013). No hazardous slopes intersect with irrigated areas and very few (159 acres) intersect with dryland operations.

Geologically Hazardous Areas on Agricultural Lands in Kittitas County	
General locations/ distribution	• Hazard slopes are concentrated in rangeland areas • No hazard slopes intersect with irrigated areas and very few intersect with dryland areas • Only 2% of agricultural land have slopes greater than 50%
Characteristics	• Landslide occurrence is generally associated with steep areas in the foothills of the Cascade Mountains • In rangeland areas, erosion and landslide hazards can be exacerbated by the loss of vegetation from wildfires or overgrazing



Source: Kittitas County Conservation District

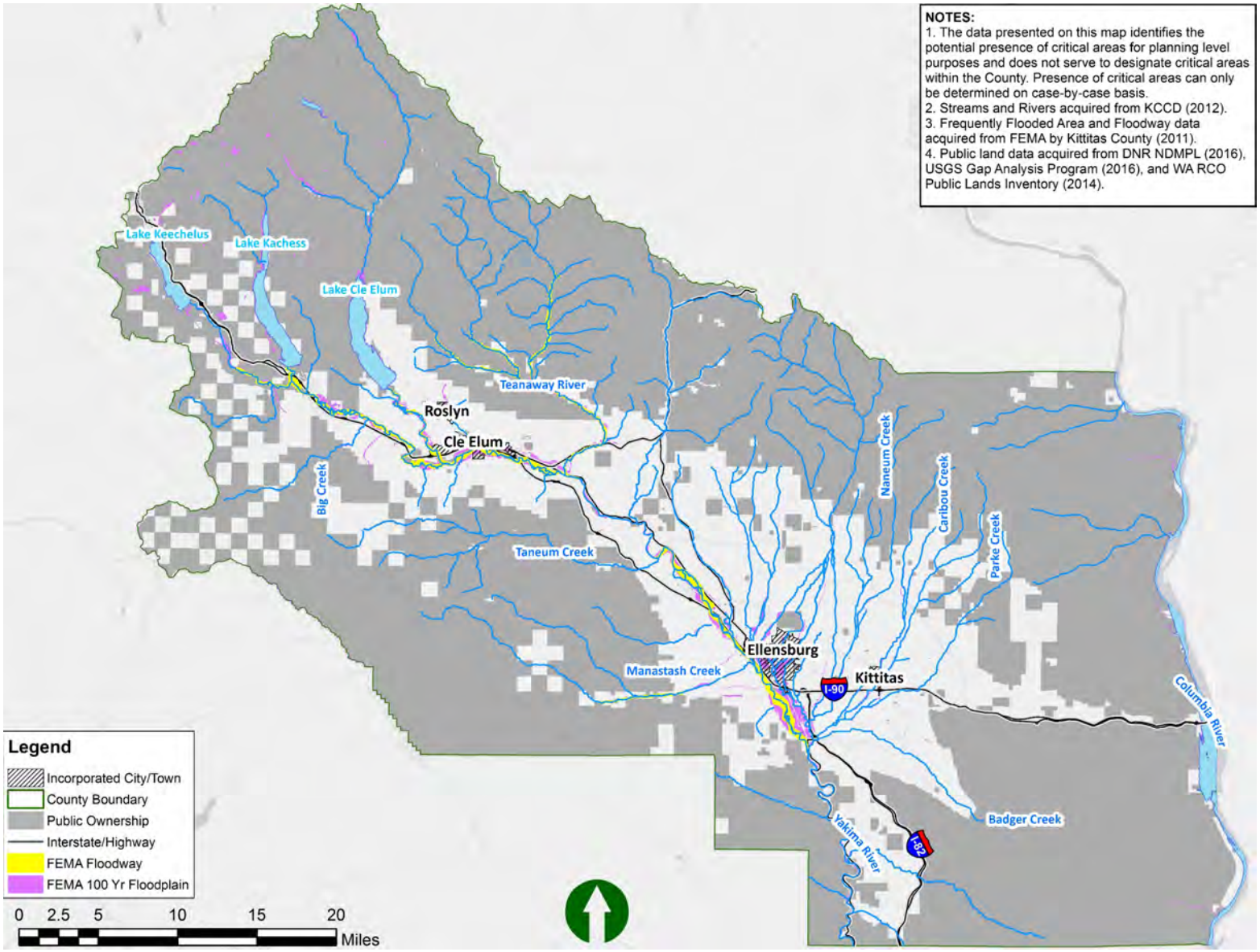
Figure 3-7
Distribution of Geologically Hazardous Areas in Kittitas County

3.1.5 Frequently Flooded Areas

Characteristics and functions overview: FFAs protect public health and safety by providing temporary flood water storage and conveyance. They also provide riparian habitat and other wildlife benefits, and can improve water quality and recharge groundwater. FFAs can affect surface and groundwater quality and hydrology (timing and magnitude of flows and alluvial aquifer recharge), improve or degrade soil health based on vegetative conditions, and contribute to riparian habitat diversity.

Intersections on agricultural lands: FFAs are found within 4% of the County's total agricultural lands. FFAs typically overlap or are adjacent to wetlands and some HCAs (Figure 3-7). The Federal Emergency Management Agency (FEMA) and the County are currently working to update the frequently flooded areas mapping. These changes to the FEMA maps will be reflected in this Work Plan through the adaptive management process.

Frequently Flooded Areas on Agricultural Lands in Kittitas County	
General locations/ distribution	• Concentrated in irrigated agricultural areas • FFAs occur mainly along the Yakima River and its tributaries including the Teanaway River, Cle Elum River, Manastash Creek, and others. • Widest portion of the Yakima River floodplain is south of Ellensburg above where the Yakima River lower canyon confines the floodplain.
Characteristics	• Rain-on-snow events have caused repeated flooding in the County. • High intensity localized rain fall has also caused flooding and landslides in the County. • Irrigation canals can also convey floodwaters. However, these events often cause damage to irrigation systems, which is an issue for agricultural viability.



Source: Kittitas County Conservation District

Figure 3-8
Distribution of Frequently Flooded Areas in Kittitas County

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3.2 Agricultural Viability Baseline Conditions

Agriculture is widely recognized as a pillar of Washington State's and Kittitas County's economies. The VSP law is explicit that critical areas are to be protected while, "maintaining and improving the long-term viability of agriculture" (RCW 36.70A.700). Both objectives, critical areas protection and maintaining agricultural viability, must be addressed in this Work Plan.

Agricultural viability in the County includes regional and individual farm goals. These are defined, respectively, as the region's ability to sustain agricultural production over time and an individual farm's ability to meet financial obligations and make a profit. Tables 3-2 and 3-3 identify agricultural viability concepts for the regional and individual farm perspectives within the County.

At the regional level, agricultural viability is the support system that helps individual farms succeed. This system also helps to mitigate potential threats and supports local producers in their operations and ability to take advantage of business opportunities.

Table 3-2
Agricultural Viability – Regional Goals

Regional Goals	
Concept	**Detail**
Maintain stable and secure agricultural land base	Land conversion
	Stable water rights
Maintain infrastructure and services	Utilities/irrigation
	Market access/transportation
	Processing facilities
Provide support for best farm management practices	Economically viable solutions
	Balanced approach
Provide education, training, and succession planning	Apprenticeships/training
	Interconnectivity with end users
Provide a welcoming business environment	Stable regulatory environment
	Partnership-based environmental protection
Track market trends/viability	Changing livestock and commodity prices can affect the number of producers that support economy
	Value added measures to make products more marketable

At the farm level, agricultural viability rests mostly on the productivity of the land and the ability of the operator to balance input costs with sales and market pressures (Table 3-3). Due to the presence of irrigation water, Kittitas County has a variety of agricultural products and practices. In this Work Plan, emphasis is placed on implementing stewardship and conservation measures through a

systematic approach that maximizes the dual benefits of protecting and enhancing critical areas while enhancing agricultural viability. These systems are a suite of farming practices, applied by crop type, that target multiple agricultural viability concerns, including water, soil health, nutrient, and pest. In combination, practices that maximize benefits and synergies through a systematic approach are expected to have the most benefit for critical areas and agricultural viability.

Table 3-3
Agricultural Viability – Farm Goals

Farm Goals	
Concept	**Detail**
Reduce inputs	Energy (power, fuels)
	Chemicals
	Labor
Maintain/enhance land production capacity	Soil health
	Water systems and moisture management
	Nutrient management
	New technologies
Maintain flexibility to respond to market conditions	Changing land in production
	Individual schedule for implementing farming practices
	Cropping choices
Provide incentives	Payment for measures
	Tax breaks
Manage farmland conversion	Urban development
	Assets protection
	Retention of farm ownership
	Maintaining resource lands
Provide a "no surprises" regulatory environment	Clean Water Act, Clean Air Act, Endangered Species Act, and others
	County permitting (drainage and other requirements)
Protect private property rights	Recognizing and respecting rights
Provide resiliency to environmental variation	Rainfall, temperature, and other environmental factors can affect agricultural production and activities
Maintain lifestyle	Maintain agricultural way of life

Another important aspect of agricultural viability is the importance of operating and maintaining existing stewardship practices/systems to achieve long-term benefits and minimize the number of practices that are discontinued over time. The continued operation of existing stewardship practices and systems will be a key component of VSP implementation. New technology is another area that can be explored by agricultural producers to improve the operation of existing stewardship practices

and systems or establish new ones. As described in this Work Plan, stewardship practices have the potential to benefit multiple resources, including agricultural practices and critical areas.

Kittitas County is unique in location, growing climate, and agricultural diversity, which are all important factors in considering agricultural viability. To obtain a firsthand agricultural viability perspective, producers in the Watershed Group provided insight on agricultural viability including strengths, weaknesses, opportunities, and threats (Table 3-4). See Appendix B-5 for a full summary of the responses.

Table 3-4
Agricultural Viability Strengths, Weaknesses, Opportunities, and Threats

Strengths	Weaknesses
• Many export options and close to urban markets • Strength of family farms • Good climate • Strong demand for products • Good transportation infrastructure	• Cost of electricity • Water availability • Few rotational options • Short growing season
Opportunities	**Threats**
• Yakima Basin Integrated Plan partnerships • New technologies and crops • Increased efficiency • Agricultural tourism	• Agricultural land conversion • New regulations • Population growth and urban sprawl • Predation of livestock • Increased cost of living • Invasive species

Although agricultural activities occurring on public lands are not included in VSP, livestock grazing on public lands is an important component of agricultural viability in the County. Grazing on public lands improves habitat conditions for wildlife species, such as mule deer, as well as protects conversion of private agricultural lands to meet grazing needs.

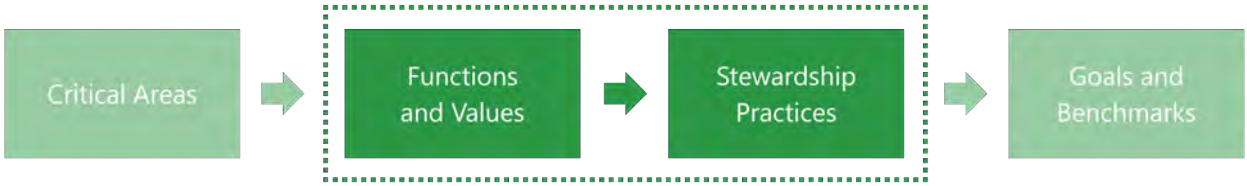
Overall, the Work Plan has been designed to support and promote the regional and individual farm agricultural viability elements listed above. The program places emphasis on systems, practices, flexibility, incentives, and other opportunities mutually beneficial to agricultural viability and critical areas protections, supporting continued agricultural viability in the County. Agricultural viability is a component of stewardship activities described in Section 4 and in each of the goals provided in Section 5. Protecting and enhancing agricultural viability will continue to be a key performance measure that must be met during plan implementation.

4 Protection and Enhancement Strategies

Agricultural producers play a major role in the stewardship and management of private lands and resources within Kittitas County. Agricultural producers are continually improving agricultural practices, applying new science and technology, and implementing stewardship practices that reduce agricultural impacts on critical areas, as well as maintain or increase the viability of the agricultural economy. In Kittitas County, agricultural producers have adopted a variety of practices to address many of the major resource concerns within the County, including practices to improve irrigation water management, control weeds, improve habitat, reduce soil erosion, and improve soil quality.

This section introduces the connection between stewardship practices and critical area functions and values (Figure 4-1). Additionally, this section discusses the stewardship strategies and practices that have been implemented since 2011, highlighting the protections to critical areas and associated function and values these practices are already providing.

Figure 4-1
Functions and Values Connection with Stewardship Practices



4.1 Examples of Stewardship Practices that Protect Critical Areas

As discussed in Section 3, key critical areas functions include water quality, hydrology, soil, and habitat. Many stewardship practices have been adopted within the County that provide a suite of benefits to these critical areas functions, in addition to maintaining the viability of agriculture. Table 4-1 summarizes examples of practices that have been applied by agricultural producers in the County under Natural Resources Conservation Services (NRCS) programs. This table helps illustrate the types of practices that have been or can be implemented to protect critical areas functions. As noted in the table, these examples also address the promotion of agricultural viability.

It is important to consider implementing a suite of farming practices in order to develop an effective conservation system on a farm. For example, application of irrigation water management practices would realize the most benefit for critical areas protections and agricultural viability with implementation in conjunction with nutrient and pest management. The KCCD is available to provide technical guidance in identifying farming practices that promote agricultural viability and further the goals of this Work Plan to protect critical area functions.

The Self-Assessment Checklist has been developed for agricultural producers and the KCCD to determine how the VSP could apply to their operations. Appendix B-2 provides specific stewardship practices for each Community Area and Appendix C provides a more comprehensive "toolbox" of example practices that have been or could be implemented by County agricultural producers.

Self-Assessment Checklist

The Self-Assessment Checklist is a helpful tool to help assess how the VSP could support individual agricultural producers. It includes additional examples of stewardship strategies and practices that protect and enhance critical areas and promote agricultural viability.

Fish Screens

In addition to diversions for irrigation districts and companies, there are also dozens of individual diversions for irrigation water operated by private individuals primarily on tributaries to the Yakima River. Installing compliant screens on these diversions protects fish from entrainment in irrigation systems. Work has been underway for more than 15 years through the Yakima Tributary Access and Habitat Program to install fish screens in Kittitas County.

Participation in Funded Programs

Federal, state, and local government, and private-sector programs and opportunities are available to support producers in addressing agricultural and resource concerns. See Section 6 for additional resources and technical assistance available to agricultural producers on a voluntary basis. **Participation in a government-funded program is not required to be a VSP participant.**

Privacy Note: The Self-Assessment Checklists can assist producers in developing an "individual stewardship plan" in coordination with the KCCD. "Individual stewardship plans" that a conservation district helps a producer develop are confidential and exempt from disclosure, similar to farm plans developed by conservation districts per RCW 42.56.270(17)(a) and (b) (WSCC 2017). Conservation practices information shared by producers with the KCCD will be reported for VSP at the watershed and County scales.

Table 4-1
Examples of Critical Areas Stewardship Practices in Kittitas County (Implemented Under NRCS)

Example Practice	Applicability	Description	Critical Area Functions[1]		Agricultural Viability
Irrigation Water Management	Irrigated	Managing water volume, frequency, and application rate for efficiency	Water Quality	• Reduces runoff and erosion • Reduces transport of nutrients and sediment	• Soil quality • Yield and fertility • Reduced inputs
			Hydrology	• Reduces degradation of surface and groundwater resources	
			Soil	• Manages leaching of salt and chemicals below the root zone	
Nutrient Management	Dryland Irrigated	Managing application of nutrients to minimize loss to runoff	Water Quality	• Reduces nutrients in surface and groundwater due to matching plant needs to the amount, timing, and placement of nutrients	• Soil quality • Yield and fertility • Reduced input costs
			Habitat	• Optimizes health and vigor of desired plant species • Increases food and cover for wildlife	
Aquatic Organism Passage[2]	Irrigated	Modification or removal of barriers to aquatic species	Habitat	• Allows aquatic organisms to migrate to find cover and shelter • Increase the amount of habitat available for feeding and breeding	• Regulatory relief • Continued access to irrigation water
Managed Grazing	Rangeland Irrigated	Managing grazing and vegetation harvest to improve plant communities and manage weeds	Water Quality	• Reduces runoff and erosion • Reduces transport of nutrients and sediment	• Soil quality and conservation • Weed management • Yield and fertility
			Hydrology	• Increases infiltration and water availability	
			Soil	• Decreases water and wind erosion due to increased vegetation cover • Reduces stream erosion through enhanced riparian vegetation	
			Habitat	• Improves and maintains health and vigor of desired plant species • Restores desired habitats, such as shrub-steppe	

Note:

1. Functions are defined by the NCRS CPPE matrix for each practice. See Section 5.2 and Table 5-6 for additional discussion and details on how practices provide benefits to these critical area functions, based on the NRCS CPPE scores.
2. Aquatic organism passage includes practices that improve the ability of all aquatic organisms that use streams for migration. This includes anadromous fish, resident fish, and any other aquatic species which rely on in stream passage.

4.2 Changes Since 2011 Baseline

Since 2011, agricultural producers have implemented practices that provide protections and enhancements to critical areas and promote agricultural viability through private projects and projects funded by federal, state, and local governments. One of the key purposes of the VSP and this Work Plan is to leverage existing resources by relying on existing local planning efforts, existing private-sector activities[4], and government programs to achieve Work Plan goals (RCW 36.70A.700(2)(d)).

These documented practices likely represent only a subset of all the stewardship practices that have been implemented since 2011, because many agricultural producers in the County implement practices independent of government programs. Accounting for these improvements would require extensive self-reporting and documentation processes that are not yet in place. Additionally, it should be acknowledged that, during this same time, there are likely some practices that have been discontinued. The re-establishment of agriculture in lands managed in conservation can result in habitat and other functions being affected.

It is expected that most implemented stewardship practices, such as irrigation management systems, stock watering facilities, and fencing, will see very little to no relapse back to old practices. Less than 3% per year of these types of practices are anticipated to be removed or discontinued each year. There are other stewardship practices (such as pest and nutrient management, residue management, direct seed, and managed grazing) where a higher rate of discontinuation (7%) or more variability year to year in implementation is anticipated. See Table 4-2 for assumptions related to varying estimated discontinuation rates.

Stock Watering Facility

Other programs may also see a higher rate of discontinuation with the expiration of long-term government contracts that manage wildlife habitat, such as the Conservation Reserve Program (CRP), that temporarily enhance wildlife habitat, but this will occur on agricultural lands historically cultivated and not part of designated critical areas. Measures and systems are typically put in place when lands are returned to production to conserve resources and protect potentially affected critical areas adjacent to lands no longer enrolled in CRP.

[4] Private-sector activities include agri-businesses and associations serving the County such as food-processing companies, certified crop consultants, and agri-businesses.

The following subsections summarize documented stewardship practices, implemented since 2011, that have likely protected or enhanced critical areas and improved agricultural viability over baseline conditions.

Table 4-2
Calculating Discontinuation for Stewardship Practices

Assumed Range of Discontinuation	Stewardship Practice Category	Example Practices
None	**Easements and Infrastructure** • Permanent Stewardship Practices	• Permanent Easements • Major Infrastructure • Aquatic Organism Passage
Lower 0-3%	**Conservation Investments** • High Barriers to Entry/Exit – Conservation Investments – Maintenance Cost – Effectiveness • Increases Land Productivity • Lowers Cost	• Irrigation Management • Streambank/Shoreline Protection • Fencing • Habitat Restoration • Nutrient Management
Higher 3-7%	**Conservation Actions** • Low Barriers to Entry/Exit – Easily Removed • Reduced Land in Production • Rotational Use – Market Driven Rotation • Reliance on Unstable Conservation Funding or Incentives (e.g., CRP)	• Managed Grazing • Conservation Cover • Range Vegetation Management

Functional Effects of Conservation Practices
It is important to consider that conservation practices will have different effects on agricultural activities and resource protections across the County's varied landscapes and regions. Producers are encouraged to discuss conservation planning with technical assistance providers to identify practices that will provide the most benefit to a farm or ranch and critical area functions based on local conditions. See Section 6.2 for additional discussion on technical assistance and outreach.

4.2.1 NRCS Conservation Practices

Conservation projects have been implemented on close to 17,000 acres since 2011 through the NRCS-funded programs on agricultural lands. The top practices that have been implemented include:

- Irrigation water management and sprinkler systems to conserve water resources
- Prescribed grazing to improve vegetation composition, manage weeds, reduce erosion, and improve soil functions

- Pest and nutrient management to protect water quality

As summarized previously in Table 4-1, these practices also promote agricultural viability.

Table 4-3 provides a summary of top NRCS practices implemented under the Environmental Quality Improvement Program (EQIP), Wildlife Habitat Improvement Program (WHIP), and Agricultural Water Enhancement Program (AWEP) for acreages and number of projects. As previously noted, these practices and programs only represent a portion of all the practices being implemented but that are currently unaccounted for in the County. VSP definitions control whether a stewardship practice or project qualifies as a protection or an enhancement under the VSP. Under the VSP definitions "enhance…means to improve the processes, structure, and functions existing, as of July 22, 2011…" and "protect…means to prevent the degradation of functions and values existing as of July 22, 2011" (RCW 36.70A.703). Because most conservation practices or projects installed since 2011 were designed to improve functions they should generally be counted as enhancement.

Table 4-3
Top NRCS Conservation Enhancement Practices Implemented from 2011 to 2016

Practice	Quantity	Projects Implemented
Water Management		
Irrigation Water Management	2,753 acres	46
Sprinkler System	2,147 acres	35
Irrigation Pipeline	82,105 feet	37
Pumping Plant	74 each	32
Pest and Nutrient Management		
Integrated Pest Management	1,406 acres	31
Nutrient Management	720 acres	21
Range Management		
Prescribed Grazing	1,428 acres	10
Access Control	1,164 acres	3
Spring Development	7 each	7
Livestock Pipeline	11,633 feet	13
Watering Facilities	35 each	11
Fence	170,439 feet	16
Habitat Enhancement		
Tree/Shrub Establishment	481 acres	40
Restoration and Management of Rare and Declining Habitats	209 acres	20
Upland Wildlife Habitat Management	144 acres	5

Source: NRCS data provided by Harold Crose with the Grant County Conservation District

This is a KCCD led project that involved conversion from a gravity diversion dam (on the left) to a pump station and sprinkler irrigation system in a tributary to Cherry Creek. After successful implementation of the sprinkler system and pump station complete with a compliant fish screen at a downstream location, the diversion dam was removed, and the stream restored (right). The project to remove the dam and restore the creek involved the following practices: aquatic organism passage (removal of concrete dam), channel bed stabilization (roughened channel), and streambank and shoreline protection (wood and rock structures).

4.2.2 Conservation District Led Practices

Numerous other projects have also been implemented through the KCCD and are often funded directly by the KCCD or through programs administered by other agencies. A majority of the projects implemented by the KCCD are related to improving irrigation efficiency such as installing irrigation water pipelines and sprinkler systems (Table 4-4). Additionally, the KCCD is also focused on improving aquatic species habitat through installation of practices such as aquatic organism passage, channel bed stabilization, streambank and shoreline protection, and fish screens. (Table 4-4).

Table 4-4
KCCD Lead Enhancement Projects Implemented from 2011 to 2016

Practice	Quantity	Projects Implemented
Water Management		
Sprinkler System	2,011 acres	43
Irrigation Pipeline	54,831 feet	24
Pumping Plant	12 each	11
Anionic Polyacrylamide (PAM) Application	8,438 acres	52
Range Management		
Range Planting	719 acres	4
Habitat Enhancement		
Tree/Shrub Establishment	14 acres	8
Streambank and Shoreline Protection	1,121 feet	7

Practice	Quantity	Projects Implemented
Channel Bed Stabilization	1,180 feet	8
Aquatic Organism Passage	7 each	7
Structure for Water Control (Fish screen)	9 each	9
Trust Water	1,983 acre-feet	10

4.2.3 Conservation Reserve Program

The CRP is a federally funded program, managed by the Farm Service Agency (FSA), that pays a yearly rental payment in exchange for farmers removing environmentally sensitive land, such as HCAs or GHAs, from agricultural production and planting species that will improve environmental quality. Acres enrolled in CRP vary year to year, depending on the availability of federal funding, which has decreased in recent years. However, these lands are not designated as critical areas. Habitat benefits from CRP lands are considered enhancements under VSP. As of September 21, 2017, there were 10 farms with a total of 1,725 acres under CRP in Kittitas County. Approximately 1,000 acres of these CRP are scheduled to expire by 2020. CRP provides temporary benefits to critical area functions and values, but these are not counted as progress toward the goals and benchmarks, since they can be put back into production after the CRP contract expires.

4.2.4 Yakima Tributary Access and Habitat Program

The Yakima Tributary Access and Habitat Program (YTAHP) was initiated in 2001 to provide assistance to landowners in restoring critical salmon habitat by implementing projects that protect, restore, and enhance riparian and floodplain habitat currently or historically used by salmon.

The program objectives are to screen irrigation diversions, remove manmade barriers (e.g., dams, culverts), restore fish passage, and enhance stream habitat. The YTAHP program is made possible through a collaborative effort between the Washington Resource Conservation and Development Council, local conservation districts (including the KCCD), the Washington Department of Fish and Wildlife, the Yakama Nation, and many other local, state, and federal entities (RCD 2017). Projects are voluntary and are designed to serve the best interest of the landowner, salmon, and the community.

In Kittitas County, YTAHP has resulted in dozens of fish screens installations, fish passage barrier removals that opened miles of additional stream habitat, and on-farm improvements that improve water management and stream flow conditions in tributaries from the Teanaway River in northern Kittitas County to Lmuma Creek in the Yakima River canyon. The YTAHP Strategic Plan outlines the work which will continue on priority projects[5].

[5] The full Strategic Plan can be downloaded from https://docs.wixstatic.com/ugd/a17495_88b382478ce5455a94b4e70039f7c2ac.pdf

4.2.5 *Yakima River Basin Integrated Water Resource Management Plan*

The Yakima River Basin Integrated Water Resource Management Plan (Yakima Basin Integrated Plan) includes a suite of actions that benefit both agricultural viability and critical areas including fish passage, structural and operational changes to existing infrastructure, increased surface water and groundwater storage, enhancement of habitat, water conservation, and market reallocation. Several fish habitat enhancement projects have been funded through the Yakima Basin Integrated Plan on private lands in Kittitas County. This includes a series of projects on Manastash Creek that supplement and expand on efforts of the KCCD and the Manastash Creek Steering Committee.

Additionally, water conservation efforts recommended in the Yakima Basin Integrated Plan include lining or piping irrigation canals, improving water management and accounting, and installing on-farm water conservation improvements. Habitat restoration efforts are also recommended including the removal of fish passage barriers and stream, floodplain, and riparian habitat improvements. Projects that are funded under this program are reviewed by subcommittees and ultimately selected by the Yakima River Basin Water Enhancement Project Working Group's Executive Committee.

Manastash Creek Restoration Project

Together, the KCCD and the Manastash Creek Steering Committee worked to implement the Manastash Creek Restoration Project, an effort to address unscreened diversions, fish passage barriers, and instream flow. The restoration project included the construction of fish screens, repair of fish passage barriers, and implementation of on-farm irrigation practices. The Yakima Basin Integrated Plan was incorporated into the project at a critical stage and assisted with the construction of pipelines to allow consolidation of the remaining irrigation diversions as well as converting 3.2 miles of the KRD irrigation canal to a pressurized pipeline. As a result of this water conservation project, many on-farm conservation projects, direct acquisition from willing sellers, and the KRD tributary supplementation program, lower Manastash Creek has achieved consistent instream flow for three consecutive seasons. The consolidation of the diversions allowed KCCD to pursue removal of the last remaining fish passage barrier, which occurred in 2016 and opened access to approximately 25 miles of upstream fish habitat (Ecology 2015).

"Manastash is a great of example of what it takes for a collaborative process to be successful. We set early goals for safe fish passage and keeping agriculture whole and we are achieving those goals."

Dave Duncan, irrigator
Manastash Water Ditch Association.

4.2.6 *Regional Conservation Partnership Program – Yakima Basin Integrated Plan – Toppenish to Teanaway Project*

Under the umbrella of the Yakima Basin Integrated Plan, the KCCD and the Yakama Nation applied together for funding through

the USDA NRCS's Regional Conservation Partnership Program (RCPP). The proposal was approved for $7.5 million in December 2016 and the 5-year project began in October 2017. In Kittitas County, the program includes funding for on-farm conservation practices, agricultural and wetland easements, and forestland easements.

4.2.7 Other Programs

Additional programs, entities, and agencies that support farmers in implementing stewardship strategies and practices are further described in Section 6.4. Technical assistance and stewardship programs and incentives are also provided through USDA NRCS, Washington State Department of Ecology, Washington Department of Fish and Wildlife, Washington State Conservation Commission (WSCC), and the Yakama Nation.

4.2.8 Changes in Agricultural Landcover Since 2011

Changes in agricultural land cover since 2011 were influenced by development, as well as purchases of large tracts of private lands converting to state owned and managed lands. In 2017, there are approximately 1,350 more tax parcels in the unincorporated area of Kittitas County than there were in 2011, reflecting further subdivisions of land in the County. Significant portions of private lands have also been acquired and are now state owned. Between 2011 and 2017, the Washington Department of Fish and Wildlife acquired more than 15,000 acres of privately owned forestland in the upper Manastash and Taneum watersheds, incorporating those lands into the LT Murray Wildlife Area. In 2014, the State of Washington secured the purchase of more than 50,000 acres of privately owned forestland and created the Teanaway Community Forest. See Section 3.2 for summary of agricultural viability concerns related to agricultural land use and land ownership.

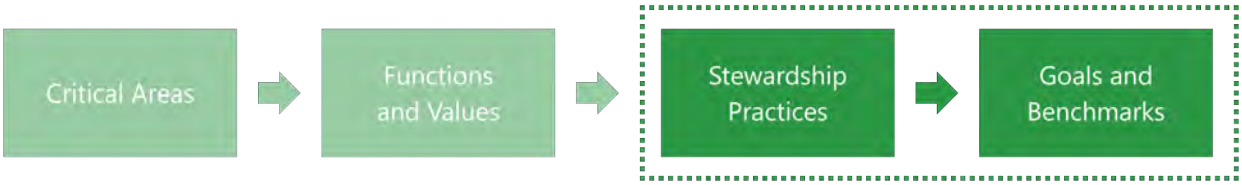
5 Goals and Measurable Benchmarks

RCW 36.70A.720(1) requires this Work Plan to include goals and benchmarks for the protection and enhancement of critical areas while maintaining agricultural viability. The benchmarks must be measurable and designed to result in the protection of critical area functions and values and the enhancement of critical areas functions and values through voluntary, incentive-based measures.

This section of the Work Plan identifies:

- **Goals** for protecting and enhancing the County's critical areas, and the four associated major critical areas functions and values: 1) water quality; 2) hydrology; 3) soil; and 4) fish and wildlife habitat. See Section 2.3 for additional discussion on these four major functions and their relationship to the five types of critical areas.
- **Measurable benchmarks** for protection and enhancement of critical areas based on participation in key stewardship strategies and practices. See Section 4 for additional discussion on the connection between stewardship strategies and critical areas functions. Section 5.2 further discusses the methods used to identify functional effects of stewardship strategies and practices.
- **Indicators** for measurable metrics that can be analyzed over time to help assess whether anticipated protection and enhancement of critical areas and their functions is occurring, and focus technical assistance efforts where needed.
- **Monitoring and adaptive management plan** to adjust the Work Plan's benchmarks and activities based on performance results and review of indicators analyzed through monitoring efforts.

Figure 5-1
Stewardship Practices Connection with Goals and Benchmarks



5.1 Goals

The VSP law requires VSP Work Plans include measurable benchmarks for the protection and enhancement of critical area functions and values, along with goals for participation by agricultural operators (RCW 36.70A.720 (1)(c)) to meet these benchmarks. Additionally, Work Plans are required to incorporate applicable data and plans into development of Work Plan goals and benchmarks (RCW 36.70A.720 (1)(a)). This section identifies the following elements in support of RCW 36.70A.720 (1)(a) and (c); and Section 5.2 includes measurable benchmarks:

- **Goals:** Participation goals are defined for the protection and enhancement of the County's critical areas and key functions.
- **Agricultural viability:** The ancillary benefits to agricultural production, profitability, and sustainability are also noted for each goal, as well as when financial assistance may be necessary to offset costs associated with implementing stewardship practices, including the purchase of associated equipment or other costs.
- **Objectives:** Objectives are identified for each goal to help define specific applications that further each goal. To accomplish these objectives, agricultural producers can implement the stewardship practices that are applicable to their land, agriculturally viable, and protect and/or enhance the critical area functions.
- **Key stewardship practices:** Example stewardship practices are tied to each objective; however, it is acknowledged other practices, including those administered outside of established government programs, can also help meet the objectives. Additionally, it is understood that new practices may emerge, and existing practices may be phased out during implementation of this Work Plan. Selection of example stewardship practices for each objective are based upon Conservation Practice Physical Effect (CPPE) scores for each practice (Appendix C).
- **Existing plans:** Existing plans were reviewed and incorporated where applicable to VSP and are also referenced in Tables 5-1 through 5-5 where applicable to identified goals. The following plans identify goals, objectives, and strategies that are included in the Work Plan, as described below. See Appendix D for additional discussion on review of applicable data and plans as a part of the process for establishing measurable benchmarks and associated indicators.

- **The Yakima Basin Integrated Plan** (Ecology 2011). This plan recommends a suite of actions that benefit both agricultural viability and critical areas. These include fish habitat enhancement projects on the Yakima River and its tributaries, irrigation water management, and improvements to aquifer storage. Water conservation practices improve critical area hydrology functions and habitat enhancement projects benefit soil and habitat functions through adding more plant cover, reducing erosion, holding water, and providing refuge to wildlife.
- **The Kittitas County Hazard Management Plan** (Tetra Tech 2012). This plan, which is currently in the process of being updated, identifies hazards and drought prone areas. The plan actions related to drought include implementing improvements to irrigation conveyance systems to reduce water loss through earthen canals and ditches; educating the public on drought resistance; and encouraging the use of water saving landscaping, irrigation methods, and farming practices. Actions related to flood hazards include forming a Flood Control Zone District; disseminating a floodplain information brochure to all floodplain area or flood risk households annually; and installing stream gauges on rivers and streams with flows greater than 20 cubic feet per second. The Flood Control Zone District was established in 2012 and has been partnering with the KCCD on projects on agricultural lands including both assessment and planning efforts, as well as construction of projects. Kittitas County is currently updating the Hazard Management Plan, a process expected to be completed by October 2018.
- **The Middle Columbia Steelhead Recovery Plan** (NMFS 2009). The recovery plan includes recommendations for several enhancement and implementation measures to restore and protect freshwater habitat throughout the middle Columbia Basin, including the Yakima River which is included as Appendix E of the plan. Tributary habitat improvement is a key focus in the plan, and this involves better irrigation management and runoff management to improve water quality and hydrology in streams; installation of compliant fish screens on irrigation diversions; correction of fish passage barriers; and protection and restoration of floodplain, riparian, and in-channel habitats. The recommended actions improve fish and wildlife habitat, while also benefiting critical area key functions like hydrology and water quality. An update of the 2009 Yakima Steelhead Recovery Plan is currently being contemplated with the discussion led by the Yakima Fish and Wildlife Recovery Board.
- **Shrub-Steppe and Grassland Restoration Manual for the Columbia River Basin** (Benson et. al 2011). This manual provides guidance for meeting unique habitat requirements of grassland and shrub-steppe areas by maintaining vegetative cover. The manual gives general site preparation principles including weed reduction control, along with guidance on appropriate seed mixes to meet wildlife-specific management

goals. Maintaining quality vegetative cover is a benefit to each of the critical areas and incorporated as a stewardship practice throughout the Work Plan.

- **Management Recommendations for Washington's Priority Habitats: Riparian** (Knutson and Naef 1997). This plan includes recommendations to protect riparian habitat areas and the associated functions to hold and filter sediment, pesticides, and nutrients and provide cover and foraging habitat. Recommendations related to agricultural activities to protect these functions include techniques that minimize soil erosion and protecting riparian vegetation through managed grazing. Riparian health is a driving force for the habitat functions of every critical area.
- **Manastash Creek Corridor Habitat Enhancement and Flood Hazard Reduction Plan** (Ecology 2015). This plan is the result of a reach-scale assessment leading to a focused strategy and a list of viable projects to improve aquatic habitat and reduce the impacts of flooding and erosion on Manastash Creek. Strategies include revegetating riparian areas to improve habitat and soils, implementing irrigation water conservation measures that will improve irrigation system reliability while also increasing instream flow to benefit sensitive fish species.
- **Yakima River – Jeffries Levee to Yakima Canyon Habitat Enhancement and Flood Risk Management Plan** (WSE and Herrera 2015). This plan involves a focused strategy and a list of viable projects to improve aquatic habitat and reduce the impacts of flooding and erosion on the Yakima River. Agricultural strategies include habitat restoration with groundwater monitoring, which benefits water quality and hydrology functions in critical areas. Channel design related to the groundwater monitoring strategy, along with increased large woody debris structures, would reduce bank erosion on the main channels and restore floodplain hydrology functions. Adjacent agricultural lands are also considered for conservation easement and/or restoration programs.
- **Naneum, Wilson, and Cherry Watershed Assessment** (Jacobs 2017). This assessment gathered information on fish, habitat, irrigation, water quality, flow conditions, and flood issues within each watercourse and within each sub-watershed to help develop recommendations and a strategy for developing future improvement projects. Pertinent focus areas include the restoration of fish habitat and flood hazard reduction through channel capacity analysis. This assessment is intended to be followed by another more intensive planning effort that identifies a specific project list for the watershed vetted by both a technical committee and a landowner committee. This second phase is not yet funded. Critical area functions will be improved with an increased floodplain area, as proposed in the plan. Key habitat functions will benefit from anticipated fish passage projects that provide longer reaches of available habitat.
- **Mid-Columbia Recovery Unit Implementation Plan for Bull Trout** (USFWS 2015). This plan identifies actions to address habitat threats by maintaining, restoring, and

protecting riparian and floodplain areas adjacent to bull trout spawning, rearing, and migration areas. The agricultural measures suggested include restoring riparian cover and native vegetation to add shade and canopy over waterways, reducing impacts from cattle grazing, and nutrient management. Reducing chemical runoff into streams through nutrient management improves water quality functions. Another suggested measure in this plan reduces excessive fine sediment delivery, benefiting critical areas through soil stabilization and all critical area water quality functions.

Table 5-1
Wetland Protection and/or Enhancement Goals

Goal #1: Protect and/or enhance wetland functions.

Protection and/or enhancement: Special emphasis on key functions provided by wetlands

Key Functions	Wetland Functions
Water Quality	• Reduces downstream sediment load and erosion • Provides water filtration • Sequesters pollutants and nutrients
Hydrology	• Stores water to reduce flooding and contributes to base flows
Habitat	• Provides aquatic and woody vegetated habitat for fish and wildlife • Provides off channel refuge during high flows and connections to fish bearing streams

Agricultural viability: This goal will be achieved while sustaining agriculture viability through:

- Ancillary benefits from implemented stewardship practices (improved soil function/soil preservation, improved water availability, weed management, increased pollinators/beneficial organisms, and increased fertility)
- Reducing regulatory uncertainty associated with priority habitat degradation and species decline
- Reducing costs associated with lost ecosystem services (e.g., flood control and water filtration)
- Reducing input costs associated with nutrient, pest, and water management
- Financial incentives to offset start-up costs for new practices and infrastructure

Objectives	Key Stewardship Practices	Consistency with Existing Plans
Protect and/or voluntarily enhance acres managed using strategies that provide direct protections to wetlands and wetland buffers.	• Riparian Herbaceous Cover/Filter Strips • Fencing • Heavy Use Protection • Stream Crossing • Wetland Enhancement/Restoration	• Washington Department of Fish and Wildlife's Management Recommendations for Washington's Priority Habitats and Species: Riparian • *Yakima River Basin Integrated Water Resource Management Plan (2012)*
Protect and/or enhance acres managed using strategies that promote water quality and hydrology functions by reducing erosion and improving water storage and filtration.	• Range Planting • Managed Grazing • Streambank and Shoreline Protection	• *Yakima River Basin Integrated Water Resource Management Plan (2012)* • *Naneum, Wilson, and Cherry Creeks Watershed Phase I Assessment (2017)*

Goal #1: Protect and/or enhance wetland functions.		
Protect and/or enhance acres managed using strategies that promote water quality and aquatic habitat functions by reducing inputs from runoff.	• Irrigation Water Management • Sprinkler Systems • Nutrient Management • Riparian Herbaceous Cover/Filter Strips	• Existing water quality data and reports, such as Washington State Department of Ecology 303(d) list (see Appendix B-6 for 303d list and Appendix D for full list of TMDLs in the County) *Yakima Steelhead Recovery Plan (2009)* • *Yakima River Basin Integrated Water Resource Management Plan (2012)* • *Naneum, Wilson, and Cherry Creeks Watershed Phase I Assessment (2017)*

Table 5-2
HCA Protection and/or Enhancement Goals

Goal #2: Protect and/or enhance fish and wildlife habitat conservation area functions.

Protection and/or enhancement: Special emphasis on key functions provided by fish and wildlife habitat conservation areas (HCAs)

Key Functions	HCA Functions
Water Quality	• Reduces siltation by stabilization streambanks from riparian vegetation • Provides water filtration, sequestration of pollutants • Reduces water temperature by providing shade
Hydrology	• Stores and retains water to reduce flooding and support base flows in streams
Soil	• Reduces rate of erosion by providing vegetative cover
Habitat	• Provides spawning, rearing and migratory habitat for fish, and riparian also provides refuge, nesting, and rearing areas for wildlife • Provides aquatic habitat by supplying organic inputs (e.g., leaf fall, insects, and large wood) • Supports sensitive species lifecycles with forage, refuge, and migratory corridors • Provides shrub-steppe habitat for wildlife by maintaining connectivity and quality necessary to support all life stages of game and non-game wildlife (perennial grasses, forbs, shrubs)

Agricultural viability: This goal will be achieved while sustaining agriculture viability through:

- Reducing regulation uncertainty associated with priority habitat degradation and species decline
- Ancillary agriculture benefits from implemented practices (soil conservation, water conservation, weed management, and pollinator/beneficial organism)
- Reducing costs associated with lost ecosystem services (e.g., flood control and water filtration)
- Financial incentives to offset start-up costs for new practices and infrastructure

Goal #2: Protect and/or enhance fish and wildlife habitat conservation area functions.		
Objectives	**Key Stewardship Practices**	**Consistency with Existing Plans**
Protect and/or enhance acres managed using strategies that promote habitat functions by restoring or creating new habitat structures.	• Stream Habitat and Improvement Management • Streambank and Shoreline Protection • Riparian Herbaceous Cover • Habitat Restoration • Tree/Shrub Establishment	• Washington Department of Fish and Wildlife's Management Recommendations for Washington's Priority Habitats and Species: – Shrub-steppe – Riparian • Washington Department of Natural Resources Natural Heritage Program (rare plants and ecosystems) • *Yakima Steelhead Recovery Plan (2009)* • *Yakima River Basin Integrated Water Resource Management Plan (2012)* • *Washington Connected Habitats Project (2010)*
Protect and/or enhance acres managed using strategies that promote habitat functions by limiting trampling of habitat.	• Managed Grazing • Watering Facilities • Fencing • Access Control	
Protect and/or enhance acres managed using strategies that promote water availability for aquatic species and agricultural benefits.	• Irrigation Water Management • Irrigation Pipeline • Sprinkler Systems • Trust Water • Conservation Easement	• *Yakima Steelhead Recovery Plan (2009)* • *Yakima River Basin Integrated Water Resource Management Plan (2012)* • *Kittitas County Hazard Mitigation Plan (2012)* • *Naneum, Wilson, and Cherry Creeks Watershed Phase I Assessment (2017)*
Protect and/or enhance acres managed using strategies to protect fish-bearing streams and limit shoreline and watercourse degradation and enhance shoreline areas and watercourses.	• Stream Habitat Improvement and Management • Streambank and Shoreline Protection • Channel Bed Stability • Aquatic Organism Passage • Tree/Shrub Establishment • Riparian Herbaceous Cover • Watering Facility • Structure for Water Control • Managed Grazing	• *Yakima Steelhead Recovery Plan (2009)* • *Yakima River Basin Integrated Water Resource Management Plan (2012)*

Goal #2: Protect and/or enhance fish and wildlife habitat conservation area functions.		
Protect and/or enhance acres managed using strategies that promote water quality and aquatic habitat functions by reducing inputs from runoff (surface water quality).	• Irrigation Water Management • Irrigation Pipeline • Sprinkler Systems • Trust Water • Nutrient Management • Pest Management[6] • Riparian Herbaceous Cover/Filter Strips	• Existing water quality data and reports, such as Washington State Department of Ecology 303(d) list (see Appendix B-6 for 303d list and Appendix D for full list of TMDLs in the County) • *Yakima Steelhead Recovery Plan (2009)* • *Yakima River Basin Integrated Water Resource Management Plan (2012)* • *Naneum, Wilson, and Cherry Creeks Watershed Phase I Assessment (2017)*
Protect and/or enhance perennial grass vegetation in shrub-steppe areas	• Managed Grazing • Upland Wildlife Habitat Management • Restoration of Rare and Declining Habitats • Tree/Shrub Establishment • Watering Facilities • Range Planting	• Washington Department of Fish and Wildlife's Management Recommendations for Washington's Priority Habitats and Species: – Shrub-steppe • Washington Department of Natural Resources Natural Heritage Program (rare plants and ecosystems) • *Washington Connected Habitats Project (2010)*

[6] Pest Management refers to practices that more efficiently apply crop protection tools to reduce nutrient runoff or use alternative methods of pest reduction for crops.

Table 5-3
CARA Protection and/or Enhancement Goals

Goal #3: Protect and/or enhance critical aquifer recharge area functions.

Protection and/or enhancement: Special emphasis on key functions provided by CARAs

Key Functions	CARA Functions
Water Quality	• Infiltration through soil column and underlying geology improves groundwater quality
Hydrology	• Recharges groundwater resources

Agricultural viability: This goal will be achieved while sustaining agriculture viability through:

- Ancillary agriculture benefits from implemented practices (increased soil, increased soil moisture, increased water use efficiency, weed management, pollinator/beneficial organism, and increased fertility)
- Reducing input costs associated with chemicals
- Reducing costs associated with irrigation and livestock watering
- Financial incentives to offset start-up costs for new practices and infrastructure
- Hazardous materials spill containment and cleanup

Objectives	Key Stewardship Practices	Consistency with Existing Plans
Protect and/or enhance acres managed to protect shallow groundwater wells by managing chemical and nutrient input controls.	• Irrigation Water Management • Sprinkler Systems • Nutrient Management • Pest Management	• Existing municipal and public water system well monitoring data • *Yakima River Basin Integrated Water Resource Management Plan (2012)*
Protect and/or enhance acres managed to promote natural groundwater filtration functions.	• Tree/Shrub Establishment • Range Planting • Managed Grazing	
Protect and/or enhance acres managed to promote hydrology functions by improving water conservation.	• Irrigation Water Management • Sprinkler Systems • Pipelines	

Table 5-4
GHA Protection and/or Enhancement Goals

Goal #4: Protect and/or enhance geologically hazardous area functions.

Protection and/or enhancement: Special emphasis on key functions provided by geologically hazardous areas (GHAs) for erosion hazards

Key Functions	GHA Functions
Water Quality	• Rate of soil erosion and associated movement of sediment deposited in surface waterbodies
Hydrology	• Rate of groundwater infiltration and rate of surface water runoff • Channel migration zones and alluvial fans help to maintain flood capacity and natural channel migration.
Soil	• Rate of erosion as it relates to arable soil depth
Habitat	• Rate of erosion as it relates to sediment inputs to stream and wetland aquatic habitat

Agricultural viability: This goal will be achieved while sustaining agriculture viability through:

- Preserving land available for agriculture
- Ancillary agriculture benefits from implemented practices (increased soil moisture, improved water availability, weed management, and pollinator/beneficial organism)
- Reducing costs associated with soil replenishment and flood cleanup
- Financial incentives to offset start-up costs for new practices and infrastructure

Objectives	Key Stewardship Practices	Consistency with Existing Plans
Protect and/or enhance acres managed using strategies that promote water quality, hydrology, soil, and habitat functions by reducing erosion and improving water storage and filtration.	• Range Planting • Managed Grazing • Sprinkler Systems • Pipelines • Riparian Planting	• Existing water quality data and reports, such as Washington State Department of Ecology 303(d) list (see Appendix B-6 for 303d list and Appendix D for full list of TMDLs in the County) *Yakima Steelhead Recovery Plan (2009)* • *Naneum, Wilson, and Cherry Creeks Watershed Phase I Assessment (2017)*

Table 5-5
FFA Protection and/or Enhancement Goals

Goal #5: Protect and/or enhance frequently flooded area (FFA) functions.

Protection and/or enhancement: Special emphasis on key functions provided by frequently flooded areas (FFAs) for erosion hazards

Key Functions	FFA Functions
Water Quality	• Vegetation in FFAs holds underlying soil in place and also provides area for new sediment depositions to settle out • Moderates water temperature by shallow groundwater infiltration and releases from unconfined aquifers of cooler groundwater back to streams, and by vegetation that can provide shade
Hydrology	• Stores and retains surface water surface in floodplain, reducing velocities and modifying discharge rates • Recharges groundwater that can later be returned to the stream to help maintain base flow
Soil	• Supports moisture content in soils, reduces rate of erosion, and supports plant growth that can increase organic inputs to soil
Habitat	• Provides aquatic and riparian habitats for wildlife, plants, and fish

Agricultural viability: This goal will be achieved while sustaining agriculture viability through:

- Ancillary agriculture benefits from implemented practices (maximize availability of surface withdrawals for irrigation, flood control benefits/soil preservation, weed management, and pollinator/beneficial organism)
- Reducing costs associated with flood management and flood cleanup
- Financial incentives to offset start-up costs for new practices and infrastructure

Objectives	Key Stewardship Practices	Consistency with Existing Plans
Protect and/or enhance frequently flooded areas directly	• Riparian Herbaceous Cover • Riparian Forest Buffer • Tree & Shrub Planting • Fencing • Heavy Use Protection • Floodplain Restoration	• *Kittitas County Hazard Mitigation Plan (2012)* • *Yakima Steelhead Recovery Plan (2009)* • *Yakima River Basin Integrated Water Resource Management Plan (2012)* • *Naneum, Wilson, and Cherry Creeks Watershed Phase I Assessment (2017)*
Protect and/or enhance acres managed using techniques that limit soil compaction or trampling of habitat	• Managed Grazing • Watering Facilities • Fencing	
Protect and/or enhance acres managed using strategies that promote water quality, hydrology, soil, and habitat functions by reducing erosion and improving water storage and filtration.	• Range Planting • Managed Grazing • Sprinkler Systems • Residue Management, No-Till/Strip Till/Direct Seed • Conservation Cover	

5.2 Measurable Benchmarks

5.2.1 Methods

This section identifies the measurable benchmarks required by RCW 36.70A.720 (1)(e) for: 1) protection of critical area functions and value; and 2) enhancement critical areas functions and values through voluntary, incentive-based measures. Protection and enhancement benchmarks are based on agricultural producer participation in key stewardship strategies that further the Work Plans goals identified in Section 5.1.

Benchmarks are measured by tracking new and continued implementations of various stewardship practices and associated stewardship on agricultural lands. Over time, the implementation of these stewardship practices will be used to demonstrate that VSP is meeting the protection goals and determine whether VSP is achieving the enhancement goals and benchmarks.

The Work Plan includes two measurable benchmarks per RCW 36.70A.720 (1)(e):

- **Protection Benchmarks** (preventing the degradation of baseline functions existing July 22, 2011) – The protection benchmark must be met to continue the voluntary, non-regulatory approach under VSP. For each protection goal, participation benchmarks are also identified and are designed to provide quantifiable measures that will ensure protection of the County's critical area functions and values is being achieved.
- **Enhancement Benchmarks** (enhancements improve baseline critical area functions and values through voluntary and incentive based measures) – Meeting enhancement goals is encouraged, but not required, to continue the voluntary, non-regulatory program under VSP for protecting critical areas. At each 5-year benchmark reporting period, voluntary enhancements of critical area conditions on lands used for agricultural activities are promoted and accounted for. Benchmarks for enhancement are specific to the County and indicate if voluntary measures are leading to desired improvements in critical area functions and values. Enhancement also provides a measure of certainty that the VSP protection goal will be met if some unforeseen, future agricultural related loss of critical area function(s) and/or value(s) occurs.

Benchmark quantities for stewardship practice enrollment are provided in 5-year reporting increments (2020 and 2025). The methods used to establish protection and enhancement benchmark values for stewardship practice participation included:

- **Measuring historical enrollment data** in key stewardship practices to develop an average annual enrollment quantity for each practice.
- **Connecting stewardship practices with specific benchmark goals** based on the CPPE scores for each practice developed by USDA (NRCS 2017). CPPE scores range between -5 and

+5, with positive scores denoting a beneficial effect, and negative scores having an adverse effect. USDA CPPE scores were averaged for the four key functions, adjusted to include scoring criteria applicable to Kittitas County. See Appendix C for details on how averaged CPPE scores were developed for Kittitas County. The CPPE scoring is an interim step in determining whether protection and/or enhancement has occurred compared to the VSP 2011 baseline. Under VSP, the relative changes in functions affected from a given conservation practice will be tracked, e.g., a +4 increase moving from a -2 to +2, rather than the CPPE score of +2.

- **Setting anticipated disenrollment rate** of agriculture lands that may not continue to maintain the stewardship practice past the required lifespan or following the end of a contract, or for other disenrollment reasons. Disenrollment or abandonment of practices can be monitored to adjust this rate further based on actual data.
- **Setting protection benchmarks and performance objectives** (see Table 5-7) by summing the enrollment goal for similar practices that maintain baseline conditions of critical area functions through replacing lost functions associated with discontinuation of practices (acres calculated by anticipated discontinuation rates; see Table 4-2). Monitoring and tracking of the protection benchmark will be refined during implementation.
- **Calculating change from baseline conditions** is the final step in determining the effect that conservation practices have on critical areas functions and values. This is completed by converting the quantity of conservation practices (based on CPPE scores) to a functions score. This acts to normalize the data and account for the differing amount of benefit provided by different practices. Initial results based on 2011 to 2016 participation data in key stewardship practices are provided in Appendix C.

Change from 2011 Baseline Condition	=	Newly Enrolled Practices x Physical Effects Score	–	Disenrolled Practices x Physical Effect Score

What is Conservation Practice Physical Effect?

The CPPE describes how NRCS practices affect human-economic environment (e.g., agricultural viability) and natural resources (e.g., critical areas functions). This planning tool provides a quantitative score detailing the magnitude of the practice's effect on the resource. Technical reports for each practice also include a qualitative statement on the impact of each practice on soil, water, air, plants, animals, energy and labor, capital, and risk. A summary of the practices with CPPE scores are provided in Appendix C. The implementation team will use discretion in determining which CPPE best represents the physical effects of stewardship practices on critical areas in the County based on local conditions and practices.

- **Setting enhancement benchmarks and performance objectives by:**
  - Anticipated levels of future funding based on historic levels of stewardship funding and estimates of future funding available through identified programs including the RCPP, which is funded through 2021. However, the amount of funding will affect the amount of enhancement that occurs within the County. Including project acres that have implemented between 2011 and 2016 above the protection performance objectives.
  - Enhancement benchmarks and performance objectives are in addition to the protection benchmarks; therefore, estimated discontinuation acres have been incorporated into the enhancement benchmark (see Table 5-7). Monitoring and tracking of the enhancement benchmark will be refined during implementation.
  - If enhancement benchmarks and performance objectives are met before the end of the reporting period, the Watershed Group will discuss updates to the enhancement objectives or benchmarks to provide further enhancement of critical areas functions and values.

Enhancement above 2011 Baseline Condition	=	Anticipated Enrolled Practices x Physical Effect Score *(Based on 2017 to 2027 project data)*	+	Historic Enrolled Practices x Physical Effect Score *(Based on 2011 to 2016 enrollment data)*	–	Disenrolled Practices x Physical Effect Score

Rapid Watershed Assessments

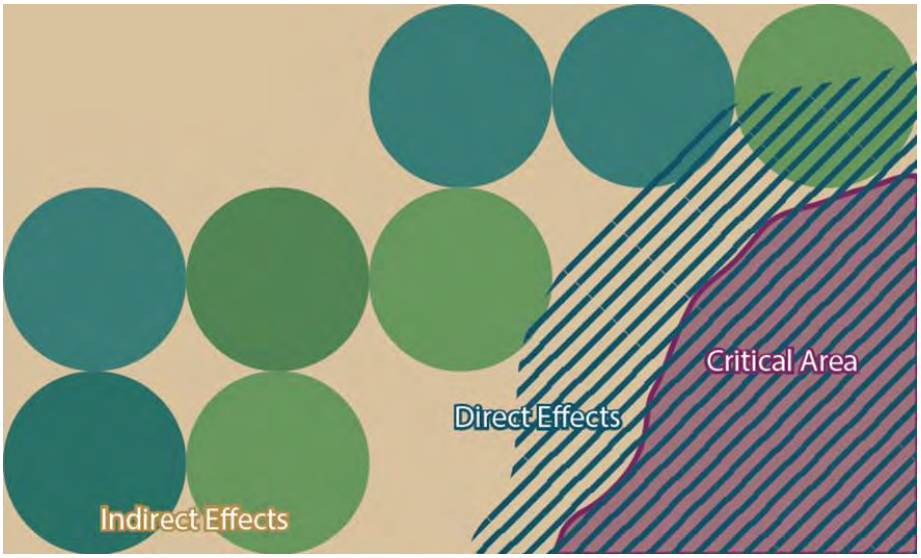
The KCCD has developed planning matrices (for each community planning area) that identify the following values:

- Resource concerns (e.g., water availability, fish passage) and locally appropriate stewardship practices to address these concerns
- The anticipated effects of implementing stewardship practices
- Funding mechanisms toward VSP implementation

Planning matrices for each community planning area are provided in Appendix B-2. These tools provide a valuable mechanism toward implementing the VSP and monitoring its success, as well as providing a localized approached to developing benchmark values.

Stewardship practices can be implemented within or directly adjacent to a critical area (see Figure 5-2 for a conceptual representation). An example of a direct effect would include implementing wetland restoration practices within or adjacent to an existing wetland critical area. Indirect effects occur within agricultural areas that are not adjacent to or within critical areas, but still influence critical area functions and values at a County- and watershed-wide scale. These influences are typically positive where conservation practices are implemented and negative where they are discontinued.

Figure 5-2
Direct and Indirect Effects of Practices on Critical Area Functions



5.2.2 Benchmarks

Work Plan benchmarks are focused on measuring and tracking producer participation in implementing key stewardship practices identified by the Watershed Group as having a benefit to one or more critical area functions and values. Benchmarks and performance objectives were created for groups of similar practices that provide similar benefits to critical areas functions and values. This acts to simplify the reporting process by focusing on groups of practices, which allows for self-funded practices outside of NRCS specific practices to be counted towards critical areas protection and enhancement.

Table 5-6 provides a crosswalk of the key stewardship practices identified for the Work Plan benchmarks to critical areas, function protections based on the overall averaged CPPE function effects score, and agricultural viability aims. The CPPE scoring shown in Table 5-6 indicates the most beneficial effects (enhancements) to functions in green boxes (+5), no effect (0), and the most detrimental effects to functions in orange (-5). See Appendix C for additional information on methods applied for linking stewardship practices to function protections using CPPE function effects and a more comprehensive list of stewardship practices.

Table 5-7 provides a summary of protection and enhancement measurable participation benchmarks for the 5-year reporting increments (2020 and 2025). In predicting benchmark values for enhancement, KCCD based implementation of enhancement practices on known funding in the short term, assuming 70% of implementation would likely occur within the first 5-year reporting timeframe (2020) while VSP implementation and outreach is developed and conducted, and 30% would occur within the second 5-year reporting timeframe (2025). The protection performance standard for each

stewardship practice is based on historic records. New practices will often replace an existing practice. Trends in stewardship practices and updates to the protection performance standard that reflect the move to new stewardship practices will be included in the 2- and 5-year reports. Benchmarks may be adjusted through adaptive management as needed to reflect the higher or lower physical effect of the new practice.

Table 5-6
Key Stewardship Practices Crosswalk to National Functions Scores, Critical Areas, and Agricultural Viability

Key Stewardship Strategies			Critical Area Functions Protection Metrics (averaged CPPE Function Effects Score)[2]				Critical Area Protections					Agricultural Viability	
Type	NRCS Code	Key Practices[1]	Soil	Hydrology	Water Quality	F&W Habitat	WET	HAB	CARA	GHA	FFA	Aims	CPPE Metric[2]
Water Management	449	Irrigation Water Management	1.75	1.50	2.00	0.00	•	•	•	•		• Protect against erosion risk • Protect soil function • Improve water availability • Reduce input costs	1.00
	441	Micro-irrigation	0.50	2.00	1.60	1.00							0.85
	430	Pipeline	1.00	1.33	1.14	0.00							1.83
	442	Sprinkler System	1.25	2.67	1.55	1.00							1.27
Nutrient Management	590	Nutrient Management	0.83	0.00	3.50	0.00	•	•	•			• Protect soil function • Reduce invasive and nuisance species • Reduce input costs	0.30
Pest Management	595	Pest Management	2.00	0.00	4.00	2.00	•	•	•	•		• Protect soil function • Reduce invasive and nuisance species • Provide pollinator species/beneficial organisms habitat	0.67
Soil Management	327	Conservation Cover	2.77	1.25	2.89	3.33	•	•		•		• Protect against erosion risk • Protect soil function • Reduce invasive and nuisance species • Provide pollinator species/beneficial organisms habitat • Promote yield and fertility	-1.11
	329	Residue Management, No-Till/Strip Till/Direct Seed	3.25	0.80	2.00	1.67							1.22
	345	Residue Management, Reduced Till	2.75	1.33	2.20	1.67							0.67
	450	Polyacrylamide Application	2.00	1.00	1.17	0.00							1.13
Range Management[3]	550	Range Planting	3.10	0.75	1.33	2.67	•	•		•	•	• Protect against erosion risk • Protect soil function • Reduce invasive and nuisance species • Promote yield and fertility	1.14
	528	Managed Grazing	2.83	1.50	1.30	2.67							0.60
	614	Watering Facility	1.10	0.00	1.71	4.00							0.25
Habitat Management	395	Stream Habitat Improvement and Management	2.50	0.00	2.00	3.00	•	•		•	•	• Protect against erosion risk • Protect soil function • Reduce invasive and nuisance species • Provide pollinator species/beneficial organisms habitat	-1.29
	390	Riparian Herbaceous Cover	2.79	0.33	2.50	3.50							-0.40
	391	Riparian Forest Buffer	2.47	0.67	2.83	4.00							-1.33
	612	Tree/Shrub Establishment	2.97	1.50	1.17	2.33							-0.36
	645	Upland Wildlife Habitat Management	1.20	-0.50	2.00	5.00							-0.14
	657	Wetland Restoration	0.50	2.00	1.50	4.00							-0.60
Stream Enhancement	580	Streambank and Shoreline Protection	2.00	0.00	1.25	1.50	•	•		•		• Protect against erosion risk • Protect soil function • Reduce invasive and nuisance species • Promote yield and fertility	-0.36
	584	Channel Bed Stabilization	1.00	2.00	1.00	1.25							-0.43
	396	Aquatic Organism Passage	0.00	0.00	2.00	2.67							-0.44
	587	Structure for Water Control (fish screen)	0.00	2.00	1.00	2.00							-0.75

Notes:
1. Key practices include those practices that address resource concerns and critical areas function protections and are widely implemented, anticipated for continued application, or identified as major practice trends anticipated in the future.
2. The NRCS CPPE matrix was relied upon to develop an average function effects scores for the key function and practices. See Appendix C for full suite of stewardship practices CPPE scores.
3. Livestock management stewardship focuses on key practices that address on-field resource concerns and management.

Table 5-7
Protection and/or Enhancement Benchmarks and Objectives (Enhancement Benchmarks Only Include Irrigated Areas, to be Updated with Other Areas)

Stewardship Strategies			Historical Enrollment Data (2011 – 2016)		Protection Benchmarks and Performance Objectives [b,c]			Enhancement Benchmarks and Performance Objectives [b, c]			2011 – 2016 Reported Data
Type		Key Stewardship Practices[a]	Average Annual Enrollment in Key Practices	Estimated Yearly Disenrollment	Total Acres in NRCS and CD-led Programs	2020 Performance Objective (Disenrollment x 9)[d]	2025 Performance Objective (Disenrollment x 14)[d]	Benchmark	2020 Performance Objective	2025 Performance Objective	Total Acres in NRCS and CD-led Programs
Indirect Intersects	Water Management	• Irrigation Water Management • Sprinkler System • Micro-irrigation	1,184 acres	59 acres	No net loss in acres under water management	533 acres	829 acres	Enrolled units (e.g., acres and feet) based on: • Implemented projects from 2011 – 2016 • Anticipated projects funded for stewardship practices from 2017 – 2025[f] • Estimated annual disenrollment since 2011 at time of reporting	8,521 acres	12,173 acres	7,104 acres
		• Pipeline/Irrigation Pipeline	24,761 feet	743 feet	No net loss in feet under water management	6,686 feet	10,400 feet		139,904 feet	199,863 feet	148,569 feet
	Nutrient Management	• Nutrient Management	120 acres	8 acres	No net loss in acres under nutrient management	76 acres	118 acres		694 acres	991 acres	720 acres
	Pest Management	• Pest Management	234 acres	16 acres	No net loss in acres under pest management	148 acres	230 acres		967 acres	1,382 acres	1,406 acres
	Soil Management	• Conservation Cover • Residue Management, No-Till/Strip Till/Direct Seed • Residue Management, Reduced Till • Polyacrylamide Application	1,406 acres	98 acres	No net loss in acres under soil management	886 acres	1,378 acres		6,141 acres	8,773 acres	8,438 acres
	Range Management[e]	• Range Planting • Managed Grazing	358 acres	25 acres	No net loss in acres under range management	225 acres	351 acres		1,786 acres	2,552 acres	2,147 acres
		• Stock Watering Facility	6 facilities	<1 facility	No net loss of feet providing forest enhancement	2 facilities	3 facilities		41 facilities	58 facilities	36 facilities
Direct Intersects	Habitat Management	• Stream Habitat Improvement and Management • Riparian Herbaceous Cover • Riparian Forest Buffer • Tree/Shrub Establishment • Upland Wildlife Habitat Management • Wetland Restoration	141 acres	4 acres	No net loss in acres under habitat management No net loss of feet providing habitat management	38 acres	59 acres		570 acres	814 acres	848 acres
	Stream Enhancement	• Streambank and Shoreline Protection • Channel Bed Stabilization	636 feet	19 feet	No net loss in acres under stream enhancement No net loss of feet providing stream enhancement	172 feet	267 feet		3,813 feet	5,448 feet	3,813 feet
		• Aquatic Species Passage • Structure for Water Control (fish screen)	3 projects	<1 project		1 project	1 project		29 projects	42 projects	17 projects

Notes:

a. Key practices include those practices that address resource concerns and critical areas function protections and are widely implemented, anticipated for continued application, or identified as major practice trends anticipated in the future. Other practices may exist that provide additional protection or enhancement of critical areas functions and values.
b. Measurable benchmarks are based upon the historic NRCS participation data (2011 to 2016) in key practices (see Note a). No net loss and enhancements will be measured based on estimated annual disenrollment rates for key practices from the 2011 baseline.
c. Objectives are anticipated to be adapted as new technologies and practices are applied by producers and unanticipated changes in environmental and market conditions would be addressed through the adaptive management process. Protection benchmarks are based on estimated disenrollment rates. A more accurate estimate and understanding of which practices are discontinued can be used to modify these benchmarks.
d. Number is years between 2011 and benchmark year.
e. Livestock management stewardship focuses on key practices that address on-field resource concerns and management.
f. If the funding received is less than anticipated, enhancement benchmarks may be lower than predicted. However, as of 2017 the amount of implemented stewardship practices in the County are above the protection benchmark and all additional stewardship practices are providing enhancement of critical areas functions and values.

5.3 Indicators

Indicators are measurable metrics associated with specific environmental variables (e.g., stream flow at a particular location). Metrics can be monitored and analyzed over time to understand longer term trends related to specific critical area functions and values. Indicators affected by both agricultural and non-agricultural factors will generally not be used for purposes of determining whether protection of baseline conditions is being achieved or goals and benchmarks are being met due to the cost and difficulty involved in separating agricultural effects from non-agricultural effects. Such indicators may, however, be used to identify resource trends and focus enhancement efforts on high priority areas or specific functions. Indicator data will be reviewed at least every 5 years to help focus technical assistance efforts and assess if the anticipated protection and/or enhancement of critical area functions is occurring. If an indicator shows a loss or gain in the baseline condition for a critical area function, it can be compared to the performance objectives for stewardship practices implemented.

It is also acknowledged that indicators data are limited and not always ideally suited to direct evaluation of program performance. Where data are insufficient, including associated data sample sizes, it will be acknowledged as part of reporting, and adaptive management measures described in Section 5.4 will be applied as part of implementation to address these data shortfalls where possible within program constraints.

If this analysis does not account for the change, a more targeted evaluation and analysis of the specific effects of agricultural activities can be made for the applicable parameter(s). This analysis would be used to inform if the VSP is meeting the protection standard for critical area functions within agricultural areas and the degree to which non-agricultural factors are influencing one or more indicators.

The following indicators relate to the four major critical area functions and will be evaluated at the 5- and 10-year performance review periods, based upon adequate funding and resources provided through the state for VSP:

- **Water quality indicators** will include Category 2 through 5 303(d) listings, focused on parameters that potentially have an agricultural source. Category 4 includes polluted waters that do not require a Total Maximum Daily Load (TMDL), and Category 5 waters are polluted and require a TMDL or other water quality improvement project. Appendix B-6 provides a listing of these parameters found in Kittitas County in 2016, acknowledging these parameters may be updated in the future. 303(d) listings within the County can be monitored using Washington State Department of Ecology's Water Quality tools found online at http://www.ecy.wa.gov/programs/wq/303d/index.html. Groundwater quality can be monitored through groundwater monitoring stations maintained by the Washington State

Department of Ecology, which can be found at https://ecology.wa.gov/Research-Data/Monitoring-assessment/Groundwater-quality-assessment. In addition, local water quality monitoring will be included as applicable.

- **Hydrology indicators** will include tracking flow gauges through the U.S. Geological Survey (USGS), Washington State Department of Ecology, U.S. Bureau of Reclamation, Kittitas Reclamation District (KRD), or other agencies. USGS water data is available online at https://www2.usgs.gov/water/. Washington State Department of Ecology water data is available online at https://fortress.wa.gov/ecy/eap/flows/regions/state.asp. U.S. Bureau of Reclamation has gauges along the mainstem Yakima River, and water monitoring sites can be found online at https://www.usbr.gov/pn/hydromet/yakima/yaktea.html. KRD monitoring occurs mostly on irrigation canals. Groundwater monitoring wells are also present in Kittitas County to monitor groundwater quantity.
- **Soil function indicators** will include USDA Natural Resources Inventory (NRI) monitoring results related to erosion and soil functions and fertility. This monitoring should focus on locations within or adjacent to critical areas in relation to erosion issues, allowing for more natural erosion rates upland of critical areas. Interactive data viewers at the State level are available online at https://www.nrcs.usda.gov/wps/portal/nrcs/rca/national/technical/nra/rca/ida/.
- **Habitat indicators** will include evaluation of publicly available aerial imagery to assess critical area resource protections (primarily HCAs and wetlands). Imagery evaluation will include a random sampling of areas[7] within the Work Plan's community planning areas. Analysis results will be summarized in the reporting at Community Area and County scales. Individual parcels will not be identified, and producer privacy will be maintained in the evaluation process. Priority habitats and species data available through Washington Department of Fish and Wildlife will also be evaluated in addition to other related information that might or is expected to become available in the future, such as remote sensing through Washington Department of Fish and Wildlife's High Resolution Change Detection program, LiDAR, or other GIS approaches for habitat assessment, if this information is made available to Kittitas County. Additionally, ground-truthing[8] will be needed to ensure that change detection data made available fits the scope and jurisdiction of the VSP. In addition to remotely sensed data, fish abundance and distribution can be monitored and track using passive integrated transponder (PIT) tag array, redd count, radio telemetry, and screw trap data. Once data are obtained, analysis will be needed to determine if agricultural activities are the cause of any identified degradations.

[7] Random sample areas will include a representation of lands for VSP participants as well as other lands that may or may not have practices implemented on them, and these results will be extrapolated to the larger community areas and the County, in an effort to more accurately characterize critical areas protections achieved.

[8] Ground-truthing refers to the practice of comparing data received by remote sensing to existing conditions of the area to determine if remotely sensed data accurately captures characteristics of real life conditions.

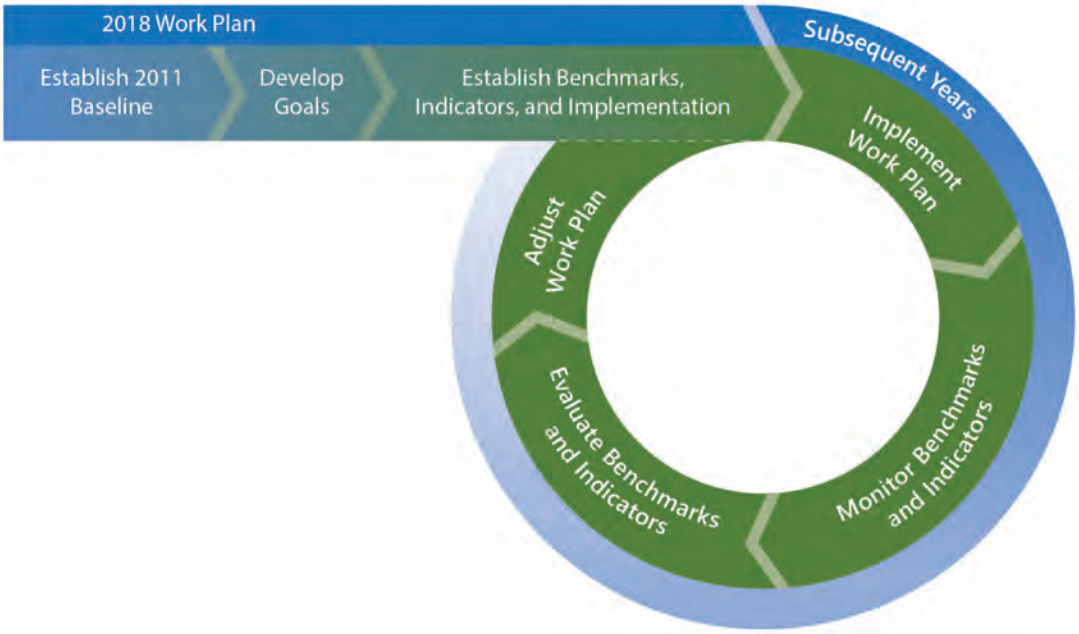
Review of PHS updates and other relevant information comparisons against the 2011 baseline conditions will be done in coordination with Washington Department of Fish and Wildlife.

Indicators provide important information for evaluating the Kittitas County VSP performance and informing adaptive management decisions as described in Section 5.4. If new information is collected during monitoring that is not confidential, it will be made available to the appropriate agencies as applicable to assist their monitoring programs. Indicators may not be determinative of VSP success in maintaining 2011 baseline or better conditions as affected by agricultural activities as opposed to other changes at the landscape scale such as urbanization, major fire events, or long term climatic trends.

5.4 Monitoring and Adaptive Management

Adaptive management typically consists of a monitoring system to identify changes in the environment coupled with a response system to adjust the activities based on performance results and review of indicators information. The adaptive management system would be applied if the performance review in Year 5 of implementation suggests the VSP program may not be protective of critical areas functions existing in 2011. The adaptive management system for the Kittitas County VSP consists of the following four key sequential elements, as illustrated in Figure 5-3:

Figure 5-3
Adaptive Management System



1. **Establish/Update Benchmarks** – After initial development of the Work Plan and establishment of benchmarks and objectives, updates to the protections and enhancement benchmarks and objectives could occur based on the results of the monitoring, evaluation, and adjustment stages of adaptive management. These updates would only be used to reflect changes in the conservation practices implemented, their measured effectiveness, or approved updates to the goals. The standard of protection (no net loss of function from the 2011 baseline) would always remain.
2. **Implement** – The approved Work Plan is put into action, concurrently with monitoring focused on documenting the protection and enhancement of critical area functions and values.
3. **Monitor and Evaluate** – Monitoring data are collected on participation and various indicators and used to determine if specific functions and values are being protected. These data are then evaluated relative to the protection and enhancement goals. Differences between targeted goals and results are identified, and the causes for those differences are investigated, including consideration of participation measures and indicators. Objectives adjustments are made as needed to maintain protection of critical area functions and values.
4. **Adjust** – Information learned in previous steps is used to adjust the participation benchmarks, stewardship practices, or level of incentive for enhancement.

Considering the Changes to Baseline Conditions

It's important to note changes to baseline conditions are likely to occur that are unrelated to agricultural activities. These may be due to effects from climate change, natural events (e.g., floods, wild fires), or other changes outside of the scope of VSP (e.g., forest practices). Additional changes to baseline may occur in the County that are the result of activities outside of the County. These changes will be accounted for in the reporting, but will be considered as changes to the baseline conditions. Changes to a baseline condition will likely have the effect of also changing the associated protection benchmark. These updates to the baseline will not count against agriculture for VSP assessment purposes will be documented through the reporting and adaptive management process.

The adaptive management process is iterative and would repeat cyclically at least every 5 years, as part of the implementation of the VSP. If an adjustment is identified, the Watershed Group would submit a written report identifying the results of the evaluation and a strategy to make the necessary adjustments to the Work Plan to the WSCC. If an adjustment is not necessary, then the report would simply state the results of the evaluation. In either case, the process of adaptive management would be applied at least every 5 years.

Monitoring and adaptive management is based on two strategies

1. **Direct monitoring** of producer participation (Table 5-9)
    a. **Enrolled acres monitoring**. Direct monitoring of stewardship participation (enrolled acres) in key stewardship practices is integral to the outreach strategy. Participation goals were developed based on agricultural activities, critical area functions, and the anticipated

effects of implementing specific stewardship practices. During outreach and implementation, enrollment data will be frequently reviewed to determine if participation levels are adequate to meet the goals and benchmarks identified in Section 5.1 and 5.2.

b. **Sample verification.** In addition to monitoring enrollment acres, KCCD will also monitor a randomly selected sample of 10% of the reported projects, including self-reported/funded, to verify the performance of the stewardship practices in terms of implementation/application and maintenance, relying on the CPPE framework. The relative changes in functions affected from a given stewardship practice will be tracked in relation to baseline conditions, e.g., a +2 CPPE score for a practice will be captured as a +4 if practices are moving to from a -2 to +2.

c. **Adaptive management trigger.** If at any point after the first year the annual producer participation rate drops below 120% of the rate needed to meet the protection benchmark, measures would be taken to understand the situation. Since the trigger is above the necessary participation rate, this allows the VSP Implementation Lead (KCCD) to adjust before the protection benchmark is in jeopardy. Participation goals and objectives with potential adaptive management actions are described in Table 5-8.

d. **Adaptive management process.** Table 5-9 includes a more detailed description of the adaptive management process for enrollment, including specific thresholds for each of the key practices.

2. **Indirect monitoring** of indicators of critical areas and their functions and values (Table 5-10)

a. **Indicators**. Indicators, identified in Section 5.3, will be used to assess whether the enrollment in VSP is having the anticipated effect of protecting and/or enhancing critical area functions and values. If enrollment goals are met, but indicators show a negative trend in critical area functions and values, it will be important to analyze whether this is related to agriculture, and respond accordingly.

b. **VSP applicability.** Some indicators (e.g., stream temperature) may be responding to changes other than agricultural activities (e.g., climactic variability, reservoir operations, urbanization). Where a link to changes in agricultural activities can be made, it may be important to also understand the contribution of other factors. Indicators of negative impacts related to changes in agriculture since 2011 would trigger additional stewardship practices, higher enrollment goals, or increased outreach as needed to mitigate these impacts. Because detection of long-term trends in environmental indicators is difficult, this review will occur every 5 years as part of VSP reporting.

c. **Process.** Table 5-10 includes a description of how environmental indicators discussed in Section 5.3 will be used to refine the goals and benchmarks of the VSP over time.

As noted above, indicators data are limited and not always collected in an ideal manner for the direct evaluation of VSP benchmarks and program performance. Where data are limited, adaptive

management measures described in this section will be applied as part of implementation to address these data shortfalls where possible within program constraints.

Table 5-8
Producer Participation Goal and Adaptive Management for Low Enrollment

Participation Goal: Promote producer participation in voluntary stewardship of agricultural lands and critical areas to meet the protection and enhancement benchmarks and protect critical areas functions and values at a County-wide watershed level.					
Objectives/Benchmarks	**Performance Metric/Monitoring Method**	**Potential Cause**	**Adaptive Management Action**	**Who Monitors**	**When**
Sufficient active participation by commercial and non-commercial agricultural operators (farmers and ranchers) over 10 years that achieves the protection of critical area functions and values at a County-wide watershed level.[1]	• Number of acres reported in key stewardship practices • Number of Self-Assessment Checklists submitted • Sufficient producer participation necessary to meet protection and enhancement benchmarks	Key practice not consistent with agricultural viability	Identify alternative practices that provide similar function and are agriculturally viable	VSP Coordinator (KCCD)	Monitored every year Reported during the Two-year status reports and Five-year performance reports
		Incentives associated with key stewardship practice no longer available	Identify alternative funding or alternative practices that are more likely to be self-funded		
		Inadequate reporting of voluntary participation	Increase outreach to producers		
		Change in agricultural practices that make key practices less applicable	Develop applicable practices that provide similar function		
		Changes in agricultural economy that make self-funded stewardship practice implementation difficult	Identify alternative funding or other incentives		
Passive participation by commercial and noncommercial agricultural operators in VSP stewardship practices is maintained or increased over 10 years on agricultural land (including but not limited to those listed in Table 5-6 and Appendix C, Attachment 2).[2]	• Mapping and aerial photo evaluation and/or rapid watershed assessment of practices in place • Random sampling of farmers and ranchers in the field by technical assistance providers with willing landowners	Decrease in passive participation in VSP	Increase outreach to producers		
Technical assistance and outreach is provided to agricultural producers to encourage stewardship practices and VSP participation.	• Number of outreach and education events • Number of event attendees	Decrease in either active or passive participation in VSP	Increase outreach to producers		

Notes:
1. Active participation includes stewardship activities reported either through publicly-funded programs or self-reported through the Self-Assessment Checklist in coordination with the VSP Coordinator or technical assistance provider.
2. Passive participation includes un-reported stewardship activities.

Table 5-9
Adaptive Management Process for Enrollment

Type	Adaptive Management Objective	Protection Metric[1] (Annual)	Verification	Adaptive Management Trigger (120 % of Protection Metric) (Annual)	Adaptive Management Action	Who Monitors	When
Soil Management	Residue Management	98 acres	10% verified through monitoring and visual recognition	118 acres	Outreach with producers/review approach	Conservation District	Every year
	Polyacrylamide Application						
	Conservation Cover						
Water Management	Irrigation Water Management	141 acres	10% verified through monitoring and visual recognition	168 acres			
	Micro-Irrigation						
	Sprinkler System						
	Pipeline	743 feet		891 feet			
Nutrient Management	Nutrient Management	8 acres	10% verified through monitoring and visual recognition	10 acres			
Pest Management	Pest Management	16 acres	10% verified through monitoring and visual recognition	19 acres			
Stream Enhancement	Streambank and Shoreline Protection	19 feet	10% verified through monitoring and visual recognition	23 acres			
	Channel Bed Stabilization						
	Aquatic Species Passage	1 project		1.2 projects			
	Structure for Water Control (fish screens)						
Range Management	Range Planting	25 acres	10% verified through monitoring and visual recognition	30 acres			
	Managed Grazing						
	Watering Facility	1 facility		1.2 facilities			
Habitat Management	Tree/Shrub Establishment	4 acres	10% verified through monitoring and visual recognition	5 acres			
	Riparian Forest Buffer						
	Wetland Enhancement						

Note:
1. Metric is calculated based on annual to meet 2020 benchmark values identified in Table 5-7.

Table 5-10
Adaptive Management Process for Critical Area Functions and Values Protection and Enhancement

Goal	Adaptive Management Objective	Indicator Data Source	Performance Metric	Monitoring Method	Adaptive Management Action Threshold	Adaptive Management Action	Who Monitors	When	Party Responsible for Action
Maintain or improve surface water and groundwater quality	Ensure stewardship practices employed with the goal of protecting or improving water quality are effective	Water quality stations	Change in Category 2 through 5 303(d) listings, focused on parameters that potentially have an agricultural source.	Tracking Category 4 and 5 listings through Washington State Department of Ecology's 303(d) Water Quality tools	Trends in available data indicating a decrease from baseline water quality due to agriculture	Determine whether water quality parameters are from agriculture or non-agriculture contributors. Survey with outreach to agricultural producers owners along affected watercourse, waterbody and/or CARA to determine % of participation in stewardship Identify if enrollment in conservation practices is supporting goals Identify stewardship strategies with Watershed Group to target for implementation to support goal	Conservation District	Every 5 years	Conservation District and participating land owners
Maintain or improve storage capacity and groundwater recharge	Ensure stewardship practices employed with the goal of maintaining or improving storage capacity and groundwater recharge are effective	Stream flow gauges, groundwater monitoring wells	Changes in flows that are attributable to agricultural practices (as opposed to regional drought)	Tracking water level gauges through USGS Water data	Trends indicating a decrease from baseline storage capacity and/or groundwater recharge due to agriculture	Determine whether storage capacity and groundwater recharge issues are due to agriculture Survey with outreach to agricultural producers along floodplains and within CARA to determine percentage of participation in stewardship Identify if enrollment in conservation practices is supporting goals Identify stewardship strategies with Watershed Group to target for implementation to support goal	Conservation District	Every 5 years	Conservation District and participating land owners
Maintain or improve soil conservation and soil fertility	Ensure stewardship practices employed with the goal of maintaining or improving soil functions are effective	USDA NRI monitoring result	Changes in volume of soil and/or overall soil fertility relative to critical areas	Tracking soil data through USDA NRI monitoring results, tracking sediment parameter within Washington State Department of Ecology's 303(d) Water Quality tools	Trends indicating a decrease from baseline soil and/or soil fertility due to agriculture	Determine whether soil issues are due to agriculture Survey with outreach to agricultural producers to determine percentage of participation in stewardship Identify if enrollment in stewardship practices is supporting goals Identify stewardship strategies with Watershed Group to target for implementation to support goal	Conservation District	Every 5 years	Conservation District and participating land owners

Goal	Adaptive Management Objective	Indicator Data Source	Performance Metric	Monitoring Method	Adaptive Management Action Threshold	Adaptive Management Action	Who Monitors	When	Party Responsible for Action
Protect or enhance terrestrial and aquatic habitat	Ensure stewardship practices employed with the goal of protecting or improving habitat are effective	Washington Department of Fish and Wildlife PHS data or other aerial and GIS-based evaluation; USDA NRI monitoring results and National Wetlands Inventory data	Changes in amount of HCAs and wetlands	Tracking PHS data through the Washington Department of Fish and Wildlife, and wetlands and other critical areas through other listed information sources; evaluating random sample areas of critical areas and agricultural lands (including a representation of lands with conservation practices documented and lands where practices are not documented) using available aerial imagery, LiDAR, and associated GIS methods	Trends indicating a decrease from baseline terrestrial and/or aquatic habitat due to agriculture	Determine whether habitat issues are due to agriculture Survey with outreach to agricultural producers and/or property owners to determine percentage of participation in stewardship Identify if enrollment in stewardship practices is supporting goals Identify stewardship strategies with Watershed Group to target for implementation to support goal	Conservation District	Every 5 years	Conservation District and participating land owners
	Ensure stewardship practices employed with the goal of protecting or improving fish species are effective	Fish abundance and distribution	Changes in fish presence and abundance	PIT tag arrays, redd counts, radio telemetry, and screw traps	Trends indicating a decrease from baseline fish presence due to agriculture				

5.5 Opportunities and Needs

The goals, benchmarks, indicators, and adaptive management measures identified in this Work Plan were developed to ensure protection of critical area functions as they existed on July 22, 2011, while also maintaining and promoting agricultural viability. The Watershed Group identified three key elements that could help promote the success of this Work Plan. The Watershed Group does not intend to address these elements, but if implemented by others they could be integrated into the Work Plan in the future:

- Improve incentives to increase participation in programs or create new programs that specifically address stewardship practices encouraged in this Work Plan. For example, riparian habitat enhancement is often addressed through programs like the Conservation Reserve Enhancement Program in other areas of the state. In Kittitas County, current Conservation Reserve Enhancement Program payments, which are based on FSA soil rental rates, are too low to entice producers to participate.
- Improve and update mapping of critical areas and other relevant environmental and natural resource data to support monitoring and adaptive management.
- Improve or develop a system to replace CPPE to better reflect the physical effects of conservation practices based on the resource concerns, agricultural economics, and environment of Kittitas County.

6 Implementation

6.1 Framework for Implementation

Work Plan implementation is expected to continue largely through established programs and organizations. As noted previously, many agricultural-based programs, activities, and efforts are already in place to protect and, in many cases, enhance critical areas and agricultural viability. Significant progress has been made to these ends in recent years, and is expected to continue under this and other related efforts. These efforts include habitat and fish passage improvements supported by the Yakima Basin Integrated Plan, the Yakima Tributary Access and Habitat Program, and the Yakima Steelhead Recovery Plan. This Work Plan has been designed to fit within this existing framework, with supplemental efforts identified to meet state VSP requirements. These requirements include documenting 2011 critical areas baseline conditions, establishing goals and measurable benchmarks, identifying stewardship practices, and establishing monitoring and adaptive management measures to track Work Plan performance in protecting critical areas and maintaining agricultural viability. The initial tracking timeframe for this Work Plan is the first 10 years of implementation.

RCW 36.70A.705, the Watershed Group is responsible for developing the Work Plan and overseeing its implementation. Work Plan implementation responsibilities include: agricultural producer participation and outreach; technical assistance; program performance tracking and reporting; and adaptive management. The KCCD and others can help in performing these responsibilities. The anticipated implementation budget for this Work Plan is summarized in Table 6-1, under the assumption that State funding for VSP is continued at a level of $220,000 each biennium for the County.

Table 6-1
Implementation Budget

Task	Activities	Who	Biennium Budgets[1]
Education, Outreach, and Technical Assistance	• Conduct outreach and develop education materials • Assist producers in developing stewardship plans • Facilitate Self-Assessment Checklist reporting • Identify cost-share to leverage other conservation project funding	KCCD/ VSP Coordinator	$135,000
Monitoring, Reporting, and Adaptive Management	• Annual monitoring and tracking • Develop adaptive management as needed • Prepare 2-year status reports • Prepare 5-year progress reports	KCCD/ VSP Coordinator or contract services	$70,000[2]
Watershed Group Coordination	• Attend quarterly meetings • Coordinate report and adaptive management review and approvals	KCCD/ VSP Coordinator	$15,000
		Total State Budget	**$220,000**

Notes:

1. Assumes State funding for VSP is continued at a level of $220,000 each biennium for the County.
2. Costs will be less in non-reporting years to support annual monitoring and tracking efforts. The majority of budget item will support costs during the 2-year and 5-year reporting years: 2019, 2020, and 2025.

Ultimately, agricultural producers play the most integral role in VSP implementation. Success of the VSP relies on these producers to voluntarily implement stewardship actions that help meet Work Plan goals and benchmarks for critical areas protection and agricultural viability.

6.2 Agricultural Producers Participation, Technical Assistance, and Outreach

Many producers are already implementing stewardship actions throughout the County that are protecting or enhancing critical areas and supporting agricultural viability, as described in Section 4. Two participation objectives have been established for Kittitas County VSP implementation:

1. Better identify and document the existing measures that have been put in place since 2011 through private-sector activity and outside of government programs.
2. Increase the level of participation among agricultural producers in implementing stewardship practices and document those efforts going forward.

Regarding the first objective, it is expected the measures summarized in Section 4 represent only a portion of the total measures implemented during this period. Outreach to individual landowners, as well as to private industry groups, is planned in Years 0 to 2 to better document existing practices and identify future practices that might be implemented outside of government programs.

Additional outreach and coordination with the private sector, resulting from initial outreach activities, is expected to continue through the remaining 8 years of the initial 10-year performance tracking period at levels supported by the economy and available funding sources as described in this Section.

The second participation objective is focused on increasing the number of stewardship practices implemented by agricultural producers and helping to meet protection and, where possible, enhancement performance goals outlined in Section 5. Achieving this objective includes offering technical assistance to producers with the development of individual farm stewardship plans, identifying and targeting technical assistance and financial incentive programs that further the goals of the Work Plan, and making producers aware of available private- and public-sector financial incentives and programs. This technical assistance would also include helping to estimate the expected benefits that can be realized from implementing the measures identified in individual stewardship plans, including agriculture viability benefits at the farm level. These plans will also be instrumental in tracking voluntary stewardship efforts, and developing better metrics in overall progress toward the benchmarks going forward. VSP success depends on producer participation, and producer participation depends on effective protection of producers' confidential business information from disclosure. According to guidance from the WSCC, statutory provisions on the confidentiality and disclosure of a farm plan also apply to a VSP "individual stewardship plan" that a conservation district helps a producer develop (unless the producer expressly permits disclosure). VSP technical assistance providers can provide more detail on applicable confidentiality and disclosure provisions for particular types of agricultural operations and conservation programs.

Producer Participation Goal

In addition to the benchmarks for enrolled acres in stewardship practices identified in Section 5, this Work Plan includes a producer participation goal to help track progress towards the Work Plan's protection and enhancement benchmarks.

It is estimated the reported stewardship practices in the County account for approximately 10% of the County's agricultural operators. This Work Plan includes the goal of **promoting producer participation (as measured either by new enrollment in stewardship practices or new producer reporting) as described in Table 5-8**. New acres enrolled will include new participants in privately-funded practices as captured through reporting for existing and new projects and new participants accounted for in government-funded programs. This goal will be tracked annually with progress reported in the 2-year and 5-year reports.

Results from these efforts will be tracked and documented, along with documenting any lands where stewardship practices are no longer implemented, so the overall net effect on protecting (and where applicable, enhancing) critical areas is characterized.

Although the Work Plan and the goals and benchmarks discussed in Section 5 apply County-wide, KCCD will tailor implementation approaches to address priorities within each Community Planning Area (see Appendix B-2).

6.2.1 Organization Leads

The KCCD will lead the public-sector[9] program participation efforts, supported by other agencies, such as Washington State Department of Agriculture, Washington Department of Fish and Wildlife, Washington State Department of Ecology, NRCS, and FSA, and others, with their respective programs and support from the private sector[10]. See Section 6.4 and Appendix D for additional detail on public-sector plans, programs, and agency partners that support the goals of this Work Plan.

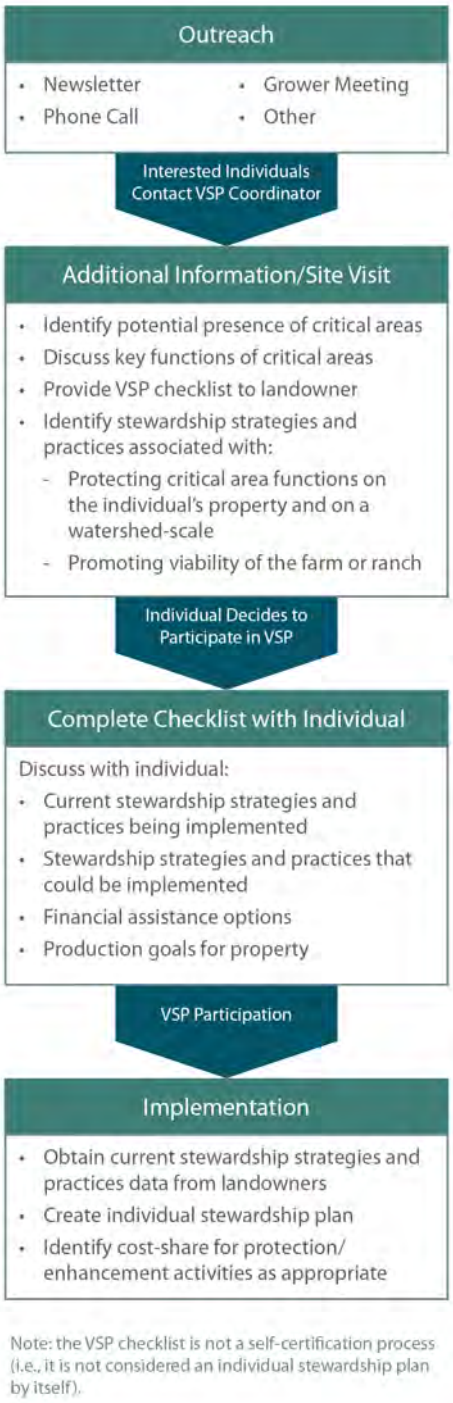
Technical assistance occurs in a variety of ways, including developing individual farm stewardship or conservation plans, range management plans, providing advice on use of specific practices, and sharing information at forums, meetings, and other venues where stewardship practices are highlighted for environmental and economic benefits (Table 6-2). KCCD will prepare biennial work plans that incorporate public-sector activities to be implemented to achieve VSP outreach and technical assistance objectives, and will identify plans for working with the private sector to capture information about practices put in place through its efforts. Figure 6-1 provides a protocol on how the Self-Assessment Checklist (Appendix A) will be used and illustrates the process from outreach to implementation. See Section 6-4 and Appendix D for additional detail on public-sector plans, programs, and agency partners that support the goals of this Work Plan.

[9] Public-sector refers to agencies or organizations of federal, state, or local governments.
[10] Private-sector refers to organizations that are independent of governments.

Table 6-2
Potential VSP Outreach Opportunities

Venue	Description
Tours	• KCCD-led annual tours • Legislative and partner agencies outreach tours • On-farm testing/demonstrations • Field trials
Meetings	• KCCD monthly board meetings (public meetings) • KCCD annual meetings • Private-sector agricultural industry-led meetings • Agricultural producer groups (e.g., Farm Bureau, Cattlemen's Association) • County government • Irrigation districts and companies • USDA Big Bend Local Work Group • FSA County Committee
Media	• KCCD and private-sector agricultural industry websites, newsletters, and social media sites • WSCC news and announcement webpage • Articles, announcements, and advertisements with local newspapers • E-mail distribution lists • FSA newsletter • Washington State University newsletter
Others	• Informational booths and displays at fairs and agricultural conventions • Individual outreach, consistent with KCCD policies • News releases

Figure 6-1
Self-Assessment Checklist Use Protocol



Note: Based on flowchart developed by the Franklin Conservation District for the Franklin County VSP Work Plan.

6.3 Monitoring, Reporting, and Adaptive Management

Monitoring performance, reporting progress on Work Plan goals and benchmarks, and implementing adaptive management measures when necessary are part of this Work Plan. Tracking program performance and reporting includes the following tasks:

- **Two-year status reports.** Conduct a program evaluation and provide a written report on the status of the Work Plan, including accomplishments, to the County and to the WSCC within 60 days (by the end of September) after the end of each biennium. Based on a November 17, 2015 receipt of funding date, 2-year reports are due by end of September in 2019, 2021, 2023, 2025, and 2027.
- **Five-year performance reports.** Develop and provide to the WSCC 5-year progress reports on Work Plan performance in meeting goals and benchmarks. Based on a January 2016 start date, 5-year progress reports would be due in early 2020, 2025, and every 5 years thereafter.

The timeline for this implementation process is shown in Table 6-3.

Table 6-3
Timelines for Implementation Process

Category	Schedule	Roles and Responsibilities
Periodic Evaluations	Finalize Work Plan in 2018 (Latest date for approval is Aug. 17, 2018 per WSCC)	Watershed Group
	2019, 2021, et seq.	Watershed Group
Report on Goals and Benchmarks	VSP start date in 2015	Watershed Group oversees; KCCD prepares report
	2020, 2025, et. seq.	
Adaptive Management or Additional Voluntary Actions	Ongoing after 2020	Watershed Group oversees Work Plan adjustment recommendations to WSCC

The 2-year status and 5-year performance reports would be developed by KCCD under the direction of the Watershed Group. Draft reports would be prepared and presented to the Watershed Group for review and comment. Reports will meet refined standards for VSP from lessons learned as part of implementation, as funding allows. Comments would be addressed and edits made to the reports, which would then be approved by the Watershed Group after they are satisfied that the reports are accurate and complete. Reports would be distributed to the County, WSCC, and others by KCCD on behalf of the Watershed Group. The general timing for reporting will be as follows:

- Monitoring will focus on the measurable benchmarks and indicators described in Section 5 and will include informal evaluations at least every 2 years in support of the 5-year

performance review, and to determine if any adaptive management measures are needed prior to the 5-year review.

- The Watershed Group must report no later than 5 years after receipt of funding (2015 for Kittitas County) on whether the protection and enhancement goals have been met or identify an adaptive management plan to meet VSP goals and benchmarks.
- The Watershed Group must report no later than 10 years after receipt of funding, and every 5 years thereafter, whether it has met the protection and enhancement goals and benchmarks of the Work Plan.

Work plans often need to adapt to changing conditions and observations of results that aren't consistent with established goals. Adaptive management is the process for, "continually improving management policies and practices by learning from the outcomes of the operational programs" (Nyberg 1999). If the Watershed Group determines goals have not been met, they must propose and submit an Adaptive Management Plan to achieve the goals and benchmarks. While adaptive management actions will be included with the 2-year status reports and 5-year progress reports, the monitoring and adaptive management process outlined in Section 5 will be applied on an ongoing basis as needed. Monitoring indicators will inform the long-term viability of the Adaptive Management Plan, based on goals for protecting critical area functions. Monitoring will focus on the measurable benchmarks and goals also described in Section 5.

6.4 Existing Programs, Plans, and Other Applicable Regulations

The GMA was passed by the Washington State legislature in 1990 to help the state manage and regulate the growth of development and activities that have the potential to affect sensitive environments and species, including critical areas. The VSP is part of the GMA, but was also written to work with other existing programs, plans, and applicable rules and regulations. The following subsections provide a brief overview of the existing resources used in this Work Plan and describes how they relate to other applicable rules and regulations (the regulatory environment).

6.4.1 Existing Public Conservation Programs

The existing programs, plans, and guidance documents that were used for this Work Plan are from federal conservation programs, local- and county-based watershed and groundwater management programs, and federal, state, and local planning efforts. These resources have been incorporated into this Work Plan to the maximum extent practical, consistent with the intent of the VSP. There are a variety of conservation programs available to agricultural producers that provide technical assistance and resources for ways to improve the agricultural viability of their land while protecting or enhancing critical areas. Funding opportunities are also available through these programs for qualifying applicants and projects. Table 6-4 includes a comparison of conservation programs that are currently available. Appendix D contains more detail for each program and links to the program's webpages.

Table 6-4
Public Sector Conservation Programs Summary

Lead	Description	Technical Assistance[1]	Financial Assistance[2]	Partnership Agreements[3]	Contractor Easement[4]
NRCS	Provides technical and financial assistance to help agricultural producers make and maintain conservation improvements on their land as well as offers conservation easement programs and partnerships to leverage existing conservation efforts on farm lands	●	●	●	●
FSA	Oversees several voluntary, conservation-related programs that work to address several agriculture-related conservation measures, including programs such as CRP		●		●
WSCC	Works with and supports Conservation Districts to provide voluntary, incentive-based programs for implementation of conservation practices through financial and technical assistance; administrative and operational oversight; program coordination; facilitate conservation easements; and promotion of activities and services		●	●	●
Washington State Department of Fish and Wildlife	Provides financial assistance for habitat projects that restore and/or preserve fish and wildlife habitat through funding opportunities such as the ALEA Volunteer Cooperative Grant Program and technical and financial assistance for fish screening and passage through Yakima Construction Shop	●	●		
Washington State Recreation and Conservation Office	Provides funding to protect aquatic lands and for projects aimed at achieving overall salmon recovery, including habitat projects and other activities that result in sustainable and measurable benefits for salmon and other fish species; funding is provided through programs such as ALEA, Washington Wildlife and Recreation Program, and the Salmon Recovery Funding Board Grant Program		●		
Washington State Department of Ecology	Provides funding for water-quality improvement and protection projects, including programs such as the Water Quality Financial Assistance program and voluntary partnership programs		●	●	
Washington State University Extension	Provides agricultural producers with technical assistance, research, and education services	●			
Kittitas County Water Purveyors	Provide technical assistance to landowners to increase water quality related to irrigation practices and habitat improvement	●			

Lead	Description	Technical Assistance[1]	Financial Assistance[2]	Partnership Agreements[3]	Contractor Easement[4]
KCCD	Works through voluntary, incentive-based programs to assist landowners and agricultural operators with the conservation of natural resources throughout the district, including cost-share and watershed-based partnership programs such as the Yakima Tributary Access & Habitat Program and the "Yakima Basin Integrated Plan – Toppenish to Teanaway" RCPP project	●	●	●	

Notes:
1. Technical assistance includes providing stewardship practice information or technical resources to producers
2. Financial assistance includes grant or funding opportunities to support stewardship practice implementation
3. Partnership agreements are developed for completing conservation projects in partnership with an agency who has partial ownership
4. Contractor easements include the payment for land to be removed from agricultural production

6.4.2 Private-Sector and Not-for-Profit Programs

Private-sector services and programs are available through existing agri-businesses and associations serving the County such as food-processing companies, certified crop consultants, and agri-businesses providing soil services, and integrated water, pest, and nutrient management services.

6.4.3 Existing Plans and Guidance

Available plans and guidance were referenced for developing the goals and benchmarks in this Work Plan and were obtained from existing federal, state, and local sources, including water quality improvement projects, species and habitat recovery recommendation and guidance, including shrub-steppe restoration and water management plans.

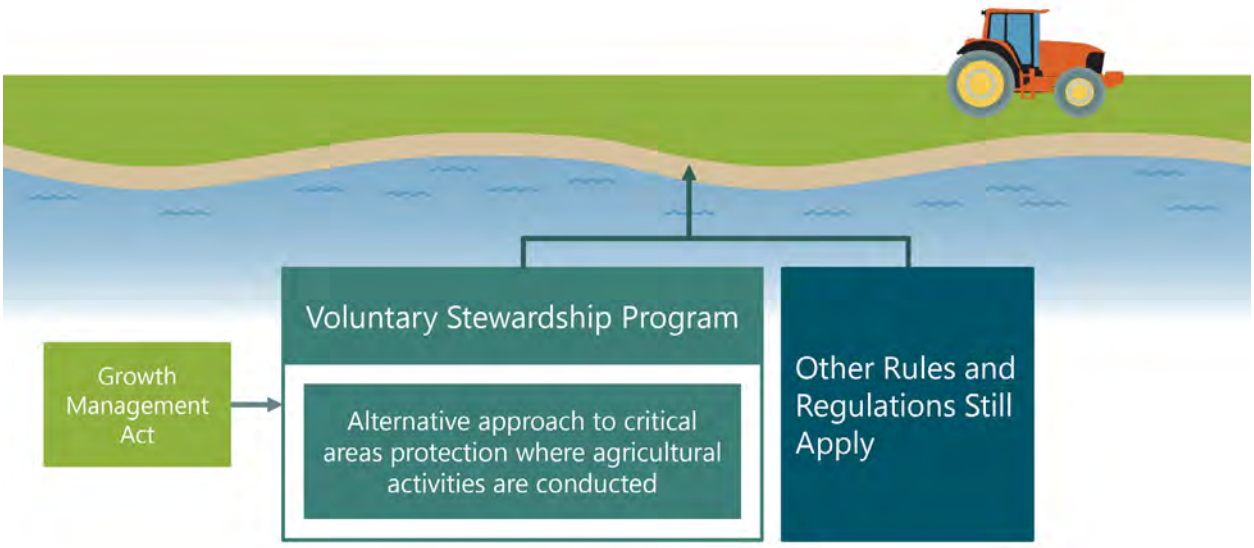
Washington State Department of Ecology has been developing strategies to protect water quality and improve working relationships with agricultural landowners and livestock producers. Washington State Department of Ecology has also established a new Agriculture and Water Quality Advisory Committee comprising a broad array of agricultural participants. The new committee aims to provide an open forum for dialogue regarding water quality protection and a healthy agricultural industry. See Appendix D for a more comprehensive list of existing plans and guidance.

Additionally, the Yakima Basin Integrated Plan includes funding of habitat protections and enhancements and water conservation efforts that agricultural producers can use. These actions will act to ensure a stable supply of irrigation water into the future, which is a crucial component of agricultural viability and provides benefits to critical area functions and values.

6.4.4 Regulatory Environment

Even though the VSP is carried out under the GMA, other rules and regulations still apply for agricultural activities that have the potential to impact critical areas (Appendix D). Existing federal and state rules and regulations will still apply to agricultural activities that have the potential to affect the environment, including the federal Clean Air Act, Clean Water Act, and Endangered Species Act. Other state and local environmental regulations may also apply to agricultural activities with the potential to affect the environment. Figure 6-1 is intended to show how the VSP relates to other rules and regulations that apply separately from critical areas protection under the GMA.

Figure 6-2
Voluntary Stewardship Program Regulatory Underpinning



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Appendix A
Self-Assessment Checklist

Working together, farmers can use voluntary efforts to avoid additional regulatory controls.

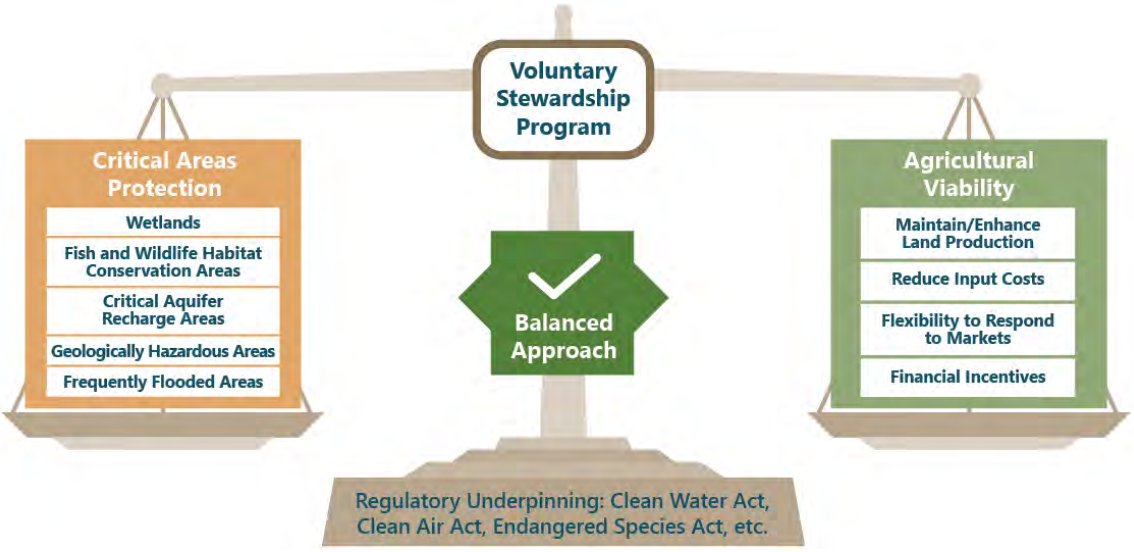
The Voluntary Stewardship Program (VSP) is a new, non-regulatory, and incentive-based approach that supports individual farm operations while protecting critical areas and maintaining agriculture viability in Kittitas County through **voluntary stewardship strategies and practices**.

Failure to meet protection and associated participation goals in the County will trigger the **traditional regulatory approach** to critical area protection under the County's Critical Areas Ordinance process.

How Can the VSP Support Operations on Your Farm?

VSP allows farmers to have more flexibility through ongoing agricultural stewardship practices, than traditional regulatory approaches for protecting critical areas. VSP also requires that this approach maintain and enhance the long-term viability of agriculture. Many farmers in the County are already conducting and tracking stewardship activities and practices that promote farm viability while also providing protections to critical area functions. This Self-Assessment Checklist will allow farmers to take credit for the actions they are already implementing.

Balanced Approach of Critical Area Protection and Agricultural Viability



Kittitas County VSP
Self-Assessment Checklist

The main objectives of the Self-Assessment Checklist are to:

- Identify and document existing stewardship strategies or practices you have implemented since 2011 (effective date of VSP), either through existing publicly funded programs or voluntarily implemented through producer-funded practices.
- Identify opportunities to:
  - Maintain or improve existing stewardship strategies and practices
  - Implement additional stewardship strategies and practices on your land and connect you with technical service providers for implementing these practices
- Encourage high producer participation, through implementation of voluntary stewardship strategies and practices to help ensure the success of VSP.

What are critical areas?

Critical areas include:

- Wetlands
- Fish and Wildlife Habitat Conservation Areas
- Critical Aquifer Recharge Areas
- Geologically Hazardous Areas
- Frequently Flooded Areas

Stewardship Practices on Your Farm

Stewardship practices are broadly defined as any practice that, when implemented, further protects critical areas directly or indirectly, and maintains or improves agricultural viability whether or not they meet a Natural Resources Conservation Service (NRCS) conservation practice or other standard recognized by VSP.

This checklist can assist in documenting all stewardship strategies and practices currently being implemented by producers in the County and identify additional stewardship practices that might apply to your property. Because stewardship strategies and practices may fall under multiple categories, please include each implemented practice **only once**.

Privacy Note:

The Self-Assessment Checklist can assist producers in developing an "individual stewardship plan" in coordination with the KCCD. "Individual stewardship plans" that a conservation district helps a producer develop are confidential and exempt from disclosure, similar to farm plans developed by conservation districts per RCW 42.56.270(17)(a) and (b).

Stewardship practices information shared by producers with the KCCD will be used to quantify, at the County-level, stewardship measures that have been implemented, as well as associated critical area protections and enhancements and agricultural viability benefits.

General Location (voluntary information):

If you are inclined to share, what Community Area is your farm located within?

- ☐ Forested Upland
- ☐ Shrub Steppe Upland
- ☐ Intensive Cropland – Kittitas Valley
- ☐ Intensive Cropland – Northern Kittitas County

Land Management and Agricultural Viability:

What types of land management or agricultural viability concerns do you have on your property?

- ☐ Water availability
- ☐ Fish screening and passage
- ☐ Soil loss (erosion)
- ☐ Weed management
- ☐ Pollinator/beneficial organism management
- ☐ Yield/fertility
- ☐ Inputs reduction (e.g., crop protection tools and/or nutrients)
- ☐ Other(s) please list: _____ _____

Water Management

Water availability is a major concern in Kittitas County. Stewardship practices that reduce the overall water consumption benefit the farmers that rely on irrigation water while increasing the amount of water available for fish and wildlife.

Grazing

Managing grazing to improve plant communities helps to reduce run-off, increases water infiltration, restores degraded habitat, and maintains healthy plant communities.

What Stewardship Practices Are Being Implemented on Your Farm Since 2011?

Conservation Practices Examples[1]	I do this	I'm interested in this	Does not apply	Not interested	Average units/year (acres/feet/other)
Water Management					
Sprinkler Systems	○	○	○	○	_____ acres
Irrigation Water Management	○	○	○	○	_____ acres
Micro-irrigation	○	○	○	○	_____ acres
Other(s): _____	○	○	○	○	_____ _____ *(unit)*
Pest and Nutrient Management					
Pest Management	○	○	○	○	_____ acres
Nutrient Management	○	○	○	○	_____ acres
Other(s): _____	○	○	○	○	_____ acres
Range Management					
Managed Grazing	○	○	○	○	_____ acres
Stock Watering Facilities/Wells	○	○	○	○	_____ no.
Other(s): _____	○	○	○	○	_____ _____ *(unit)*
Soil Management					
Conservation Cover	○	○	○	○	_____ acres
Residue Management, No-Till	○	○	○	○	_____ acres
Residue Management, Reduced Till					_____ acres
Other(s): _____	○	○	○	○	_____ acres
Habitat Management					
Stream Habitat Improvement and Management	○	○	○	○	_____ acres
Riparian Herbaceous Cover	○	○	○	○	_____ acres
Riparian Forest Buffer					
Tree/Shrub Establishment	○	○	○	○	_____ acres
Upland Wildlife Habitat Management	○	○	○	○	_____ feet
Other(s): _____	○	○	○	○	_____ ____ *(unit)*
Stream Enhancement					
Streambank and Shoreline Protection	○	○	○	○	_____ feet
Channel Bed Stabilization					_____ feet
Aquatic Organism Passage	○	○	○	○	_____ no.
Structure for Water Control (fish screen)	○	○	○	○	_____ no.
Other(s): _____	○	○	○	○	_____ ____ *(unit)*

[1] There are a variety of implementation methods that are acceptable within each type of stewardship practice. Under VSP, a goal is to document and take credit for all conservation practices that provide benefits to critical areas functions and values.

Additional Information and Assistance

Critical areas exist throughout the County. You can direct questions about the presence of critical areas on your property or participation in the VSP to the Kittitas County VSP Coordinator by using the contact information below. Additional information on the VSP can be found at the Kittitas County Conservation District website http://www.kccd.net/VoluntaryStewardship.htm.

VSP Technical Assistance Providers

Kittitas County Conservation District
Anna Lael (VSP Coordinator) District Manager Kittitas County Conservation District 2211 W Dolarway Road, Ste 4 Ellensburg, WA 98926 a-lael@conservewa.net (509) 925-3352

Other Local Resources:

- Washington Cattlemen's Association: http://www.washingtoncattlemen.org/
- Organization of Kittitas County Timothy Hay Growers and Suppliers: http://www.kittitastimothy.org/
- Kittitas County Water Purveyors: http://www.kcwp.org/
- Washington Farm Bureau: https://wsfb.com/
- U.S. Department of Agriculture Natural Resources Conservation Service: https://www.nrcs.usda.gov/wps/portal/nrcs/site/national/home/
- Washington State University Extension: http://extension.wsu.edu/

Appendix B
Baseline Conditions Summary

B-1 Baseline Conditions Summary – Methods and Data Sources
B-2 Community Planning Areas
B-3 Kittitas County Critical Areas Designations and Definitions
B-4 Countywide GIS Baseline Data Summary
B-5 Agricultural Viability Interviews Summary
B-6 Kittitas County Water Quality 303(d) Listings (2017)

Appendix B-1
Baseline Conditions Summary – Methods and Data Sources

Appendix B-1: Baseline Conditions Summary – Methods and Data Sources

Overview

The effective date of the VSP legislation is July 22, 2011. This is also the date chosen by the legislature as the applicable baseline for accomplishing the following items (RCW 36.70A.703):

- Protecting critical areas functions and values.
- Providing incentive based voluntary enhancements to critical areas functions and values.
- Maintaining and enhancing the viability of agriculture in the County.

The 2011 baseline sets the conditions from which the County will measure progress in implementing the Work Plan and meeting measurable benchmarks. Measurable benchmarks are a required Work Plan element under VSP (RCW 36.70A.720 (1)(E)) and provided in the Kittitas County VSP Work Plan, Section 5: Goals, Benchmarks, and Adaptive Management.

The methods and data sources relied upon to establish 2011 baseline conditions for the County's five critical areas and agricultural activities are described in the following sections.

Methods for Establishing Baseline Conditions

The 2011 baseline conditions summary prepared includes an inventory of agriculture land cover and critical area resources. The following methods were applied in the baseline conditions inventory (see Table 1 for a complete list of data sources):

- **Agricultural landcover assessment.** This was based primarily on Washington State Department of Agriculture (WSDA) 2011 agricultural landcover data for croplands (irrigated agriculture). U.S. Department of Agriculture (USDA) 2011 agricultural landcover data was primarily relied upon for additional data on dryland agriculture. Kittitas County tax parcel data was used for rangelands through the Department of Revenue code category of Resource Production and Extraction, including 81-Agriculture, 83-Agriculture Current Use, and 88-Designated Forestland since the grazed rangelands were not included in either the WSDA or the USDA data sets. Three major agricultural land categories were characterized within the County: 1) irrigated; 2); shrub-steppe uplands and 3) forested uplands. These categories are associated with different crops, agricultural activities, stewardship practices, and intersections with critical areas.
- **Privately owned lands.** These were used when assessing critical area intersections with agricultural lands. The VSP does not apply to agricultural activities occurring on public lands through leases or other agreements.

- **Critical areas assessment** was based on:
  - Critical areas designations included in the County's Critical Areas Ordinance (CAO; 2011) (see Appendix B-3 for CAO summary).
  - Data sources for planning-level critical areas mapping and critical area/agricultural intersections summaries (Appendix B-4: Baseline Conditions Critical Areas Data Summary Tables) ranged from 2010 to 2018. See Table 1 for a complete list of data sources.
- **Streams and rivers data**. The streams and rivers data are provided by the Washington Department of Natural Resources. In calculating the reaches intersecting agricultural land cover, minor adjustments were made to data known locally to be incorrect. This includes the designation of several irrigation delivery ditches in the Manastash area as fish bearing. The installation of fish screens has prevented the entrainment of fish into those delivery ditches and some have been either converted to pipelines or abandoned entirely. These reaches were included as non-fish or unknown category in the data tables in Appendix B-4.
- **Mid-Columbia summer steelhead critical habitat and bull trout critical habitat.** Since these two species are listed under the Endangered Species Act as "threatened," critical habitat designations obtained from the U.S. Fish and Wildlife Service (USFWS) for Bull Trout (2010) and the National Marine Fisheries Service for summer steelhead (2009) were used to determine critical habitat and agricultural practices intersections. These areas provide notice to the public and land managers of the importance of these areas to the conservation of these species. Special protections and/or restrictions are possible in areas where federal funding, permits, licenses, or actions occur or are required.
- **Other fish data.** Priority Habitat and Species (PHS) data provided by the Washington Department of Fish and Wildlife (WDFW) were used to assess areas where fish distribution and activity is important. There were two specific data sets, the Statewide Washington Integrated Fish Distribution (SWIFD) and Salmonid Stock Inventory (SaSI). SWIFD is a spatial representation of the distribution of anadromous and resident salmonids and various game fish based on the line work in the National Hydrography Dataset. SaSI is a standardized, uniform approach to identifying and monitoring the status of Washington's salmonid fish stocks. The inventory is a compilation of data on all wild stocks and a scientific determination of each stock's status. In the SWIFD data set, only fish runs categorized as a "PHS priority" were included in the miles noted in tables in Appendix B-4. These data represent believed instances of fish distribution or habitat that likely supports fish distribution, and as every stream has not been fully evaluated, this is not an all-inclusive list of fish distribution in this region. Each arc included in this coverage represents a stream segment of suitable habitat believed to be used by wild, natural, and/or hatchery fish populations and/or streams where sightings of wild, natural, and/or hatchery fish has been documented. Fish species represented are coho, spring Chinook, fall Chinook, and summer Chinook salmon and

Westslope Cutthroat. It should be noted that sockeye salmon and pacific lamprey are not included in the PHS data, but are present in the Yakima River in Kittitas County.

- **Shrub-Steppe Priority Habitat.** The provided PHS data did not include designated Shrub-Steppe Habitat north east of the Kittitas Valley. In reviewing the data with local WDFW staff, it was learned that polygons for those areas had been drafted locally and submitted to Olympia for inclusion in the PHS data. Local staff provided those polygons, labelled Parke and Quilomene, and the acres within those areas intersecting agricultural lands are included in the tables in Appendix B-4.
- **Wellhead protection area.** Kittitas County Code 17A.08.025 refers to 13.20.040 wellhead protection areas, which vary on setback distance (50 to 100 feet) depending on well classification. Wellhead locations were acquired from Washington State Department of Health and applied 100-foot buffer radius from each wellhead location.
- **Critical aquifer recharge areas.** Per Kittitas County Code 17A.08.010, no critical aquifer recharge locations have been identified in Kittitas County. If highly vulnerable recharge areas are identified, studies will be initiated to determine if ground water contamination has occurred. Future classification of these areas will include consideration of the degree to which the aquifer is used as a potable water source, feasibility of protective measures to preclude further degradation, availability of treatment measures to maintain potability, and availability of potable water sources. Preliminary maps of aquifer susceptibility in coordination with Kittitas County's Critical Areas update were created in December 2013. Kittitas County Community Development Services retains copies of draft maps that were developed, however, they are not adopted at this time.
- **Channel migration zones.** Kittitas County Shoreline Master Program (WAC 73-26-201.3.c.vii) was updated and approved March 7, 2016. A Channel Migration Zone Mapping effort was made in conjunction with the Shoreline Master Program Update. Channel Migration Zones were mapped as a subset of streams under Shoreline Management Act jurisdiction with the potential to migrate, as identified by Washington State Department of Ecology. Where sufficient data were available, mapping within the alluvial valley was refined to better identify portions of the valley that, because of inherent geomorphological conditions, are not subject to channel migration and therefore are outside the potential channel migration zone. Maps of Channel Migration Zones are available at Kittitas County Community Development services or on the Kittitas County website[1].
- **Use of maps.** Data sources and VSP critical areas mapping that were used to assess the potential presence of critical areas within the County and intersection with agricultural lands were used for planning-level purposes only. Actual critical areas presence is determined on a case-by-case basis through farm stewardship planning.

[1] https://www.co.kittitas.wa.us/cds/smp/reports.aspx

Data Sources

The data sources listed in Table 1 were used in the baseline conditions inventory, to assess the conditions as close to the 2011 baseline as data availability allowed.

Table 1
2011 Baseline Conditions Data Sources

Title	Year	Author
Watershed Resource Inventory Area	2000	Washington State Department of Ecology
Wellhead Protection Area	2009	Washington Department of Health
National Landcover Data Set	2011	U.S. Geological Survey
National Wetland Inventory Data	2011	USFWS
Priority Habitat and Species Data[2]	2018	WDFW
Frequently Flooded Areas	2011	Federal Emergency Management Agency
USDA Agricultural Landcover	2011	USDA
WSDA Agricultural Landcover	2011	WSDA
PRISM Climate Group Precipitation Data	2012	Oregon State University
Hydraulic Unit Code (HUC) 10 data	2013	Bureau of Land Management
Public Lands (Public Lands Inventory)	2014	Washington State Recreation and Conservation Office
Streams and Rivers Data	2015	Washington Department of Natural Resources
Water Erosion Potential	2015	Natural Resource Conservation Service
Wind Erosion Susceptibility	2015	Natural Resource Conservation Service
Public Lands (Gap Analysis Program)	2016	U.S. Geological Survey
Bull Trout Critical Habitat	2010	USFWS
Mid-Columbia Summer Steelhead Critical Habitat	2009	National Oceanic and Atmospheric Administration
Kittitas County Tax Parcel	2017	Kittitas County

[2] Priority Habitat and Species data provided by WDFW include a draft Parke Creek and Quilomene area priority Shrub Steppe designations provided by Scott Downes (WDFW Ellensburg).

Appendix B-2
Community Planning Areas

Appendix B-2: Community Planning Areas

Kittitas Valley Community Planning Area

Profile

Agricultural Landcover and Primary Crops/Products

The Kittitas Valley Community Planning Area is located in central Kittitas County. The Yakima River flows through this Community Area with it and many of its tributaries providing irrigation water to agricultural lands within Kittitas Valley. The Columbia River flows on eastern boundary as well.

Landcover	Acres	Percent
Total Community Area	**146,051**	
Agricultural Landcover	**103,345**	**70.8%**
Irrigated Cropland	76,371	73.9%
Irrigated Pasture	22,113	21.4%
Orchard/vineyard	1,942	1.9%
Dryland	104	0.1%
Rangeland – Shrub-Steppe	1,924	1.9%
Rangeland – Forest	891	0.9%

The main type of agricultural practice in this Community Area is irrigated agriculture. Hay is the most prominent crop in Kittitas Valley, specifically timothy hay. Kittitas Valley is known worldwide for producing high quality timothy hay, much of which is exported to the international market. Other crops produced in this area include small grains, seed crops, and vegetables. Orchards and vineyards are concentrated along the Columbia River to the east and southeastern area of the Valley. Additionally, irrigated pasture lands, primarily on the northern half of the Valley, are used for livestock production.

Water Resources, Soils, and Terrain

Many irrigation canals and pipelines facilitate water movement in this area and are regulated by water rights. Water availability is a major concern in this Community Area because some years the demand for irrigation water exceeds the supply resulting in prorationing for proratable, or junior, water right holders. This means that the amount of water delivered to junior water right holders is equally reduced based on the total water available. This Community Area is relatively flat with mainly loamy soils which range from silty loam to gravelly loam.

Critical Areas Presence

There are many mapped wetlands in this area, many of which are associated with the Yakima River and its tributaries and to a lesser extent the Columbia River. Additionally, the Yakima River, Manastash Creek, Taneum Creek, and portions of other tributaries contain habitat for bull trout or summer steelhead. The Yakima River has a relatively wide floodplain through this Community Area especially south of the City of Ellensburg. Additionally, due to its proximity to Ellensburg, this Community Area has the largest overlap with wellhead protection areas. Geologic hazard areas are not prevalent in this area due to the flatness of the Valley.

Objectives and Key Practices

Protection/Enhancement Objectives	Key Stewardship Practices
• Manage irrigation water so it is delivered, scheduled, and/or applied efficiently • Maintain and improve fish habitat including riparian vegetation and fish passage • Protect soils from water and wind erosion • Manage nutrients and pesticides effectively and efficiently	• Fence • Sprinkler System • Irrigation Water Management • Nutrient Management • Tree/Shrub Establishment • Riparian Forest Buffer • Streambank Protection and Restoration • Stream Habitat Improvement • Structure for Water Control (fish screen) • Managed Grazing • Wetland Restoration and Enhancement

Attachments

- Kittitas Valley Community Planning Area Rapid Watershed Assessment Tables
- Kittitas Valley Community Planning Area Baseline Summary Table

WATERSHED NAME & CODE	KITTITAS IRRIGATED LANDS - CROP & PASTURE	LANDUSE ACRES	103,345
LANDUSE TYPE	MIXED	TYPICAL UNIT SIZE ACRES	40
ASSESSMENT INFORMATION		CALCULATED PARTICIPATION	21%

	Benchmark Conditions	Future Conditions			RESOURCE CONCERNS			
Conservation Systems by Treatment Level	Total Units	Existing Unchanged Units	New Treatment Units	Total Units	Soil Erosion – Irrigation induced	Water Quality – Excessive Nutrients and Organics in Surface Water	Fish and Wildlife – T & E Fish/Wildlife Species: Listed or Proposed under ESA	Profitability - Change in Profitability
Baseline				**System Rating ->**	**-1**	**0**	**0**	**0**
Irrigation System, Surface and Subsurface (ac.) 443	42,630	31,972	**0**	31,972	-2	-1	0	-1
Total Acreage at Baseline	**85,260**	**63,945**	**0**	**63,945**				
Progressive				**System Rating ->**	**5**	**4**	**3**	**1**
Anionic Polyacrylamide (PAM) Erosion Control (ac.) 450	3,204	3,140	**4,092**	7,232	3	3	0	2
Fence (ft.) 382	18,021	17,660	**23,020**	40,680	0	1	1	2
Irrigation System, Sprinkler (ac.) 442	2,723	2,669	**3,479**	6,147	3	1	0	-1
Irrigation Water Conveyance, Pipeline (ft.) 430	48,055	47,094	**61,387**	108,481	4	3	0	-1
Irrigation Water Management (ac.) 449	1,602	1,570	**2,046**	3,616	4	3	0	2
Residue Management, No-Till/Strip Till/Direct Seed (ac.) 329	1,201	1,177	**1,535**	2,712	5	3	0	-1
Structure for Water Control (no.) 587	11	11	**14**	25	1	2	5	1
Tree/Shrub Establishment (ac.) 612	8	8	**10**	18	3	2	1	-1
Watering Facility (no.) 614	12	12	**15**	27	0	4	0	-2
Total Acreage at Progressive Level	**16,018**	**15,698**	**20,462**	**36,160**				
RMS				**System Rating ->**	**4**	**5**	**5**	**-2**
Aquatic Organism Passage (no.) 396	21	21	**12**	32	0	0	5	-1
Channel Stabilization (ft.) 584	1,033	1,033	**586**	1,620	0	0	1	-3
Conservation Cover (ac.) 327	14	14	**8**	23	5	3	0	-4
Irrigation System, Microirrigation (ac.) 441	568	568	**323**	891	5	4	0	-1
Nutrient Management (ac.) 590	620	620	**352**	972	0	5	0	1
Pest Management (ac.) 595	310	310	**176**	486	1	2	0	1
Prescribed Grazing (ac.) 528	517	517	**293**	810	1	3	2	2
Riparian Forest Buffer (ac.) 391	4	4	**2**	6	2	2	5	-2
Streambank & Shoreline Protection (ft.) 580	2,067	2,067	**1,173**	3,240	1	1	3	-3
Trust Water Rights Program (ac/ft) 999	1,033	1,033	**586**	1,620	0	0	3	2
Water Well (no.) 642	3	3	**1**	4	0	0	0	-1
Wetland Restoration (ac.) 657	1	1	**1**	2	0	1	1	-1
Total Acreage at RMS Level	**2,067**	**2,067**	**1,173**	**3,240**				

WATERSHED NAME & CODE	KITTITAS IRRIGATED LANDS - CROP & PASTURE	LANDUSE ACRES	103,345
LANDUSE TYPE	MIXED	TYPICAL UNIT SIZE ACRES	40
CONSERVATION COST TABLE		CALCULATED PARTICIPATION	21%

	FUTURE	FEDERAL				PRIVATE		
Conservation Systems by Treatment Level	New Treatment Units	Installation Cost 75%	Management Cost - 3 yrs 100%	Technical Assistance 30%	Total Present Value Cost	Installation Cost 25%	Annual O & M + Mgt Costs 100%	Total Present Value Cost
Progressive								
Anionic Polyacrylamide (PAM) Erosion Control (ac.) 450	4,092	$0	$429,709	$128,913	$526,406	$0	$143,236	$240,169
Fence (ft.) 382	23,020	$43,163	$0	$12,949	$56,111	$14,388	$1,151	$19,512
Irrigation System, Sprinkler (ac.) 442	3,479	$3,913,417	$0	$1,174,025	$5,087,442	$1,304,472	$104,358	$1,769,055
Irrigation Water Conveyance, Pipeline (ft.) 430	61,387	$184,161	$0	$55,248	$239,409	$61,387	$4,911	$83,250
Irrigation Water Management (ac.) 449	2,046	$0	$30,693	$9,208	$37,600	$0	$10,231	$17,155
Residue Management, No-Till/Strip Till/Direct Seed (ac.) 329	1,535	$0	$138,121	$41,436	$169,202	$0	$46,040	$77,197
Structure for Water Control (no.) 587	14	$42,971	$0		$55,862	$14,324	$1,146	$19,425
Tree/Shrub Establishment (ac.) 612	10	$5,180	$0		$6,733	$1,727	$69	$2,034
Watering Facility (no.) 614	15	$11,510	$0		$14,963	$3,837	$460	$5,886
Subtotal	**20,462**	**$4,200,401**	**$598,523**	**$1,439,677**	**$6,193,729**	**$1,400,134**	**$311,603**	**$2,233,682**
RMS								
Aquatic Organism Passage (no.) 396	12	$25,512	$0	$7,654	$33,166	$8,504	$680	$11,533
Channel Stabilization (ft.) 584	586	$39,588	$0	$11,876	$51,464	$13,196	$1,056	$17,896
Conservation Cover (ac.) 327	8	$616	$0	$185	$801	$205	$25	$315
Irrigation System, Microirrigation (ac.) 441	323	$362,886	$0	$108,866	$471,752	$120,962	$24,192	$228,662
Nutrient Management (ac.) 590	352	$0	$15,835	$4,751	$19,398	$0	$5,278	$8,850
Pest Management (ac.) 595	176	$0	$10,557	$3,167	$12,932	$0	$3,519	$5,900
Prescribed Grazing (ac.) 528	293	$1,540	$0	$462	$2,001	$513	$0	$513
Riparian Forest Buffer (ac.) 391	2	$2,217	$0	$665	$2,882	$739	$89	$1,134
Streambank & Shoreline Protection (ft.) 580	1,173	$79,175	$0	$23,753	$102,928	$26,392	$2,111	$35,791
Trust Water Rights Program (ac/ft) 999	586	$197,938	$0	$59,381	$257,319	$65,979	$0	$65,979
Water Well (no.) 642	1	$11,151	$0		$14,496	$3,717	$149	$4,379
Wetland Restoration (ac.) 657	1	$132	$0		$172	$44	$2	$52
Subtotal	**1,173**	**$720,754**	**$26,392**	**$224,144**	**$969,311**	**$240,251**	**$37,101**	**$381,004**
Grand Total	**21,635**	**$4,921,154**	**$624,914**	**$1,663,821**	**$7,163,040**	**$1,640,385**	**$348,703**	**$2,614,685**

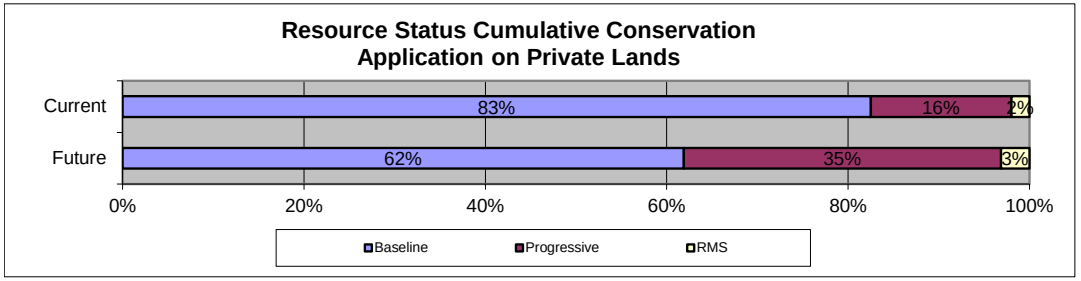


Chart Refers To	
Landuse Type	MIXED
Calculated Participation Rate	21%

Average PV Costs per Ac		
System	**Federal**	**Private**
Prog	$302.69	$109.16
RMS	$826.38	$324.82

Kittitas County VSP Work Plan - Kittitas Valley Community Data Summary

Landcover	Acres
Total Area	**146,051**
Agricultural Landcover	**103,345**
Irrigated Cropland	76,371
Irrigated Pasture	22,113
Orchard/Vineyard	1,942
Dryland	104
Rangeland - Shrub-Steppe	1,924
Rangeland - Forest	891
Total Streams (miles)	**726**

Critical Areas	Areas within Agricultural Lands				
	Irrigated	**Dryland**	**Rangeland Shrub-Steppe**	**Rangeland Forest**	**Total**
	Miles	*Miles*	*Miles*	*Miles*	*Miles*
Streams Total	706	0	14	6	726
Shorelines of the State	31	0	1	0	32
Fish Use or Potential Fish Use	195	0	4	2	200
No Fish Use	77	0	1	1	79
Unknown (this includes irrigation canals)	404	0	8	4	415
Fish Habitat (PHS)					
Summer Steelhead (ESA threatened)	39	0	1	0	40
Bull Trout (ESA threatened)	16	0	0	0	16
Upper Yakima River Spring Chinook Salmon	42	0	1	0	43
Upper Yakima Coho Salmon	21	0	0	0	21
Rainbow Trout	102	0	2	1	105
Westslope Cutthroat Trout	24	0	0	0	24
Columbia River Bull Trout (ESA Threatened)	5	0	0	0	5
Columbia River Summer Steelhead (ESA Threatened)	5	0	0	0	5
Columbia River Fall Chum	5	0	0	0	5
Columbia River Rainbow Trout	5	0	0	0	5
Columbia River Sockeye	5	0	0	0	5
Columbia River Kokanee	5	0	0	0	5
Columbia River Spring Chinook Salmon	5	0	0	0	5
Columbia River Summer Chinook Salmon	5	0	0	0	5
Columbia River Coho Salmon	5	0	0	0	5
Hanford Reach Fall Chinook Salmon	5	0	0	0	5

Critical Areas	Areas within Agricultural Lands				
	Irrigated	**Dryland**	**Rangeland Shrub-Steppe**	**Rangeland Forest**	**Total**
	Acres	*Acres*	*Acres*	*Acres*	*Acres*
Wetlands (all types)	4,053	4	78	36	4,171
Freshwater Emergent Wetland	3,010	3	58	27	3,098
Freshwater Forested/Shrub Wetland	537	1	10	5	552
Lake/Pond	256	0	5	2	263
Riverine	250	0	5	2	257
Other	1	0	0	0	1
Frequently Flooded Areas	7,800	8	149	69	8,027
Wellhead Protection Areas	6	0	0	1	7
Hazard Slopes	0	0	938	435	1,373
25% to 50%	0	0	899	416	1,315
Over 50%	0	0	40	18	58
Priority Habitats and Species					
Birds					
Spotted Owl	354	119	0	454	927
Black-Backed Woodpecker	0	1	0	0	1
Common Loon	8	0	0	0	8
Great Blue Heron	11	0	0	0	11
Mammals					
Mule Deer	3,174	104	1,875	560	5,713
Elk	1,049	82	1,395	775	3,301
Bighorn Sheep	6	0	76	0	82
Oak Woodland	0	0	83	0	83
Shrub-Steppe	37	18	851	0	906
Cliffs and Bluffs	0	1	0	0	1
Biodiversity Areas and Corridor	19	0	129	0	148
Big Game Area (Watson Rd Cutoff)	206	0	0	40	246
Waterfowl Concentration	22	0	0	0	22

Forested Upland Community Planning Area

Profile

Agricultural Landcover and Primary Crops/Products

The Forested Upland Community Area includes the mainly forested areas northwest of the Kittitas Valley.

Landcover	Acres	Percent
Total Community Area	**90,800**	
Agricultural Landcover	**34,763**	**38%**
Irrigated	82	0.2%
Irrigated Pasture	19	0.1%
Orchard/vineyard	0	0.0%
Dryland	1,420	4.1%
Rangeland – Shrub-Steppe	0	0.0%
Rangeland – Forest	33,242	95.6%

This Community Area includes agricultural practices for dryland farming and forest rangeland. The dryland areas mainly produce wheat or are enrolled in the Conservation Reserve Program. Forested rangeland occurs mostly in the foothills of the Cascade Mountains and is characterized by livestock that graze on vegetation underneath the forest canopy. Grazing in these areas often has the additional benefit of reducing fuel for forest fires.

Water Resources, Soils, and Terrain

Both the Yakima and Teanaway rivers flow through the Forested Upland Community Area. The terrain in this Community Area ranges from flat in the river valleys to hilly and mountainous in the upland areas. Forests cover a majority of the area and are mainly characterized as open forests with ponderosa pine. Soils are mainly characterized as loam.

Critical Areas Presence

The Yakima, Teanaway, and Cle Elum rivers provide habitat for fish and wildlife including bull trout and summer steelhead. Additionally, wetland complexes can be found along all three rivers and along many of the tributaries in this Community Area. In addition, all three rivers have designated floodplains, with the Yakima River having the largest floodplain upstream of its confluence with the Teanaway River. Much of this Community Area contains area with steep slopes, especially in higher elevations, but also in areas near the Yakima and Teanaway rivers. Wellhead protection areas can be found throughout the Community Area.

Objectives and Key Practices

Protection/Enhancement Objectives	Key Stewardship Practices
• Plan intensity, frequency, timing, and duration of grazing to be protective of critical areas • Maintain and improve fish habitat including riparian vegetation and fish passage • Manage irrigation water so it is delivered, scheduled, and/or applied efficiently	• Fence • Managed Grazing • Watering Facilities • Sprinkler System • Nutrient Management • Stream Habitat Improvement Tree/Shrub Establishment • Riparian Forest Buffer

Attachments

- Forested Upland Community Planning Area Rapid Watershed Assessment Tables
- Forested Upland Community Planning Area Baseline Summary Table

WATERSHED NAME & CODE	**FOREST UPLANDS - FOREST GRAZING**	**LANDUSE ACRES**	**34,763**
LANDUSE TYPE	**MIXED**	**TYPICAL UNIT SIZE ACRES**	**120**
ASSESSMENT INFORMATION		**CALCULATED PARTICIPATION**	**9%**

	Benchmark Conditions	Future Conditions			RESOURCE CONCERNS			
Conservation Systems by Treatment Level	**Total Units**	**Existing Unchanged Units**	**New Treatment Units**	**Total Units**	**Water Quality – Excessive Nutrients and Organics in Surface Water**	**Plant Condition – Productivity, Health and Vigor**	**Fish and Wildlife – T & E Fish/Wildlife Species: Listed or Proposed under ESA**	**Profitability - Change in Profitability**
Baseline				**System Rating ->**	**0**	**0**	**0**	**0**
No Conservation Practices being applied at this level	0	0	**0**	0	0	0	0	0
Total Acreage at Baseline	**32,330**	**29,097**	**0**	**29,097**				
Progressive				**System Rating ->**	**3**	**2**	**1**	**0**
Fence (ft.) 382	869	860	**1,078**	1,938	1	1	1	2
Prescribed Grazing (ac.) 528	167	165	**207**	372	3	0	2	2
Residue Management, No-Till/Strip Till/Direct Seed (ac.) 329	83	83	**103**	186	2	0	0	-1
Tree/Shrub Establishment (ac.) 612	1	1	**1**	2	2	4	1	-1
Watering Facility (no.) 614	3	3	**3**	6	4	0	0	-2
Total Acreage at Progressive Level	**2,086**	**2,065**	**2,586**	**4,651**				
RMS				**System Rating ->**	**1**	**3**	**0**	**-2**
Riparian Forest Buffer (ac.) 391	1	1	1	2	2	1	0	-2
Stream Habitat Improvement and Management (ac.) 395	1	1	1	2	0	3	0	-1
Streambank & Shoreline Protection (ft.) 580	35	35	67	102	0	0	0	-3
Wetland Restoration (ac.) 657	0	0	1	1	0	4	1	-1
Total Acreage at RMS Level	**348**	**348**	**667**	**1,015**				

WATERSHED NAME & CODE	FOREST UPLANDS - FOREST GRAZING	LANDUSE ACRES	34,763
LANDUSE TYPE	MIXED	TYPICAL UNIT SIZE ACRES	120
CONSERVATION COST TABLE		CALCULATED PARTICIPATION	9%

	FUTURE	FEDERAL				PRIVATE		
Conservation Systems by Treatment Level	New Treatment Units	Installation Cost 75%	Management Cost - 3 yrs 100%	Technical Assistance 30%	Total Present Value Cost	Installation Cost 25%	Annual O & M + Mgt Costs 100%	Total Present Value Cost
Progressive								
Fence (ft.) 382	1,078	$2,021	$0	$606	$2,627	$674	$54	$913
Prescribed Grazing (ac.) 528	207	$1,086	$0	$326	$1,412	$362	$0	$362
Residue Management, No-Till/Strip Till/Direct Seed (ac.) 329	103	$0	$9,311	$2,793	$11,406	$0	$3,104	$5,204
Tree/Shrub Establishment (ac.) 612	1	$655	$0	$196	$851	$218	$9	$257
Watering Facility (no.) 614	3	$2,425	$0	$727	$3,152	$808	$97	$1,240
Subtotal	**2,586**	**$6,186**	**$9,311**	**$4,649**	**$19,448**	**$2,062**	**$3,263**	**$7,977**
RMS								
Riparian Forest Buffer (ac.) 391	1	$1,261	$0	$378	$1,640	$420	$50	$645
Stream Habitat Improvement and Management (ac.) 395	1	$5,106	$0	$1,532	$6,638	$1,702	$136	$2,308
Streambank & Shoreline Protection (ft.) 580	67	$4,505	$0	$1,352	$5,857	$1,502	$120	$2,037
Wetland Restoration (ac.) 657	1	$188	$0	$56	$244	$63	$3	$74
Subtotal	**667**	**$11,060**	**$0**	**$3,318**	**$14,379**	**$3,687**	**$309**	**$5,064**
Grand Total	**3,254**	**$17,247**	**$9,311**	**$7,967**	**$33,827**	**$5,749**	**$3,573**	**$13,040**

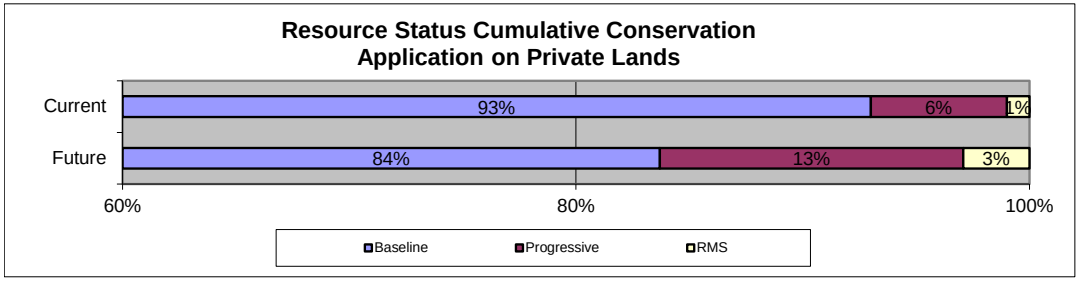


Chart Refers To	
Landuse Type	MIXED
Calculated Participation Rate	9%

Average PV Costs per Ac		
System	Federal	Private
Prog	$7.52	$3.08
RMS	$21.54	$7.59

Kittitas County VSP Work Plan - Forested Upland Community Data Summary

Landcover	Acres
Total Area	**90,800**
Agricultural Landcover	**34,586**
Irrigated Cropland	82
Irrigated Pasture	19
Orchard/Vineyard	0
Dryland	1,420
Rangeland - Shrub-Steppe	115
Rangeland - Forest	32,950
Total Streams (miles)	**212**

Critical Areas	Areas within Agricultural Lands				
	Irrigated	Dryland	Rangeland Shrub-Steppe	Rangeland Forest	Total
	Miles	*Miles*	*Miles*	*Miles*	*Miles*
Streams Total	3	15	1	193	212
Shorelines of the State	1	1	0	14	16
Fish Use or Potential Fish Use	1	2	0	24	27
No Fish Use	1	10	1	128	140
Unknown	0	1	0	27	28
Fish Habitat (PHS)					
Summer Steelhead (ESA threatened)	1	0	0	10	11
Bull Trout (ESA threatened)	1	0	0	5	6
Upper Yakima River Spring Chinook Salmon	1	0	0	10	11
Upper Yakima Coho Salmon	1	0	0	5	6
Rainbow Trout	1	0	0	16	17
Westslope Cutthroat Trout	1	0	0	12	13

Critical Areas	Areas within Agricultural Lands				
	Irrigated	**Dryland**	**eland-Shrub St**	**angeland-Fores**	**Total**
	Acres	*Acres*	*Acres*	*Acres*	*Acres*
Wetlands (all types)	8	4	0	521	533
Freshwater Emergent Wetland	1	1	0	121	123
Freshwater Forested/Shrub Wetland	6	0	0	305	311
Lake/Pond	1	2	0	27	30
Riverine	0	1	0	68	69
Other	0	0	0	0	0
Frequently Flooded Areas	1	1	0	835	837
Wellhead Protection Areas	0	0	0	1	1
Hazard Slopes	0	159	0	12,536	12,695
NRCS Severe to Very Severe	0	148	0	10,408	10,556
Steep Slopes	0	11	0	2,128	2,139
Priority Habitats and Species					
Birds					
Spotted Owl	0	300	0	7,068	7,368
Mammals					
Mule Deer	35	1,400	115	7,631	9,181
Elk	35	1,400	115	15,064	16,614
Bighorn Sheep	0	0	0	956	956
Cliff Bluffs	0	0	0	24	24
Shrub Steppe	0	0	0	115	115

Shrub-Steppe Upland Community Planning Area

Profile

Agricultural Landcover and Primary Crops/Products

The Shrub-Steppe Upland Community Planning Area includes areas upland of the Kittitas Valley and along the Columbia River. These areas are characterized hilly terrain with shrub-steppe habitat.

Landcover	Acres	Percent
Total Community Area	**208,055**	
Agricultural Landcover	**90,197**	**43.4%**
Irrigated Cropland	84	0.1%
Irrigated Pasture	308	0.3%
Orchard/vineyard	227	0.3%
Dryland	1,939	2.1%
Rangeland – Shrub-Steppe	81,422	90.3%
Rangeland – Forest	5,121	5.7%

Agriculture in this community area consists of mainly rangeland with a small amount of dryland, irrigated crop- and pasture-land, and orchard/vineyard. Rangelands cover much of this area and often overlap with shrub-steppe habitat. Dryland agriculture only covers of a small portion of this area and is mainly enrolled in the Conservation Reserve Program. The orchards and vineyards in this area are located in the Yakima River Canyon and grow tree fruit and grapes.

Water Resources, Soils, and Terrain

The Yakima River is the only large waterbody that interact with this Community Area, and the river provides irrigation water for the orchards, vineyards, and irrigated cropland located along or near it. Many small creeks and streams run through this Community Area providing water for livestock. The terrain in this area is mainly hilly and dominated by shrubs and grasses with stony or cobbly loam soils.

Critical Areas Presence

This Community Area does not have a large wetland presence with only a few small wetlands scattered throughout the area. Additionally, the upstream ends of many of the Kittitas Valley streams and many Columbia River tributaries flow through the Shrub-Steppe Upland Community Area. There are many steep slopes in this area, but there is a low presence of landslide hazard areas. This Community Area has a low overlap with wellhead protection areas frequently flooded areas.

Objectives and Key Practices

Protection/Enhancement Objectives	Key Stewardship Practices
• Plan intensity, frequency, timing, and duration of grazing to be protective of critical areas • Maintain and improve fish habitat including riparian vegetation • Manage irrigation water so it is delivered, scheduled, and/or applied efficiently	• Fence • Managed Grazing • Sprinkler System • Irrigation Water Management • Watering Facilities • Range Seeding Tree/Shrub Establishment • Riparian Forest Buffer • Streambank Protection and Restoration

Attachments

- Shrub-Steppe Upland Community Planning Area Rapid Watershed Assessment Tables
- Shrub-Steppe Upland Community Planning Area Baseline Summary Table

WATERSHED NAME & CODE	SHRUB STEPPE UPLANDS - SHRUB STEPPE	LANDUSE ACRES	90,197
LANDUSE TYPE	MIXED	TYPICAL UNIT SIZE ACRES	240
ASSESSMENT INFORMATION		CALCULATED PARTICIPATION	18%

	Benchmark Conditions	Future Conditions			RESOURCE CONCERNS			
Conservation Systems by Treatment Level	Total Units	Existing Unchanged Units	New Treatment Units	Total Units	Water Quality – Excessive Nutrients and Organics in Surface Water	Plant Condition – Productivity, Health and Vigor	Fish and Wildlife – T & E Fish/Wildlife Species: Listed or Proposed under ESA	Profitability - Change in Profitability
Baseline				**System Rating ->**	**0**	**0**	**0**	**0**
Irrigation System, Sprinkler (ac.) 442	388	310	0	310	0	0	0	-1
Total Acreage at Baseline	**77,569**	**62,056**	**0**	**62,056**				
Progressive				**System Rating ->**	**5**	**5**	**1**	**0**
Fence (ft.) 382	4,510	4,329	6,141	10,470	1	1	1	2
Heavy Use Area Protection (ac.) 561	0	0	1	1	3	0	-1	-2
Irrigation System, Microirrigation (ac.) 441	4	4	6	10	0	0	0	-1
Irrigation Water Conveyance, Pipeline (ft.) 430	225	216	307	524	3	2	0	-1
Irrigation Water Management (ac.) 449	32	31	44	75	3	3	0	2
Nutrient Management (ac.) 590	27	26	37	63	5	5	0	1
Pest Management (ac.) 595	22	21	29	50	0	3	0	1
Range Planting (ac.) 550	54	52	74	126	2	5	3	2
Tree/Shrub Establishment (ac.) 612	3	3	4	8	2	4	1	-1
Watering Facility (no.) 614	5	4	6	10	4	1	0	-2
Total Acreage at Progressive Level	**10,824**	**10,391**	**14,738**	**25,129**				
RMS				**System Rating ->**	**3**	**4**	**5**	**-1**
Prescribed Grazing (ac.) 528	271	271	181	452	3	5	2	2
Residue Management, No-Till/Strip Till/Direct Seed (ac.) 329	99	99	66	166	3	0	0	-1
Riparian Forest Buffer (ac.) 391	2	2	1	3	2	4	5	-2
Spring Development (no.) 574	2	2	1	3	0	0	0	2
Stream Habitat Improvement and Management (ac.) 395	1	1	1	2	0	3	5	-1
Streambank & Shoreline Protection (ft.) 580	113	113	76	188	1	0	3	-3
Wetland Restoration (ac.) 657	2	2	1	3	1	4	1	-1
Total Acreage at RMS Level	**1,804**	**1,804**	**1,209**	**3,013**				

WATERSHED NAME & CODE	SHRUB STEPPE UPLANDS - SHRUB STEPPE	LANDUSE ACRES	90,197
LANDUSE TYPE	MIXED	TYPICAL UNIT SIZE ACRES	240
CONSERVATION COST TABLE		CALCULATED PARTICIPATION	18%

	FUTURE	FEDERAL				PRIVATE		
Conservation Systems by Treatment Level	New Treatment Units	Installation Cost 75%	Management Cost - 3 yrs 100%	Technical Assistance 30%	Total Present Value Cost	Installation Cost 25%	Annual O & M + Mgt Costs 100%	Total Present Value Cost
Progressive								
Fence (ft.) 382	6,141	$11,514	$0	$3,454	$14,968	$3,838	$307	$5,205
Heavy Use Area Protection (ac.) 561	1	$91	$0	$27	$118	$30	$6	$57
Irrigation System, Microirrigation (ac.) 441	6	$6,632	$0	$1,990	$8,622	$2,211	$442	$4,179
Irrigation Water Conveyance, Pipeline (ft.) 430	307	$921	$0	$276	$1,197	$307	$25	$416
Irrigation Water Management (ac.) 449	44	$0	$4,643	$1,393	$5,687	$0	$1,548	$2,595
Nutrient Management (ac.) 590	37	$0	$1,658	$497	$2,031	$0	$553	$927
Pest Management (ac.) 595	29	$0	$1,769		$2,167	$0	$590	$988
Range Planting (ac.) 550	74	$4,974	$0		$6,466	$1,658	$66	$1,953
Tree/Shrub Establishment (ac.) 612	4	$2,238	$0		$2,910	$746	$30	$879
Watering Facility (no.) 614	6	$4,606	$0		$5,987	$1,535	$184	$2,355
Subtotal	**14,738**	**$30,976**	**$8,069**	**$11,714**	**$50,154**	**$10,325**	**$3,750**	**$19,555**
RMS								
Prescribed Grazing (ac.) 528	181	$952	$0	$286	$1,237	$317	$0	$317
Residue Management, No-Till/Strip Till/Direct Seed (ac.) 329	66	$0	$5,983	$1,795	$7,329	$0	$1,994	$3,344
Riparian Forest Buffer (ac.) 391	1	$1,142	$0	$343	$1,485	$381	$46	$584
Spring Development (no.) 574	1	$2,361	$0	$708	$3,069	$787	$31	$927
Stream Habitat Improvement and Management (ac.) 395	1	$2,312	$0	$693	$3,005	$771	$62	$1,045
Streambank & Shoreline Protection (ft.) 580	76	$5,099	$0	$1,530	$6,629	$1,700	$136	$2,305
Wetland Restoration (ac.) 657	1	$272	$0	$82	$354	$91	$4	$107
Subtotal	**1,209**	**$12,137**	**$5,983**	**$5,436**	**$23,107**	**$4,046**	**$2,273**	**$8,629**
Grand Total	**15,947**	**$43,113**	**$14,052**	**$17,150**	**$73,261**	**$14,371**	**$6,023**	**$28,184**

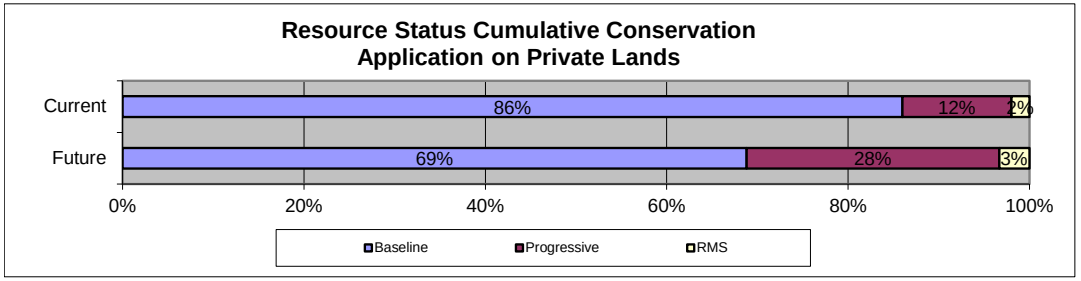


Chart Refers To	
Landuse Type	MIXED
Calculated Participation Rate	18%

Average PV Costs per Ac		
System	Federal	Private
Prog	$3.40	$1.33
RMS	$19.12	$7.14

Kittitas County VSP Work Plan - Shrub-Steppe Upland Community Data Summary

Landcover	Acres
Total Area	**208,055**
Agricultural Landcover	**90,197**
Irrigated Cropland	84
Irrigated Pasture	308
Orchard/Vineyard	1,323
Dryland	1,939
Rangeland - Shrub-Steppe	81,422
Rangeland - Forest	5,121
Total Streams (miles)	**436**

Critical Areas	Areas within Agricultural Lands				
	Irrigated	Dryland	Rangeland Shrub-Steppe	Rangeland Forest	Total
	Miles	*Miles*	*Miles*	*Miles*	*Miles*
Streams Total	9	4	398	25	436
Shorelines of the State	1	0	5	0	6
Fish Use or Potential Fish Use	2	0	76	5	82
No Fish Use	3	0	149	9	161
Unknown (this includes irrigation canals)	3.5	4.0	168	11	186
Fish Habitat (PHS)					
Summer Steelhead (ESA threatened)	1	0	7	3	11
Bull Trout (ESA threatened)	1	0	1	2	4
Upper Yakima River Spring Chinook Salmon	1	0	2	2	5
Upper Yakima Coho Salmon	1	0	1	0	2
Rainbow Trout	1	0	16	3	20
Westslope Cutthroat	1	0	5	3	9
Columbia River Fall Chum	0	0	1	0	1
Columbia River Kokanee	0	0	1	0	1
Columbia River Spring Chinook Salmon	0	0	1	0	1
Columbia River Summer Chinook Salmon	0	0	1	0	1
Columbia River Coho Salmon	0	0	1	0	1
Hanford Reach Fall Chinook Salmon	0	0	1	0	1

Critical Areas	Areas within Agricultural Lands				
	Irrigated	**Dryland**	**Rangeland Shrub-Steppe**	**Rangeland Forest**	**Total**
	Acres	*Acres*	*Acres*	*Acres*	*Acres*
Wetlands (all types)	4	5	228	13	250
Freshwater Emergent Wetland	2	2	104	7	115
Freshwater Forested/Shrub Wetland	1	2	68	4	75
Lake/Pond	1	1	31	2	35
Riverine	0	0	17	0	17
Other	0	0	8	0	8
Frequently Flooded Areas	81	0	328	54	463
Wellhead Protection Areas	0	0	0	0	0
Hazard Slopes	0	0	24,310	2,208	26,518
25% to 50%	0	0	22,278	1,834	24,112
Over 50%	0	0	2,032	374	2,405
Priority Habitats and Species					
Birds					
Golden Eagle	0	0	100	0	100
Burrowing Owl	0	0	7	0	7
Greater Sage Grouse	0	0	2490	0	2,490
Dusky Grouse	0	0	187	0	187
American White Pelican	0	0	1	0	1
Mammals					
Mule Deer	0	1,176	49,397	3107	53,680
Elk	0	705	30,215	1861	32,781
Bighorn Sheep	1,515	0	6,604	0	8,119
Townsend's Ground Squirrel	0	0	6	0	6
Oak Woodland	0	0	184	0	184
Shrub Steppe	1,500	1,939	65,358	0	68,797
Biodiversity Areas and Corridor	388	0	15,391	0	15,779
Cliffs and Bluffs	0	0	350	0	350
Talus Slopes	0	0	26	0	26

Appendix B-3
Kittitas County Critical Areas Designations and Definitions

Appendix B-3: Kittitas County Critical Areas Designations and Definitions

Kittitas County Draft Critical Areas Ordinance November 2014 (Chapter 17A)

During development of the Kittitas County Voluntary Stewardship Program (VSP) Work Plan, Kittitas County was in the process of updating the Critical Areas Ordinance. The definitions and designations excerpted in this Appendix are from the November 2014 Draft Critical Areas Ordinance. Any difference between what is reflected in the VSP and the adopted Critical Areas Ordinance will be address during adaptive management.

General Provisions

Critical areas in Kittitas County are categorized as follows:

1. Wetlands
2. Frequently Flooded Areas
3. Critical Aquifer Recharge Areas
4. Geologically Hazardous Areas
5. Fish and Wildlife Habitat Conservation Areas

Wetlands

Identification and Designation (KCC 17A.07.XXX)

Designation. Wetlands are those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include, but are not limited to, swamps, marshes, bogs, ponds, and similar areas. Wetlands do not include those artificial wetlands intentionally created from non-wetland sites, including, but not limited to, irrigation and drainage ditches, grass-lined swales, canals, detention facilities, wastewater treatment facilities, farm ponds, and landscape amenities, or those wetlands created after July 1, 1990, that were unintentionally created as a result of the construction of a road, street, or highway. Wetlands may include those artificial wetlands intentionally created from non-wetland areas to mitigate the conversion of wetlands. *[RCW 36.70A.175]*

Maps and References (KCC 17A.07.XXX)

Mapping. The approximate location and extent of wetlands are shown on maps maintained by the County. These maps are useful as a guide for project applicants and/or property owners, but do not provide a conclusive or definitive indication of wetland presence or extent. Other wetlands may exist that do not appear on the maps, and some wetlands that appear on the maps may not meet all of

the wetland designation criteria. The County shall update the maps periodically as new wetland areas are identified and as new wetland information becomes available.

Fish and Wildlife Habitat Conservation Areas (HCAs)

Identification and Designation (KCC 17A.04.XXX)

Fish and wildlife habitat conservation areas include:

- Waters of the state.
- Areas with which federally designated endangered, threatened, and sensitive aquatic species have a primary association. The U.S. Fish and Wildlife Service and the National Marine Fisheries Service should be consulted for current federal listing status.
- Areas with which state designated endangered, threatened, and sensitive aquatic species have a primary association. The Washington Department of Fish and Wildlife should be consulted for current state listing status.
- State priority habitats and areas associated with state priority species. The state Department of Fish and Wildlife should be consulted for current listing of priority habitats and species.
- Habitats and species of local importance. Kittitas County recognizes that the priority habitats and species designated by the Washington Department of Fish and Wildlife that occur within the County are locally important, and are hereby designated as habitats and species of local importance.
- Naturally occurring ponds under twenty (20) acres. Lakes, ponds, streams, and rivers planted with game fish by a government or tribal entity.
- State natural area preserves, natural resource conservation areas. Natural area preserves and natural resource conservation areas are defined, established, and managed by the Washington State Department of Natural Resources.
- State wildlife areas. State wildlife areas are defined, established, and managed by the Washington Department of Fish and Wildlife. *[WAC 365-190-130]*

Maps and References (KCC 17A.04.XXX)

2. **Mapping.** The approximate location and extent of fish and wildlife habitat conservation areas are shown on the County's critical area maps. These maps are to be used as a guide and do not provide definitive information about fish and wildlife habitat conservation area size or presence. Fish and wildlife habitat conservation areas may exist that do not appear on the maps. The County shall update the maps periodically as new fish and wildlife habitat conservation areas are identified and as new information becomes available.

Critical Aquifer Recharge Areas (CARAs)

Identification and Designation (KCC 17A.03.XXX)

17A.03.020 Classification, designation, and mapping.

1. **Classification.** Lands within Kittitas County shall be classified as having either high, medium, or low aquifer susceptibility as determined by the criteria established by the Washington State Department of Ecology. *[WAC 365-190-100]*

2. **Designation.** Critical aquifer recharge areas are areas where an aquifer that is a source of drinking water is vulnerable to contamination that would affect the potability of water. All lands classified as having moderate-to-high aquifer susceptibility—together with wellhead protection areas for Class A water systems—are hereby designated as critical aquifer recharge areas. *[WAC 365-190-030]*

3. **Mapping.** The general location and extent of critical aquifer recharge areas are shown on maps maintained by the County. These maps are useful as a guide for Kittitas County, project applicants, and/or property owners, and may be updated as more information on aquifer recharge and susceptibility becomes available. These maps are a reference and do not provide a conclusive or final critical area designation. *[WAC 365-190-100]*

Maps and References (KCC 17A.03.XXX)

Geologically Hazardous Areas (GHAs)

Identification and Designation (KCC 17A.06.XXX)

The purpose of this Chapter is to protect human life and safety, prevent damage to structures and property, and minimize impacts to water quality and fish and wildlife caused by geologic hazards.

- **Landslide Hazard Areas.** Landslide hazard areas shall include areas potentially subject to landslides based on a combination of geologic, topographic, and hydrologic factors. They include any areas susceptible because of any combination of bedrock, soil, slope (gradient), slope aspect, structure, hydrology, or other factors. Landslide hazard areas shall be further classified as follows:
  - Areas of historic failures, such as:
    - Those areas delineated by the Natural Resource Conservation Service (NRCS) as having a "severe" limitation for building site development; or
    - Areas designated as quaternary slumps, earth-flows, mudflows, lahars, or landslides on maps published by the U.S. Geological Survey or Washington State Department of Natural Resources.
  - Areas with all three (3) of the following characteristics:

    - Slopes steeper than fifteen percent (15%);
    - Hillsides intersecting geologic contacts with a relatively permeable sediment overlying a relatively impermeable sediment or bedrock; and
    - Springs or groundwater seepage.
  - Areas that have shown movement and/or are underlain or covered by mass wastage debris;
  - Slopes that are parallel or sub-parallel to planes of weakness (which may include but not be limited to bedding planes, soft clay layers, joint systems, and fault planes) in subsurface materials;
  - Slopes having gradients steeper than eighty percent (80%) subject to rock fall during seismic shaking;
  - Areas that show evidence of, or are at risk from snow avalanches; and
  - Any area with a slope of forty percent (40%) or steeper and with a vertical relief of ten (10) or more feet except areas composed of competent bedrock. A slope is delineated by establishing its toe and top and measured by averaging the inclination over at least ten (10) feet of vertical relief.
- **Erosion Hazard Areas.** Erosion hazard areas shall include areas containing soils that may experience significant erosion, including:
  - Slopes forty percent (40%) or steeper with a vertical relief of ten (10) or more feet, except areas composed of consolidated rock.
  - Concave slope forms equal to or greater than fifteen percent (15%) with a vertical relief of ten (10) or more feet, except areas composed of consolidated rock.
  - Channel migration zones, which are defined as the areas along a river within which the channel(s) can be reasonably predicted to migrate over time as a result of natural and normally occurring hydrological and related processes when considered with the characteristics of the river and its surroundings.
- **Alluvial Fan Hazard Areas**. Alluvial fan hazard areas shall include those areas on alluvial fans where debris flows, debris floods, or clear water floods have the potential to significantly damage or harm the health or welfare of the community. They include the area generally corresponding to the path of potential flooding, channel changes, sediment and debris deposition, or debris flow paths as determined by analysis of watershed hydrology and slope conditions, topography, valley bottom and channel conditions, potential for channel changes, and surface and subsurface geology.
- **Seismic Hazard Areas.** Seismic hazard areas shall include areas subject to severe risk of damage as a result of earthquake induced ground shaking, slope failure, settlement, soil liquefaction, lateral spreading, or surface faulting.
- **Volcanic Hazard Areas**. Volcanic hazard areas shall include areas subject to pyroclastic flows, lava flows, debris avalanche, inundation by debris flows, mudflows, or related flooding

resulting from volcanic activity. There are no active or dormant volcanoes located within Kittitas County; however, Mount Rainer and Mount St. Helens are relatively near. Hazards to Kittitas County residents from these volcanoes are likely limited to ash deposition.

- **Mine Hazard Areas**. Mine hazard areas shall include areas underlain by abandoned mine shafts, secondary passages between shaft tunnels, or air vents. Mine hazards include subsidence, which is the uneven downward movement of the ground surface caused by underground workings caving in; contamination to ground and surface water from tailings and underground workings; concentrations of lethal or noxious gases; and underground fires. *[WAC 365-190-080]*

As noted in the VSP Work Plan, structures in agricultural lands will continue to be permitted and regulated through the County's Critical Areas Ordinance, notably for landslide, mine, and seismic hazard areas. Geologically hazardous areas for erosion hazards have primary applicability in the VSP context.

Maps and References (KCC 17A.06.XXX)

Mapping. The approximate location and extent of geologically hazardous areas are shown on maps maintained by the County. These maps are useful as a guide for project applicants and/or property owners, but do not provide a conclusive or definitive indication of geologically hazardous area presence or extent. Other geologically hazardous areas may exist that do not appear on the maps, and some geologically hazardous areas that appear on the maps may not meet the geologically hazardous areas designation criteria. The County shall update the maps periodically as new information becomes available and may require additional studies during the development review process to supplement and/or confirm the mapping. Historic maps showing the locations of known coal mines within the County are available from the Washington State Department of Natural Resources. *[NEW]*

Frequently Flooded Areas (FFAs)

Designation and Mapping (KCC 17A.05.XXX)

Mapped areas. All lands classified as floodway or special flood hazard areas in the Federal Emergency Management Agency report titled "The Flood Insurance Study for the County of Kittitas County" dated November 5, 1980, as now or hereafter amended, with accompanying Flood Insurance Rates and Boundary Maps, are designated as frequently flooded areas. The study and maps are on file at Kittitas County. *[KCC 14.08.030 / WAC 365-190-030(8)]*

Other areas. The Flood Insurance Study maps may not show all potential flood hazard areas. The Director (as defined by Kittitas County) may designate unmapped frequently flooded areas. Such

designations may be appealed pursuant to Section 14.08.160. The Director's designation of an unmapped frequently flooded area shall be based upon the following criteria:

- Documented history of flood damage;
- Presence of alluvial fan hazards and/or channel migration zones; and/or
- Evidence of stream channel instability and susceptibility to erosion.

Appendix B-4
Countywide GIS Baseline Data Summary

Kittitas County VSP Work Plan - Countywide Data Summary

Landcover	Acres
Total Community Areas	**444,906**
Agricultural Landcover	**228,128**
Irrigated Cropland	76,537
Irrigated Pasture	22,440
Orchard/Vineyard	3,265
Dryland	3,463
Rangeland - Shrub-Steppe	83,461
Rangeland - Forest	38,962
Total Streams (miles)	**1,374**

Critical Areas	Areas within Agricultural Lands				
	Irrigated	Dryland	Rangeland Shrub-Steppe	Rangeland Forest	Total
	Miles	*Miles*	*Miles*	*Miles*	*Miles*
Streams Total	719	19	412	224	1,374
Shorelines of the State	33	1	6	15	54
Fish Use or Potential Fish Use	197	2	80	30	310
No Fish Use	81	10	151	138	380
Unknown (includes irrigation canals)	408	5	176	41	630
Fish Habitat (PHS)					
Summer Steelhead (ESA threatened)	41	0	8	13	62
Bull Trout (ESA threatened)	18	0	1	7	26
Upper Yakima River Spring Chinook Salmon	44	0	3	12	59
Upper Yakima Coho Salmon	23	0	1	5	29
Rainbow Trout	104	0	18	20	142
Westslope Cutthroat Trout	26	0	5	15	46
Columbia River Fall Chum	5	0	1	0	6
Columbia River Kokanee	5	0	1	0	6
Columbia River Spring Chinook Salmon	5	0	1	0	6
Columbia River Summer Chinook Salmon	5	0	1	0	6
Columbia River Coho Salmon	5	0	1	0	6
Hanford Reach Fall Chinook Salmon	5	0	1	0	6

Critical Areas	Areas within Agricultural Lands				
	Irrigated	**Dryland**	**Rangeland Shrub-Steppe**	**Rangeland Forest**	**Total**
	Acres	*Acres*	*Acres*	*Acres*	*Acres*
Wetlands (all types)	4,065	13	306	570	4,954
Freshwater Emergent Wetland	3,013	6	162	155	3,336
Freshwater Forested/Shrub Wetland	544	3	78	314	938
Lake/Pond	258	3	36	31	328
Riverine	250	1	22	70	343
Other	1	0	8	0	9
Frequently Flooded Areas	7,882	9	478	958	9,327
Wellhead Protection Areas	6	0	0	2	9
Hazard Slopes	0	159	25,248	15,179	40,586
25% to 50%	0	148	23,177	12,658	35,983
Over 50%	0	11	2,071	2,520	4,603
Priority Habitats and Species					114,772
Birds					
Spotted Owl	354	419	0	7,522	8,295
Black-Backed Woodpecker	0	1	0	0	1
Common Loon	8	0	0	0	8
Great Blue Heron	11	0	0	0	11
Golden Eagle	0	0	100	0	100
Burrowing Owl	0	0	7	0	7
Greater Sage Grouse	0	0	2490	0	2,490
Dusky Grouse	0	0	187	0	187
American White Pelican	0	0	1	0	1
Mammals					
Mule Deer	3,209	2,680	51,387	11,298	68,574
Elk	1,084	2,187	31,725	17,700	52,696
Bighorn Sheep	1,521	0	6,680	956	9,157
Townsend's Ground Squirrel	0.0	0	6	0	6
Oak Woodland	0	0	267	0	267
Shrub-Steppe	1,537	1,957	66,210	115	69,819
Biodiversity Areas and Corridor	407	0	15,520	0	15,927
Big Game Area (Watson Rd Cutoff)	206	0	0	40	246
Waterfowl Concentration	22	0	0	0	22
Cliffs and Bluffs	0	0	350	24	374
Talus Slopes	0	0	26	0	26

Appendix B-5
Agricultural Viability Interviews Summary

Appendix B-5: Agricultural Viability Interviews Summary

Kittitas County is unique in location, growing climate, and agricultural diversity, which are all important factors in considering agricultural viability. Watershed Group producers were interviewed to provide their firsthand insights and perspectives on agricultural viability. Their responses are summarized below.

What do you see in terms of trends for agricultural viability in Kittitas County or the region?

- Majority of hay crops are exported overseas (Pacific Rim, Middle East, China), resulting in reliance on longshoreman's union, exchange rate, trade policies.
- There is a constant evolution in practices, for example precision farming practices like cell phone activated pump systems, drone technology, real time infrared photos, etc.
- Labor costs and availability result in a trend toward more mechanization, especially with tree fruit.
- Conversion of traditional crops to tree crops is putting pressure on traditional producers in some areas (particularly south of Fourth Parallel Rd) by driving up land prices.
- The trend towards reduced tillage helps economically because it reduces trips across the field.
- Land prices are high, and the ownership pattern is changing. There is a trend of farms that are purchased to be a nice place to live, but do not need to be an economically viable farm. These are especially prevalent in Northern Kittitas County.
- The reliability of water is threatened by weather conditions and other things.
- There is a strong market for small production, but it requires a large amount of work.
- It is hard for young farmers to break into agriculture due to high land prices.
- Trend towards bigger and faster equipment, which has higher costs.
- Pacific Northwest regional market for hay (feed stores or direct to consumer)
- We can be viable if we are not over regulated. We have a product that has worldwide demand as long as we can keep our costs at a reasonable level.
- We see local farmers trying to minimize labor and overall farm cost by using overhead sprinkler systems and many are using GPS guidance for field work and irrigation application.
- It's getting more difficult in a place like Kittitas County with pressure being put on what used to be a niche market for Timothy hay. Larger producers can create an oversupply in a short amount of time. A shorter growing season limits our options for certain crops that might otherwise be attractive. But as long as we have good dirt, ample water supply, and a willingness to work, we should be able to get by.
- New rotation crops (such as beans, sunflowers, canola), less tillage, and change to sprinkler irrigation

- Due to growth and economic strength of Washington, it seems that agricultural viability, be it small market direct or export, will continue to be strong. The limiting factors would be development trends and increased regulations at the state level.

How do you see the international market affecting agricultural viability?

- International export of hay drives the economy of the valley. Trade policy, shipping (longshoreman), and exchange rate (strength of the dollar) all impact agricultural viability.
- Globalization is becoming more prominent every day; therefore, the international market will always be a concern. We must compete on quality and diversity if we are to stay competitive.
- The exporting of Kittitas Valley hay has been a driving force for farmers expanding operations and trying new hay varieties. The longshoreman strike was very damaging because it affected the export of our farms' products for years after the strike ended.
- The international market is what makes the Kittitas Valley viable. Without it, agriculture in this Valley cannot survive.
- Currently the international market offers the best return.
- Seems there will always be strong demand as populations grow worldwide.

In regard to the local agriculture market or practices, what do you see are some strengths, weaknesses, opportunities, and threats (SWOT)?

Strengths:

- Export options to international markets
- Smart and talented producers are trying new approaches
- Land is mostly owned by family farms
- Intergenerational producers with understanding of the land and resources of the County
- Excellent climate for quality Timothy hay production
- Proximity to ports and existing transportation infrastructure (interstates, etc.)
- Local presence of buyers and processors for hay market
- Proximity to urban markets for direct sell of products
- County has a Right to Farm ordinance in place
- Available public land leases for livestock producers
- Special demand for valley hay to the export market
- Have hay brokers in the valley to work with that have well established customers
- A long history of quality forage production
- Good soil and moderate climate
- Is a central hub for the hay market
- We sell domestic hay- and grass-fed bovine on a small scale. I feel that with the wealth of the westside and the continued search for local grown and farm raised products should continue to be strong.

Weaknesses:

- Electricity expense and availability
- Lack of water storage, pro-ratable water for large portion of producers
- Volatility of access to ports (longshoreman union)
- Access to meat processors (must go to Rochester or Chewelah) for retail meat sales
- Few viable rotation crops
- Not enough diversity of crops due to short growing season
- Access by west side residents
- Public lands grazing leases
- We need an ability to use the land to the fullest. An example is the placement of solar farms and low-density zoning (3-acre minimum to 20 acre). The ability to have a diverse income stream equates to economic strength and health of the producer.
- The removal of agricultural lands for residential housing, solar farms, and other industrial uses
- Small producers have a hard time competing with larger operations.
- Limited interest in farming shown by younger people.
- Deterioration of infrastructure

Opportunities:

- Yakima Basin Integrated Plan, which is a collaborative effort with partners addressing all land uses and threats (i.e., agriculture, fish habitat, and water availability)
- First county east of King County
- County Agricultural advisory commission
- New technologies such as precision agriculture
- New crops for dryland farms
- Grazing opportunities on public lands for habitat improvement
- Agricultural tourism to supplement production agriculture
- Developing new profitable rotation crops
- Supporting and growing local vendors, which offer superior service and great products close to home
- Increased efficiency
- Technology and irrigation upgrades

Threats:

- Land conversion and rising land prices
- Excessive regulations related to direct sell of agricultural products
- High wages and housing costs
- Depredation of crops and livestock by elk, cougars, wolves, etc.
- Endangered Species Act and Clean Water Act

- Urban and suburban sprawl
- Centralization of land regulations so that regulations don't fit specific local conditions
- Paperwork and restrictions that are required under existing and future regulations

Do agricultural producers have the flexibility to respond to fluctuating market conditions that is needed? Are there opportunities to increase flexibility?

- Market trends are really hard to predict and are not the only fluctuating conditions to which producers are responding
- It is costly to change crops because equipment and infrastructure changes are needed
- For many, limited alternative crop options if markets or other conditions change for traditional crops
- It seems market trends are much faster and shorter lived than growing seasons. I have always felt that there is a lag and that the trend may be over by the time the producer is up and running 2 years later. Some way to anticipate the coming trends is the trick.
- The flexibility is here, the opportunities are not.
- There is not much flexibility for the agricultural producer pertaining to the market. We are limited on crop rotation and equipment to harvest.

Are there programs at the regional level that you would like to see that would support a more resilient local agriculture market (i.e., infrastructure and services, support for best practices, education or training, a welcoming business environment)?

- Yakima Basin Integrated Plan which is a collaborative effort with partners addressing all land uses and threats (i.e., agriculture, fish habitat, and water availability)
- Provide more flexibility in regulations or less regulations overall. Farmers find it harder and harder to farm and maintain their land especially around and along water ways.
- The practices of agriculture and the wants of the new residents are often in conflict (irrigation water, clogging of roads with commuters, spraying, etc.). I have always thought transfer of development rights (TDR) are the way to go. Make the developer pay the farmer not to convert farmland. This protects the land and pushes the development into areas that are not prime leaving agriculture the uninhibited ability to keep farming.
- A welcome business environment and help with infrastructure

At a farm level, what would help agricultural producers remain viable (i.e., reducing input costs, maintain/enhance land productivity, increased incentives)?

- Allow farmers to maintain and improve creeks and water ways
- Improve farm to market roads
- Consistent farm labor
- Reduction of or protection/exemption from regulations that hamper operations or add expensive and time-consuming compliance

- Help with irrigation system updates would increase production and decrease labor costs
- Conservation district efforts to help enhance agricultural activities in our area are critical. Funding is key to help producers remain competitive.

Other Thoughts

- The government needs to take an active role in making sure our products can make it to market. Good roads, keeping the ports open at all times, and ensuring taxes remain as low as possible.

Appendix B-6
Kittitas County Water Quality 303(d) Listings (2017)

Kittitas County Water Quality 303(d) Category 5 Listings (2017) – Parameters with Potential Intersects with Agricultural Activities

Water Quality Parameter	Potential Agricultural-related Source
4,4'-DDD	Insecticide
4,4'-DDE	Byproduct of DDT
Bacteria	Animal waste
Dieldrin	Insecticide
Dissolved Oxygen	Organic matter decomposition
pH	Indicator
Temperature	Erosion/sediment/canopy cover

Source: Washington Department of Ecology Water Quality Assessment Data accessed November 1, 2017

Appendix C
Benchmarks – Methods and Initial Results

APPENDIX C: Benchmarks – Methods and Initial Results

Methods

Linking Stewardship Practices to Resource Protection

Conservation practice benefits are related to critical areas functions and values through the use of the national conservation practice physical effect (CPPE) scores developed by the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS; NRCS 2017). The CPPE describes how NRCS practices affect the human-economic environment (e.g., Agricultural Viability) and natural resources (e.g., Critical Functions) and helps field planners describe in detail how each practice affects agricultural viability and natural resource critical functions. Scores range between +5 and -5, with positive scores denoting a functional beneficial effect, 0 denoting no effect, and negative scores having an adverse effect.

For each of the four key critical area functions (i.e., soil health, hydrology, water quality, and habitat), resource concerns were tailored to Kittitas County by including concerns applicable to the County and were averaged together to provide an overall function score. Where a resource concern was listed as not applicable to a practice, this resource concern was not factored into the average function score. Table 1 and Attachments 1 and 2 provide additional details on methods applied to summary tables of practice effects on resource function in Kittitas County:

- **Table 1: CPPE Resource Concerns for Kittitas County** summarizes the resource concerns identified as applicable to Kittitas County conditions, pared down for applicability from the comprehensive list of resource concerns in the NRCS National CPPE Summary Tool, dated 7/28/2015, and available from the NRCS CPPE webpage (NRCS 2017) at https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/technical/econ/data/?cid=nrcs143_009740.
- **Attachment 1: Kittitas County CPPE Resource Concerns and Scores** provides a detailed summary of applicable individual resource scores (identified in Table 1) and average function scores per key critical area function for all NRCS conservation practices. Resource concerns listed as a zero (and colored in red) indicate the score is applicable to the conservation practice as having no effect. Zero scores not highlighted in red indicate a resource concern that is not applicable to the practice and is therefore not factored into the average function score.
- **Attachment 2: Kittitas County Practice Toolbox with CPPE Averaged Function Scores** provides an overview of NRCS conservation practices currently implemented in Kittitas County, showing quantitative scores and additional applicable and key practices (scores greater than 3) for each function category.

Table 1
CPPE Resource Concerns for Kittitas County

Function	Resource Concern
Soil	The soil score averaged soil erosion and soil condition scores based on the associated resource concerns listed below.
Soil Erosion	• Sheet and rill • Wind • Ephemeral gully • Classic gully • Streambank/shoreline/conveyance
Soil Condition	• Organic matter depletion • Compaction • Subsidence • Contaminants: Salts or other chemicals
Hydrology	• Excessive seepage • Excessive runoff, flooding, or ponding • Excessive subsurface water • Drifted snow • Inefficient water use on irrigated land • Inefficient water use on non-irrigated land
Water Quality	• Pesticides in surface water • Pesticides in groundwater • Nutrients in surface water • Nutrients in groundwater • Salts in surface water • Salts in groundwater • Excess pathogens and chemicals from manure, bio-solids, or compost applications in surface water • Excess pathogens and chemicals from manure, bio-solids, or compost applications in groundwater • Excessive sediments in surface water • Elevated water temperature • Petroleum, heavy metals, and other pollutants transported to surface water • Petroleum, heavy metals, and other pollutants transported to groundwater
Habitat	• Inadequate food • Inadequate cover/shelter • Inadequate water • Inadequate space

Function	Resource Concern
Agricultural Viability	• Livestock production limitation: inadequate food/forage, shelter, and stock water • Inefficient energy use • Cultural resources and/or historic properties present or suspected • Change in land use • Change in land production • Change in equipment • Total investment cost • Annual cost • Credit and farm program eligibility • Labor • Change in management level • Risk: yield, flexibility, timing, cash flow

Application for Future Practices

The spreadsheets in Attachments 1 and 2 may be used to track enrollment in future practices and to continue to assess functional indicators of these practices. New NRCS practices may also be added to Kittitas County's palette of protection and enhancement tools (Attachment 2).

For practices outside of NRCS, equivalent function scores should be developed to estimate the benefit or impact on soil health, hydrology, water quality, and habitat based on the understanding that scores range from +5 and -5, with positive scores denoting a beneficial effect and negative scores indicating an adverse impact. The following steps are suggested for this process:

- Assess whether the new practice is similar to an existing NRCS practice and use the resource concern scores from the existing NRCS practice as a starting point to develop function scores.
- Use experience and available technical information to develop scores, with the understanding that although a practice may have a beneficial effect on a target resource, there may be impacts to other resources. Also, not all practices will have an effect on all possible resource concerns; many will have no effect, and some will not be applicable and should be listed as a zero.

Initial Results (2011 to 2016)

To track performance from implemented conservation practices from 2011 to 2016, enrollment in conservation practices was tabulated and average function scores (Attachment 2) were applied. This provided a functional indicator that accounted for the beneficial and adverse effects of each practice.

Although NRCS enrollment data are available since 2011, the discontinuation of practices during that period was not recorded. The rate of discontinuation of practices often varies based on whether implemented practices involve stewardship investment (e.g., irrigation management systems),

stewardship actions (e.g., cover cropping), or permanent conversion into conservation easements. Table 2 summarizes the proposed approach to account for the varied disenrollment rates based on some of these categories of practices.

Table 2
Calculating Disenrollment for Conservation Practices

Assumed Range of Disenrollment/ Discontinuation	Conservation Practice Category	Example Practices
None	**Easements and Infrastructure** • Permanent conservation practices	• Permanent easements • Major infrastructure
Lower 0-3%	**Conservation Investments** • High barriers to entry/exit – Conservation investments – Maintenance cost – Effectiveness • Increases land productivity • Lowers cost	• Irrigation systems (e.g., sprinklers, pipelines) • Habitat management and restoration • Watering facilities • Fencing
Higher 3-7%	**Conservation Actions** • Low barriers to entry/exit – Easily removed • Reduced land in production • Rotational use – Market driven rotation • Reliance on unstable conservation funding or incentives (e.g., Conservation Resource Program)	• Irrigation management • Pest management • Nutrient management • Prescribed grazing • Cover crop/mulching • Anionic Polyacrylamide (PAM) Application

Figures 1 through 4 illustrate the functional indicator results from 2011 to 2016 based on reported practices enrolled/implemented and estimated discontinuation of practices within that time. Figures 1 through 4 indicate a net gain in function over time for soil health, hydrology, water quality, and habitat.

Figure 1
Soil Functional Indictors: 2011 to 2016 NRCS Practice Enrollments

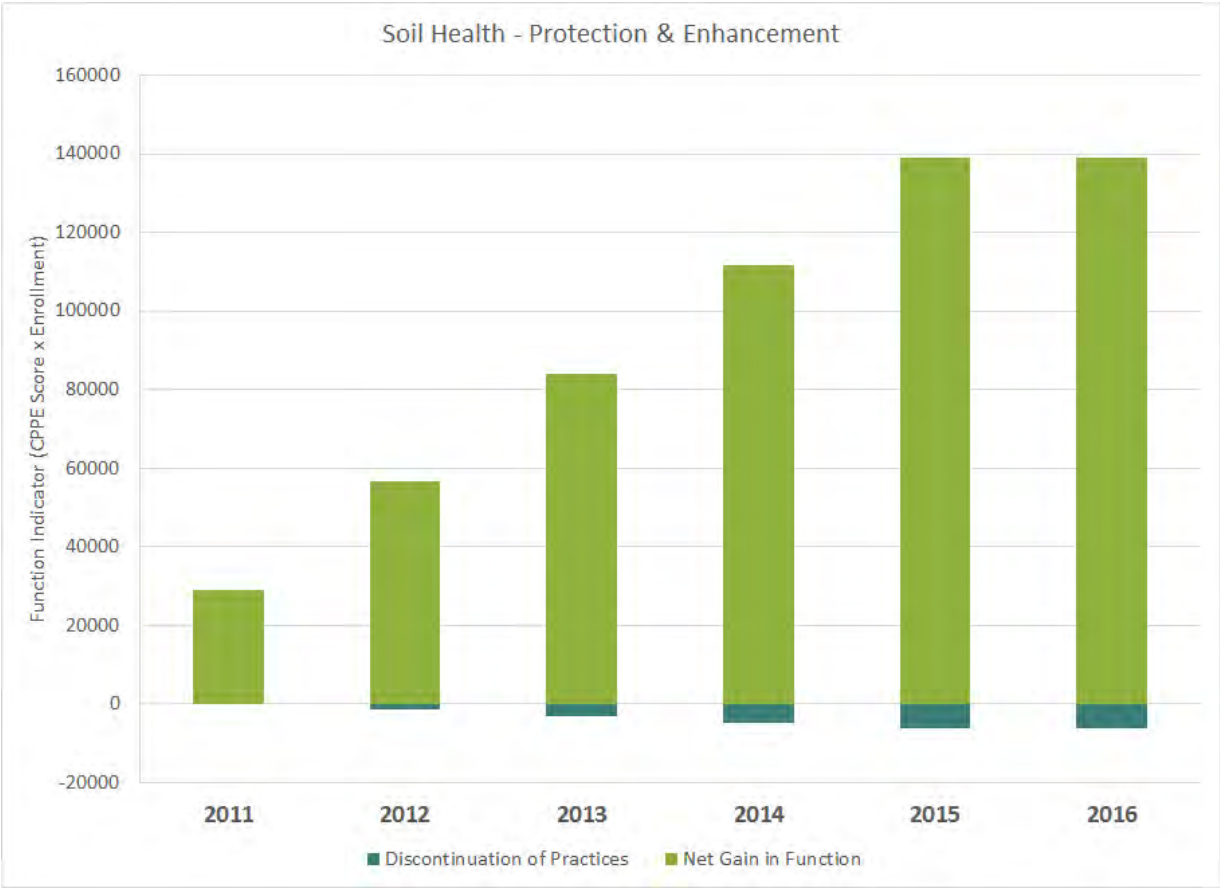


Figure 2
Hydrology Functional Indictors: 2011 to 2016 NRCS Practice Enrollments

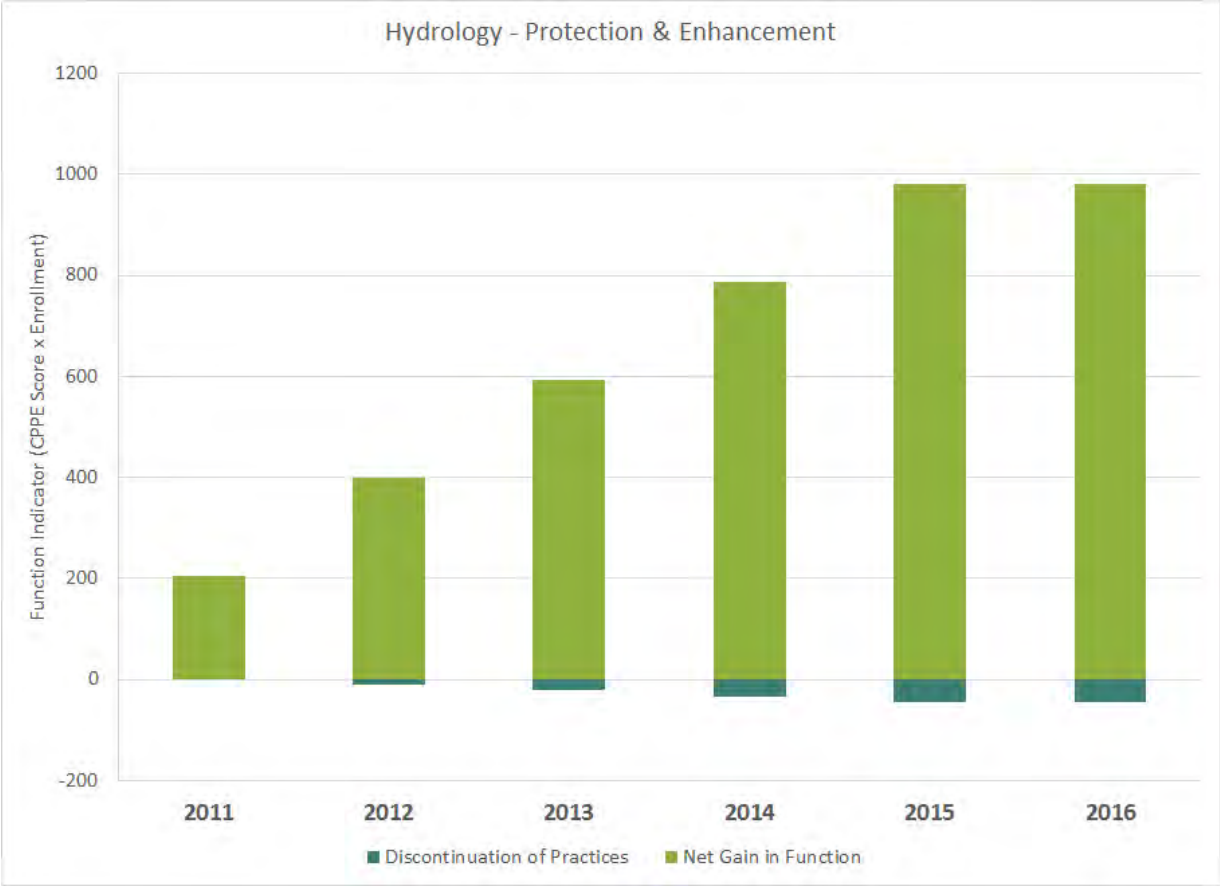


Figure 3
Water Quality Functional Indictors: 2011 to 2016 NRCS Practice Enrollments

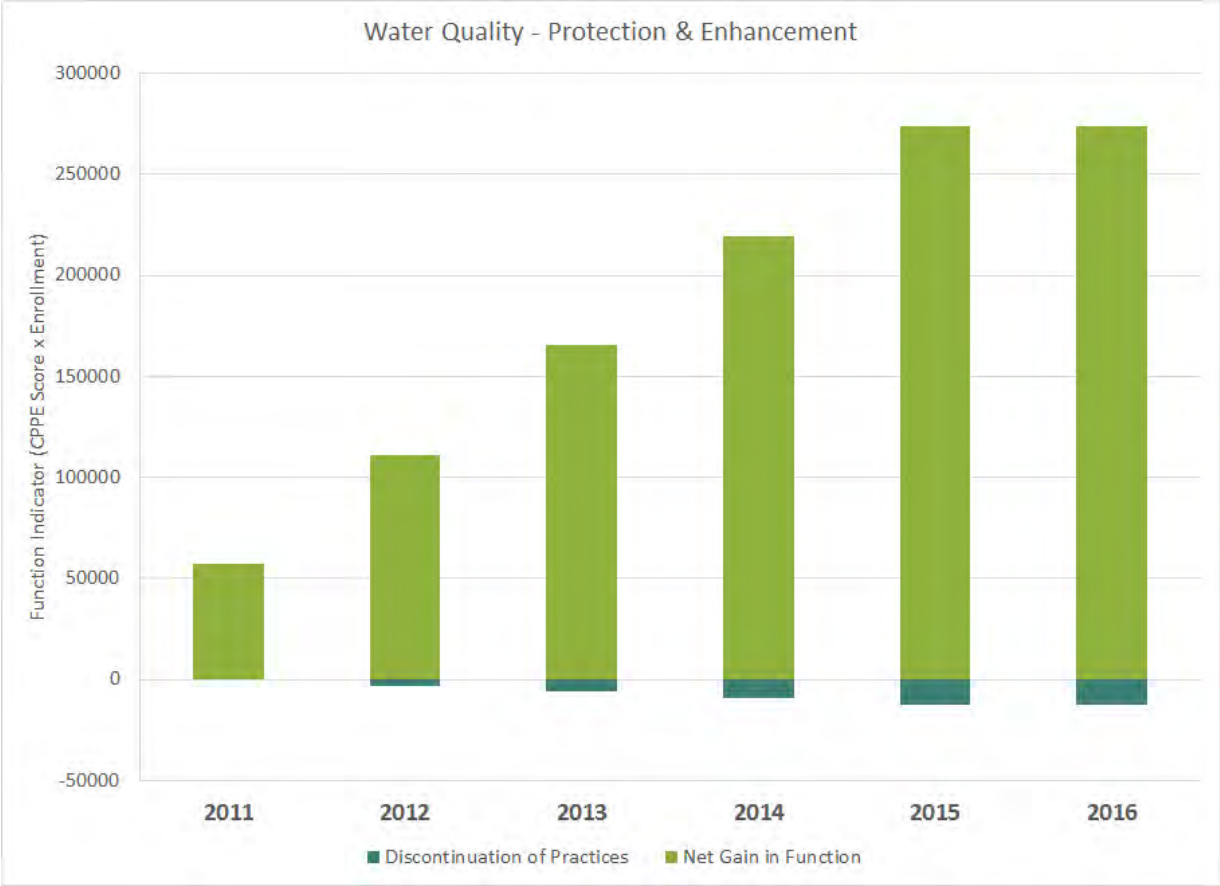
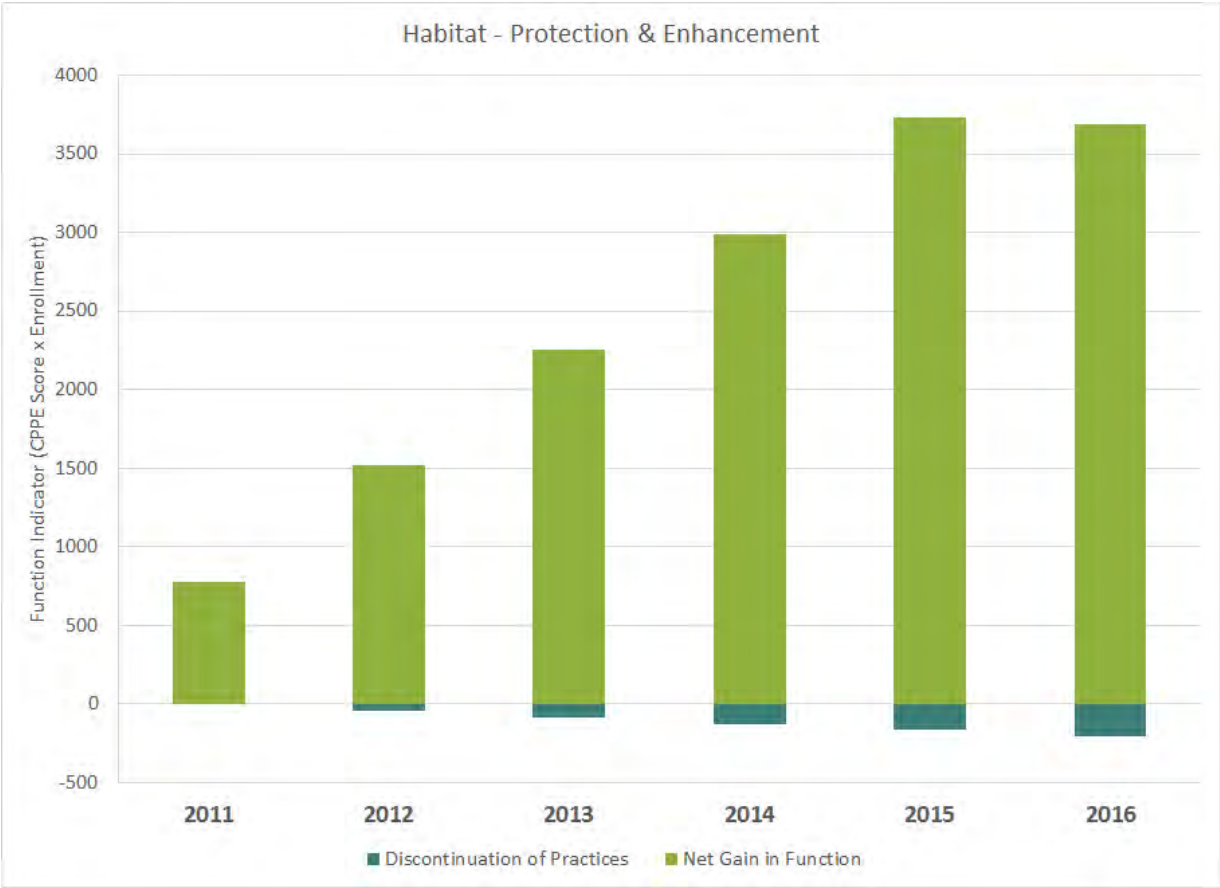


Figure 4
Habitat Functional Indictors: 2011 to 2016 NRCS Practice Enrollments



Reference

NRCS (Natural Resources Conservation Service), 2017. NRCS Conservation Practice Physical Effects CPPE | NRCS Economics. Accessed March 2017. Available at https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/technical/econ/data/?cid=nrcs143_009740.

Attachment 1
Kittitas County CPPE Resource Concerns and Scores

Kittitas County VSP Work Plan	Code	Soil Function	Hydrology Average	Water Quality Average	Habitat Average	Agr Viability	Wetlands	Fish/Wildlife Habitat Conservation Areas	Critical Aquifer Recharge Areas	Geologically Hazardous Areas (Erosion)	Frequently Flooded Areas
Access Control	**472**	2.95	1.75	1.44	2.00	-0.64	1.73	2.00	0.60	3.40	2.22
Access Road	**560**	1.50	1.50	1.00	-1.00	-0.33	0.50	-1.00	0.00	1.00	0.90
Agrichemical Handling Facility	**309**	0.00	0.00	5.00	0.00	-1.36	1.67	0.00	2.00	0.00	1.00
Air Filtration and Scrubbing	**371**	0.00	0.00	0.00	0.00	-2.86	0.00	0.00	0.00	0.00	0.00
Alley Cropping	**311**	3.58	2.00	1.73	2.33	0.07	2.02	2.33	1.00	4.50	2.65
Amending Soil Properties with Gypsum Products	**333**	1.00	1.00	0.00	0.00	0.00	0.33	0.00	0.00	1.00	0.60
Amendments for Treatment of Agricultural Waste	**591**	0.25	0.50	2.00	0.00	-1.73	0.83	0.00	1.60	0.00	0.60
Anaerobic Digester	**366**	0.00	0.00	0.67	0.00	-1.70	0.22	0.00	0.00	0.00	0.13
Animal Mortality Facility	**316**	0.00	0.00	2.00	0.00	1.00	0.67	0.00	0.80	0.00	0.40
Anionic Polyacrylamide (PAM) Erosion Control	**450**	2.00	1.00	1.17	0.00	1.13	0.72	0.00	-0.40	2.00	1.23
Aquaculture Ponds	**397**	0.00	0.00	-2.00	1.00	-0.42	-0.33	1.00	-0.40	0.00	-0.20
Aquatic Organism Passage	**396**	0.00	0.00	2.00	2.67	-0.44	1.56	2.67	0.00	0.00	0.93
Bedding	**310**	0.83	2.00	-0.55	0.00	0.17	0.48	0.00	1.00	2.00	0.62
Bivalve Aquaculture Gear and Biofouling Control	**400**	0.00	0.00	2.00	2.00	-1.67	1.33	2.00	0.00	0.00	0.80
Brush Management	**314**	0.50	1.50	0.50	1.67	2.36	1.22	1.67	0.00	1.00	0.93
Building Envelope Improvement	**672**	0.00	0.00	0.00	0.00	-0.75	0.00	0.00	0.00	0.00	0.00
Channel Bed Stabilization	**584**	1.00	2.00	1.00	1.25	-0.43	1.42	1.25	0.00	2.00	1.25
Clearing & Snagging	**326**	1.00	2.00	-1.50	-1.75	-0.57	-0.42	-1.75	0.00	2.00	0.15
Combustion System Improvement	**372**	0.00	0.00	0.00	0.00	-3.00	0.00	0.00	0.00	0.00	0.00
Composting Facility	**317**	0.00	0.00	2.00	0.00	-1.17	0.67	0.00	0.80	0.00	0.40
Conservation Cover	**327**	2.77	1.25	2.89	3.33	-1.11	2.49	3.33	2.00	2.20	2.60
Conservation Crop Rotation	**328**	3.17	1.60	1.75	2.00	0.88	1.78	2.00	1.20	4.00	2.34
Constructed Wetland	**656**	0.00	2.00	2.25	2.00	-0.11	2.08	2.00	1.40	0.00	1.25
Contour Buffer Strips	**332**	2.50	-0.67	0.56	2.00	0.43	0.63	2.00	-0.60	3.00	1.38
Contour Farming	**330**	1.50	-0.25	0.50	0.00	0.50	0.08	0.00	-0.60	2.00	0.65
Contour Orchard and Other Perennial Crops	**331**	2.25	0.20	0.43	0.00	0.55	0.21	0.00	-0.60	2.50	1.03
Controlled Traffic Farming	**334**	2.00	1.00	0.00	0.00	0.00	0.33	0.00	0.00	0.00	1.00
Cover Crop	**340**	2.46	1.40	1.75	2.00	0.10	1.72	2.00	1.40	3.67	2.01
Critical Area Planting	**342**	3.63	0.00	2.33	2.00	-1.00	1.44	2.00	0.20	4.60	2.32
Cross Wind Ridges	**588**	2.50	0.00	1.00	0.00	-1.38	0.33	0.00	0.00	4.00	1.20
Cross Wind Trap Strips	**589C**	3.00	0.00	1.50	2.00	-0.89	1.17	2.00	0.00	4.00	1.90
Dam	**402**	0.25	0.25	-0.25	1.75	0.00	0.58	1.75	-0.20	1.50	0.45
Dam, Diversion	**348**	-0.50	2.00	-2.00	-2.00	0.18	-0.67	-2.00	0.00	-1.00	-0.60
Deep Tillage	**324**	0.25	1.00	0.00	0.00	0.89	0.33	0.00	-0.40	0.00	0.30
Denitrifying Bioreactor	**605**	0.00	0.00	2.00	0.00	0.00	0.67	0.00	0.20	0.00	0.40
Dike	**356**	-0.25	0.00	1.33	-0.50	0.91	0.28	-0.50	0.40	-0.50	0.07
Diversion	**362**	0.75	1.40	0.71	0.00	0.20	0.70	0.00	0.00	1.50	0.72
Drainage Water Management	**554**	1.50	0.33	0.89	2.00	1.33	1.07	2.00	0.40	2.00	1.24
Dry Hydrant	**432**	0.00	-1.00	0.00	0.00	-1.14	-0.33	0.00	0.00	0.00	-0.20
Dust Control from Animal Activity on Open Lot Surfaces	**375**	1.00	0.00	1.00	0.00	-1.67	0.33	0.00	0.00	2.00	0.60
Dust Control on Unpaved Roads and Surfaces	**373**	0.25	0.00	-0.50	0.00	-2.00	-0.17	0.00	0.00	1.50	0.00
Early Successional Habitat Development/Mgt.	**647**	0.00	0.00	-1.00	4.00	-0.78	1.00	4.00	0.00	0.00	0.60
Emergency Animal Mortality Management	**368**	0.00	0.00	2.00	0.00	0.00	0.67	0.00	0.80	0.00	0.40
Farmstead Energy Improvement	**374**	0.00	0.00	-2.00	0.00	-0.75	-0.67	0.00	0.00	0.00	-0.40
Feed Management	**592**	0.00	0.00	1.40	0.00	-1.00	0.47	0.00	0.60	0.00	0.28
Fence	**382**	1.00	0.00	2.00	0.00	0.33	0.67	0.00	0.00	1.00	0.80
Field Border	**386**	2.25	1.00	1.43	2.00	-1.00	1.48	2.00	0.80	2.50	1.79
Field Operations Emissions Reduction	**376**	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.40
Filter Strip	**393**	2.50	0.00	2.36	2.00	-1.40	1.45	2.00	1.20	0.00	1.87
Firebreak	**394**	-1.40	0.00	-1.00	-1.00	-0.70	-0.67	-1.00	0.00	-0.80	-0.96
Fish Raceway or Tank	**398**	0.00	0.00	-1.00	0.00	0.69	-0.33	0.00	-0.40	0.00	-0.20
Fishpond Management	**399**	0.00	0.00	-2.00	3.50	0.33	0.50	3.50	-0.40	0.00	0.30
Forage and Biomass Planting	**512**	1.25	1.00	1.00	1.00	1.40	1.00	1.00	0.00	1.00	1.10
Forage Harvest Management	**511**	1.50	1.00	1.25	1.00	0.00	1.08	1.00	0.00	1.00	1.25
Forest Stand Improvement	**666**	0.38	3.00	0.75	2.33	0.45	2.03	2.33	0.80	0.75	1.37
Forest Trails and Landings	**655**	-0.38	0.00	0.50	0.33	-0.50	0.28	0.33	0.00	-0.75	0.02
Fuel Break	**383**	-1.50	-1.00	-1.00	0.40	-0.33	-0.53	0.40	-0.20	-1.00	-0.92
Grade Stabilization Structure	**410**	1.00	0.00	1.00	1.67	-0.56	0.89	1.67	0.00	2.00	0.93
Grassed Waterway	**412**	2.17	2.50	1.33	1.00	-0.08	1.61	1.00	0.00	3.33	1.83
Grazing Land Mechanical Treatment	**548**	1.00	2.00	2.33	0.00	0.67	1.44	0.00	0.00	1.00	1.27
Groundwater Testing	**355**	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heavy Use Area Protection	**561**	1.25	-1.00	1.67	0.00	-1.50	0.22	0.00	0.00	2.00	0.63
Hedgerow Planting	**422**	1.25	2.00	1.33	4.00	-1.18	2.44	4.00	0.00	1.00	1.97
Herbaceous Weed Control	**315**	1.60	2.00	-0.25	1.67	0.63	1.14	1.67	0.00	3.20	1.32
Herbaceous Wind Barriers	**603**	3.00	3.00	1.00	2.00	-0.89	2.00	2.00	0.00	4.00	2.40
High Tunnel System	**325**	0.00	-2.00	-1.00	0.00	0.00	-1.00	0.00	0.00	-1.00	-0.60
Hillside Ditch	**423**	0.88	2.50	-0.25	1.00	0.42	1.08	1.00	-0.20	1.75	1.00
Integrated Pest Management	**595**	2.00	0.00	4.00	2.00	0.67	2.00	2.00	1.00	2.00	2.00
Irrigation Canal or Lateral	**320**	0.00	1.67	-1.33	1.00	-0.33	0.44	1.00	0.00	0.00	0.27
Irrigation Ditch Lining	**428**	0.00	1.67	0.60	1.00	0.13	1.09	1.00	1.00	0.00	0.65
Irrigation Field Ditch	**388**	0.00	1.25	0.00	1.00	-0.18	0.75	1.00	0.00	0.00	0.45
Irrigation Land Leveling	**464**	-0.33	2.33	1.70	0.00	0.80	1.34	0.00	1.80	1.00	0.67
Irrigation Pipeline	**430**	1.00	1.33	1.14	0.00	1.83	0.83	0.00	0.80	2.00	0.90
Irrigation Reservoir	**436**	0.75	0.50	0.50	0.50	0.23	0.50	0.50	-0.20	1.50	0.60
Irrigation System, Microirrigation	**441**	0.50	2.00	1.60	1.00	0.85	1.53	1.00	1.60	0.00	1.12
Irrigation System, Surface & Subsurface	**443**	-0.42	1.25	1.00	1.00	1.17	1.08	1.00	1.00	-0.33	0.48
Irrigation System, Tailwater Recovery	**447**	0.00	0.25	0.73	1.00	-0.83	0.66	1.00	-0.20	1.00	0.40
Irrigation Water Management	**449**	1.75	1.50	2.00	0.00	1.00	1.17	0.00	2.00	2.00	1.40
Karst Sinkhole Treatment	**527**	3.00	-2.00	2.00	0.00	-0.43	0.00	0.00	2.00	4.00	1.20
Land Clearing	**460**	-1.00	-1.00	-1.00	-2.00	1.80	-1.33	-2.00	0.00	0.00	-1.20
Land Reclamation, Abandoned Mined Land	**543**	2.96	3.00	2.00	1.67	1.67	2.22	1.67	0.40	3.25	2.52
Land Reclamation, Currently Mined Land	**544**	2.96	3.00	2.00	1.67	1.67	2.22	1.67	0.40	3.25	2.52
Land Reclamation, Landslide Treatment	**453**	1.33	2.00	3.00	2.00	0.89	2.33	2.00	0.00	2.00	1.93
Land Reclamation, Toxic Discharge Control	**455**	2.00	1.67	2.67	2.00	0.80	2.11	2.00	0.80	2.00	2.07
Land Smoothing	**466**	-0.58	2.00	1.17	-1.00	2.14	0.72	-1.00	0.60	0.50	0.20
Lighting System Improvement	**670**	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00
Lined Waterway or Outlet	**468**	1.75	2.00	2.00	-0.50	-0.67	1.17	-0.50	0.40	3.50	1.40
Livestock Pipeline	**516**	0.00	0.00	0.00	0.00	1.85	0.00	0.00	0.00	0.00	0.00
Livestock Shelter Structure	**576**	1.50	0.00	2.33	0.00	2.63	0.78	0.00	0.00	3.00	1.07
Mine Shaft & Adit Closing	**457**	1.00	2.00	1.67	2.00	-0.17	1.89	2.00	0.60	0.00	1.53
Mole Drain	**482**	-0.03	1.20	0.56	0.00	0.44	0.59	0.00	1.80	0.20	0.34
Monitoring Well	**353**	0.00	0.00	0.00	0.00	-2.71	0.00	0.00	0.00	0.00	0.00
Mulching	**484**	2.50	0.60	0.83	1.00	0.60	0.81	1.00	-0.40	4.00	1.49
Multi-Story Cropping	**379**	1.63	1.00	1.10	1.67	0.80	1.26	1.67	0.60	1.00	1.40
Nutrient Management	**590**	0.83	0.00	3.50	0.00	0.30	1.17	0.00	2.80	0.00	1.03
Obstruction Removal	**500**	0.00	2.00	0.00	-2.00	0.44	0.00	-2.00	0.00	0.00	0.00
On-Farm Secondary Containment Facility	**319**	0.00	0.00	5.00	0.00	0.00	1.67	0.00	1.00	0.00	1.00
Open Channel	**582**	1.00	2.67	-0.67	-0.50	-0.20	0.50	-0.50	0.00	2.00	0.70
Pond	**378**	0.25	0.60	0.20	2.50	-0.36	1.10	2.50	-0.20	1.50	0.76
Pond Sealing or Lining, Concrete	**522**	0.50	1.75	2.00	1.00	-0.71	1.58	1.00	1.60	0.00	1.15
Pond Sealing or Lining, Compacted Soil Treatment	**520**	0.50	1.75	2.00	1.00	-0.71	1.58	1.00	1.60	0.00	1.15

Kittitas County VSP Work Plan	Code	Soil Function	Hydrology Average	Water Quality Average	Habitat Average	Agr Viability	Wetlands	Fish/Wildlife Habitat Conservation Areas	Critical Aquifer Recharge Areas	Geologically Hazardous Areas (Erosion)	Frequently Flooded Areas
Pond Sealing or Lining, Flexible Membrane	**521A**	0.50	1.75	2.00	1.00	-0.71	1.58	1.00	1.60	0.00	1.15
Precision Land Forming	**462**	0.67	2.00	1.11	0.00	1.00	1.04	0.00	1.20	2.00	0.89
Prescribed Burning	**338**	0.53	1.00	1.25	2.67	0.73	1.64	2.67	0.20	1.40	1.20
Prescribed Grazing	**528**	2.83	1.50	1.30	2.67	0.60	1.82	2.67	0.80	3.00	2.23
Pumping Plant	**533**	1.00	2.00	0.00	0.00	0.85	0.67	0.00	0.00	0.00	0.80
Range Planting	**550**	3.10	0.75	1.33	2.67	1.14	1.58	2.67	1.20	3.20	2.19
Recreation Area Improvement	**562**	1.00	1.00	1.00	0.33	-1.11	0.78	0.33	0.20	1.00	0.87
Recreation Land Grading and Shaping	**566**	0.85	2.00	2.00	-2.00	-0.86	0.67	-2.00	0.00	1.20	0.74
Residue and Tillage Management, No Till	**329**	3.25	0.80	2.00	1.67	1.22	1.49	1.67	-0.20	4.50	2.19
Residue and Tillage Management, Reduced Till	**345**	2.75	1.33	2.20	1.67	0.67	1.73	1.67	0.00	4.00	2.14
Restoration and Management of Rare or Declining Habitats	**643**	0.50	0.00	2.00	4.00	-1.22	2.00	4.00	0.00	2.00	1.40
Riparian Forest Buffer	**391**	2.47	0.67	2.83	4.00	-1.33	2.50	4.00	1.80	2.60	2.49
Riparian Herbaceous Cover	**390**	2.79	0.33	2.50	3.50	-0.40	2.11	3.50	2.20	2.25	2.38
Road/Trail/Landing Closure and Treatment	**654**	3.17	2.25	1.50	1.50	-0.75	1.75	1.50	0.60	4.00	2.32
Rock Barrier	**555**	1.50	1.33	0.80	0.00	-0.25	0.71	0.00	-0.20	3.00	1.03
Roof Runoff Structure	**558**	0.75	1.00	1.80	0.00	-1.29	0.93	0.00	0.40	1.50	0.86
Roofs and Covers	**367**	0.00	-1.00	1.00	0.00	-1.00	0.00	0.00	0.40	0.00	0.00
Row Arrangement	**557**	1.67	1.60	0.43	0.00	-0.17	0.68	0.00	0.20	2.33	1.07
Salinity and Sodic Soil Management	**610**	1.00	2.00	-1.50	0.00	1.33	0.17	0.00	-0.80	0.00	0.50
Saturated Buffer	**604**	0.00	0.00	5.00	0.00	0.00	1.67	0.00	0.00	0.00	1.00
Sediment Basin	**350**	0.67	-0.67	1.00	-0.33	-1.20	0.00	-0.33	-1.00	1.33	0.27
Shallow Water Development and Management	**646**	0.50	2.00	0.70	3.00	-0.60	1.90	3.00	0.00	0.00	1.34
Short Term Storage of Animal Waste and Byproducts	**318**	0.50	0.00	2.00	0.00	0.00	0.67	0.00	1.20	0.00	0.60
Silvopasture Establishment	**381**	2.90	1.60	1.50	1.00	0.42	1.37	1.00	1.20	2.80	1.98
Spoil Spreading	**572**	0.00	0.00	2.00	0.00	-1.13	0.67	0.00	0.00	0.00	0.40
Spring Development	**574**	0.00	1.80	1.25	3.00	0.17	2.02	3.00	0.00	1.00	1.21
Sprinkler System	**442**	1.25	2.67	1.55	1.00	1.27	1.74	1.00	1.40	2.00	1.54
Stormwater Runoff Control	**570**	1.75	0.67	2.67	0.00	-1.29	1.11	0.00	0.00	2.50	1.37
Streambank and Shoreline Protection	**580**	2.00	0.00	1.25	1.50	-0.36	0.92	1.50	0.00	4.00	1.35
Stream Crossing	**578**	1.00	0.00	0.50	0.00	-0.75	0.17	0.00	0.40	2.00	0.50
Stream Habitat Improvement and Management	**395**	2.50	0.00	2.00	3.00	-1.29	1.67	3.00	0.00	5.00	2.00
Stripcropping	**585**	3.00	0.00	1.17	1.67	0.00	0.94	1.67	-0.20	4.00	1.77
Structure for Water Control	**587**	0.00	2.00	1.00	2.00	-0.75	1.67	2.00	0.00	0.00	1.00
Structures for Wildlife	**649**	0.00	0.00	0.00	4.00	0.00	1.33	4.00	0.00	0.00	0.80
Subsurface Drain	**606**	0.90	3.00	0.70	0.00	0.82	1.23	0.00	1.40	1.80	1.10
Surface Drainage, Field Ditch	**607**	0.33	2.00	-0.20	0.00	0.75	0.60	0.00	1.00	0.67	0.49
Surface Drainage, Main or Lateral	**608**	0.25	2.00	-0.22	0.00	0.91	0.59	0.00	1.40	0.50	0.46
Surface Roughening	**609**	1.50	0.00	0.00	0.00	-0.17	0.00	0.00	-0.20	3.00	0.60
Terrace	**600**	1.55	0.80	0.36	1.00	-0.36	0.72	1.00	-1.60	2.60	1.05
Trails and Walkways	**575**	1.90	2.00	1.50	3.33	-0.09	2.28	3.33	0.00	1.80	2.13
Tree/Shrub Establishment	**612**	2.97	1.50	1.17	2.33	-0.36	1.67	2.33	1.00	3.60	2.19
Tree/Shrub Site Preparation	**490**	-1.38	2.00	-0.50	0.00	-1.00	0.50	0.00	-0.20	-1.25	-0.25
Tree/Shrub Pruning	**660**	1.00	0.00	1.00	1.00	-0.29	0.67	1.00	0.40	1.00	0.80
Underground Outlet	**620**	1.33	4.00	-0.50	0.00	-0.25	1.17	0.00	0.00	2.67	1.23
Upland Wildlife Habitat Management	**645**	1.20	-0.50	2.00	5.00	-0.14	2.17	5.00	0.00	2.40	1.78
Vegetated Treatment Area	**635**	2.67	-1.50	1.50	0.00	0.70	0.00	0.00	-0.80	4.00	1.07
Vegetative Barrier	**601**	0.00	0.00	1.60	1.00	-0.50	0.87	1.00	0.00	2.00	0.52
Vertical Drain	**630**	0.50	1.00	-0.20	0.00	-0.56	0.27	0.00	-1.40	1.00	0.36
Waste Facility Closure	**360**	1.00	0.00	1.75	0.00	-0.43	0.58	0.00	1.00	0.00	0.75
Waste Recycling	**633**	0.50	1.00	1.43	0.00	-1.13	0.81	0.00	1.20	0.00	0.69
Waste Separation Facility (no)	**632**	0.25	1.00	2.00	0.00	1.00	1.00	0.00	1.60	0.00	0.70
Waste Storage Facility	**313**	0.50	1.00	1.75	0.00	-1.80	0.92	0.00	1.20	0.00	0.75
Waste Transfer	**634**	-1.00	1.00	1.50	0.00	-1.88	0.83	0.00	1.20	-1.00	0.10
Waste Treatment	**629**	0.50	0.25	2.00	0.00	-0.70	0.75	0.00	1.60	0.00	0.65
Waste Treatment Lagoon	**359**	0.50	0.50	2.00	0.00	-1.45	0.83	0.00	1.20	0.00	0.70
Water and Sediment Control Basin	**638**	1.00	-0.67	-0.43	2.00	-1.70	0.30	2.00	-1.00	2.00	0.58
Water Harvesting Catchment	**636**	0.00	1.00	0.00	3.00	-0.58	1.33	3.00	0.00	0.00	0.80
Watering Facility	**614**	1.10	0.00	1.71	4.00	0.25	1.90	4.00	0.20	2.20	1.58
Water Well	**642**	1.50	2.00	-1.00	2.00	0.73	1.00	2.00	0.00	2.00	1.20
Waterspreading	**640**	0.00	0.75	0.00	1.67	0.10	0.81	1.67	-1.00	-1.00	0.48
Well Decommissioning	**351**	0.00	0.00	2.00	0.00	-4.25	0.67	0.00	2.00	0.00	0.40
Wetland Creation	**658**	1.00	0.50	1.50	4.00	-0.80	2.00	4.00	0.40	0.00	1.60
Wetland Enhancement	**659**	0.50	2.00	1.50	4.00	-0.60	2.50	4.00	0.40	0.00	1.70
Wetland Restoration	**657**	0.50	2.00	1.50	4.00	-0.60	2.50	4.00	0.40	0.00	1.70
Wetland Wildlife Habitat Management	**644**	0.00	2.00	2.00	4.00	-1.00	2.67	4.00	0.00	0.00	1.60
Windbreak/Shelterbelt Establishment	**380**	2.50	2.83	1.40	3.00	0.23	2.41	3.00	0.20	2.67	2.45
Windbreak/Shelterbelt Renovation	**650**	2.50	2.83	1.40	3.00	0.70	2.41	3.00	0.20	2.67	2.45
Woody Residue Treatment	**384**	-0.25	1.00	1.00	0.00	0.30	0.67	0.00	0.00	1.00	0.30

Attachment 2
Kittitas County Practice Toolbox with CPPE Averaged Function Scores

NRCS Practice Code	Conservation Practice	Direct Effect Scores					Average CPPE Scores		Function Effects: Average CPPE Scores				Critical Areas					Agricultural Viability					
		Wetlands	Fish/Wildlife Habitat Conservation Areas	Critical Aquifer Recharge Areas	Geologically Hazardous Areas (Erosion)	Frequently Flooded Areas	Soil Erosion	Soil Condition	Soil Health[1]	Hydrology	Water Quality	Habitat	WET	FFA	CARA	GHA	HCA	Soil Health	Prevent Soil Loss	Moisture Management	Weed/ Pest Management	Pollinator/ Beneficial Organisms	Yield/ Fertility Management
313	Waste Storage Facility	0.92	0.00	1.20	0.00	0.75	0.00	1.00	0.50	1.00	1.75	0.00			x								
315	Herbaceous Weed Control	1.14	1.67	0.00	3.20	1.32	3.20	0.00	1.60	2.00	-0.25	1.67					x				x		
325	Seasonal High Tunnel	-1.00	0.00	0.00	-1.00	-0.60	1.00	0.00	0.50	0.00	0.00	0.00					x			x			
326	Clearing and Snagging	-0.42	-1.75	0.00	2.00	0.15	2.00	0.00	1.00	2.00	-1.50	-1.75				x					x		
327	Conservation Cover	2.49	3.33	2.00	2.20	2.60	2.20	3.33	2.77	1.25	2.89	3.33	x	x		x	x	x	x		x	x	
328	Conservation Crop Rotate	1.78	2.00	1.20	4.00	2.34	4.00	2.33	3.17	1.60	1.75	2.00	x			x	x	x	x	x	x	x	x
329	Residue and Tillage Management - No-till/ Strip Till/ Direct Seed	1.49	1.67	-0.20	4.50	2.19	4.50	2.00	3.25	0.80	2.00	1.67	x	x	x	x	x	x	x	x			x
340	Cover Crop	1.72	2.00	1.40	3.67	2.01	3.67	1.25	2.46	1.40	1.75	2.00	x	x	x	x	x	x	x	x	x	x	x
342	Critical Area Planting	1.44	2.00	0.20	4.60	2.32	4.60	2.67	3.63	0.00	2.33	2.00				x							
345	Residue Management - Mulch Till	1.73	1.67	0.00	4.00	2.14	4.00	1.50	2.75	1.33	2.20	1.67	x	x	x	x	x	x	x	x			x
367	Roofs and Covers	0.00	0.00	0.40	0.00	0.00	0.00	0.00	0.00	-1.00	1.00	0.00											
378	Pond	1.10	2.50	-0.20	1.50	0.76	1.50	-1.00	0.25	0.60	0.20	2.50	x				x		x		x	x	
380	Windbreak/Shelterbreak	2.41	3.00	0.20	2.67	2.45	2.67	2.33	2.50	2.83	1.40	3.00	x	x		x	x	x	x	x	x	x	x
382	Fence	0.67	0.00	0.00	1.00	0.80	1.00	1.00	1.00	0.00	2.00	0.00	x			x	x		x			x	
383	Fuel Break	-0.53	0.40	-0.20	-1.00	-0.92	-1.00	-2.00	-1.50	-1.00	-1.00	0.40									x		
384	Woody Residue Treatment	0.67	0.00	0.00	1.00	0.30	1.00	-1.50	-0.25	1.00	1.00	0.00									x		
386	Field Border	1.48	2.00	0.80	2.50	1.79	2.50	2.00	2.25	1.00	1.43	2.00	x	x	x	x	x		x	x			x
390	Riparian Herbaceous Cover	2.11	3.50	2.20	2.25	2.38	2.25	3.33	2.79	0.33	2.50	3.50	x	x		x	x		x		x	x	
391	Riparian Forest Buffer	2.50	4.00	1.80	2.60	2.49	2.60	2.33	2.47	0.67	2.83	4.00	x	x		x	x		x		x	x	
393	Filter Strip	1.45	2.00	1.20	0.00	1.87	0.00	5.00	2.50	0.00	2.36	2.00	x	x		x	x		x		x	x	
395	Stream Habitat Improvement and Management	1.67	3.00	0.00	5.00	2.00	5.00	0.00	2.50	0.00	2.00	3.00	x	x		x	x		x		x	x	
396	Aquatic Organism Passage	1.56	2.67	0.00	0.00	0.93	0.00	0.00	0.00	0.00	2.00	2.67	x	x			x					x	
422	Hedgerow Planting	2.44	4.00	0.00	1.00	1.97	1.00	1.50	1.25	2.00	1.33	4.00	x	x	x	x	x		x	x			x
430	Irrigation Pipeline	0.83	0.00	0.80	2.00	0.90	2.00	0.00	1.00	1.33	1.14	0.00			x				x				x
441	Irrigation system, microirrigation (No)	1.53	1.00	1.60	0.00	1.12	0.00	1.00	0.50	2.00	1.60	1.00	x		x	x	x		x	x			x
442	Sprinkler System	1.74	1.00	1.40	2.00	1.54	2.00	0.50	1.25	2.67	1.55	1.00	x		x	x	x	x	x	x			x
449	Irrigation Water Management	1.17	0.00	2.00	2.00	1.40	2.00	1.50	1.75	1.50	2.00	0.00	x		x	x	x						
450	Anionic Polyacrylamide (PAM) Application	0.72	0.00	-0.40	2.00	1.23	2.00	2.00	2.00	1.00	1.17	0.00				x				x			
472	Access Control	1.73	2.00	0.60	3.40	2.22	3.40	2.50	2.95	1.75	1.44	2.00	x	x	x	x	x	x	x		x	x	x
484	Mulching	0.81	1.00	-0.40	4.00	1.49	4.00	1.00	2.50	0.60	0.83	1.00				x	x	x	x	x	x		
490	Tree/Shrub Site Preparation	0.50	0.00	-0.20	-1.25	-0.25	-1.25	-1.50	-1.38	2.00	-0.50	0.00	x	x		x	x				x	x	
512	Pasture and Hayland Seeding	1.00	1.00	0.00	1.00	1.10	1.00	1.50	1.25	1.00	1.00	1.00	x	x	x	x	x	x	x	x	x	x	x
516	Pipeline	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			x	x	x						x
528	Prescribed Grazing	1.82	2.67	0.80	3.00	2.23	3.00	2.67	2.83	1.50	1.30	2.67	x	x	x	x	x		x				x
533	Pumping Plant	0.67	0.00	0.00	0.00	0.80	0.00	2.00	1.00	2.00	0.00	0.00		x					x		x		x
550	Range Planting	1.58	2.67	1.20	3.20	2.19	3.20	3.00	3.10	0.75	1.33	2.67				x	x	x	x		x	x	x
561	Heavy Use Area Protection	0.22	0.00	0.00	2.00	0.63	2.00	0.50	1.25	-1.00	1.67	0.00				x	x		x				
574	Spring Development	2.02	3.00	0.00	1.00	1.21	1.00	-1.00	0.00	1.80	1.25	3.00		x					x		x		x
578	Stream Crossing	0.17	0.00	0.40	2.00	0.50	2.00	0.00	1.00	0.00	0.50	0.00	x	x		x	x		x				
580	Streambank and Shoreline Protection	0.92	1.50	0.00	4.00	1.35	4.00	0.00	2.00	0.00	1.25	1.50				x			x				
584	Channel Bed Stabilization	1.42	1.25	0.00	2.00	1.25	2.00	0.00	1.00	2.00	1.00	1.25				x			x				
587	Structure for Water Control	1.67	2.00	0.00	0.00	1.00	0.00	0.00	0.00	2.00	1.00	2.00			x					x			
590	Nutrient Management	1.17	0.00	2.80	0.00	1.03	0.00	1.67	0.83	0.00	3.50	0.00			x		x	x					x
595	Pest Management	2.00	2.00	1.00	2.00	2.00	2.00	2.00	2.00	0.00	4.00	2.00			x		x	x			x	x	
600	Terrace	0.72	1.00	-1.60	2.60	1.05	2.60	0.50	1.55	0.80	0.36	1.00				x			x				
601	Vegetative Barrier	0.87	1.00	0.00	2.00	0.52	2.00	-2.00	0.00	0.00	1.60	1.00	x	x	x	x	x		x	x			x
612	Tree/Shrub Establishment	1.67	2.33	1.00	3.60	2.19	3.60	2.33	2.97	1.50	1.17	2.33	x		x	x	x		x			x	
612	Tree Planting	1.67	2.33	1.00	3.60	2.19	3.60	2.33	2.97	1.50	1.17	2.33	x		x	x	x		x			x	
614	Watering Facility	1.90	4.00	0.20	2.20	1.58	2.20	0.00	1.10	0.00	1.71	4.00					x						x
642	Water Well	1.00	2.00	0.00	2.00	1.20	2.00	1.00	1.50	2.00	-1.00	2.00					x			x			x
643	Restoration and Management of Rare and Declining Habitats	2.00	4.00	0.00	2.00	1.40	2.00	-1.00	0.50	0.00	2.00	4.00					x				x	x	
644	Wetland Wildlife Habitat Management	2.67	4.00	0.00	0.00	1.60	0.00	0.00	0.00	2.00	2.00	4.00	x				x		x		x	x	
645	Upland Wildlife Habitat Management	2.17	5.00	0.00	2.40	1.78	2.40	0.00	1.20	-0.50	2.00	5.00					x		x		x	x	
647	Early Successional Habitat Development/Management	1.00	4.00	0.00	0.00	0.60	0.00	0.00	0.00	0.00	-1.00	4.00					x				x	x	
659	Wetland Enhancement	2.50	4.00	0.40	0.00	1.70	0.00	1.00	0.50	2.00	1.50	4.00	x				x		x		x	x	

Notes:
1. Soil health function scores are based on the average scores for Soil Condition and Soil Erosion as summarized in Attachment 1.
CARA: Critical Aquifer Recharge Areas
CPPE: conservation practice physical effect
FFA: Frequently Flooded Areas
GHA: Geologically Hazardous Areas
HCA: Fish and Wildlife Habitat Conservation Areas
NRCS: Natural Resources Conservation Service
WET: Wetlands

Appendix D
Existing and Related Plans, Programs, and Regulations

APPENDIX D: Existing and Related Plans, Programs, and Regulations

Existing Conservation Programs

As described in the Voluntary Stewardship Program (VSP) Work Plan, the VSP provides a voluntary framework for critical areas protection and enhancement actions carried out by agricultural producers while maintaining and improving agricultural viability. Other similar programs are available to agricultural producers that are designed to incentivize protection and enhancement of critical areas through conservation practices. The availability of these programs is variable, as they are heavily influenced by the federal and state program funding, regulatory environment, industry standards, and the agricultural market. Many of these programs have been in place since the July 22, 2011 baseline and have contributed to conservation practices being implemented across Kittitas County.

There are a variety of voluntary incentive programs for agricultural producers provided by federal, state, and local entities. The VSP was written to be compatible with existing conservation programs to achieve protection and enhancement of critical areas. Table 1 includes a summary of federal programs, and Table 2 includes a summary of state and local programs available to agricultural producers. These tables provide a general representation of available federal, state, and local programs and are not intended to provide an exhaustive list.

The following list includes international organizations that offer a variety of voluntary conservation and certification programs to agricultural producers:

- **GLOBALG.A.P.:** GLOBALG.A.P. is an international non-profit organization that provides a voluntary GLOBALG.A.P. certification for eligible crops and livestock that meet or exceed 16 standards for safe and environmentally sound agricultural practices.
- **Safe Quality Food Institute (SQFI):** SQFI offers certifications recognized by the Global Food Safety Initiative for best agricultural and livestock practices.
- **PrimusLabs:** PrimusLabs, located in North and South America, is a food safety company that provides a Good Agricultural Practices (GAP) auditing program that certifies agricultural producers who comply with standard operating procedures for food safety.

Table 1
Federal Conservation Programs

Lead	Description	Program	Details
Natural Resources Conservation Service (NRCS)	NRCS provides technical and financial assistance to help agricultural producers make and maintain conservation improvements on their land. NRCS also offers conservation easement programs and partnerships to leverage existing conservation efforts on farm lands.	**Environmental Quality Incentives Program (EQIP)**[1]	Voluntary program providing financial and technical assistance for agricultural producers to plan and implement conservation practices improving soil, water, plants, animals, air, and related natural resources.
		Conservation Stewardship Program (CSP)[2]	Voluntary program providing technical assistance for agricultural and forest landowners to develop plans for conservation, management, and enhancement activities.
		Agricultural Conservation Easement Program (ACEP)[3]	Provides conservation partners with financial and technical assistance through land easements to conserve agricultural lands and restore, protect, and enhance wetlands.
		Regional Conservation Partnership Program (RCPP)[4]	Voluntary program with conservation partners to increase conservation through EQIP, CSP, and ACEP funds for priority areas. The "Yakima Basin Integrated Plan – Toppenish to Teanaway Project" is funded through 2021 for Kittitas County.[5]
		Conservation Technical Assistance (CTA)[6]	Voluntary program to provide technical assistance to producers to address opportunities, concerns, and problems related to the use of natural resources.
Farm Service Agency (FSA)	FSA oversees several voluntary, conservation-related programs that work to address several agriculture-related conservation measures.	**Conservation Reserve Program (CRP)**[7]	Voluntary reserve program to conserve environmentally sensitive land through agricultural protections and plant species to improve environmental health.
		Conservation Reserve Enhancement Program (CREP)[8]	Similar to the CRP, this voluntary program targets high-priority conservation issues with typical contract periods of 10 to 15 years.

[1] www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/eqip/
[2] www.nrcs.usda.gov/csp
[3] www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/easements/acep/
[4] https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/farmbill/rcpp/
[5] http://www.kccd.net/rcpp.htm
[6] https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/technical/cta/
[7] www.fsa.usda.gov/programs-and-services/conservation-programs/conservation-reserve-program/
[8] www.fsa.usda.gov/FSA/webapp?area=home&subject=lown&topic=cep

Table 2
State and Local Conservation Programs

Lead	Description	Program(s)	Details
Washington State Conservation Commission (WSCC)	WSCC works with conservation districts (CDs) to provide voluntary, incentive-based programs for implementation of conservation practices. WSCC supports the CDs through financial and technical assistance; administrative and operational oversight; program coordination; and promotion of CDs activities and services.	**Coordinated Resource Management (CRM) Program**[9]	Voluntary and locally led program for landowners seeking to resolve land-use and natural resource issues through local coalitions and consensus building.
		Irrigation Efficiencies Grant Program (IEGP)[10]	Provides financial incentives to landowners willing to install irrigation systems that save water.
		Natural Resource Investments (non-shellfish) Grants[11]	Grant program for landowners to complete natural resource enhancement projects necessary to improve water quality in non-shellfish growing areas.
		Office of Farmland Preservation (OFP)[12]	The OFP identifies and addresses farmland loss through agriculture conservation easement programs, providing technical assistance, developing farm transition programs, and providing data and analysis on trends.
Washington State Department of Fish and Wildlife (WDFW)	WDFW provides financial assistance for habitat projects that restore and/or preserve fish and wildlife habitat through funding opportunities such as the ALEA Volunteer Cooperative Grant Program.	**Aquatic Lands Enhancement Account (ALEA)**[13]	Grant program for qualifying landowners who undertake projects that benefit Washington state's fish and wildlife resources.

[9] http://scc.wa.gov/coordinated-resource-management/
[10] http://scc.wa.gov/iegp/
[11] http://scc.wa.gov/wq-nonshellfish/
[12] http://scc.wa.gov/office-of-farmland-preservation/
[13] http://wdfw.wa.gov/Kittitass/alea/index.html

Lead	Description	Program(s)	Details
Washington State Recreation and Conservation Office	The Washington State Recreation and Conservation Office provides funding to protect aquatic lands and for projects aimed at achieving overall salmon recovery, including habitat projects and other activities that result in sustainable and measurable benefits for salmon and other fish species. Funding is provided through programs such as ALEA and the Salmon Recovery Funding Board Grant Program.	**Aquatic Lands Enhancement Account (ALEA)**[14]	Local and state agencies and Native American Tribes can apply for grants to fund aquatic habitat-enhancement projects.
		Salmon Recovery Funding Board Salmon Recovery Grants[15]	Grant program for eligible parties seeking to improve important habitat conditions or watershed processes to benefit salmon and bull trout.
		Farmland Preservation Grants[16]	Grant program for local agencies and non-profits to buy development rights on farmlands to ensure the lands remain available for farming in the future.
Washington State Department of Ecology (Ecology)	Ecology provides funding for water-quality improvement and protection projects, including programs such as the Water Quality Financial Assistance program and voluntary partnership programs such as the Farmed Smart Partnership.	**Water Quality Financial Assistance Program**[17]	Grant and loan program for high-priority projects to protect and improve the health of Washington State waters.
		Yakima Basin Integrated Plan (YBIP)[18]	Grant program through various subcommittees of the Yakima Basin Integrated Plan Workgroup to provide funding for technical and financial assistance for on-the-ground projects that help implement the 30-year water resiliency plan for the Yakima River Basin.

[14] http://www.rco.wa.gov/Kittitass/alea.shtml
[15] http://www.rco.wa.gov/Kittitass/sal_rec_Kittitass.shtml
[16] http://www.rco.wa.gov/Kittitass/farmland.shtml
[17] http://www.ecy.wa.gov/programs/wq/funding/funding.html
[18] https://ecology.wa.gov/Water-Shorelines/Water-supply/Water-supply-projects-EW/Yakima-River-Basin-projects/Yakima-integrated-plan

Lead	Description	Program(s)	Details
Kittitas County Conservation District (KCCD)	KCCD works through voluntary, incentive-based programs to assist landowners and agricultural operators with the conservation of natural resources including cost-share, and assistance in the development of range management and farm conservation plans.	**Yakima Tributary Access and Habitat Program (YTAHP)**[19]	This voluntary program is designed to screen unscreened diversion structures to prevent fish entrainment into artificial waterways, provide for fish passage at man-made barriers, such as diversion dams, culverts, siphons, and bridges, and provide information and assistance to landowners interested in contributing to the improvement of water quality, water reliability, and stream habitat.
		Local Funding	Funding for financial and technical assistance for private landowners in the KCCD boundaries to implement priorities identified in the annual and long-range plans of work. This includes PAM Cost Share, Small Project Cost Share, and technical assistance to complete individual conservation planning, develop larger scale cooperative projects, and seek funding through any of the programs listed with state or federal agencies.
Washington State University (WSU) Extension	The WSU Extension program connects agricultural and natural resource stakeholders and industries, as well as the general public, to extend research-based information and conduct locally relevant applied research in the fields of agriculture and natural resource sciences.	**Agriculture and Natural Resources Program**[20]	Program providing technical assistance, research, and education to producers.

[19] http://www.kccd.net/YTAHP.htm
[20] http://anr.cw.wsu.edu/

Related Plans and Programs

As required by the Revised Code of Washington (RCW) 36.70A.720(1)(a), the VSP Work Plan must incorporate applicable water quality, watershed management, farmland protection, and species recovery data and plans. Table 3 includes a summary of the planning documents and programs that were referenced for the VSP Work Plan and appendices. This includes watershed management and wildlife management programs prepared applicable to Kittitas County.

The County includes portions of three watersheds, or Water Resource Inventory Areas (WRIAs). As described in the VSP Work Plan, the watershed that overlaps with most of the County is the Upper Yakima (WRIA 39) and a small portion of the eastern County is in the Alkali-Squilchuck (WRIA 40). The Naches (WRIA 38) watershed was not designated by the County to be within the VSP because there is no agricultural activity on private lands within it.

Within the two watersheds included in the VSP, there are four Washington State Department of Ecology water quality improvement projects or Total Maximum Daily Loads (TMDLs) in process or under development:[21]

- Wilson/Cooke Creek: TMDL from fecal coliform which includes many small creeks and irrigation canals in Central Kittitas County. The TMDL was approved in 2005 and is being implemented and monitored.
- Yakima River: There are three TMDLs for the Yakima River, two of which are in development and one which has been approved. They include:
  - An approved TMDL for dieldrin, DDT, suspended sediments, and turbidity in the Upper Yakima River. The TMDL was approved in 2002 and is being implemented and monitored.
  - An in development TMDL for temperature in the Upper Yakima River.
  - An in development TMDL for toxics in the Yakima River.

Table 3
Summary of Planning Documents

Plan or Program	Date	Author/Agency	Description
State and Local Management Plans and Programs			
Yakima Basin Integrated Water Resource Management Plan (Yakima Basin Integrated Plan)	April 2011	Washington Department of Ecology and the U.S. Bureau of Reclamation	The Yakima Basin Integrated Plan includes a suite of actions that benefit both agricultural viability and critical areas. These include fish habitat enhancement projects on the Yakima River and its tributaries and enhanced water conservation efforts.

[21] http://www.ecy.wa.gov/programs/wq/tmdl/TMDLsbyCounty/kittitas.html

Plan or Program	Date	Author/Agency	Description
State and Local Management Plans and Programs			
Kittitas County Hazard Management Plan	October 2012	Kittitas County	The Hazard Management Plan identifies hazards and vulnerable areas within the County, including flood-hazard and landslide-prone areas.
Kittitas County Shoreline Master Program (SMP) and Restoration Plan	March 2016	Kittitas County	The SMP includes shoreline goals and policies for management and protection of shorelines of the state located within the County. The Restoration Plan describes existing restoration planning, programs, and partners and summarizes goals and priorities for the County.
Middle Columbia Steelhead Recovery Plan	November 2009	National Marine Fisheries Service	The recovery plan includes recommendations for several enhancement and implementation measures to restore and protect habitat throughout the middle Columbia Basin, including the Yakima River.
Shrub-steppe and Grassland Restoration Manual for the Columbia River Basin	2011	Washington State Department of Fish and Wildlife	This publication provides guidance for shrub-steppe and grassland restoration practitioners within the Columbia River Basin.
Management Recommendations for Washington's Priority Habitats: Riparian	1997	Washington State Department of Fish and Wildlife	The riparian habitat management plan provides statewide riparian management recommendations based on the best-available science.
Manastash Creek Corridor Habitat Enhancement and Flood Hazard Reduction Plan	2013	Kittitas County Conservation District	This plan is the result of a reach-scale assessment leading to a focused strategy and a list of viable projects to improve aquatic habitat and reduce the impacts of flooding and erosion on Manastash Creek.
Yakima River - Jeffries Levee to Yakima Canyon Habitat Enhancement and Flood Risk Management Plan	2015	Kittitas County Flood Control Zone District	This plan is the result of a reach-scale assessment leading to a focused strategy and a list of viable projects to improve aquatic habitat and reduce the impacts of flooding and erosion on the Yakima River.
Naneum, Wilson, and Cherry Watershed Assessment	2017	Kittitas County Flood Control Zone District	An assessment to gather information and develop an understanding of fish, habitat, irrigation, water quality, flow conditions, and flood issues within each watercourse and within each sub-watershed to help develop recommendations and a strategy for future improvement projects.
Mid-Columbia Recovery Unit Implementation Plan for Bull Trout	2015	U.S. Fish and Wildlife Service	This plan identifies actions to address habitat threats by maintaining, restoring, and protecting riparian and floodplain areas adjacent to spawning, rearing, and forage/migration/overwintering habitats.

Federal, State, and Local Regulations that Apply to Agriculture

The VSP is provided as an alternative to protecting critical areas used for agricultural activities through development regulations under the Growth Management Act. Despite its voluntary nature, it is still the intent of the VSP to improve, and not limit, "compliance with other laws designed to protect water quality and fish habitat," per RCW 36.70A.700 and 36.70A.702. Per RCW 36.70A.720, the development regulations used to achieve the goals and measurable benchmarks for protection of critical areas must be incorporated into the VSP Work Plan.

Tables 4 and 5 include a summary of federal, state, and local development regulations that are used to achieve the goals and measurable benchmarks of the VSP Work Plan. This list includes the most common environmental regulations affecting agriculture. The list does not include all regulations potentially impacting agricultural producers in the County. For instance, regulations on taxation, employment practices, marijuana production, and other regulations are not included. Because no regulations are enforced via the VSP, regulatory enforcement in the County provides a "regulatory backstop." For example, the Washington State Department of Ecology will continue to regulate wetland conversions on agricultural lands through the local Water Pollution Control Act.[22] Continued compliance with these regulations provides assurance the functions and values of critical areas are protected.

As illustrated in Figure 1, the VSP is intended to balance critical areas protection and agricultural viability at the County level through voluntary actions by agricultural producers. VSP is not a replacement for compliance with other laws and regulations, but participation in the program can often help agricultural producers comply with these requirements.

[22] Washington State Department of Ecology, 2013. The Voluntary Stewardship Program and Clean Water. Available at: https://fortress.wa.gov/ecy/publications/publications/1310030.pdf.

Figure 1
Balanced Approach of Critical Areas Protection and Agricultural Viability

Table 4
Federal Regulations that Apply to Agriculture

Regulation(s)	Agency	Description	VSP Intersect
Agricultural Act (Farm Bill)[23]	U.S. Department of Agriculture	The Farm Bill, reauthorized in 2014, eliminates direct payments and continues crop insurance.	The Farm Bill includes the "swampbuster" conservation policy prohibiting land owners from converting wetlands to cropland. The "sodbuster" provision requires participating parties to maintain a specified level of conservation.
Clean Water Act (CWA)[24]	U.S. Environmental Protection Agency (USEPA); regulated locally by Washington State Department of Ecology	The CWA regulates discharges of pollutants into waters of the United States, including discharges of dredge or fill material in wetlands. CWA exemptions for agriculture are designed consistent with and support existing U.S. Department of Agriculture programs.	Compliance with the CWA maintains or enhances water quality, which in turn benefits critical areas, including wetlands and fish and wildlife habitat conservation areas.
Safe Drinking Water Act (SDWA)[25]		The SDWA protects public drinking water supplies in the United States, including sole-source aquifers. The USEPA provides technical and financial resources under the Clean Water State Revolving Fund (CWSRF) for improving water quality, protecting drinking water sources, and controlling nonpoint source pollution.	The SDWA is designed to protect critical aquifer recharge areas, an important source for drinking water that is vulnerable to contamination.
National Pollution Discharge Elimination System (NPDES)[26]		NPDES is promulgated under the CWA to regulate discharges to waters of the United States from animal feeding operations.	Regulated discharges to waters of the United States helps to protect water quality in critical areas, including wetlands and fish and wildlife habitat conservation areas.

[23] https://www.fsa.usda.gov/programs-and-services/farm-bill/index
[24] https://www.epa.gov/laws-regulations/summary-clean-water-act
[25] https://www.epa.gov/sdwa
[26] https://www.epa.gov/npdes

Regulation(s)	Agency	Description	VSP Intersect
Endangered Species Act (ESA)[27][28]	National Marine Fisheries Service and the U.S. Fish and Wildlife Service	The ESA protects threatened and endangered species and critical habitat throughout the United States.	ESA-listed species and critical habitat are protected through avoidance and minimization measures such as the "no-spray" pesticide buffer zones near ESA-listed salmon-bearing waterbodies. The no-spray buffer zones are 60 feet for ground and 300 feet for aerial pesticide applications.
Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)[29]	U.S. Environmental Protection Agency	FIFRA regulates pesticide distribution, sale, and use and includes labeling and registration requirements.	Compliance with FIFRA is intended to maintain or enhance water quality, which in turn benefits critical areas, including wetlands, fish and wildlife habitat conservation areas, and critical aquifer recharge areas.
National Emissions Standards for Hazardous Air Pollutants (NESHAP)[30]	U.S. Environmental Protection Agency	NESHAP regulates hazardous air pollutant emissions, including from new and existing facilities that manufacture organic pesticide active ingredients used in herbicides, insecticides, and fungicides.	These regulations are intended to reduce or eliminate hazardous air pollutant emissions with the potential to spread via aerial application to critical areas, including wetlands and fish and wildlife habitat conservation areas.

[27] http://www.nmfs.noaa.gov/pr/laws/esa/
[28] https://www.fws.gov/endangered/
[29] https://www.epa.gov/laws-regulations/summary-federal-insecticide-fungicide-and-rodenticide-act
[30] https://www.epa.gov/stationary-sources-air-pollution/national-emission-standards-hazardous-air-pollutants-neshap-9

Table 5
State and Local Regulations that Apply to Agriculture

Regulation(s)	Agency	Description	VSP Intersect
Revised Code of Washington (RCW)			
Title 15 Agriculture and Marketing	Washington State Department of Agriculture	RCW Title 15 includes general regulations pertaining to agricultural practices.	• Regulations cover pest and disease control, fertilizers, and commodity commissions.
Title 16 Animals and Livestock	Washington State Department of Agriculture	RCW Title 16 includes general regulations pertaining to animals and livestock practices.	• Regulations cover range areas, meat licensing, feed lot certification, and fencing.
Title 17 Weeds, Rodents, and Pests	Washington State Noxious Weed Control Board*	RCW Title 17 includes general regulations pertaining to weed, rodent, and pest control.	• RCW Title 17.06 establishes intercounty weed districts.
Title 36 Counties	*Various*	RCW Title 36 includes regulations pertaining to counties including the Voluntary Stewardship Program.	• RCW Titles 36.70A.700-904 comprise the Voluntary Stewardship Program, a program designed to promote plans to protect and enhance critical areas while maintaining and improving agricultural viability.
Title 77 Fish and Wildlife	Washington Department of Fish and Wildlife	RCW Title 77 includes fish and wildlife enforcement regulations.	• Salmon recovery and enhancement programs include habitat projects and plans, including voluntary, incentive-based enhancement programs. • In-water construction activities (i.e., hydraulic projects) are regulated under RCW Title 77.55.
Title 87 Irrigation	Irrigation Districts	RCW Title 87 regulates irrigation and irrigation districts.	• RCW Title 87.03 establishes irrigation and improvement districts.
Title 89 Reclamation, Soil Conservation, and Land Settlement	Conservation Districts, Office of Farmland Preservation, and Irrigation Districts	RCW includes general regulations pertaining to reclamation and local conservation districts.	• RCW Title 89.08 establishes conservation districts. • RCW Title 89.10 establishes the Office of Farmland Preservation. • RCW Title 89.12 includes adoption of the Columbia Basin Project Act and related regulations.

Regulation(s)	Agency	Description	VSP Intersect
Title 90 Water Rights – Environment	*Various*	RCW Title 90 regulates various aspects of water rights and appropriation for public and industrial purposes.	• RCW Titles 90.42-46 include regulations pertaining to water resource management, regulation of public groundwater, and reclaimed water use. • RCW Title 90.48 includes the Water Pollution Control Act, which regulates agricultural discharges to surface waters and wetlands. • RCW Title 90.64 includes dairy nutrient management regulations. • RCW Title 90.90 includes the Columbia River Basin water supply rules for allocation and development of water supplies.
Washington Administrative Code (WAC)			
Title 16	Washington State Department of Agriculture	WAC Title 16 includes Washington State Department of Agriculture rules pertaining to agriculture regulation, certification, and marketing.	• WAC Chapters 16-200 through 16-202 include standards for fertilizer and pesticide usage. • WAC Chapter 16-611 includes standards for nutrient management.
Title 173	Washington State Department of Ecology	WAC Title 173 includes Washington State Department of Ecology rules for air and water quality protection.	• WAC Chapters 173-15 through 173-27 include state Shoreline Management Act rules and permitting requirements. The County currently implements the Shoreline Master Program under these state rules. • WAC Chapter 173-158 includes floodplain management rules. • WAC Chapters 173-166, 173-170, and 173-173 include rules for drought relief programs, agricultural water supply facilities, and measuring and reporting water usage. • WAC Chapter 173-220 includes National Pollution Discharge Elimination System rules for discharges to waters of the state. • WAC Chapter 173-430 includes rules for agricultural burning.

Regulation(s)	Agency	Description	VSP Intersect
Title 220 and 232	Washington State Department of Fish and Wildlife	WAC Titles 220 and 232 include Washington State Department of Fish and Wildlife rules for management of fish and wildlife species and habitat.	• WAC Chapter 220-410 defines game management areas, including the Game Management Units in Kittitas County. • WAC Chapter 220-620 describes the volunteer cooperative fish and wildlife enhancement program. • WAC Chapter 220-660 includes the Washington State Hydraulic Code, which regulates in-water construction activities (hydraulic projects) through Hydraulic Project Approvals. • WAC Chapter 232-28 includes wildlife interaction rules, including those pertaining to damage of commercial crops and livestock.
Title 246	Washington State Department of Health	WAC Title 246 includes Washington State Department of Health rules, including those for protection of water systems.	• WAC Chapters 246-290 and 246-291 include rules for Group A and B public water supplies and water systems, respectively. These include regulations for using greywater for irrigation purposes.
Kittitas County Regulations			
Critical Areas Ordinance	Kittitas County Planning Department	The Kittitas County Critical Areas Code is currently being updated	• See Appendix B-3 for a summary of the November 2014 Draft Critical Areas Ordinance
Shoreline Master Program	Kittitas County Planning Department	The Kittitas County Shoreline Master Program is promulgated under KCC 17B	• KCC 17B.06.030 includes policies protecting agricultural land including use of best management practices including NRCS and prohibiting discharge of animal waste into surface waters. • The Shoreline Master Program covers new or additional uses within shorelines of the state (defined as 200 feet from mean higher high water) and does not limit or modify existing or ongoing agricultural practices. The VSP applies to critical areas both inside and outside of the shoreline jurisdiction.

*Includes agencies responsible for overseeing agriculture-specific regulations. Other agencies may be assigned jurisdiction for non-agriculture related regulations described therein.

Appendix E
Kittitas County VSP Outreach Plan

Appendix E: Kittitas County VSP Outreach Plan

The Kittitas County VSP Outreach Plan is intended to provide a framework for outreach both during plan development and implementation. This will ensure that outreach to the agricultural community and other interested parties are involved in all aspects of the VSP.

Continued public outreach and education is integral to implementing the Work Plan following its approval by the State Technical Panel. Each year, the Kittitas County Conservation District (KCCD) will commit to reaching out to 10% of the producers in the County, using the methods described in this Outreach Plan. As part of the adaptive management program, this percentage may change based on available funding and resources and/or how the County is progressing toward the goals and benchmarks described in the Work Plan during implementation.

Public Communication and Outreach Materials

Type	Description
Create email list	KCCD created an email list containing all interested parties (e.g., Watershed Group, Technical Committee, public) for the VSP Work Plan process. All meeting notices and materials as well as documents will continue to be provided to the email list. In addition, KCCD maintains an email list for electronic newsletters, in which information about VSP has been and will continue to be included. The email list was originally created with emails on record from producers, the public, and partners. Anyone may subscribe to the email list from the KCCD website http://www.kccd.net
Update website	KCCD created a webpage specifically for the VSP and will continually update it with meeting notices and materials as well as documents. Additional information will be added for the implementation phase. The website can be found at http://www.kccd.net/VoluntaryStewardship.htm
Newsletter	KCCD publishes one newsletter annually in July that is sent to all rural routes and the City of Cle Elum (all landowners in the District boundaries). The newsletter circulation exceeds 10,000. Information about VSP has been and will continue to be included. KCCD also publishes an electronic newsletter two to three times per year sent out to an email list. VSP is also a topic in that publication. Anyone may subscribe to the email list from the KCCD website http://www.kccd.net
VSP Self-Assessment Checklist	The VSP Self-Assessment Checklist was completed as part of the VSP Work Plan. This checklist will help facilitate participation in VSP and tracking of currently ongoing stewardship practices. The VSP Checklist may potentially be converted to an online fillable document in the future.
Educational Videos	Educational videos are focused on particular critical area issues and agricultural practices available to producers at their convenience, for booths at the fair or farmers markets, and to be incorporated into story maps.
Virtual Tours	Virtual tours are opportunities to share information with producers, partners and the public at their convenience. In particular, story maps combine maps with narrative text, images, and multimedia content.

Potential Community Meetings or Other Outreach Opportunities

Outreach Opportunity	Description
KCCD Meetings	Conduct Annual Meeting to report previous natural resource accomplishments and to lay out plans and opportunities for the year. Conduct workshops for specific issues or opportunities.
County Fair	Host a booth to provide information on the VSP to a broad range for people.
Farmers Markets	Host a booth to provide information on the VSP to a broad range for people.
Association Meetings	Give presentations at association meetings such as the Association of Kittitas County Hay Growers & Suppliers, Kittitas County Farm Bureau, Kittitas County Cattlemen.
Watershed Group Member Outreach	KCCD led outreach activities with members of the Watershed Group to reach agricultural producers who are more comfortable speaking with a fellow producer.
Newspapers	Provide information to producers though posting in local newspapers.

Government Agencies and Agricultural Groups

Coordination with the following agencies and groups help with outreach and implementation:

- Kittitas County Cattlemen's Association
- Kittitas County Timothy Hay Growers & Suppliers
- U.S. Department of Agriculture Natural Resource Conservation Service
- Washington State University Extension
- Kittitas County Farm Bureau
- Kittitas County Water Purveyors

Formation of the Watershed Group and Watershed Group Meetings

Kittitas County designated the Kittitas County Conservation District (KCCD) to manage and facilitate the VSP process. Potential Watershed Group members were initially identified by the Kittitas County Commissioners and the Kittitas County Conservation District with the goal of the establishing a Watershed Group of approximately 12 individuals representing agriculture, tribal, and environmental interests. The following were groups or types of producers identified in October 2015 for invitation to participate in the Watershed Group:

- Agricultural Operators (lower county)
- Agricultural Operators (upper county)
- Futurewise
- Kittitas Audubon Society
- Kittitas County Cattlemen's Association.
- Kittitas County Conservation Coalition
- Kittitas County Farm Bureau

- Kittitas County Hay Growers Association
- Kittitas Reclamation District
- Small Acreage Operator
- Swauk Teanaway Grange
- The Nature Conservancy
- Yakama Nation

All who responded to the invitation from the Board of County Commissioners were asked at the first meeting in March 2016 to review membership and determine whether additional members were needed to meet the intent of the legislation and to be representative of the specific stakeholders in Kittitas County. The Nature Conservancy, Kittitas County Conservation Coalition, and Futurewise did not attend or respond initially. The invitations to those entities were followed with email or phone conversations in which those entities all indicated that they did not have staff or members with either the time or resources to attend the series of meetings planned for VSP. The Kittitas County Conservation Coalition did express an interest in following the process and were added to the e-mail list. The Kittitas Audubon Society did attend the first two meetings, but declined to attend or participate further citing an objection to any exemption for agriculture practices under the Critical Areas Ordinance. Invitations were sent to the Washington Water Trust, Trout Unlimited, and the Kittitas Conservation Trust, all non-profit organizations working in the County on natural resource projects with private landowners. All three accepted the invitations to participate. In addition to the Watershed Group, there was also a Technical Committee established through a similar process.

The Watershed Group includes agricultural producers, and representatives from the Yakama Nation, environmental groups, and government agencies.

- List of Watershed Group members

Watershed Group Members	Representative Group
Terry Clark	Kittitas County Cattlemen's Association
Mark Charlton	Kittitas County Farm Bureau
Brad Haberman	Kittitas County Farm Bureau-Alternate
Brian Cortese	Kittitas County Hay Grower's Association
Kevin Eslinger	Kittitas Reclamation District
Urban Eberhart	Kittitas Reclamation District-Alternate
Jack Clerf	Cascade Irrigation District
Lila Hanson	Dryland Operator
Karen Poulsen	Lower County Operator
Jim Miller	Upper County Operator

Watershed Group Members	Representative Group
Matthew Cox	Small Acreage
Bambi Miller	Small Acreage (Organic)
Phil Rigdon	Yakama Nation
John Marvin	Yakama Nation - Alternate
Dale Rusho	Swauk Teanaway Grange
Justin Bezold	Trout Unlimited
Arden Thomas	Washington Water Trust
Mitch Long	Kittitas Conservation Trust

Technical Committee Members	Representative Group
Heather Kosaka	Washington State Department of Ecology
Chelsea Benner	Kittitas County Community Development Services
Sherry Swanson	Kittitas County Conservation District
Mark Crowley	Kittitas County Conservation District
Rose Shriner	Kittitas County Conservation District
Karen Hodges	Kittitas County Flood Control Zone District
Kat Satnik	Kittitas County Water Purveyors
Erin Kaczmarzyk	USDA Natural Resources Conservation Service
Brent Dixon	USDA Natural Resources Conservation Service
Larry Leach	Washington Department of Natural Resources
Kelly McLain	Washington Department of Agriculture
Jennifer Nelson	Washington Department of Fish and Wildlife
Tip Hudson	Washington State University Extension

The Work Plan was developed through a series of Watershed Group meetings listed below.

- March 9, 2016 – Watershed Group Meeting
- March 28, 2016 – Watershed Group Meeting
- July 20, 2016 – Watershed Group Meeting
- October 12, 2016 – Watershed Group Meeting
- November 2, 2016 – Watershed Group Meeting
- November 9, 2016 – Watershed Group Meeting
- November 15, 2016 – Watershed Group Meeting
- November 30, 2016 – Watershed Group Meeting

- December 7, 2016 – Watershed Group Meeting
- December 14, 2016 – Watershed Group Meeting
- February 22, 2017 – Watershed Group Meeting
- March 14, 2017 – Watershed Group Meeting
- March 29, 2017 – Technical Committee Meeting
- July 19, 2017 – Watershed Group Meeting
- August 25, 2017 – Technical Committee Meeting
- September 25, 2017 – Technical Committee Meeting
- October 25, 2017 – Watershed Group Meeting
- November 20, 2017 – Watershed Group Meeting
- December 18, 2017 – Watershed Group Meeting
- January 18, 2018 – Watershed Group Meeting
- February 15, 2018 – Watershed Group Meeting