



April 2018

Benton County Approved VSP Work Plan

Benton County VSP Work Group





STATE OF WASHINGTON
CONSERVATION COMMISSION

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April 16, 2018

Jerrod MacPherson
Planning Manager
Benton County Planning Dept.
PO Box 910
Prosser, WA 99350

Re: Approval of Benton County Voluntary Stewardship Program Work Plan

Dear Mr. MacPherson:

The Voluntary Stewardship Program (VSP) Technical Panel (TP) has reviewed the work plan submitted by the County and has approved the work plan at a formal review meeting on April 13, 2018.

As a result of the approval of the work plan by the TP, and in accordance with RCW 36.70A.725 (3) (a) (ii), the Director of the Commission must approve the work plan.

Therefore, by this letter, as Executive Director of the Washington State Conservation Commission, I formally approve the work plan for the County as of the date of this letter.

If any amendments have been made to the work plan during the Technical Panel review process, please provide the Commission an electronic link to the final version of the work plan. That link can be sent to Alicia McClendon at amcclendon@scc.wa.gov.

Thank you for your continued engagement in and support of VSP, and congratulations on the approval of the county's plan. If you have any questions, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "Mark Clark".

Mark Clark
Executive Director
Washington State Conservation Commission



Benton County VSP Work Plan

Benton County Work Group Work Plan – **Approved** April 2018

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The Work Plan was developed under Benton VSP Work Group Direction with assistance from:

- BERK Consulting, Inc.
- The Watershed Company
- Neil Aaland, Aaland Planning Services, Facilitator
- Benton County Planning Department
- Benton Conservation District

Executive Summary

The purpose of this Executive Summary is to provide a cross-walk for the Voluntary Stewardship Technical Panel members and the public to navigate the Benton County Voluntary Stewardship Program (VSP) Work Plan. The Plan and Appendices provide greater detail on how the Benton agricultural community will work with the County, technical assistance providers, and state agencies to protect critical areas while also maintaining and enhancing agricultural viability in county watersheds. Implementation of the Work Plan is largely designed to fit within the framework of established programs. Many efforts already in place help agricultural producers protect and, in many cases, enhance critical areas. Numerous existing programs, activities, and efforts also help maintain and enhance agricultural viability. This plan promotes complimentary and mutually beneficial objectives for agriculture and critical areas. These ongoing efforts will be further supported and supplemented by VSP efforts to concurrently meet agricultural and environmental objectives.

To that end, the core VSP task is meeting the statutory test to be applied by the Technical Panel in determining whether to recommend approval of this VSP Work Plan:

“... at the end of ten years after receipt of funding, the work plan, in conjunction with other existing plans and regulations, will protect critical areas while maintaining and enhancing the viability of agriculture in the watershed.” RCW 36.70A.725

Following is a cross-walk table with the Work Plan that lists each element of RCW 36.70A.720(1) (a)-(l) and where to find it in the Work Plan. Below the table each element of the statute is listed with a description of how it is addressed in the plan.

Elements of VSP Law and Location in Work Plan

KEY PLAN SECTION	WORK PLAN REQUIREMENTS (RCW 36.70A.720(1) A THROUGH L UNLESS STATED)
Introduction	
Work Group	b
Core Elements of Work Plan:	
Protect Critical Areas Test	RCW 36.70A.725
Maintain and Enhance Agricultural Viability Test	RCW 36.70A.725
Create Protection and Enhancement Goals and Benchmarks	RCW 36.70A.720 (1)
Background Information, Other Plans, and Regulations	a, h
Technical Assistance	d, f, g
Baselines and Measurable Benchmarks	c, e, i
Monitoring, Reporting, and Adaptive Management	j, k, l

(a) Review and incorporate applicable water quality, watershed management, farmland protection, and species recovery data and plans;

Consistent with the requirements of RCW 36.70A.700, the Work Group reviewed existing water quality, watershed management, farmland protection, and species recovery data and plans. This review identifies critical area and agricultural viability issues that have been recognized by past planning efforts within the county, as well as proposed strategies to address those issues. See Chapter 4 and Appendix C.

The documents contribute to the baseline understanding of critical areas in Benton County and offered direction for goals, benchmarks, and voluntary enhancement strategies.

(b) Seek input from tribes, agencies, and stakeholders;

The Work Group was formed to represent diverse interests of tribes, agencies, and agricultural and environmental stakeholders. See Chapter 1, as well as Chapter 3 which identifies agricultural commodities and helped the County seek diverse agricultural representation to the Work Group. Outreach to grower groups, Audubon, and the broader public occurred during VSP Work Plan preparation, and more outreach and education is planned per Appendix J. Additionally, a project website and materials, e.g. Frequently Asked Questions, allowed the stakeholders and broader public to track VSP Work Plan preparation.

(c) Develop goals for participation by agricultural operators conducting commercial and noncommercial agricultural activities in the watershed necessary to meet the protection and enhancement benchmarks of the work plan;

Goals and benchmarks for protection, enhancement, and participation are part of Chapter 7 and Appendix I, the Adaptive Management Matrix.

(d) Ensure outreach and technical assistance is provided to agricultural operators in the watershed;

Outreach to grower groups occurred during VSP Work Plan preparation, and more outreach and education is planned per Appendix J. See Chapter 6 for a description of technical assistance resources.

(e) Create measurable benchmarks that, within ten years after the receipt of funding, are designed to result in (i) the protection of critical area functions and values and (ii) the enhancement of critical area functions and values through voluntary, incentive-based measures;

Goals and benchmarks for protection and enhancement are part of Chapter 7 and Appendix I, the Adaptive Management Matrix.

(f) Designate the entity or entities that will provide technical assistance;

See Chapter 6. The Benton Conservation District (BCD) is the designated lead technical assistance provider.

(g) Work with the entity providing technical assistance to ensure that individual stewardship plans contribute to the goals and benchmarks of the work plan;

BCD will work with growers on individual stewardship plans. See Appendices G and H for short and long-form stewardship checklists, and example handouts that illustrate the linkages between goals, benchmarks, and conservation practices.

(h) Incorporate into the work plan any existing development regulations relied upon to achieve the goals and benchmarks for protection;

See Chapter 4 and Appendix I. The goals and benchmarks rely on the following elements of the county, state, and federal regulatory backstop:

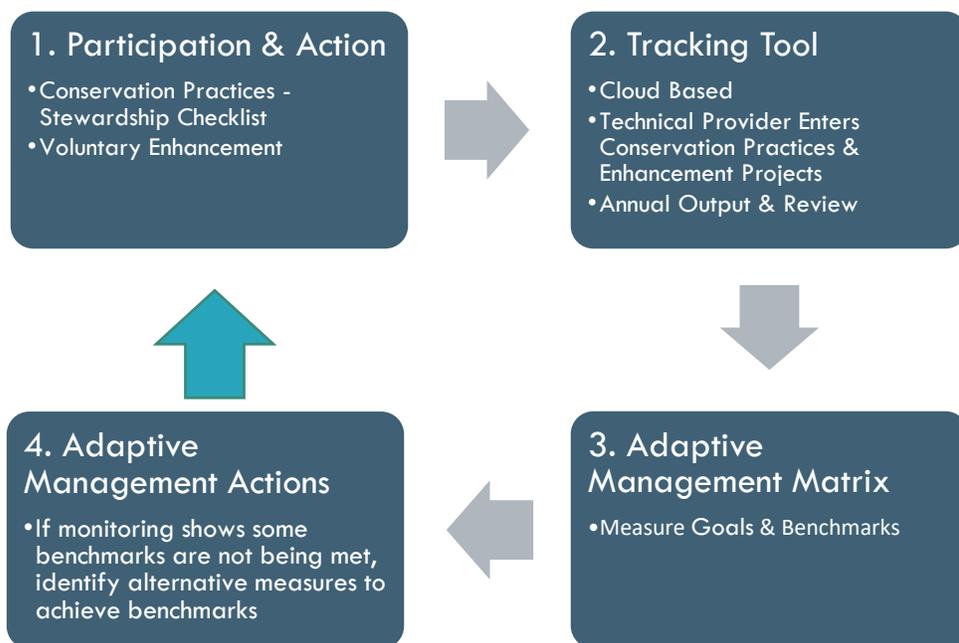
- Water right adjudication and minimum instream flows.
- Rely on existing and future regulations pertaining to groundwater withdrawals.
- TMDLs for suspended sediment and toxics (state and federal).
- Federal and state wetland regulatory backstop.
- Pesticide regulations (state and federal).
- County flood hazard management regulations, in addition to this VSP Work Plan goals and benchmarks.
- Control of Class A and B noxious weeds.

The Work Plan goals and benchmarks rely upon Benton County's flood hazard management development regulations in addition to the Work Plan goals and benchmarks, since flood hazard regulations address public health and safety and floodplain functions, and help maintain flood insurance for the county.

(i) Establish baseline monitoring for: (i) Participation activities and implementation of the voluntary stewardship plans and projects; (ii) stewardship activities; and (iii) the effects on critical areas and agriculture relevant to the protection and enhancement benchmarks developed for the watershed;

See Chapter 8 and Appendices G and I. Three components of monitoring, reporting, and adaptive management have been developed with this Work Plan, as illustrated in the graphic below – Stewardship Checklists, a cloud-based Tracking Tool to enter conservation practices overtime, and an Adaptive Management Matrix.

Monitoring Program Steps



(j) Conduct periodic evaluations, institute adaptive management, and provide a written report of the status of plans and accomplishments to the county and to the commission within sixty days after the end of each biennium;

See Chapter 8. The Benton Conservation District (BCD) is the lead Technical Service provider. See ongoing BCD responsibilities bulleted below. Benton County Planning Department (BCPD) will serve as administrator of the work plan monitoring and implementation (e.g. submit work plan monitoring reports once Work Group approved; transfer SCC funds to BCD; track participation of Work Group members to ensure that Work Group formed by County is well represented).

- Ongoing activities by BCD include conservation practices and voluntary enhancement with willing landowners and VSP Participation events. As part of cost-share agreements, the Technical Assistance Provider will prepare an implementation plan and on-site monitoring as appropriate.
- Annually, BCD will evaluate the Tracking Tool statistical output to describe conservation practices and voluntary enhancement projects entered during the prior year and present it to the Work Group. Annually, BCD will prepare an annual report describing VSP implementation based on the technical assistance agreements with willing landowners and any other grants or programs that implement VSP efforts.
- Biennially and every five years, BCD would conduct mapping and aerial interpretation, surveys, or convene an expert panel on fish and wildlife or other critical area conditions where needed to address a lack of data or a need for interpretation. There could be a voluntary subgroup of the VSP Work Group with expertise in critical areas and agriculture who can review monitoring results in detail and provide recommendations to the full Work Group.

(k) Assist state agencies in their monitoring programs; and

See Section 8.4 and Appendix I for monitoring efforts. Several elements of monitoring dovetail with State, Federal, and regional monitoring, e.g. TMDIs, Yakima Basin Integrated Water Plan, etc.

(l) Satisfy any other reporting requirements of the program.

See Chapters 8, 9, Appendices I and M for planned biennial and five-year reports.

1.0 Introduction

1.1 PURPOSE

The Voluntary Stewardship Program (VSP) is an optional, incentive-based approach to protecting critical areas while promoting agriculture. The VSP is allowed under the Growth Management Act (GMA) as an alternative to traditional regulatory approaches to critical areas protection. Benton County is one of 27 counties that has “opted in” to VSP, and has received funding to develop a VSP Work Plan. The VSP Work Plan is locally prepared and monitored by agricultural and environmental stakeholders; the VSP Work Plan is voluntarily implemented by individual agricultural producers to protect critical areas and improve agricultural viability through conservation practices. Unnecessary regulations are avoided.

This VSP Work Plan applies to the intersection of agriculture and five critical areas –fish and wildlife habitat conservation areas, wetlands, frequently flooded areas, geologically hazardous areas, and critical aquifer recharge areas used for potable water – in unincorporated areas of Benton County. (See Appendix A for maps and Appendix B for methods and data sources.)

This Work Plan is intended to fulfil the VSP legislative requirements to create a voluntary set of goals, benchmarks, and planned implementation activities, and is organized as follows:

1. Introduction
2. County Watersheds
3. Agricultural Context
4. Background Information, Other Plans and Regulations
5. VSP Definitions
6. Technical Assistance
7. Baseline Conditions and Measurable Benchmarks
8. Monitoring, Reporting, and Adaptive Management
9. Plan Approval Process and Timeline
10. Appendices

1.2 WORK GROUP MEMBERS AND ROLES

In 2012, Benton County opted into the VSP with Resolution 2012-038, and designated the Lower Yakima Watershed, the Alkali-Squilchuck Watershed, and the Rock-Glade Watershed for inclusion in its VSP.

After reviewing information on key agricultural sectors in the county (see Chapter 3 for the range of types), and developing a list of stakeholder groups, the County formed a VSP Watershed Work Group in 2016 with representatives of the following agricultural and environmental interests and governmental agencies:

- AgriNorthwest
- Benton Co Cattleman's Association
- Benton County Conservation District
- Benton County Park Board
- Benton County Wheat Growers
- Farm Bureau
- Hogue Farmland LLC
- Irrigated Agricultural Research and Extension Center
- Kennewick Irrigation District
- Lower Columbia Basin Audubon Society
- Olsen Brothers Ranches Inc.
- Tapteal Greenway Association
- Tapteil Vineyard Winery
- Washington Alfalfa Seed Commission
- Washington Department of Fish and Wildlife
- Washington Farm Bureau

- Washington State Department of Agriculture (WSDA)
- Washington State University Benton County Extension
- Yakama Nation
- Zirkle Fruit Company (2016-2017)

While the County has the responsibility to opt into the VSP program, nominate watersheds, and form the VSP Watershed Work Group (VSP Work Group for short), the VSP Work Group has the responsibility to prepare a Work Plan with goals and benchmarks, and implement it over 10 years. See sidebar.

Roles

The County. The County has the initial authority to opt-in to the VSP program, designate participating watersheds, recommend priority watersheds, convene and confer with stakeholders, and designate the VSP Watershed Work Group and Administrative Entity. If a VSP Work Plan is not approved within 3 years of initial funding, or if plan goals and benchmarks are not met after adaptive management efforts, the County maintains the responsibility for protecting critical areas under GMA with standard regulatory approaches.

The VSP Work Group. The VSP Watershed Work Group is responsible for developing and agreeing to this Work Plan, designating technical assistance providers, identifying outreach and implementation approaches, setting goals and benchmarks, establishing a monitoring plan, regular reporting and adaptive management toward those goals. The Work Group is responsible for developing and administering the Work Plan on an ongoing basis throughout implementation and monitoring. The Work Plan would be submitted by the Watershed Work Group to the Director of the State Conservation Commission and technical panel (Departments of Fish and Wildlife, Ecology, and Agriculture) for approval.

Benton County	VSP Watershed Work Group	State Conservation Commission and Technical Panel
<ul style="list-style-type: none"> • Opt In • Nominate Watersheds • Form VSP Watershed Work Group 	<ul style="list-style-type: none"> • Develop Work Plan • Administer the Work Plan • Set up Monitoring Program • Adaptatively Manage Work Plan 	<ul style="list-style-type: none"> • Technical Panel Advises State Conservation Commission • State Conservation Commission Approves Work Plan

The VSP Work Group’s first core task is meeting the statutory test the Technical Panel, Statewide Advisory Committee, and Conservation Commission Director will apply in determining whether to approve the VSP Work Plan:

“... at the end of ten years after receipt of funding, the work plan, in conjunction with other existing plans and regulations, will protect critical areas while maintaining and enhancing the viability of agriculture in the watershed.” RCW 36.70A.725

Per the VSP statutes, the Work Plan must be approved if the above test is met within three years after receipt of funding, as determined through the VSP Work Plan Approval process.

The Work Group’s second core task is to create measurable ten-year benchmarks designed to promote voluntary, incentive-based measures 1) to provide long-term protection of critical areas and 2) to encourage voluntary enhancements to improve critical areas.

Together these voluntary incentive-based efforts reflect the three core “test” elements of an approvable VSP Work Plan: **1) protection of critical areas; 2) maintenance and enhancement of agricultural viability; and 3) voluntary enhancement of critical areas through promotion of incentive-based measures.** See RCW 36.70A.720 (1) and (1)(e). Each key test is described below.

1.3 PROTECTING CRITICAL AREAS

Critical areas are specifically defined under GMA ([RCW 36.70A.030](#)) and include fish and wildlife habitat conservation areas, wetlands, frequently flooded areas, geologically hazardous areas, and critical aquifer recharge areas used for potable water. See chart below for brief definitions. More detailed definitions of critical areas, as they relate to state and county regulations, are described in Appendix B.

This Work Plan must detail how Benton County, through VSP, will protect critical areas while maintaining and enhancing the viability of agriculture in the watershed. The definition of protection in the legislation for the Voluntary Stewardship Program indicates that:

“Protect” or “protecting” means to prevent the degradation of functions and values existing as of July 22, 2011. RCW 36.70A.703

The VSP requirement “to protect critical areas” is met where a critical area is protected, at the aggregate or watershed level, from new harms or degradations. *Swinomish Indian Tribal Community v. Western Washington Growth Management Hearing Board*, 161 Wn.2d 415 (2007).

Fish and Wildlife Habitat Conservation Areas



- Land and waters managed to maintain populations of fish and wildlife species in suitable habitats within their natural geographic distribution over the long term within connected habitat blocks and open spaces.
- Includes: Ranges and habitat elements where federal and state listed endangered, threatened, and sensitive species have a primary association. Lakes, rivers, ponds, streams, inland waters, and underground waters.
- Does not include Artificial features or constructs as irrigation delivery systems, irrigation infrastructure, irrigation canals, or drainage ditches that lie within the boundaries of and are maintained by a port district or an irrigation district or company.

Wetlands



- Areas inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support a prevalence of vegetation typically adapted for life in saturated soil conditions.
- 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. However, wetlands may include those artificial wetlands specifically intentionally created from non-wetland areas to mitigate conversion of wetlands. (See Chapter 2.)

Frequently Flooded Areas



- Lands in the flood plain subject to at least a one percent or greater chance of flooding in any given year, or within areas subject to flooding due to high groundwater.

Critical Aquifer Recharge Areas



- Areas with a critical recharging effect on aquifers used for potable water, including areas where an aquifer that is a source of drinking water is vulnerable to contamination that would affect the potability of the water, or is susceptible to reduced recharge.

Geologically Hazardous Areas



- Areas susceptible to erosion, sliding, earthquake, or other geological events, where development is not suitable due to public health or safety concerns.
- According to BCC 15.55.030, geologically hazardous areas are characterized by steep slopes over 15 percent.

Source: Definitions are adapted from RCW 36.70A and WAC 365-190, and Benton County Code Title 15.

1.4 PROMOTING AGRICULTURAL VIABILITY

Agricultural viability can be defined as the ability of a farmer or group of farmers to:¹

- productively farm on a given piece of land or in a specific area,
- maintain an economically viable farm business through experience, exploration, ingenuity, and technology,
- keep the land in agriculture use long-term, and
- steward the land so it will remain productive into the future.

The VSP Work Plan must “maintain and enhance” agricultural viability to receive approval (RCW 36.70A.725). Some VSP statutory sideboards implicitly help to maintain agricultural viability.

- The VSP Work Plan is to rely on voluntary stewardship “as the primary method of protecting critical areas and not require cessation of agricultural activities.” (RCW 36.70A.700)
- The County, and the VSP Work Plan, may not “require an agricultural operator to discontinue agricultural activities legally existing before July 22, 2011.” (RCW 36.70A.702)
- VSP statutes do not grant counties or state agencies any additional regulatory authority to protect critical areas on lands used for agricultural activities. (RCW 36.70A.702)
- In order to promote producer participation and productive discussion among Work Group members, VSP statutes prohibit county promulgation of new critical area regulations related to agricultural activities during the VSP process (narrow exceptions apply). (RCW 36.70A.130 (8)(a))
- Nothing in the VSP statutes requires participation from agricultural operators, which is voluntary only. (RCW 36.70A.705)
- With regard to conservation programs, VSP is not to be administered in a manner that prevents operator eligibility for environmental incentives (RCW 36.70A.702), and volunteer “agricultural operators implementing an individual stewardship plan consistent with a work plan are presumed to be working toward the protection and enhancement of critical areas.” (RCW 36.70A.750)
- Agricultural operators volunteering to participate may withdraw from the program at any time. (RCW 36.70A.702)
- VSP may not require participating operators who voluntarily enter conservation contracts to protect or enhance critical areas to continue such voluntary measures after expiration of the applicable contract. (RCW 36.70A.760)

¹ Washington State Conservation Commission. Undated. Agricultural Viability Toolkit. Available: November 2016. According to the Conservation Commission, this definition was originally found in the “Farming in the Floodplain Project: Existing Conditions Report”, August 2016, Environmental Services Associate.

1.5 VOLUNTARY ENHANCEMENT

VSP statute requires the Work Group to create and meet critical area protection and enhancement benchmarks:

“Create measurable benchmarks that, within ten years after the receipt of funding, are designed to result in (i) the protection of critical area functions and values and (ii) the enhancement of critical area functions and values through voluntary, incentive-based measures.”

RCW 36.70A.720 (2)(b).

The VSP legislation further states the “Program shall be designed to protect and enhance critical areas on lands used for agricultural activities through voluntary actions by agricultural operators.” (RCW 36.70A.705 (1)) The Work Plan is tested at the five-year mark as to whether protection and enhancement goals and benchmarks have been met. If protection is not met there must be adaptive management planning. If enhancement goals have not been met, additional voluntary actions would need to be identified. At the 10-year mark if protection goals and benchmarks are not met, the plan would fail and an alternative regulatory path would be required. (RCW 36.70A.720 (2); RCW 36.70A.735; RCW 36.70A.130 (8))

Though critical area enhancement is not part of the initial VSP Work Plan Approval test, the Work Plan must also include benchmarks for promotion and implementation of voluntary actions designed to protect and enhance critical areas. The definition of “protection” is provided above. The VSP legislation’s definition of “enhancement” establishes that:

“enhance” means “to improve the processes, structure, and functions existing, as of July 22, 2011, of ecosystems and habitats associated with critical areas.” RCW 36.70A.703

1.6 WORK PLAN FRAMEWORK

The VSP legislation at RCW 36.70A.720 specifically outlines the duties of the Work Group and requirements of this VSP Watershed Work Plan (Plan). These are:

- (1) A watershed group designated by a county under RCW 36.70A.715 must develop a work plan to protect critical areas while maintaining the viability of agriculture in the watershed. The work plan must include goals and benchmarks for the protection and enhancement of critical areas. In developing and implementing the work plan, the watershed group must:
 - (a) Review and incorporate applicable water quality, watershed management, farmland protection, and species recovery data and plans;
 - (b) Seek input from tribes, agencies, and stakeholders;
 - (c) Develop goals for participation by agricultural operators conducting commercial and noncommercial agricultural activities in the watershed necessary to meet the protection and enhancement benchmarks of the work plan;
 - (d) Ensure outreach and technical assistance is provided to agricultural operators in the watershed;
 - (e) Create measurable benchmarks that, within ten years after the receipt of funding, are designed to result in (i) the protection of critical area functions and values and (ii) the

enhancement of critical area functions and values through the voluntary, incentive-based measures;

- (f) Designate the entity or entities that will provide technical assistance;
- (g) Work with the entity providing technical assistance to ensure that individual stewardship plans contribute to the goals and benchmarks for protection;
- (h) Incorporate into the work plan any existing developmental regulations relied upon to achieve the goals and benchmarks for protection;
- (i) Establish baseline monitoring for: (i) Participation activities and implementation of the voluntary stewardship plans and projects; (ii) stewardship activities; and (iii) the effects on critical areas and agriculture relevant to the protection and enhancement benchmarks developed for the watershed;
- (j) Conduct periodic evaluations, institute adaptive management, and provide a written report of the status of plans and accomplishments to the county and to the commission within sixty days after the end of each biennium;
- (k) Assist state agencies in their monitoring programs; and
- (l) Satisfy any other reporting requirements of the program.

RCW 36.70A.720

Exhibit 1-1 below shows the relationship of major VSP plan sections to the statute.

Exhibit 1-1. VSP Work Plan Sections and Statutory References

KEY PLAN SECTION	WORK PLAN REQUIREMENTS (RCW 36.70A.720(1) A THROUGH L UNLESS STATED)
Introduction	
Work Group	b
Core Elements of Work Plan:	
Protect Critical Areas Test	RCW 36.70A.725
Maintain and Enhance Agricultural Viability Test	RCW 36.70A.725
Create Protection and Enhancement Goals and Benchmarks	RCW 36.70A.720 (1)
Background Information, Other Plans, and Regulations	a, h
Technical Assistance	d, f, g
Baselines and Measurable Benchmarks	c, e, i
Monitoring, Reporting, and Adaptive Management	j, k, l
Plan Approval Process	RCW 36.70A.725

2.0 County Profile and Critical Area Context

Benton County encompasses 1,760 square miles and is located in the southeast part of Washington. The county is bounded on three sides (north, east, and south) by the Columbia River, and is bordered to the west by Klickitat and Yakima counties. Critical areas are described above in Section 1.3, and encompass fish and wildlife habitat conservation areas, wetlands, frequently flooded areas, geologically hazardous areas, and critical aquifer recharge areas used for potable water.

2.1 CRITICAL AREA CONTEXT IN BENTON COUNTY

Fish and Wildlife Habitat Conservation Areas

Streams

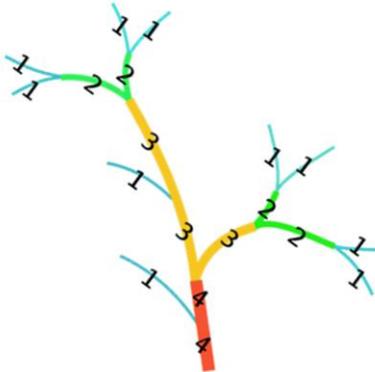
Due to the semi-arid climate in the county, many of the small tributary streams exhibit intermittent or ephemeral (infrequent, short duration) flow patterns. In areas where irrigated agriculture predominates, summer flows are supplemented by irrigation drainage, such that historically intermittent streams may exhibit perennial flow.

The VSP Working Group reviewed maps of streams based on a nationwide model (National Hydrography Dataset- US Geological Survey), and the Working Group concurred that the nationwide model over-represented streams in Benton County. The group further agreed that, for the purpose of mapping streams and defining critical area goals on a watershed scale, the likelihood of actual stream occurrence could be reasonably well approximated using the modeled stream order. Field evaluation would still be necessary to verify stream occurrence at the site scale.

The Working Group concluded that outside of irrigated areas, only those streams modeled as greater than 7th order are likely to actually carry stream flow (even on an intermittent or ephemeral basis). In these areas, streams that are 7th order or lower are better

Stream order refers to the “hierarchy of streams from the source (or headwaters) downstream.” Headwater streams are considered first order and downstream segments are defined at the confluence of two streams. See the diagram and description below.

Exhibit 2-1. Strahler Stream Order Diagram



Source: [USGS 2016](#)

The headwaters are the first order and downstream segments are defined at confluences (two streams running into each other). At a confluence, if the two streams are not of the same order then the highest numbered order is maintained on the downstream segment. At a confluence of two streams with the same order, the downstream segment gets the next highest numbered order. ([USGS 2016](#))

characterized as dry washes with no surface flows. In irrigated areas, modeled streams that are greater than 3rd order represent streams that are likely to carry at least ephemeral flows.

Benton County's draft critical areas ordinance clarifies that, "Fish and wildlife conservation areas do not include such artificial features or constructs as irrigation delivery systems, irrigation infrastructure, irrigation canals, or drainage ditches that lie within the boundaries of, and are maintained by, a port district or an irrigation district or company." In the County's definition of watercourse, it indicates, "This definition includes watercourses that flow on an intermittent basis or which fluctuate in level during the year and applies to the entire bed of such watercourse whether or not the water is at peak level. This definition does not include irrigation ditches, canals, stormwater run-off devices, or other entirely artificial watercourses, except where they exist in a natural watercourse that has been altered by humans." The determination of whether highly altered irrigation drainages mapped as streams are considered critical areas will depend on the County's final critical areas code and its final determination of what meets the intent of the code.

Where flow in natural channels is supplemented by irrigation, this may improve channel functions. Nevertheless, if irrigation efficiencies are installed that reduce this level of flow supplementation, under this program, that action would be viewed as an overall benefit to critical area functions due to reductions in demand for irrigation withdrawals and reduction in the erosive potential of irrigation runoff.

Anadromous fish migrate through, spawn, and breed in the Yakima and Columbia rivers, and anadromous salmon breeding is documented in the lowermost reaches of Spring Creek and Snipes Creek, tributaries to the Yakima River, and Glade Creek, a tributary to the Columbia River.

Wildlife Habitat

Shrub-steppe habitat is identified as a state-designated priority habitat, meaning that it is a habitat type with unique or significant value to a diverse assemblage of species. Shrub-steppe habitat is critical to supporting a number of priority species in the county, including, but not limited to elk, burrowing owl, chukar, mule deer, sagebrush sparrow, Townsend's ground squirrel, jackrabbit, black-tailed jackrabbit, desert nightsnake, prairie falcon, Swainson's hawk, breeding areas for state-threatened ferruginous hawk, and habitat for other sagebrush-obligate species. Shrub-steppe habitat areas also include several plant species and communities identified through the Department of Natural Resources Natural Heritage Program. WDFW describes shrub-steppe habitat as follows:

*"A nonforested vegetation type consisting of one or more layers of perennial bunchgrasses and a conspicuous but discontinuous layer of shrubs. Although Big Sagebrush (*Artemisia tridentata*) is the most widespread shrub-steppe shrub, other dominant (or co-dominant) shrubs include Antelope Bitterbrush (*Purshia tridentata*), Threepart Sagebrush (*A. tripartita*), Scabland Sagebrush (*A. rigida*), and Dwarf Sagebrush (*A. arbuscula*). Dominant bunchgrasses include (but are not limited to) Idaho fescue (*Festuca idahoensis*), Bluebunch Wheatgrass (*Pseudoroegneria spicata*), Sandberg Bluegrass (*Poa secunda*), Thurber's Needlegrass (*Achnatherum thurberianum*), and Needle-and-Thread (*Hesperostipa comata*). In areas with greater precipitation or on soils with higher moisture-holding capacity, shrub-steppe can also*

*support a dense layer of forbs (i.e., broadleaf herbaceous flora). Shrub-steppe contains various habitat features, including diverse topography, riparian areas, and canyons. Another important component is habitat quality (i.e., degree to which a tract resembles a site potential natural community), which may be influenced by soil condition and erosion; and the distribution, coverage, and vigor of native shrubs, forbs, and grasses. Sites with less disturbed soils often have a layer of algae, mosses, or lichens. At some more disturbed sites, non-natives such as Cheatgrass (*Bromus tectorum*) or Crested Wheatgrass (*Agropyron cristatum*) may be co-dominant species.”*

Shrub-steppe priority habitat areas are mapped by WDFW’s Priority Habitat and Species database. In addition, recent efforts, including the Spatial Conservation Priorities in the Columbia Plateau Ecoregion (Arid Lands Initiative 2014) and the Washington Connected Landscapes Project: Statewide Analysis and Analyses of the Columbia Plateau Ecoregion (Washington Wildlife Habitat Connectivity Working Group 2010, 2012) have identified specific habitat concentration areas, habitat linkage areas, and pinch points. Finally, WDFW has identified the Blackrock area in northwestern Benton County as an area of particular conservation significance for shrub-steppe habitat. This area, located between Hanford National Monument and the Yakima Training Center, consists of a patchwork of private and publicly owned lands used predominantly for rangeland agricultural activities. Shrub-steppe habitat in this area has been adversely affected by frequent, large-scale wildfires. Fire control and prevention in the Blackrock area is a priority to both conserve the quality of this area of diverse, contiguous shrub-steppe habitat, but also to maintain viable rangeland.

Wetlands

Wetlands in Benton County are concentrated within the floodplain of the Yakima and Columbia rivers. Similar to stream flows, irrigation drainage may contribute to wetland conditions in some areas where wetland conditions did not historically occur. Many wetlands have formed adjacent to irrigation conveyance systems and in low-lying areas where irrigation occurs. A wetland is considered artificial, and not subject to state or local regulation as a wetland, only if it meets both of the following characteristics:

- a. It was intentionally created; and
- b. It is in a formerly non-wetland (upland) site.

In irrigated agricultural areas, wetlands can result from localized conditions (e.g., a leaking irrigation ditch) or as a result of a region-wide rise in groundwater resulting from regional irrigation projects. These types of wetlands are regulated by state wetland law and cannot be filled or drained without appropriate permits and mitigation (Ecology 2010). However, if the irrigation practices that led to the incidental wetland creation are changed (for example through implementation of water conservation practices), and the wetland dries up and no longer performs wetland functions, then no mitigation is required (Ecology 2010). Where irrigation efficiencies result in wetlands drying up, voluntary enhancement measures could be implemented to help maintain habitat features, although these voluntary enhancements would not be necessary to meet the wetland protection standard.

Frequently Flooded Areas

A floodway is mapped along the Yakima River west of Richland and north of Benton City. The floodplain of the Yakima River is widest downstream (east) from Benton City. A relatively narrow floodplain is mapped along the Columbia River.

Geologically Hazardous Areas

Geologically hazardous areas encompass channel migration zones, steep slopes with moderate to severe erosion potential, landslide hazard areas, and seismic hazard areas.

Channel migration in the Lower Yakima watershed is limited by a low gradient (average one percent gradient in the lower 47 miles of the river) (Wise et al. 2009) and geologic and structural controls in the eastern portion of Benton County. Similarly, the geology and topography of the Columbia River in Benton County, combined with dam regulations and shoreline stabilization measures, substantially limit channel migration.

Although Washington Department of Natural Resource (DNR) identifies few landslide hazard areas within Benton County, steep slopes with erodible soils intersect agricultural areas along the northern face of the Horse Heaven Hills and eastern drainages within the Rock-Glade watershed, including along the Columbia River shoreline at Wallula Gap. Steep slopes with erodible soils are also mapped as intersecting rangelands in the northwestern (Blackrock) portion of the county.

Critical Aquifer Recharge Areas

The Columbia River basalts of the Columbia Plateau provide a locally important aquifer system. Within the lower Yakima basin, from the western county border east to Horn Rapids, the mainstem channel of the river flows through a relatively narrow inner valley of basalt bedrock covered with an unknown thickness of coarse alluvium. Downstream from Horn Rapids, the river flows through broad alluvial fill of the Columbia River (Kinnison and Sceva 1963).

Within Benton County, the majority of wells and wellhead protection areas are concentrated along the Yakima River Valley and in the incorporated cities of Richland and Kennewick. Other class A wells are located near well-draining irrigated lands in the southern portion of the county near Paterson. Studies have found nitrate concentrations exceeding drinking water quality standards in shallow wells in eastern and southern Benton County (Washington State Interagency Groundwater Committee 1996, Ecology 2016). Based on the number of wells and the percentage of wells exceeding 10 mg/L of nitrate, Ecology identified eastern Benton County as one of the top ten nitrate priority area candidates within Washington.

In addition to areas based on wellhead protection areas and soils, the Benton County draft critical areas ordinance identifies, “Areas within one hundred (100) feet of all irrigation district main canals (one hundred (100) feet from edge of canal),” as moderately susceptible aquifer recharge areas (draft critical areas ordinance 15.08.360.b.2.3).

2.2 OVERVIEW OF WATERSHEDS

The county includes portions of three Water Resource Inventory Areas (WRIAs):

- The eastern portion of the Lower Yakima Watershed (WRIA 37);

- The Rock-Glade Watershed (WRIA 31); and
- The Alkali-Squilchuck Watershed (WRIA 40).

All three watersheds are included in the VSP.

Lower Yakima Watershed (WRIA 37)

Geology and Hydrology

Benton County occupies the eastern half of the Lower Yakima Watershed (WRIA 37). The entire Lower Yakima watershed sits atop the Columbia Plateau, which extends from the foothills of the Cascade Mountains in the west of the county, east to the Columbia River.

Precipitation is limited in the Lower Yakima watershed, with most of the precipitation falling between October and March (Rinella et al. 1992). Watershed hydrology is primarily derived from snowmelt from the Cascade Mountains, and flooding in the lower Yakima River is typically caused by snowmelt associated with warm, Chinook winds and rain-on-snow events (FEMA 2012, Rinella et al. 1992). Hydrology in the watershed is also heavily influenced by diversion and return of irrigation flows, and by storage and release of reservoir waters.

Fish and Wildlife

Anadromous fish in the watershed include fall Chinook salmon, and federally threatened steelhead and bull trout; native Coho, sockeye and summer Chinook salmon were extirpated (locally extinct) from the watershed but have recently been reintroduced by the Yakama Tribe. In Benton County, these species primarily use the watershed as a migratory corridor; however, approximately one third of adult steelhead migrating into the Yakima watershed hold between McNary Pool and Prosser for several months before finishing their upstream migrations to spawning areas (Yakima Basin Fish and Wildlife Recovery Board 2009). Pacific lamprey and westslope cutthroat are present in the watershed and designated as a species of concern by USFWS.

Shrub-steppe is the predominant upland native habitat type in the watershed. However, conversion of shrub-steppe habitats has left only about five percent of the historical habitat in the entire Yakima watershed (WRIAs 37, 38, and 39) in relatively undisturbed condition (Yakima Subbasin Planning Board 2004). A larger portion of the native habitat is moderately disturbed, but still provides cover, food, and nesting habitat for many species of wildlife, particularly during winter months when cultivated fields provide no vegetative cover. These moderately disturbed areas offer opportunities for restoration and enhancement, while lesser-disturbed shrub-steppe habitat should be prioritized for protection. Data are not available to provide an estimate of the moderately-disturbed shrub-steppe habitat.

The Lower Yakima watershed supports important nesting and wintering habitat for waterfowl, songbirds, and raptors, including a significant portion of all wood ducks hatched in the state, as well as mallards, Canada geese, and other duck species (Yakima Subbasin Planning Board 2004). Both large and small mammals are found in the watershed, including the western gray squirrel (a Washington State threatened species), black bear, mule deer, Rocky Mountain elk, mountain goats, and cougar (Yakima Subbasin Planning Board 2004).

Large-scale Watershed Alterations

The federal government authorized the Yakima Irrigation Project in 1905, which resulted in the construction of five storage reservoirs. Today, there are six major diversion dams associated with the Yakima Project on the Yakima and its tributaries. The Wanawish Dam, or Horn Rapids Dam, is another major diversion dam that supplies irrigation canals on the river. The river basin is over-appropriated, meaning that surface water rights exceed available water supply (Ecology 2012b).

The storage and distribution of irrigation water has altered the timing and character of streamflow and groundwater recharge in the watershed. Agricultural return flows in the lower Yakima River account for as much as 80 percent of the mainstem summer flows in the watershed (Morace et al. 1999). As a result of the diversion and use of irrigation water, the recharge of cold, spring-melt water into the aquifer systems in the upper watershed has decreased, and recharge of irrigation water now occurs later in the spring and summer in the lower watershed (Vaccaro and Olsen 2007). Recent studies have found that shallow groundwater seeps in backwater habitats and irrigation wastewater outflows provide a source of cooler groundwater compared to elevated river temperatures in the lower Yakima River (Appel et al. 2011). Groundwater seeps were identified near Prosser and Whistran, and east of the Chandler Power House (Appel et al. 2011). Additionally, Spring and Snipes creeks, which function as irrigation wasteways are cooler than the mainstem Yakima River in summer months (Appel et al. 2011). Although irrigation efficiencies may tend to reduce groundwater outflows in general, conservation efforts will likely seek to maintain irrigation discharges in key areas of cool groundwater refuge. The installation of irrigation efficiencies is viewed as an overall benefit to critical area functions due to reductions in instantaneous withdrawal demand and reduction in erosive potential of irrigation runoff.

Rock-Glade Watershed (WRIA 31)

Geology and Hydrology

The Rock-Glade watershed extends south from the Yakima River mouth to the John Day dam in Klickitat County. The geology of the watershed is dominated by extensive, erosion-resistant basalt flows, resulting in the creation of deep (500 to 800 feet), steep-walled canyons along the Columbia River (Lautz 2000).

Rainfall is generally less than 10 inches per year. Most of the drainage of the Columbia River falls as snow in the Rocky Mountains and Cascade Range, outside of Benton County. Tributaries to the Columbia River in the watershed are limited to small, ephemeral streams that flow through steep, confined canyons.

Fish and Wildlife

The middle Columbia River supports rearing and migration of several evolutionarily significant units of federally threatened anadromous salmon, including Chinook and sockeye salmon, steelhead, and bull trout.

The middle Columbia River mainstem supports one of the largest Northwest concentrations of wintering waterfowl, particularly Canada geese and mallards (Ward et al. 2001). The river is an important migratory stopover and staging area for many species of shorebird as well.

Much of the undeveloped, non-agricultural upland area within the Rock-Glade watershed is characterized as shrub-steppe habitat. Shrub-steppe habitat supports several sensitive species, as well as ferruginous hawk, a state-threatened species.

Large-scale Watershed Alterations

The dams on the Columbia River have substantially altered the river's hydrograph, reducing floodplain connectivity, over-bank flows, and associated large woody debris (LWD) and sediment transport processes.

Extensive flatlands, which existed along the Columbia River prior to dam building and inundation have formed shallow wetlands and embayments along the shore of Lake Umatilla; these serve as holding or resting areas for migrating adult and juvenile salmonids (Lautz 2000). Agricultural water return flows affect the ecology of these backwater areas, supplementing the natural flow of streams and springs that drain into the Columbia River. As irrigation efficiencies continue to be installed, the magnitude of groundwater seeps may decrease. Nevertheless, the installation of irrigation efficiencies is viewed as an overall benefit to critical area functions due to reductions in instantaneous withdrawal demand and reduction in erosive potential of irrigation runoff. Where irrigation efficiencies result in wetlands drying up, voluntary enhancement measures could be implemented to help maintain habitat features, particularly along streams and floodplains; these voluntary enhancements would not be necessary to meet the wetland protection standard.

Alkali-Squilchuck Watershed (WRIA 40)

Geology and Hydrology

The Alkali-Squilchuck watershed is bordered to the north by the Columbia River and drains to that waterbody. The portion of the watershed within Benton County is within the Columbia Plateau, sharing the geological and hydrological characteristics attributed to that ecoregion and described earlier.

Fish and Wildlife

The Hanford Site, which occupies much of the watershed in Benton County offers intact vegetation, habitat, and hydrologic features. As the last free-flowing reach on the Columbia River, the Hanford Reach is extremely valuable for aquatic resources, including anadromous salmon. The Hanford Reach supports colonial nesting birds, most of which forage primarily on fish. Upland habitats adjacent to the Reach include large tracts of relatively undisturbed shrub-steppe vegetation.

Land Use Impacts

The U.S. Department of Energy's Hanford Site occupies the majority of the Alkali-Squilchuck watershed in Benton County. The Hanford Site covers 560 square miles and borders 51 miles of

the Columbia River. Groundwater at the site has become contaminated from leaking storage tanks of nuclear wastes, and the site is the focus of the nation's largest environmental cleanup. The majority of the site is undeveloped, serving as a security buffer for nuclear facilities.

3.0 Agricultural Context

3.1 DISTRIBUTION OF AGRICULTURE BY WRIA

A total of 695,843 acres of agricultural activities are mapped in the county as of 2016. Of those, 323,003 acres (46%) are dryland agriculture; 2781,809 acres (41%) are irrigated agriculture; and 91,030 acres (13%) are rangeland. Exhibit 3-1 presents a summary of agricultural acreage by watershed as of 2016. These figures include agricultural activities, particularly rangeland activities, conducted on public lands. However, public lands do not fall within the purview of VSP.

Exhibit 3-1. Total acres of agriculture by watershed with privately owned acreage in parentheses

AGRICULTURE TYPE	WATERSHED			COUNTY	
	LOWER YAKIMA	ROCK-GLADE	ALKALI-SQUILCHUCK	ACRES	PERCENT
Dryland	93,116 (87,808)	229,112 (214,307)	776 (776)	323,003	46%
Irrigated	72,915 (67,855)	208,606 (190,942)	289 (286)	281,809	41%
Rangeland	62,980 (50,943)	27,190 (17,103)	860 (304)	91,030	13%
Total					
Acres	229,010 (206,306)	464,908 (422,351)	1,925 (1,367)		695,843
Percent	33%	67%	0%		

Lower Yakima Watershed (WRIA 37)

The Lower Yakima watershed supports the majority of rangeland (69%) in the county. This rangeland is concentrated north of the Yakima River along Cold Creek. The watershed also supports over a quarter of the county’s dryland and irrigated agriculture by area. Irrigated agricultural lands are concentrated along the Yakima River, with larger dryland parcels concentrated in the southeast and central portions of the watershed.

Rock-Glade Watershed (WRIA 31)

The Rock-Glade watershed supports the largest area of dryland (71%) and irrigated (74%) agriculture in the county. Agriculture is the dominant land use throughout the watershed. Rangelands in the watershed (31% of all rangelands in the county) occupy a relatively narrow band along the Columbia River.

Alkali-Squilchuck Watershed (WRIA 40)

Agriculture is extremely limited in the Alkali-Squilchuck watershed, as the vast majority of the watershed is within the Hanford Site. Small concentrations of agriculture are located at the extreme eastern and western edges of the watershed.

3.2 VALUE AND EXTENT OF AGRICULTURE

Based on the 2012 Census of Agriculture, Benton County ranks third in Washington state by market value of agricultural products sold, totaling about \$923.2 million in value of crops and livestock. This is an increase over 2007 Census of Agriculture estimates of \$525.9 million in market value. By market value, Benton County ranks 38th in the nation as of 2012. In Benton County, the top value commodities are potatoes, apples, and grapes.

According to 2013 Washington State Department of Revenue information, Benton County produces \$617 million in income from food processing, which is about ninth in the state.² Employment Security Division information for 2013 shows that food processing supports the fourth highest number of employees in the state.

The Tri-City Development Council (TRIDEC) notes that the Tri-Cities area (includes Benton and Franklin counties) has more than 175 food and beverage manufacturers, including those with over 1,000 employees and smaller production operations. Production is attracted to Benton County by the location of agricultural producers in proximity, access to markets, an educated labor force, and lower cost of living.

Also related to production, Benton County's wineries produced just under 9.5 million cases of wine in 2014, beating the second-highest-producing county, King County, by more than 7.2 million cases. Walla Walla county is third with 1.6 million cases.³

As of 2016, there are about 695,843 acres of agricultural land eligible to participate in the VSP. Irrigated and dryland crops total approximately 604,812 acres. The approximate location of agriculture is highlighted in Exhibit 3-2.

DRYLAND AGRICULTURE 323,003 ACRES + IRRIGATED AGRICULTURE 281,809 ACRES + RANGELAND 91,030 ACRES = 695,843 TOTAL ACRES IN UNINCORPORATED LANDS ELIGIBLE UNDER VSP

Benton County is located in the southeastern portion of Washington state at the confluence of the Columbia, Snake, and Yakima rivers. The land, part of the semi-arid Columbia Basin, lies in the rain shadow of the Cascade Mountains and is naturally dry. But the soil is fertile and supports native plants such as bunch grasses and sagebrush. This vegetation in turn supported the deer and elk that Native Americans hunted, and later, the cattle and sheep of non-Indian settlers. Irrigation began in the 1890s with water drawn from the Columbia River. Farm crops then flourished, including wheat, alfalfa, grapes, strawberries, and potatoes. ... Benton County has very little rainfall, and some farmers had been successful at dryland farming. ... Once there was a reliable water source, orchards and vineyards sprung up all over the Kennewick area. Strawberries were another successful crop.

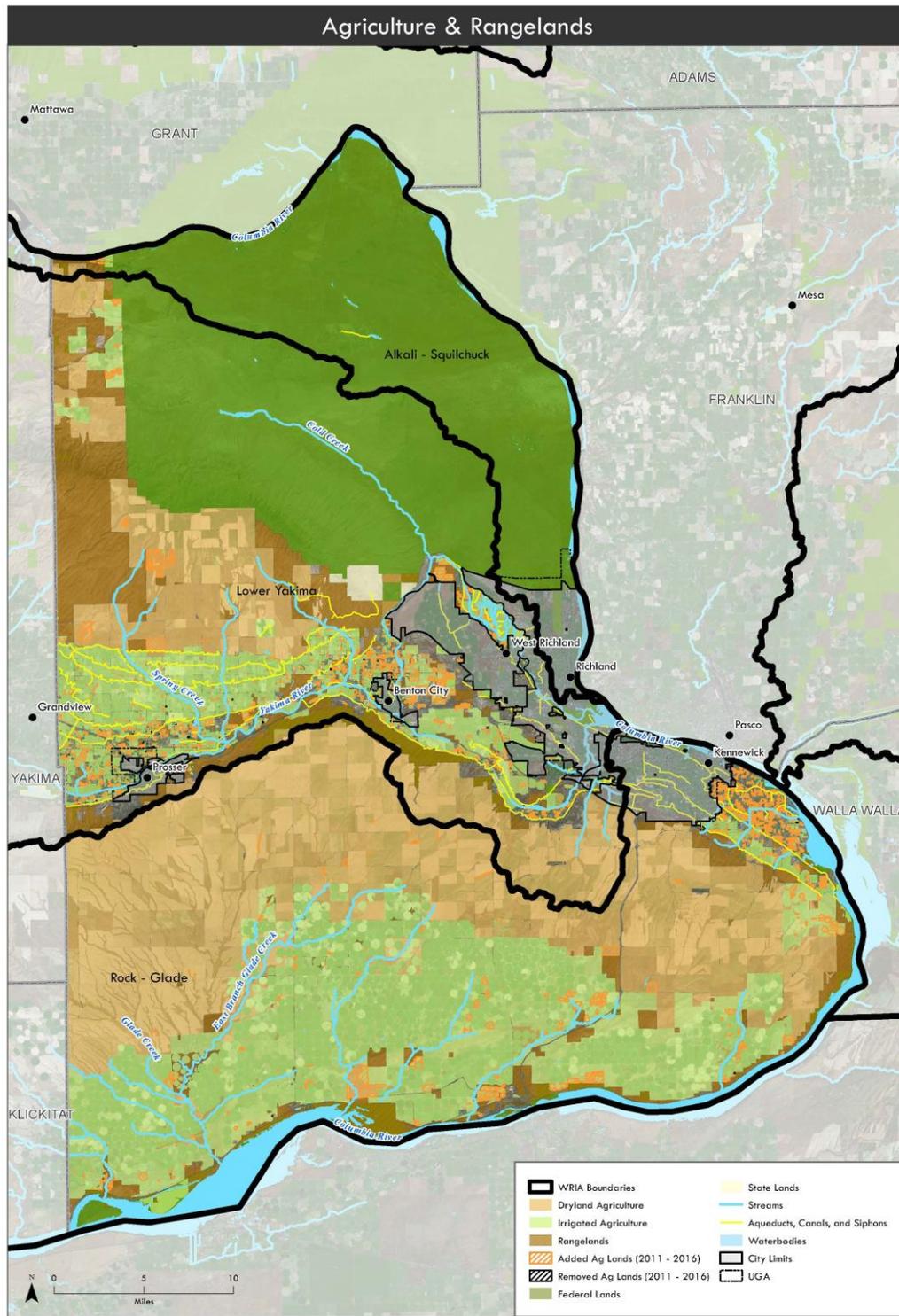
~ Benton County – Thumbnail History, Historylink.org, by Elizabeth Gibson, 3/29/2004, Essay 5671

² See: <http://agr.wa.gov/AgInWa/docs/127-ProcMap2015-Copier.pdf>

³ Community Attributes. August 2015. Economic and Fiscal Impacts of Wine & Wine Grapes in Washington State. Prepared for: Washington State Wine Industry. Available: <https://www.washingtonwine.org/>.

Exhibit 3-2. Consolidated Benton County Agricultural Map

BENTON COUNTY VOLUNTARY STEWARDSHIP (VSP) PROGRAM



Source: BCD, WSDA, Benton County Assessor, BLM, Ecology, The Watershed Company, BERK Consulting 2016.

WSDA information provides more detailed crop type information for dryland and irrigated agriculture; it does not address rangeland. The largest crop type is in wheat/wheat fallow as well as in Conservation Reserve Program (CRP) / Conservation Reserve Enhancement Program (CREP). Other extensive crops include corn, grapes, potatoes, apples, and onion. See Exhibit 3-3. In 2015 and 2016, the data shows more acres in pasture due to improved mapping. In 2016, there is less land that is in the CRP/CREP program in 2016 than in prior years. More land is in grapes, corn, onions, and potatoes.

Exhibit 3-3. WSDA Agricultural Data 2011, 2015, and 2016

Crop Type	Acres 2011	Acres 2015	Acres 2016	Crop Type	Acres 2011	Acres 2015	Acres 2016
Alfalfa Hay	10,062	5,031	7,709	Nectarine/Peach	278	52	126
Alfalfa/Grass Hay	1,619	486	572	Nursery, Greenhouse	8	2	2
Apple	11,364	11,578	12,067	Nursery, Orchard/Vineyard	292	56	56
Apricot	181	66	78	Nursery, Ornamental	7	25	34
Asparagus	27	12	12	Oat	112	34	-
Barley	39	70	6	Oat Hay	-	98	98
Bean Seed	611	47	73	Onion	10,944	12,563	13,203
Bean, Dry	124	-	125	Pasture	5,847	9,419	11,994
Bean, Green	136	17	128	Pea Seed	1,461	768	605
Blueberry	2,180	3,337	3,210	Pea, Green	3,117	3,556	7,266
Bluegrass Seed	6,212	4,665	6,591	Pear	323	284	308
Buckwheat	-	73	131	Plum	39	50	44
Caneberry	511	297	159	Poplar	2,743	218	215
Canola	33	-	-	Potato	26,488	30,381	31,934
Carrot	1,699	2,440	4,659	Pumpkin	519	235	185
Cherry	4,878	4,845	5,269	Research Station	488	505	511
Clover Hay	-	3	-	Rye	3	2	2
Clover/Grass Hay	-	12	12	Ryegrass Seed	781	-	-
Corn Seed	71	-	-	Silviculture	-	-	3
Corn, Field	18,942	19,250	21,659	Sorghum	-	1	1
Corn, Sweet	18,890	29,832	15,952	Strawberry	-	1	1
CRP/Conservation*	104,536	105,702	99,316	Sudangrass	-	87	43
Currant	41	-	-	Sugar Beet	1,937	1,909	2,281
Developed	907	1,219	3,144	Sunflower	-	110	-
Driving Range	-	-	34	Timothy	81	408	715
Fallow	6,202	6,112	6,122	Triticale	13	188	83
Garlic	1	-	-	Triticale Hay	-	129	153
Golf Course	10	13	657	Unknown	80	3	932
Grape, Juice	5,847	5,161	5,138	Walnut	24	26	27
Grape, Table	-	4	4	Watermelon	45	-	16
Grape, Unknown	-	3	3	Wheat	100,009	93,407	100,256
Grape, Wine	17,865	20,553	22,280	Wheat Fallow	73,967	74,787	79,980
Grass Hay	775	1,228	1,536	Wildlife Feed	42	69	126
Green Manure	51	-	-	Yellow Mustard	-	-	152
Hay/Silage, Unknown	-	12	-	Grand Total	450,333	459,446	476,569
Hops	4,503	4,720	4,720				
Kale	-	-	5				
Marijuana	-	-	18				
Market Crops	14	135	140				
Medicinal Herb	-	-	3				
Melon, Unknown	-	2	-				
Mint	2,357	3,149	3,689				

Note: * See Chapter 10 definition of agricultural activities.

Source: WSDA 2016

WSDA information also shows the change in acres put into production between the VSP baseline of 2011 and 2016, illustrating a net increase of 26,236 acres. While some of the change is due to improved mapping of pastureland and small farms, much of it represents changes from non-agriculture to dryland or irrigated agriculture (see Chapter 5, Exhibit 5-5). The most notable

changes include areas not characterized as agriculture in 2011 changing to wine grapes (1,869 acres). The new acreage of wine grapes occurred in the Horse Heaven Hills region.

As illustrated above, the strength of Benton County's agricultural economy is its diversity. Due to a combination of factors including the climate with over 300 days of sunshine providing a long growing season, available labor, agricultural infrastructure including access and processing, as well as other factors, agriculture is growing. The primary sectors of the local agricultural economy include:

- Irrigated specialty fruit and herb crops, including but not limited to:
 - Vineyards
 - Orchards
 - Blueberries
 - Hops
 - Mint
- Dryland wheat farming
- Hay/Silage
- Small acreage farms
- Cattle operations
- Row vegetable crops, including but not limited to:
 - Potato
 - Corn
 - Onion
 - Green Pea
 - Carrot
- Seed crops, including but not limited to
 - Turf Grass Seed / Bluegrass Seed
 - Pea Seed

Each major category is addressed below.

3.3 AGRICULTURE AND FOOD PROCESSING IN BENTON COUNTY



Image: winesandvines.com

Viticulture. Benton County had the highest wine production in the state in 2014, producing nearly 9.5 million cases of wine in 2014.⁴ The county has about 22,000 acres planted in wine grapes and over 5,000 acres planted in juice grapes as of 2016 WSDA inventories.

The U.S. Department of the Treasury Tax and Trade Bureau identifies American viticultural areas (AVAs) in 27 CFR Part 9. Three AVAs are designated within Benton County and beyond including: Horse Heaven Hills, Red Mountain, and Yakima Valley.⁵



Orchards. Over 12,000 acres are planted in apples in Benton County according to 2016 WSDA data, and contribute to the state's top exported agricultural product. "The Columbia Basin's rich volcanic soil, fed by the cool waters of the Columbia River, nurture vast acres of apples. Blessed by a long growing season, the Basin is noted for producing larger apples and later-maturing varieties."⁶

Another sizable number of acres, over 5,200, are planted in cherries based on 2016 WSDA data. "Washington State is the 3rd largest producer of tart cherries and the leading sweet cherry producer in the United States."⁷



Blueberries. Blueberries are known for being grown in Western Washington, and Whatcom County is the top producer. However, that is changing with almost half now grown in Eastern Washington. "In 2012, 40percent of Washington's blueberries were grown in Eastern Washington where the dry climate minimizes pest problems. Eastern Washington now has about 4,300 acres of blueberries, mostly in Benton, Franklin, Walla Walla, Grant, and Yakima counties."⁸ That total figure across the five counties is likely higher now. The 2016 acreage in blueberries in Benton County alone is 3,210 acres, up over 1,000 acres from 2011.

4 Washington State Wine Commission, 2015. Economic & Fiscal Impacts of Wine and Wine Grapes in Washington State.

5 Washington State Wine Commission. <https://www.washingtonwine.org/wine/facts-and-stats/regions-and-avas>.

6 Washington State University Extension. 2013. Apples. <http://extension.wsu.edu/benton-franklin/tag/tree-fruit/>.

7 Washington State University Extension. 2013. Cherries. <http://extension.wsu.edu/benton-franklin/2013/12/cherries/>.

8 <http://www.washivore.org/blueberries>



Hops. According to USA Hops, a trade organization, “the Yakima Valley of Washington State is one of the most important hop growing regions in the world. Approximately two-thirds of the hops produced in the Yakima Valley are exported to countries all over the globe.”⁹ As a whole, the valley in both Yakima and Benton counties contains about 75 percent of the U.S. hop acres. The WSDA has identified about 4,720 acres of hops in Benton County and another 31,265 acres in Yakima County as of 2016.

Source: nbcrightnow.com



Mint. Washington State is a national leader in the production of mint oil. Growers produce about 3.5 million pounds a year on 28,000 acres in the Yakima Valley and the Columbia Basin. WSDA has estimated 3,689 acres in mint in Benton County as of 2015. (Yakima County has over 11,000 acres.)

Statewide mint information and photo source:

<http://www.washivore.org/mint>



Wheat. “Washington farmers produce the fourth-most bushels of wheat in the nation.”¹⁰ Wheat for grain is the largest crop in Benton County, by acreage, with about 100,250 acres planted and another 80,000 acres fallow as of 2016 Washington State Department of Agriculture inventories.

Image: Washington State University



Hay/Silage. “Benton, Franklin, and Walla Walla counties counties represent 30.5 percent of all alfalfa production and 24.2 percent of all hay produced in Washington.”¹¹ In 2018, WSDA reported the total acreage in various forms of hay/silage in Benton County was over 10,800.

9 http://www.usahops.org/index.cfm?fuseaction=hop_farming&pageID=13

10 Tri-City Herald. October 19, 2012. Farmers bust records for values of six crops, all grown in Mid-Columbia. <http://www.tri-cityherald.com/news/local/article32088195.html#storylink=cpy>.

11 <http://www.wa-hay.org/chapters/columbia-basin.html>

Small Acre Farms

The 2012 Census of Agriculture shows that most of the farms in the county are less than 50 acres (76%). About 45 percent are less than 10 acres.

WSU-Extension offers a small farm team that provides research and education for small farms that are often part of the local food system.

Benton CD also offers a Small Farms Assistance Program helping landowners with conservation plan development, technical assistance and cost-share for agricultural best management practices.

	Number	Percent
1 to 9 acres	686	45%
10 to 49 acres	461	31%
50 to 179 acres	161	11%
180 to 499 acres	84	6%
500 to 999 acres	29	2%
1,000 acres or more	88	6%

In unincorporated areas, the county's GMA agricultural zoning assumes about 20 acres minimum parcel size for new divisions.

Cattle Operations. Benton County has the fifth largest cattle inventory in the state according to the 2012 Census of Agriculture.

Other important livestock are pheasants, layers (egg laying poultry birds), bees, and quail.



Row Crops: Vegetables. WSDA reports the following at over 2,000 acres in 2016: potato 31,934 acres, sweet corn 15,952 acres, onion 13,203 acres, green pea 7,266 acres, carrot 4,659 acres.

Images: Washington State University Extension



Benton County is #2 in the state in potato production, and #5 in the nation. Over 30,000 acres are planted in potatoes as of 2015 WSDA data.

Seed Crops. WSDA has reported 2016 planted acreages as follows: Bluegrass (6,591 acres), Pea Seed (605 acres).¹²



Source: <http://www.desertgreenturf.com/>

¹² See also: Mid-Columbia great for turfgrass seed, September 27, 2012: <http://www.tri-cityherald.com/news/local/article32084733.html>

3.4 COMMON PRACTICES BY AGRICULTURAL TYPE

Conservation Practices

Agricultural producers in Benton County continue to innovate their farm practices and increase their efficiencies while stewarding the environment. Common practices include but are not limited to:

- Cover crops to provide vegetative cover that improves soil quality and reduces erosion
- Fencing for browsing animal management
- Fish screens at irrigation diversions
- Integrated Pest Management
- Irrigation Conversion and Irrigation Water Management such as: trellis and irrigation systems, pond and irrigation canal lining, center pivot low energy precise application (LEPA), variable frequency drive, irrigation scheduler/precision irrigation
- Pesticide disposal / washing containers in vegetated areas
- Poles / boxes for birds of prey (“raptor poles”)
- Pollinator habitat (e.g. end of rows, outside pivot circles)
- Upland wildlife habitat planting (e.g. Mercer Canyon)

The Benton Conservation District (BCD) shows application of conservation practices through its programs, particularly regarding irrigation conversions and water management as well as fish screens. Exhibit 3-4 represents the projects that the BCD completed between 2011 and 2015. This represents only a portion of projects that were completed, since many producers implement conservation practices in coordination with other conservation programs, such as Global GAP (see below), as well independently, or coordinated with the Voluntary Regional Agreement between Columbia-Snake River Irrigators Association and Washington State Department of Ecology (RCW 90.90.030).

Exhibit 3-4. Benton Conservation District – Conservation Practices 2011-2015

PRACTICE	NUMBER OF PROJECTS	AMOUNT	VALUE	CRITICAL RESOURCE AREAS POTENTIALLY IMPACTED
CREP	3	20,948	Feet	FWCA, Wetlands, Freq. Flooded
Fencing	4	21,122	Feet	FWCA, Wetlands, Freq. Flooded
Field Borders*	1	160	Acres	?
Fish Screen	12	12	No.	FWCA, Freq. Flooded
Irrigation Conversion	14	278	Acres	CARA, FWCA
Irrigation Water Management	6	21,988	Acres	CARA, FWCA
Livestock Nutrient Management	1	1	No.	CARA
Pond Lining - Irrigation	2	2	No.	CARA, FWCA

PRACTICE	NUMBER OF PROJECTS	AMOUNT	VALUE	CRITICAL RESOURCE AREAS POTENTIALLY IMPACTED
Residue Management*	1	1	No.	?
Riparian Restoration	2	650	Feet	FWCA, Wetlands, Freq. Flooded
Variable Frequency Drive	1	3,944	No.	CARA, FWCA
Windbreak	1	270	Feet	FWCA

Note: * Field Borders May Impact – FWCA’s and Residue Management May Impact – FWCA’s and Geologically Hazardous Areas

Source: BCD 2016.

The NRCS also shows approximately 147 contracts over the 2011-2015 period addressing pest management, irrigation systems and management, tillage management, nutrient management, and others.

Agricultural Practices and Market Demand

Products that are grown sustainably and with attention to food safety are in demand by customers. Example programs include:

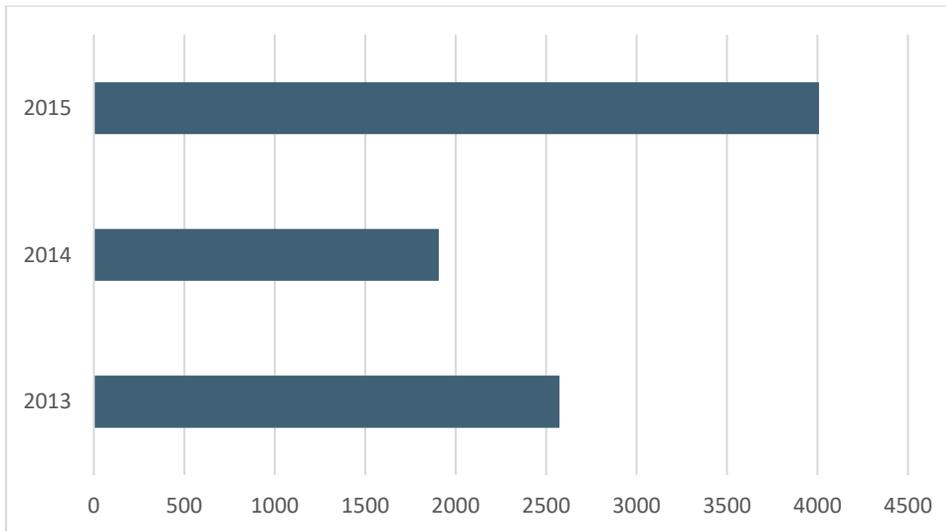
- Global GAP [Good Agricultural Practices], which asks producers about conservation practices, including how much land is set aside for habitat; in Benton County products certified include tree fruit, blueberries, and peppers/chilies. See Exhibit 3-5.
- Vinewise, an educational program that helps grape growers and vintners assess their practices against “industry standards of sustainability.” This self-assessment tool is scored. (Chateau Ste. Michelle, the largest winery in the state, requires all their growers to score themselves using the Vinewise checklist).
- LIVE provides third-party certification against a checklist that measures the level of environmental responsibility in winegrowers’ farming practices.
- SalmonSafe, a certification program that promotes practices that protect water quality and restore habitat. A grower can also be certified SalmonSafe through the LIVE Certified program.

Agricultural viability can be defined as the ability of a farmer or group of farmers to:

- productively farm on a given piece of land or in a specific area,
- maintain an economically viable farm business through experience, exploration, ingenuity and technology,
- keep the land in agriculture long-term, and
- steward the land so it will remain productive into the future.

~ Washington State Conservation Commission. Undated. Agricultural Viability Toolkit.

Exhibit 3-5. Benton County Global Gap Total Acreage Certified: 2013-2015



It appears from the website that certification lasts for one year. http://www.globalgap.org/uk_en/what-we-do/globalg.a.p.-certification/five-steps-to-get-certified/

Source: Global Gap, 2016.

There is also an increasing demand for organic products. The WSDA provides a checklist for crop producers to prepare an organic system plan.

Work Group members noted that switching from a crop like pears to raising grapes cuts irrigation water use in half.

3.5 AGRICULTURAL VIABILITY IMPORTANCE AND CHALLENGES

Based on Work Group discussion of the Benton County Agricultural Economy, water availability, an adequate agricultural land base, protection from natural and manmade damage, reasonable regulations, market infrastructure, and educational and technical assistance are important to Benton County's agricultural viability.

- Adequate agricultural water rights and resources – reliable water supplies that retain water rights for agriculture now and in the future are important. The Department of Ecology or irrigation districts could potentially provide monitoring and may contribute to stewardship work plans. Promoting coordinated efforts to increase water supply (e.g. Yakima Basin Integrated Plan) is important to maintaining agricultural stability during droughts.
- Adequate agricultural land resources base – increased development is a challenge for achieving the agriculture and conservation goals of the VSP. Sprawl and orchard conversion are happening. The cost of land is a problem. There is a need for succession planning. At the same time, there is a need to allow agriculture to expand. Where is agriculture the highest and best use? Where are critical areas that cannot be compromised? Are there priority corridors that can be retained and allow agriculture elsewhere? Often the corridors for wildlife are in areas that are not suited for growing, e.g. due to slopes or poor growing conditions in ravines.

- Reducing sources of agricultural damage by wildlife and pests is important to the agricultural economy and its viability. Some actions to address pest damage could be individual (e.g. integrated pest management), or applying research in the field from WSU-Extension or Technical Providers such as the Benton Conservation District. Other efforts regarding avoiding fire damage involve coordinated efforts by municipal, rural, and state fire suppression services.
- Reasonable regulatory standards (environmental and labor) – regulatory certainty is important and there should be an avoidance of excessive regulations. The regulations should be science-based.
- Adequate farm-to-market infrastructure – there has been vertical integration of production and distribution. In the lower valley, there is an issue with the amount of potable water for wineries and processing plants. How many more plants can be sustained? There should be an adequate supply of potable water for processing.
- Adequate community support, technical assistance, and public education – sufficient resources are needed. Regarding community support and engagement, it is important to counter-act an anti-agriculture bias in urban areas. Growers are stewards of their lands; they implement conservation practices and participate in market-based programs that promote sustainable practices such as GlobalGAP. Promoting college and university programs that provide research and education on agricultural businesses and conservation practices would help both growers and the broader community to understand and support a viable agricultural industry.

These conditions and challenges in Benton County were elaborated upon in a strengths, weaknesses, opportunities, and threats (SWOT) exercise by the Work Group.

A “SWOT” analysis is an exercise considering strengths, weaknesses, opportunities, and challenges/threats regarding Benton County’s Agricultural Economy and how to protect Agricultural Viability over the long term. See Exhibit 3-6.

Exhibit 3-6. Benton County Agricultural Viability: SWOT Analysis

<p style="text-align: center;">STRENGTHS</p> <p>What are the positive attributes of Benton County's agricultural economy?</p>	<p style="text-align: center;">OPPORTUNITIES</p> <p>What can be done to address weaknesses?</p>
<ul style="list-style-type: none"> ● Good soil type ● Abundant water ● Close to processing ● Export facilities within 200 miles ● Good roads/infrastructure ● Low energy costs ● Good climate for diverse crops ● Crop diversity ● Strong Ag. Organizations ● Availability of tech review/advice (WSU/Hanford/Battelle) ● Cooperation among producers 	<ul style="list-style-type: none"> ● Education ● Getting good data (R&D) ● Branding (3rd party) ● Climate change (new crop opportunities) ● Cheaper energy from solar ● Conservation of water/energy/inputs ● Mechanization (New technology, R&D) ● Increased demand (population)
<p style="text-align: center;">WEAKNESSES</p> <p>What local issues or characteristics limit opportunities?</p>	<p style="text-align: center;">CHALLENGES/THREATS</p> <p>What challenges and trends must be overcome in the future to promote Benton County's agricultural viability?</p>
<ul style="list-style-type: none"> ● Dependence on irrigation ● Lack of access to water ● Distance from markets ● Broken L&I system (cost to employee/employer – limited benefit when needed) ● Labor – hard to get ● Human nature – adaptability to change ● Yakima Basin - drought 	<ul style="list-style-type: none"> ● Lowering/removal of dams ● Growing anti-ag bias in urban areas ● Regulations/limits on inputs <ul style="list-style-type: none"> ○ Dept. of Ecology ○ ESA issues ● Climate change ● Urban sprawl ● Branding (3rd party verification) ● Higher energy costs ● Higher labor costs/more limited labor

In response to SWOT analysis and Work Group direction, specific agricultural viability aims, incentives, and outcomes are included in Section 7.3 of the Work Plan.

4.0 Background Information, Other Plans, and Regulations

Consistent with the requirements of RCW 36.70A.700, the Working Group reviewed existing water quality, watershed management, farmland protection, and species recovery data and plans. This review identifies critical area and agricultural viability issues that have been recognized by past planning efforts within the county, as well as proposed strategies to address those issues. These plans were developed for varying reasons, the scale and scope of which may differ from the VSP Work Plan. Specifically, the Work Plan is to rely on voluntary stewardship “as the primary method of protecting critical areas and not require cessation of agricultural activities” (RCW 36.70A.700). Existing watershed planning documents can help the Working Group identify issues and strategies already identified by the watershed planning groups. These planning documents may help focus efforts to promote voluntary enhancement of critical area functions and values (above the critical area protection baseline) through incentive-based measures.

Many existing federal, state, and local regulations and programs apply to agricultural activities, independent of County critical area regulations. These regulations are outside of the purview of the VSP, yet they provide context of the regulatory background within which agricultural activities operate within the county.

The following section provides a summary of related plans reviewed and the regulatory setting within Benton County. More details are provided in Appendix C.

4.1 RELATED PLANS

Watershed Planning under the Watershed Management Act (Chapter 90.82 RCW)

Watershed Planning under the Watershed Management Act was completed for the Yakima Basin and the Rock/Glade Watershed. Watershed planning goals in each of the basins focus on the following:

- Restoring or maintaining the reliability of surface water supplies for both in-stream and out-of-stream uses;
- Protecting, improve, and sustain groundwater quantity and pumping levels of aquifers for the benefit of current and future use (Yakima Basin); and
- Protecting surface and groundwater from contamination (Yakima Basin).

Watershed planning goals served as a basis for understanding key ecological issues and recommendations related to agricultural activities in each watershed in Benton County.

Subbasin Planning

Similar to WRIA watershed planning goals, sub-basin plans served as a basis for understanding key ecological issues and recommendations related to agricultural activities. Subbasin plans were

completed in 2004 as a part of the Fish and Wildlife Program for the Northwest Power and Conservation Council. Plans for the Lower Mid-Columbia Subbasin and the Yakima Subbasin, identified focal species and habitats of conservation concern. Focal fish species include bull trout, steelhead, spring Chinook, fall Chinook, sockeye, and Pacific lamprey. Focal wildlife species include western toad, sandhill crane, white-headed woodpecker, Lewis' woodpecker, western gray squirrel, mule deer, sage grouse, Brewer's sparrow, yellow warbler, mallard, and beaver. These species were associated with focal habitats, including montane coniferous wetland, ponderosa/Oregon white oak, interior shrub-steppe, and riparian wetlands. Plans address issues of instream flow and water reliability, instream habitat degradation, and water quality, as well as wildlife habitat loss and degradation.

Integrated water resource management planning in the Yakima River Basin

The Yakima River Integrated Water Resource Management Plan followed Watershed Planning efforts. Its purpose is to develop an integrated, system-wide approach to water storage, distribution, and conservation, and fish habitat enhancement. Proposals include building new and expanded reservoirs, providing fish passage at all Reclamation dams, improving irrigation and water delivery infrastructure, and investing in fish and wildlife habitat protection and improvement projects. A Programmatic Environmental Impact Statement, completed in 2012, serves as a framework for the plan. The Yakima River Integrated Water Resource Management Plan will help to enhance instream flow and habitat over time, and it is referenced under enhancement benchmarks in this Work Plan.

Total Maximum Daily Load studies and implementation plans

Total Maximum Daily Loads (TMDL) are established for streams, rivers, and waterbodies with impaired water quality conditions. Development of a TMDL involves monitoring water quality, identifying contaminant sources, establishing water quality targets, identifying load allocations, and developing implementation plans. Only point source pollutants are regulated through water quality-based effluent limitations in TMDLs. Non-point source pollutants are addressed through voluntary measures through education, outreach, and individual and cooperative implementation of water quality improvement projects.

In Benton County, a TMDL was established for suspended sediment in 1998. Subsequent monitoring in 2003 noted a dramatic reduction in suspended sediment in the Lower Yakima River. In 2006, Ecology began a new TMDL to target human health exceedances of DDT loads in the Yakima River, as well as other toxic compounds. TMDLs are referenced in protection and enhancement benchmarks in this Work Plan.

Lower Yakima Habitat Assessment

In 2011, the BCD led an assessment of the Lower Yakima River within Benton County, which identified instream habitat issues, as well as restoration opportunities. The assessment, completed in 2010 can contribute to the baseline understanding of critical areas in Benton County. The assessment identified the following as high priority restoration actions:

- Yakima River Delta and Bateman Island Causeway- investigate benefits of removal to instream temperature
- Fish screening and irrigation water conservation- half of intakes on Lower Yakima River not compliant with current fish screening practices
- Restoration of riparian buffers
- Side-channel restoration and protection (Prosser to Richland)
- Off-channel restoration and re-connectivity (Benton City to Richland)
- Island and floodplain protection (Benton City and West Richland)
- Protection, enhancement, and further analysis of thermal refugia potential
- Water stargrass management
- Large woody debris management at Prosser dam and supplementation
- Levees and flooding (e.g., Yakima delta)

The Lower Yakima Habitat Assessment provided Benton County-specific recommendations that helped the Work Group understand priority ecological issues along the Lower Yakima River. These were integrated into Work Plan objectives.

Species recovery planning

Similar to WRIA watershed planning goals and subbasin plans, species recovery plans served as a basis for understanding key ecological issues and recommendations related to agricultural activities.

Fish Species

Bull Trout and Middle Columbia River Steelhead are federally threatened species under the Endangered Species Act (ESA) that occur in Benton County. Recovery planning, required by the ESA, incorporated locally-written, basin-specific voluntary recovery plans, that incorporate local population information and priorities. In Benton County, these plans include the Yakima Bull Trout Action Plan (2012), the Yakima Steelhead Recovery Plan (2009), and the Recovery Plan for the Klickitat River Population of the Middle Columbia River Steelhead Distinct Population Segment (2009). It should be noted that most recovery recommendations apply to areas upstream from Benton County.

Upland Species

The U.S. Fish and Wildlife Service and WDFW have developed recovery plans for several species listed by the federal or Washington State Endangered Species Act. Recovery plans have been developed for the following species that may occur within areas used for agricultural activities in Benton County: Ferruginous hawk (state), Greater sage grouse (state and federal), and gray wolf (federal).

More detail on specific recovery actions is included in Appendix C.

Shrub-Steppe Habitat

The WDFW mapping of Priority Habitats and Species (PHS) identifies expansive PHS occurrences throughout the county, particularly in shrub-steppe habitats. Recent efforts from multiple agencies and organizations have focused on identifying and prioritizing key areas for shrub-steppe habitats in Washington State and the Columbia Plateau Region. These efforts include the Arid Lands Initiative (SAH Ecologia and Arid Lands Initiative Team 2014) and the Washington Connected Landscapes Project (Washington Wildlife Habitat Connectivity Group 2010, 2012, 2013), both of which represent a partnership of public, private, and tribal interests. These efforts use a focal species approach to identifying habitat concentration areas, habitat linkages, and key pinch points and barriers to habitat connectivity. Focal species were selected based on criteria such as representation of the Columbia Plateau's vegetation types, representation of key threats (e.g., climate change), ability to serve as an "umbrella" for other candidates, and information availability. The following, 11 focal species were selected:

- sharp tailed grouse
- greater sage-grouse
- black-tailed jackrabbit
- white-tailed jackrabbit
- Townsend's ground-squirrel
- Washington ground squirrel
- least chipmunk
- mule deer
- Western rattlesnake
- beaver
- tiger salamander

See Appendix E for habitat and shrub-steppe maps.

Benton County Groundwater Plan

Benton County is in the early phases of developing a groundwater management plan. The work products from the Benton Groundwater Planning process will be considered in focusing the area of targeted outreach for groundwater protection, as well as the conservation practices recommended for those areas. Groundwater quality monitoring data collected by the Benton Groundwater Planning process will be considered by the Work Group during reporting cycles, when reasonably available, and this review of groundwater quality trends could inform additional actions or Work Plan modifications by the Work Group.

Related Plans and Agricultural Activities

Based on the related plans summarized above and in Appendix C, agricultural activities of focus would include:

- Nutrient sources applications in critical aquifer recharge areas and in hydrologic study areas.
- Irrigation practices where sedimentation of hydrologic study areas is of concern.
- Irrigation efficiencies and return flows to support fish-bearing streams.
- Livestock grazing practices along hydrologic study areas and shrub-steppe lands.
- Agricultural activities in areas of landscape connectivity between large shrub-steppe lands.

4.2 REGULATORY BACKSTOP

In addition to watershed-level plans, existing federal, state, and local regulations and voluntary programs apply to agricultural activities throughout Benton County. These provisions provide a regulatory or programmatic backstop, which can help provide assurances that the voluntary nature of the VSP can effectively conserve critical areas. Appendix D summarizes the application of existing federal, state, and local regulations to agricultural activity in Benton County.

It is important to note that VSP does not “limit the authority of a state agency, local government, or landowner to carry out its obligations under any other federal, state, or local law” (RCW 36.70A.702).

Relevant Federal Regulations

Key federal regulations that serve as a regulatory backstop are briefly summarized here and described in detail in Appendix D.

- **Water Quality and Wetland Fill:** The Clean Water Act encompasses Section 303(d) water quality standards and TMDLs, the National Pollutant Discharge Elimination System (NPDES), Section 404 protections for wetlands and streams, and Section 401 water quality certification requirements for discharge of Safe Drinking Water Act (SDWA).

Section 404 of the Clean Water Act regulates new fill of wetlands or streams, including fill associated with new agricultural activities (ongoing agricultural activities are generally exempted from Section 404 permits). The VSP Work Plan relies on this regulatory backstop to help maintain the area of existing wetlands intersecting with agriculture.

NPDES permits are not required for most agricultural activities, as they are considered non-point sources of pollutants. Agricultural stormwater discharges and return flows from irrigated agriculture are specifically exempted from NPDES permit requirements. NPDES permits are required for discharge from concentrated animal feed operations (CAFOs). A general NPDES permit for CAFOs was issued in 2006 and expired in 2011. A draft general NPDES permit for CAFOs is under development.

Normal ongoing farming, silviculture, and ranching practices such as plowing, cultivating, minor drainage, and harvesting for the production of food, fiber, and forest products, or upland soil and water conservation practices are generally exempt from Section 404.

- Water Pollution Control: State water pollution control law (RCW 90.48) prohibits the discharge of any polluting matter into the surface or groundwater of the state (including wetlands), and requires “the use of all known available and reasonable methods ... to prevent and control the pollution of the waters of the state of Washington.”
- Endangered species: The ESA prohibits the “take” of species federally listed as threatened or endangered. Projects with potential to affect listed species that involve federal funding, action, or approval require consultation with the National Marine Fisheries Service and/or U.S. Fish and Wildlife Service.
- Federal laws regulating the use of pesticides include the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) and the Food Quality Protection Act.

Relevant State Regulations

A wide range of Washington State regulations apply to agriculture. Key provisions that provide a regulatory backstop for the VSP are briefly summarized here and described in detail in Appendix D.

- Water Pollution Control: State water pollution control law (RCW 90.48) prohibits the discharge of any polluting matter into the surface or groundwater of the state (including wetlands), and requires “the use of all known available and reasonable methods ... to prevent and control the pollution of the waters of the state of Washington.”
- Pesticides: Pesticides are regulated under the Washington Pesticide Control Act (15.58.020 RCW) and Washington Pesticide Application Act (17.21 RCW).
- In-water work: The hydraulic code (77.55 RCW) gives WDFW the authority to review, condition, and approve or deny “any construction activity that will use, divert, obstruct, or change the bed or flow of any of the salt or fresh waters of the state.” This authority does not extend to irrigation ditches, canals, storm water runoff devices, or other artificial watercourses except where they exist in a natural watercourse that has been altered artificially. WDFW review under the hydraulic code supports protection of instream habitat functions.
- Water Rights: The water code (90.03 RCW) establishes water rights appropriation standards and procedures with a “first in time, first in right” clause. Water rights adjudication limits the timing, location, and quantity of water that may be withdrawn from the Yakima River. This supports protection of water quantity functions of surface waters.
- Fish Screens: The Revised Code of Washington (RCW 77.57) states that all water diversion devices must have compliant fish screens. An HPA [hydraulic project approval] is required for all construction or repair/replacement of any structure that crosses a stream, river, or other water body regardless of the location of the proposed work relative to the OHWL of state

waters. When a fish passage barrier is replaced, the crossing needs to be fish passable (WAC 220-660-190). This standard provides a regulatory backstop to prevent a proliferation of unscreened diversions.

- **Instream Flow:** The minimum water flows and levels act (90.22 RCW) permits Ecology to establish minimum flows or levels on streams and lakes by regulation for the purpose of protecting fish and wildlife, recreational or aesthetic values, or water quality.
- **Water Quality:** The dairy nutrient management act (90.64 RCW) requires all dairy producers, regardless of size to prepare and implement a dairy nutrient management plan, register with WSDA, and participate in a program of regular inspections and compliance. The Department of Ecology is responsible for developing and maintaining a standard protocol for water quality monitoring of the waters of the state within the vicinity of dairies and CAFOs.
- **Noxious Weeds:** The State and regional Noxious Weed Control Boards classify noxious weeds. 17.10 RCW establishes an owner's duty to eradicate all class A noxious weeds and to control and prevent the spread of all class B noxious weeds. The Work Plan defers to the Noxious Weed Control Boards' regulatory authority for the control Class A and B noxious weeds.

Relevant County Regulations

County regulations that may affect agricultural activities include zoning code designations, which direct uses, building bulk, scale, and location, and other design considerations.

The Benton County Shoreline Master Program (SMP) addresses shoreline uses, conservation, and public access along shoreline waterbodies with mean annual flow over 20 cubic feet per second, lakes over 20 acres in size and an area 200 feet landward of these waters plus associated wetlands, floodways, and up to 200 feet of floodway-contiguous floodplains. The Benton County SMP only applies to agriculture when new land is brought into production within shoreline jurisdiction (WAC 173-26-241 (3)(a)), and it does not apply to replacement, maintenance, or repair of existing agricultural facilities. The SMP does not need to incorporate the VSP Work Plan. The SMP cannot limit or modify agricultural activities as defined in the SMA (essentially existing, ongoing agriculture). The VSP Work Plan should apply wherever agriculture and critical areas exist inside or outside of shoreline jurisdiction.

The County also addresses flood hazard management regulations to maintain flood insurance eligibility and address health and safety.

Voluntary Programs

Agricultural producers participate in numerous voluntary industry programs that may contribute to the protection or voluntary enhancement of critical areas. It is important to note that these programs are dynamic and influenced by changing federal regulations, industry norms, and market conditions. Producers may indirectly participate in VSP through involvement in any one of these voluntary programs or through their independent initiative without the use of a federal,

state, or non-profit incentive program. VSP participation is described in more detail in Chapter 7.2.

Summary of Regulations Relied Upon in Work Plan

Work Plan goals and benchmarks rely on the following elements of the county, state, and federal regulatory backstop:

- Water right adjudication and minimum instream flows.
- Rely on existing and future regulations pertaining to groundwater withdrawals.
- TMDLs for suspended sediment and toxics (state and federal).
- Federal and state wetland regulatory backstop.
- Pesticide regulations (state and federal).
- County flood hazard management regulations, in addition to this VSP Work Plan goals and benchmarks.
- Control of Class A and B noxious weeds.

5.0 Baseline Conditions

The effective date of the VSP legislation is July 22, 2011. This is the statutory date from which a baseline of critical area functions and agricultural viability will be evaluated (RCW 36.70A.703). This chapter documents our best approximation of the mapped intersection of agriculture and critical areas in Benton County as it occurred in 2011, as well as the change in the distribution of agriculture relative to critical areas from 2011 to 2015.

Voluntary conservation measures implemented from 2011 to 2015 in cooperation with the BCD and NRCS, as well as other voluntary market-based programs such as GlobalGAP, are summarized in Chapter 3. Most of them involve irrigation efficiencies and residue and tillage management. Between 2011 and 2015, highlights of conservation measures resulting in improvements to the critical area baseline included:

- BCD worked with willing landowners on two riparian restoration projects along the Yakima River resulting in 650 lineal feet of improved riparian functions and values.
- Three contracts for CREP facilitated by BCD resulted in 20,948 lineal feet of improved fish and wildlife habitat conservation areas, wetlands, and frequently flooded areas.
- The NRCS established two contracts lasting from 2008 to 2011 addressing restoration and management of rare and declining habitats (locations unspecified).
- Twelve contracts for fish screens through BCD efforts benefited fish and wildlife habitat conservation areas and frequently flooded areas.
- In addition, in 2015, the Badger Mountain Irrigation District installed six new, belt-driven fish exclusion screens at its existing water diversion intake from the Yakima River.
- The Kennewick Irrigation District and the Office of Columbia River partnered to increase streamflows in the Yakima River through the Red Mountain AVA Pump Project. The project added 11,005 acre-feet of water to a low-flowing stretch of the river (between Prosser and Kiona) that is critical to salmon survival.

In addition to measures implemented based on funding or market-based programs, many individual agricultural producers have independently invested in conservation measures, such as irrigation efficiencies, where market factors support such changes.

5.1 INTERSECTION OF AGRICULTURE AND CRITICAL AREAS

Methods

The Washington State Department of Agriculture (WSDA) maintains a periodically updated map of agricultural activities (excluding rangelands) in Benton County. Agricultural attributes are updated by WSDA staff via ground surveys or by using outside sources such as USDA's NASS Cropland Data Layer, obtaining data from producers, enlisting help from Conservation Districts, etc. This land use data is published annually at the section-level, but due to limited resources, the entire state is not updated annually. WSDA strives to maintain a minimum four-year refresh schedule, with a target goal of every two or three years. For Benton County, WSDA agricultural data were available for 2011 and 2015.

In addition to the WSDA data, the BCD provided datasets of agricultural lands, published in 2016, which supplement the WSDA layer. Areas identified in the BCD data that do not overlap with the WSDA layer were added to the agricultural mapping. Agricultural irrigation drains and wasteways are not included in the mapping of agricultural activities, although these features are considered agricultural activities (see definitions in Chapter 10).

Rangelands were mapped based on spatial datasets from the County assessor, the BCD, Bureau of Land Management (BLM), and Department of Ecology. Because grazing is no longer permitted within the Hanford Site, any rangelands mapped within Hanford Site were removed.

As with any large-scale mapping effort, it is important to remember that mapping reflects best available information at a given point in time. Apparent differences among years may reflect actual changes on the ground or differences or improvements in the accuracy of mapping methods. For example, the 2015 WSDA map includes wet pasture areas that were present, but not identified in the 2011 WSDA mapping. Additionally, approximately 1,722 acres were identified as enrolled in CRP program in 2015, which were not previously identified as agriculture in 2011. This difference is more likely a result of reporting discrepancies than conversion of new land to CRP. Additionally, some apparent changes in agricultural activities may be transient; for example, we recognize that 2015 was a dry year, which resulted in many junior water rights holders temporarily fallowing fields. Approximately 1,950 acres were fallowed as a result of low water availability in the Roza Irrigation District in Benton County, and another approximately 800 acres were fallowed in the Sunnyside Valley Irrigation District in Benton County (S. Defoe, personal communication). As a result, depending on how and when data were collected, irrigated agricultural acreage may be under-represented in the 2015 WSDA data.

In order to provide the most accurate and representative depiction of agricultural activities in 2011, we started with the most recent map, which included the 2015 WSDA map supplemented with BCD and rangeland mapping. We then identified areas of change between 2011 and 2015. The Working Group vetted differences between the 2011 and 2015 WSDA maps to identify results from actual changes to agricultural activities versus those that are likely a reflection of data error or changes in mapping methodology. The group determined that areas over one acre that were either identified as dryland agriculture or not identified in the 2011 WSDA map, which changed to irrigated agriculture in 2015 generally represented an actual change in agricultural distribution. Areas that changed to dryland agriculture or areas not identified in the WSDA 2015 map were considered a result of differences in mapping categorization methodology rather than on-the-ground changes.

This 2011 baseline was intersected with the most recent available information on critical areas based on the assumption that critical areas mapping is improved over time, and changes typically represent advances in accuracy and completeness of mapping efforts rather than actual changes to critical area occurrence. It is important to recognize that critical area mapping is completed at the watershed-scale, and that actual occurrence of critical areas is confirmed at the site-scale. In some cases, areas that are mapped as a given critical area feature may not meet the criteria to be a critical area (i.e. wholly artificial wetlands are not considered a critical area). A detailed description of critical area mapping data is provided in Appendix B.

Results

Intersection of Agriculture and Critical Areas

The total acreage of agricultural activities and the intersection of agricultural activities with critical areas in Benton County in 2011 are summarized in Exhibit 5-1 to Exhibit 5-4.

Irrigated agricultural intersects with floodplains, the hydrologic study area, and critical aquifer recharge areas disproportionately more than areas of dryland agriculture and rangeland. In the Lower Yakima watershed, approximately one-third of the area of wetlands and hydrologic study area intersecting irrigated agriculture occurs in Barker Ranch, an area with conservation easements maintained as flooded wetlands for waterfowl and other wildlife. In the Rock-Glade watershed, wetlands in Umatilla National Wildlife Refuge (NWR) and near Hover Park compose the majority of wetlands mapped as rangeland area and approximately half of the wetlands mapped in irrigated agriculture.

The great majority of dryland agriculture and rangeland intersects with some type of priority species or habitat. Predominant priority species areas intersecting agriculture include the following: elk (108,413 ac), mule deer (7,884 ac), sage grouse (5,991 ac)¹³, and waterfowl concentrations (5,216 ac). Predominant priority habitats include shrub-steppe (60,325 ac) and cliffs (1,997 ac). More detailed analyses of specific priority habitats and species are included in Appendix F.

In the Alkali-Squillchuck watershed (Exhibit 5-2), approximately 95 percent of agricultural activities overlap with a mapped priority habitat or species. The primary sources of this overlap include chukar habitat, cliffs and bluffs, and shrub-steppe.

In the Lower Yakima watershed (Exhibit 5-3), mapped areas of priority habitats and species overlap with most areas of dryland and rangeland activities (67 percent and 98 percent of total area, respectively), and to a lesser extent with irrigated agricultural activities (44 percent of total area). This overlap is predominantly associated with shrub-steppe and elk habitat.

In the Rock-Glade watershed (Exhibit 5-4), 17.5 percent of the total area of agricultural activities overlaps with a mapped critical area, a relatively low percentage relative to the other watersheds in the county. The largest intersection with a mapped critical area comes from the intersection between well drained soils (NRCS hydrologic soil group A) and irrigated agriculture (54,308 acres).

¹³ The acreage for sage grouse habitat comes from WDFW's PHS data; however, sage grouse are not currently present in Benton County.

Exhibit 5-1. Intersection of Agricultural Activities and Critical Areas in Benton County in 2011

	COUNTYWIDE- ACRES				PERCENT
	DRYLAND	IRRIGATED	RANGELAND	TOTAL	
Total Agricultural Acres	327,335	271,112	92,271	690,718	
Frequently Flooded Areas					
500-year floodplain	26	432	12	479	0.1%
100-year floodplain	3,023	6,549	2,636	12,207	1.8%
Floodway	2	1,467	13	1,483	0.2%
Wetlands	21	1,692	997	2,710	0.4%
Barker Ranch	0	543	2	545	0.1%
Umatilla NWR	0	105	567	671	0.1%
Hover Park and North	0	111	202	313	0.0%
Hydrologic Study Area¹⁴	977	6,606	3,134	10,717	1.6%
Barker Ranch	0	1,020	2	1,022	0.1%
Umatilla NWR	0	255	1,206	1,461	0.2%
Hover Park and North	1	166	364	531	0.1%
Geologically Hazardous Areas					
Slopes >15%	30,097	14,628	32,640	77,365	11.2%
Channel migration zone	7	1,152	166	1,326	0.2%
Liquefaction- Moderate to High	5,756	6,300	2,251	14,307	2.1%
Landslides	967	394	3,167	4,528	0.7%
Critical Aquifer Recharge Areas					
10-year travel time wellhead protection areas	1,052	4,113	963	6,128	0.9%
Alluvial parent material or Hydrologic soil group A	NA	87,577	NA	87,577	12.7%
Aqueducts, Canals, and Siphons	183	2,268	575	3,026	0.4%

¹⁴ This area of intersect may decrease depending on the County's critical areas ordinance and County determination of which features qualify as a Fish and Wildlife Habitat Conservation Area.

	COUNTYWIDE- ACRES				
	DRYLAND	IRRIGATED	RANGELAND	TOTAL	PERCENT
Fish and Wildlife Habitat Conservation Areas					
Priority Habitats and Species	67,449	14,326	70,460	152,244	22.0%
Total Intersect	91,865	97,472	74,502	263,838	38.2%

Exhibit 5-2. Intersection of Agricultural Activities and Critical Areas in Alkali-Squilchuck Watershed (WRIA 40) in Benton County in 2011

	ALKALI-SQUILCHUCK (WRIA 40)- ACRES				
	DRYLAND	IRRIGATED	RANGELAND	TOTAL	PERCENT
Total Agricultural Acres	776	248	860	1,883	
Frequently Flooded Areas					
500-year floodplain	0	0	0	0	0.0%
100-year floodplain	0	164	23	187	9.9%
Floodway	0	0	0	0	0.0%
Wetlands	0	0	1	1	0.1%
Hydrologic Study Area	0	1	17	18	0.9%
Geologically Hazardous Areas					
Slopes >15%	647	60	743	1,450	77.0%
Channel migration zone	0	0	0	0	0.0%
Liquefaction- Moderate to High	0	0	22	22	1.2%
Landslides	522	0	234	756	40.1%
Critical Aquifer Recharge Areas					
10-year travel time wellhead protection areas	0	0	0	0	0.0%
Alluvial parent material or Hydrologic soil group A	NA	0	NA	0	0.0%
Aqueducts, Canals, and Siphons	0	0	0	0	0.0%
Fish and Wildlife Habitat Conservation Areas					
Priority Habitats and Species	776	52	729	1,558	82.7%
Total Intersect	776	226	793	1,795	95.3%

Exhibit 5-3. Intersection of Agricultural Activities and Critical Areas in Lower Yakima Watershed (WRIA 37) in Benton County in 2011

LOWER YAKIMA (WRIA 37)- ACRES					
	DRYLAND	IRRIGATED	RANGELAND	TOTAL	PERCENT
Total Agricultural Activities	94,329	68,477	63,313	226,119	
Frequently Flooded Areas					
500-year floodplain	26	401	12	448	0.2%
100-year floodplain	358	3,456	501	4,316	1.9%
Floodway	2	1,467	13	1,483	0.7%
Wetlands	12	1,284	131	1,427	0.6%
Barker Ranch	0	543	2	545	0.2%
Hydrologic Study Area¹⁵	428	3,322	764	4,514	2.0%
Barker Ranch	0	1,020	2	1,022	0.5%
Geologically Hazardous Areas					
Slopes >15%	13,769	3,976	24,204	41,949	18.6%
Channel migration zone	7	1,152	166	1,326	0.6%
Liquefaction- Moderate to High	771	4,655	1,467	6,893	3.0%
Landslides	352	191	2,252	2,794	1.2%
Critical Aquifer Recharge Areas					
Assigned well group areas A&B	1,112	8,048	1,058	10,218	4.5%
10-year travel time wellhead protection areas	620	3,484	797	4,901	2.3%
Alluvial parent material or Hydrologic soil group A	NA	17,857	NA	17,857	7.9%
Aqueducts, Canals, and Siphons	179	1,195	502	1,876	0.8%
Fish and Wildlife Habitat Conservation Areas					
Priority Habitats and Species	62,509	10,594	58,762	132,865	58.8%
Total Intersect	67,265	30,685	60,402	158,351	70.0%

¹⁵ This area of intersect may decrease depending on the County's critical areas ordinance and County determination of which features qualify as a Fish and Wildlife Habitat Conservation Area.

Exhibit 5-4. Intersection of Agricultural Activities and Critical Areas in Rock-Glade Watershed (WRIA 31) in Benton County in 2011

ROCK-GLADE (WRIA 31)- ACRES					
	DRYLAND	IRRIGATED	RANGELAND	TOTAL	PERCENT
Total Agricultural Acres	232,230	202,387	28,099	462,716	
Frequently Flooded Areas					
500-year floodplain	0	31	0	31	0.0%
100-year floodplain	2,664	2,928	2,112	7,704	1.7%
Floodway	0	0	0	0	0.0%
Wetlands					
Umatilla NWR	0	105	557	661	0.1%
Hover Park and North	0	111	202	313	0.1%
Hydrologic Study Area					
Umatilla NWR	0	255	1,206	1,461	0.3%
Hover Park and North	1	166	364	531	0.1%
Geologically Hazardous Areas					
Slopes >15%	15,681	10,593	7,693	33,966	7.3%
Channel migration zone	0	0	0	0	0.0%
Liquefaction- Moderate to High	4,973	1,787	763	33,966	7.3%
Landslides	93	203	681	977	0.2%
Critical Aquifer Recharge Areas					
10-year travel time wellhead protection areas	432	629	166	1,227	0.3%
Alluvial parent material or Hydrologic soil group A	NA	69,720	NA	69,720	15.1%
Aqueducts, Canals, and Siphons	4	133	73	210	0.0%
Fish and Wildlife Habitat Conservation Areas					
Priority Habitats and Species	3,164	3,680	10,979	17,822	3.9%
Total Intersect	23,825	66,561	13,307	103,693	22.4%

Change in Agriculture from 2011 to 2016

The approximate area of change in agricultural activities between 2011 and 2016 in Benton County is summarized in Exhibit 5-5.

Exhibit 5-5. Change in Agricultural Activities from 2011 to 2016

LAND USE IN 2011	LAND USE IN 2016	AREA OF CHANGE (ACRES)			
		BENTON COUNTY OVERALL	ALKALI-SQUILCHUCK	LOWER YAKIMA	ROCK-GLADE
Dryland agriculture	Irrigated agriculture	4,681	0	1,231	3,450
Not classified	Irrigated agriculture	5,712	41	3,190	2,481
Total increase in irrigated agriculture		10,393	41	4,392	5,931

Areas shifting from dryland to irrigated agriculture were predominantly converted to potatoes (1,049 acres), corn (802 acres), wheat (728 acres), and apple (504 acres).

Areas categorized as new irrigated agriculture from areas not characterized as agriculture in 2011 were predominantly wine grapes (2,211 acres). The new acreage of wine grapes occurred in the Horse Heaven Hills and Red Mountain American Viticultural Areas (AVAs). Impacts to shrub-steppe habitat resulting from a 670-acre irrigated vineyard development in the Red Mountain AVA were mitigated by Kennewick Irrigation District and Ecology through a payment of \$1 million to WDFW. The money was used to purchase a conservation easement for 2,900 acres of elk and butterfly habitat in the North Fork Cowlitz Canyon in Yakima County. Although this mitigation area is outside of Benton County, it is within the same watershed as the impact area and it contributes to regional habitat area and connectivity.

Exhibit 5-6 summarizes the intersect between the new irrigated agriculture area and mapped critical areas. The most significant changes to the intersect area occurred through an increase in the intersect with both critical aquifer recharge areas and priority habitats and species in the Lower Yakima and Rock-Glade watersheds. Much of the change in the priority habitats and species intersect resulted from an intersect with shrub-steppe habitat (1,440 acres countywide). As noted above, the impacts to 670 acres of shrub steppe in the Red Mountain area was mitigated in neighboring Yakima County.

Exhibit 5-6. Change in Intersect of Agricultural Activities and Critical Areas from 2011 to 2016 in acres

	BENTON COUNTY			ALKALI-SQUILCHUCK			LOWER YAKIMA			ROCK-GLADE		
	COUNTYWIDE			WRIA 40			WRIA 37			WRIA 31		
	Dryland To Irrigated	Not Classified To Irrigated	Total	Dryland To Irrigated	Not Classified To Irrigated	Total	Dryland To Irrigated	Not Classified To Irrigated	Total	Dryland To Irrigated	Not Classified To Irrigated	Total
Total Area of Change in Agricultural Activities	4,681	5,712	10,393	0	41	41	1,231	3,190	4,392	3,450	2,481	5,931
Frequently Flooded Areas												
500-year floodplain	0	10	10	0	0	0	0	10	10	0	0	0
100-year floodplain	7	213	220	0	26	26	0	136	136	7	53	53
Floodway	0	68	68	0	0	0	0	70	70	0	0	0
Wetlands	3	59	59	0	0	0	3	29	32	0	29	29
Hydrologic study area (SF)	16	146	162	0	0	0	13	84	97	2	62	64
Geologically Hazardous Areas												
Slopes>15%	41	224	265	0	0	0	13	56	69	28	168	196
Channel migration zone	0	11	11	0	0	0	0	17	17	0	0	0
Liquefaction-moderate to high	69	215	284	0	0	0	69	213	282	0	2	2
Landslides	0	0	0	0	0	0	0	0	0	0	0	0

	BENTON COUNTY			ALKALI-SQUILCHUCK			LOWER YAKIMA			ROCK-GLADE		
	COUNTYWIDE			WRIA 40			WRIA 37			WRIA 31		
	Dryland To Irrigated	Not Classified To Irrigated	Total	Dryland To Irrigated	Not Classified To Irrigated	Total	Dryland To Irrigated	Not Classified To Irrigated	Total	Dryland To Irrigated	Not Classified To Irrigated	Total
Critical Aquifer Recharge Areas												
10-year travel time wellhead protection areas	0	49	49	0	0	0	0	18	18	10	31	23
Alluvial parent material or Hydrologic soil group A	261	1,582	1,843	0	0	0	220	885	1,105	41	697	738
Aqueducts, Canals, and Siphons	24	38	62	0	0	0	24	31	55	0	7	7
Fish and Wildlife Habitat Conservation Areas												
Priority Habitats and Species and Natural Heritage Plant Communities	63	1,650	1,711	0	2	0	63	1,232	1,295	0	415	415
Total Intersect	1,267	2,780	4,046	0	28	28	771	2,037	2,808	496	715	1,211

Noxious Weeds

Noxious weeds are invasive, non-native plants that can threaten agricultural crops, local ecosystems or fish and wildlife habitat, and that are required to be controlled per state laws, including:

- [RCW 17.10](#), (Revised Code of Washington) is the state's basic weed law.
- [WAC Chapter 16-750](#) includes the state Noxious Weed List, definitions and descriptions of region boundaries for Class B weeds, and the schedule of monetary penalties.
- [WAC Chapter 16-752](#) describes the quarantine list maintained by the state Department of Agriculture. (The state law that calls for the creation and maintenance of the quarantine list is RCW 17.24.)
- Federally owned lands are also subject to the [Plant Protection Act of 2000 \(Pub. L. 106-224 Title IV Sec. 411-442\)](#), amended by the [Noxious Weed Control and Eradication Act of 2004](#), and [Executive Order 13112](#).

There are three types of noxious weeds identified in the state law:

- Class A consists of those noxious weeds not native to the state that are of limited distribution or are unrecorded in the state and that pose a serious threat to the state;
- Class B consists of those noxious weeds not native to the state that are of limited distribution or are unrecorded in a region of the state and that pose a serious threat to that region;
- Class C consists of any other noxious weeds. Benton County Noxious Weed Board has selected Class C noxious weeds that are already widespread in Washington State and are of special interest to the state's agricultural industry.

Benton County Noxious Weed Board has created lists of each class of weed, per Appendix K. Maps have been compiled from the Washington Department of Agriculture in 2016 that shows the level of infestation at a county scale illustrating a range of acres of presence. See Appendix K. The amount of actual intersect within critical areas and agricultural land is unknown.

6.0 Technical Service Providers

As mandated by VSP legislation, the work plan will need to identify technical assistance providers who will work with agricultural operators to ensure individual stewardship plans contribute to the overall goals and benchmarks of Benton County's VSP work plan (RCW 36.70A.720). The Work Group has been tasked with designating one or more entities to ensure technical assistance and outreach is adequately provided to the agricultural operations in Benton County. Exhibit 6-1 identifies each of these roles and summarizes the services of the lead and supporting technical entities

6.1 ROLE OF TECHNICAL ASSISTANCE PROVIDERS

For the purposes of this work plan the following roles are established for technical assistance providers:

- Administration of work plan monitoring and implementation: Benton County Planning Department (e.g. submit work plan monitoring reports once Work Group approved; transfer SCC funds to BCD; track participation of Work Group members to ensure that Work Group formed by County is well represented).
- Lead technical assistance provider: Benton Conservation District (BCD). Lead technical assistance provider will be responsible for outreach to agricultural producers, including assisting in completion of individual stewardship plans. The lead technical assistance providers will also have the primary responsibility for entering data and maintaining the tracking tool. The tracking tool is a primary mechanism to quantify implementation progress toward critical area goals and benchmarks. BCD will present monitoring results to Work Group and prepare monitoring reports that County will submit.
- Supporting technical assistance provider: Washington State University Extension. The Work Group may contract the supporting technical provider where more expertise is needed.
- Additional sources of specialty assistance, advocacy, and outreach: Many are members of the Work Group and helped develop the Work Plan Goals and Benchmarks and would review monitoring results and offer their perspectives. The Work Group may contract the sources of specialty assistance as appropriate. The following agencies and associations could also be outlets by which participation in the VSP program in Benton County can be encouraged. * = Those participating in the Benton VSP Work Group as of 2018.

- Natural Resources Conservation Service
- Washington Department of Ecology*
- Washington Department of Fish and Wildlife*
- Benton County Water Conservancy Board
- Tapteal Greenway*
- Yakama Nation Department of Natural Resources*
- Washington Association of Wheat Growers*
- Washington Farm Bureau*
- Washington Cattlemen's Association*
- Washington Wine Growers
- Farm Service Agency
- Alfalfa Seed Growers Association
- Washington State Hay Growers Association
- Hop Growers of Washington
- Potato Commission
- Potato Growers
- Irrigation Districts (Sunnyside Valley, Roza, Kennewick)*
- Pacific Northwest Vegetable Association
- Washington Mint Growers Association
- Columbia-Snake River Irrigators Association
- Washington State Tree Fruit Association
- Ducks Unlimited
- Washington State Department of Agriculture*
- Washington State Department of Natural Resources – Natural Heritage Program
- Trout Unlimited
- Rocky Mountain Elk Foundation
- Lower Columbia Basin Audubon Society*
- Benton County Noxious Weed Control Board

6.2 LIST OF TECHNICAL ASSISTANCE PROVIDERS

Exhibit 6-1. Summary of Key Technical Service Providers in Benton County

Agency	Projects and Programs	Description of Services
Agencies with a Broad Range of Experience in Agriculture and Conservation		
Benton Conservation District http://www.bentoncd.org	<ul style="list-style-type: none"> ▪ Field borders ▪ Salmon Recovery Funding Board grants ▪ Yakima river water stargrass removal ▪ Fish screening ▪ Irrigation Efficiency Conversions ▪ Irrigation Water Management ▪ Streamside planting and buffers ▪ Streamside fencing and off-channel watering ▪ Erosion assistance ▪ Grazing management ▪ Concentrated animal feeding operations ▪ Conservation Reserve Enhancement Program 	Provides landowners with technical and financial assistance to encourage wise stewardship of all natural resources (soil, water, air, fish, and wildlife) in Benton County.
WSU Extension - Benton County http://extension.wsu.edu/benton-franklin	<ul style="list-style-type: none"> ▪ Education and research, turning results into best practices regarding irrigation, weed management, pesticide application, and pest management ▪ Opportunities for certifications such as pesticide application certification, online certificate in organic farming ▪ Training and outreach. 	Connects residents to research and knowledge base of the state's land grant research university, providing solutions to local problems and stimulating local economies. WSU works with partners in to provide educational programs and leverage the broad resources of a major university to resolve issues and create a positive future.

Agency	Projects and Programs	Description of Services
Natural Resources Conservation Service (NRCS) http://www.usda.gov/wps/portal/usda/usdahome	<ul style="list-style-type: none"> ▪ Natural Resource Conservation Planning Program where staff work with agricultural operators to assess conditions on their property, help identify conservation practices that can ameliorate environmental conditions affecting the operation and monitor practices. ▪ Conservation Technical Assistance ▪ Maintain and improve private lands and their management ▪ Implement better land management technologies ▪ Protect and improve water quality and quantity ▪ Maintain and improve wildlife and fish habitat ▪ Enhance recreational opportunities on their land ▪ Maintain and improve the aesthetic character of private land ▪ Explore opportunities to diversify agricultural operations and ▪ Develop and apply sustainable agricultural systems ▪ NRCS offers voluntary programs to eligible landowners and agricultural producers to provide financial and technical assistance to help manage natural resources in a sustainable manner. ▪ Agricultural Conservation Easement Program 	Works with private landowners to help them conserve, maintain, and improve their natural resources
Supporting Providers with Specific Expertise		
Washington Department of Ecology http://www.ecy.wa.gov	<ul style="list-style-type: none"> ▪ Water resources program ▪ Wells ▪ Water rights ▪ Instream flows ▪ Water market 	Works with citizens to provide effective water management by providing technical support, grant programs, managing water supplies, environmental permitting, and enforcement.

Agency	Projects and Programs	Description of Services
Washington Department of Fish and Wildlife http://wdfw.wa.gov/about/regions/region3	<ul style="list-style-type: none"> ▪ Species and ecosystem science ▪ Species recovery and management ▪ Habitat conservation, protection, and restoration 	WDFW provides scientific foundation for management policies and works on issues affecting individual species, wildlife communities, and entire ecosystems.
Benton County Water Conservancy Board	<ul style="list-style-type: none"> ▪ Water rights changes/transfers 	Processes water-right transfer applications at the local level
Taptal Greenway Association http://www.taptal.org	<ul style="list-style-type: none"> ▪ Trail building and maintenance ▪ Clean-ups ▪ Habitat restoration ▪ Outreach and education ▪ Water quality monitoring 	Promotes conservation, education, and recreation on the lower Yakima River through development of public policy and on the ground enhancement activities.
Yakama Nation Department of Natural Resources http://www.yakamanation-nsn.gov/	<ul style="list-style-type: none"> ▪ Biology/Restoration 	The Department of Natural Resources was established to manage, co-manage and protect the Yakama Nation's Ancestral, Cultural, and Treaty Natural Resources on Reservation, in the Ceded Area and at Usual and Accustomed Sites, to meet the tribal culture, protecting tribal sensitive areas and sites and restoring diminished damaged resources.

7.0 Goals, Benchmarks, and Performance Metrics

7.1 PROTECTION AND VOLUNTARY ENHANCEMENT OF CRITICAL AREAS AND RELATED AGRICULTURAL VIABILITY AIMS

The following goals, benchmarks, and performance metrics were developed to frame the Benton County Voluntary Stewardship Program's (VSPs) approach to protecting and voluntarily enhancing the value and functions of critical areas. This section addresses the requisite components of the VSP work plan:

- goals and benchmarks for the protection and enhancement of critical areas (RCW 36.70A.720(1))
- measurable benchmarks that, within ten years after the receipt of funding, are designed to result in (i) the protection of critical area functions and values and (ii) the enhancement of critical area functions and values through voluntary, incentive-based measures ((RCW 36.70A.720(1)(e))

Work Plan implementation must be monitored, and periodic reporting will describe whether the protection and enhancement goals and benchmarks have been met.

In developing goals and measurable benchmarks, the Work Group carefully weighed protection of critical area functions with considerations of agricultural viability, including the specific intent to allow for future expansion of irrigated agriculture. Some of the key considerations that contributed to the formulation of goals and benchmarks are described below.

- Fish and Wildlife Habitat Conservation Areas:

Goals and measurable benchmarks for streams focus on measures to protect and enhance water quality, as well as riparian vegetation.

Given the extent of shrub-steppe habitat in areas of the County not already developed or in irrigated or dryland agriculture, there is an expectation that irrigated agriculture will likely expand into shrub-steppe habitat. Since shrub-steppe habitat cannot generally be created, the goals and benchmarks focus on a twofold approach to protecting shrub-steppe habitat functions. First, areas identified as very-high or high habitat centrality areas, linkages, or pinch points in the Washington Connected Landscapes Project¹⁶ that overlap with critical areas are prioritized as a focus for implementation. The adaptive management threshold for shrub-steppe area focuses on these habitat centrality areas, linkages, and pinch points as well (Appendix I). Where losses in shrub-steppe area occur, those will be balanced with measures to protect high quality shrub steppe and enhance degraded shrub-steppe communities.

¹⁶ Washington Wildlife Habitat Connectivity Working Group. 2012. Washington Connected Landscapes Project: Analysis of the Columbia Plateau Ecoregion

- **Critical Aquifer Recharge Areas:**

The Benton Groundwater Plan is presently under development. Rather than replicate the work of developing the Plan, this VSP will consider work products to identify measures for groundwater protection.

- **Wetlands:**

Wetlands are rare given the semi-arid climate of Benton County. Approximately half of the total wetland area intersecting agriculture in the County is already protected under conservation ownership or easements. The Work Group recognizes the challenge in accurately mapping and monitoring wetlands throughout the County, and it also recognizes that floodplain wetlands along the Yakima and Columbia River provide functions that are most significant for protecting habitat and water quality in the County. Therefore, wetland goals and benchmarks focus on floodplain wetlands along the Yakima and Columbia Rivers and other wetlands with high habitat functions.

- **Geologically Hazardous Areas**

Compared to other critical areas in the County, the concern regarding the potential impact of agricultural activities on geologically hazardous areas alone is relatively low. While goals and measurable benchmarks are established to address geologically hazardous areas, these critical areas are the lowest priority for implementation of conservation actions. If other critical areas are present along with geologically hazardous areas, the context and approach would match that of the non-geologically hazardous area.

The following exhibits summarize the goals, benchmarks, and performance metrics developed by the Benton County VSP Working Group for critical area functions. This chapter includes three exhibits:

- Exhibit 7-1. Goals, benchmarks, and monitoring approaches to maintain critical area functions;
- Exhibit 7-2. Goals, benchmarks, and monitoring approaches to voluntarily enhance critical area functions; and
- Exhibit 7-3. Agricultural viability aims, incentives, and activities associated with critical area protection.

Exhibit 7-1 and Exhibit 7-2 summarize the critical area goals, benchmarks, and performance metrics intended to protect and voluntarily enhance critical area functions, respectively. For the purposes of interpreting benchmarks in this chapter and Appendix I, the following terms are described to aid in measurement of benchmark performance:

- **Maintain** means no net adverse change from the July 2011 baseline conditions of critical area functions and values and within the range of the adaptive management threshold in Appendix I. Protect is interpreted similar to maintain for purposes of measuring benchmarks. **For each performance metric, protection would be indicated by no change in the metric** (e.g. conservation practices including irrigation efficiencies are maintained).
- **Enhance** means to improve the processes, structure, and functions existing, as of July 22, 2011, of ecosystems and habitats associated with critical areas relative to the adaptive management

threshold. **Enhancement would be indicated by a positive change (improvement) in the metric** (e.g. new irrigation efficiencies are installed).

- **Extent**, when indicated below, will be measured using the unit of measure prescribed for a given Conservation Practice by the Natural Resource Conservation District (NRCS).

In this document, performance standards are differentiated between implementation (i.e. installation of new activities) and resource measures (i.e. measured effect of actions on critical areas). The right-hand column that describes the relationship to agricultural viability is intended to identify how critical area goals and benchmarks are compatible with agricultural viability.

Adaptive management thresholds are included in Appendix I, and these would be used to detect if there is a substantial change in the performance metrics to determine whether the benchmark is met.

Implementation is typically measured by the area directly affected by conservation practices. However, implementation benchmarks may also relate to more programmatic actions led by the working group or other members of the agricultural community. For example, coordinated fire management among agriculture and fire-fighting and resource management agencies is a high-priority programmatic action to reduce the frequency of fire affecting shrub-steppe habitat and rangelands. Outreach to federal, state, and local land managers and owners is identified as an implementation benchmark for enhancement.

Resource measures may be evaluated by the area of change, which is supplemented by the nature of the change to understand the effects on critical area functions, or by follow up monitoring of the effectiveness of conservation practices. The measurable extent of change may be detected through existing remote sensing information, an expert panel, or through follow-up monitoring by the technical service providers. Where computer models are used to assess changes in aerial imagery, the Work Group anticipates that the entire area of intersect will be evaluated. Alternatively, when expert panels or follow-up monitoring are used, a representative sample of intersect areas through the County may be evaluated. Sampling should consider agricultural activities of producers/entities both participating and not participating in VSP. Such sampling may incorporate information from voluntary reporting from participating producers/entities, such as irrigation districts.

Where implementation benchmarks evaluate the number and extent of conservation practices, follow up monitoring will be conducted to confirm that practices are being implemented as designed. To accomplish this, the BCD will follow up on at least five percent of the conservation measures completed through cost-share funding mechanisms in the preceding five years. During the follow-up visits, the BCD will evaluate whether conservation measures are generally consistent with the NRCS Conservation Practice standards and having the intended effect. The BCD may offer recommendations or technical assistance to the producer. Any different or additional stewardship practices identified by the BCD will be implemented by the agricultural producer on a voluntary basis only. If deviations from the NRCS standards are observed, BCD staff will work with the producer to modify the practice. The follow-up site visits will be used to assess the effectiveness of implemented conservation practices, and the number of conservation practices implemented may be adjusted downward if these visits identify a trend that conservation practices are not implemented effectively.

Protection goals and benchmarks are monitored periodically, and if not met would trigger adaptive management per Chapter 8, and Appendix I. Failure to meet enhancement or restoration goals may not trigger adaptive management, as these goals are aspirational and voluntary. However, results of progress on goal attainment will be documented in monitoring reports (see Chapter 8 and Appendix L).

Exhibit 7-1. Goals, benchmarks, and monitoring approaches to maintain critical area functions

Critical Area Goal	Critical Area Protection Benchmark	Performance Metric (Implementation)	Performance Metric (Resource measurement)	Relationship to Agricultural Viability
Streams/Rivers				
In areas of critical area intersect with agricultural activities, and at the watershed level: Protect surface water quality in streams, wetlands, and agricultural drains in hydrologic study areas. ¹⁷	<ul style="list-style-type: none"> In areas of critical area intersect with agricultural activities, and at the watershed level: Manage runoff and erosion associated with agricultural activities through voluntary maintenance of conservation practices (See also water quality regulatory backstop for suspended sediment and toxics). 	<ul style="list-style-type: none"> Number and extent of conservation practices to limit runoff and erosion associated with agricultural activities (including irrigation efficiencies). 	<ul style="list-style-type: none"> Percentage of conservation practices functioning as designed to protect water quality. Trends in water quality directly attributable to agriculture. 	<ul style="list-style-type: none"> New FSMA requirements for monitoring bacteria levels in irrigation water result in a large expense for farmers.
	Intersect with hydrologic study areas per Chapter 5: Countywide 10,717 acres 1.6% Alkali-Squilchuck 18 acres 0.9% Lower Yakima 4,514 acres 2.0% Rock-Glade 6,186 acres 1.3% ¹⁸			
	<ul style="list-style-type: none"> At the watershed level: Maintain riparian vegetation to support biofiltration and bank stability in areas of agricultural intersect through voluntary practices: <ul style="list-style-type: none"> Maintain interface between agriculturally-managed areas and existing riparian areas. Retain riparian vegetated conditions, 	<ul style="list-style-type: none"> Number and extent of conservation practices to manage livestock access to streams and wetlands. 	<ul style="list-style-type: none"> Area and cover of riparian vegetation in areas of agricultural intersect. 	The priority for agricultural and water resources is to improve efficiency of water use; the Working Group recognizes tradeoffs may occur as efficiencies may affect survival of riparian vegetation.

¹⁷ An assumption is that federal and state pesticide application requirements apply in any case, and, as a result we are not including as a specific performance measure.

¹⁸ This area of intersect may decrease depending on the County's critical areas ordinance and County determination of which features qualify as a Fish and Wildlife Habitat Conservation Area.

Critical Area Goal	Critical Area Protection Benchmark	Performance Metric (Implementation)	Performance Metric (Resource measurement)	Relationship to Agricultural Viability
	<p>except for noxious weeds. Recognize changes to riparian areas may occur due to erosion and natural events; allow riparian areas to reestablish.</p> <ul style="list-style-type: none"> ○ Where appropriate to the critical area function allow managed or flash grazing or other appropriate agricultural practices. <p>See right column regarding water efficiency.</p>			
Upland Habitat (Shrub-Steppe)				
<p>In areas of critical area intersect with agricultural activities, and at the countywide level¹⁹: Protect shrub-steppe habitat and connectivity without restricting ongoing or new agricultural activities.</p>	<ul style="list-style-type: none"> ▪ In areas of critical area intersect with agricultural activities: Maintain shrub-steppe habitat through voluntary management and protection measures. Examples include but are not limited to: <ul style="list-style-type: none"> ○ Timed/less intense grazing at appropriate times. ○ Native vegetation propagation 	<ul style="list-style-type: none"> ▪ Area of agricultural activities compatible with shrub-steppe (area of interface). 	<ul style="list-style-type: none"> ▪ Area of intact shrub steppe habitat in areas of agricultural intersect. 	

¹⁹ The goal and benchmark for shrub-steppe habitat is at the countywide level in recognition that wildlife habitats and corridors do not follow watershed basin boundaries and to enable the Work Group to focus on priorities for protection and enhancement.

Critical Area Goal	Critical Area Protection Benchmark	Performance Metric (Implementation)	Performance Metric (Resource measurement)	Relationship to Agricultural Viability
	<ul style="list-style-type: none"> ○ Advanced fire protection strategies, including managed grazing and maintaining firebreaks. ○ Voluntary protection or set-asides (e.g., easements, acquisition, CREP, and other strategies). <p>Implementation focus will be in areas identified as having high or very high habitat concentration areas, linkage centrality areas or pinch points protected²⁰, or as directed by the Work Group.</p>			
<p>Area of shrub-steppe habitat intersect per Chapter 5: Countywide 60,655 acres 8.7% Alkali-Squilchuck 434 acres 22.6% Lower Yakima 49,994 acres 21.9% Rock-Glade 10,226 acres 2.2%</p> <p>See Appendix F for habitat concentration areas, linkage centrality areas, or pinch points.</p>				
<p>In areas of critical area intersect with agricultural activities, and at the countywide level: Maintain native plant community diversity in shrub-steppe habitats in areas of agricultural intersect.</p>	<ul style="list-style-type: none"> ▪ In areas of critical area intersect with agricultural activities: Manage invasive species on agricultural lands and maintain native species diversity. 	<ul style="list-style-type: none"> ▪ Number and extent of practices to maintain botanical diversity such as prescribed grazing, Integrated Pest Management and control of noxious weeds and invasive plants or other measures based on an annual/seasonal review of weather and growing conditions 	<ul style="list-style-type: none"> ▪ Change in native plant diversity, based on expert information (e.g. Noxious Weed Control Board). 	<ul style="list-style-type: none"> ▪ Recognize agricultural activities and techniques that are compatible with critical area functions ▪ Invasive species can be agricultural pests and/or nuisance species and lead to production loss
<p>Area of shrub-steppe habitat intersect: Countywide 60,655 acres 8.7% Alkali-Squilchuck 434 acres 22.6% Lower Yakima 49,994 acres 21.9% Rock-Glade 10,226 acres 2.2%</p>				

²⁰ As mapped by the Washington Wildlife Habitat Connectivity Working Group, 2012, Washington Connected Landscapes Project: Analyses of the Columbia Plateau Ecoregion

Critical Area Goal	Critical Area Protection Benchmark	Performance Metric (Implementation)	Performance Metric (Resource measurement)	Relationship to Agricultural Viability
	Area of intersect with invasive species is unknown. See Appendix K for countywide maps of noxious weeds.			
Aquifer Recharge				
At the watershed level: Protect groundwater quality in areas of agricultural intersect	<ul style="list-style-type: none"> In areas of critical area intersect with agricultural activities, and at the watershed level: Maintain practices that limit leaching of nitrogen and other contaminants into groundwater 	<ul style="list-style-type: none"> Number and extent of conservation practices that limit leaching of nutrients and pesticides (Benton Groundwater Plan work products will be considered to identify conservation practices for groundwater protection). 	<ul style="list-style-type: none"> Trends in groundwater monitoring results (only measures reflecting agricultural practices since 2011) as collected per County Groundwater Plan as resources allow. 	<ul style="list-style-type: none"> Nutrient management activities could increase crop yield and quality while reducing loss of inputs via leaching or runoff
	<p>Area of critical aquifer recharge area intersect per Chapter 5:</p> <p>Wellhead Protection Areas: Countywide 6,128 acres 0.9% Alkali-Squilchuck 0 acres 0% Lower Yakima 4,901 acres 2.2% Rock-Glade 1,227 acres 0.3%</p> <p>Hydrologic Soil Group A: Countywide 56,872 acres 8.2% Alkali-Squilchuck 0 acres 0% Lower Yakima 2,564 acres 1.1% Rock-Glade 54,308 acres 11.7%</p> <p>Aqueducts, Canals, and Siphons: Countywide 3,026 acres 0.4% Alkali-Squilchuck 0 acres 0% Lower Yakima 1,876 acres 0.8% Rock-Glade 210 acres 0.0%</p>			
Wetlands²¹				
At the watershed level: Protect the functions and values of wetlands in areas of agricultural intersect ²²	<ul style="list-style-type: none"> In areas of critical area intersect with agricultural activities, and at the watershed level: Maintain wetland functions and values, with a priority for protecting wetlands with high habitat functions and floodplain wetlands along the Yakima and Columbia Rivers 	<ul style="list-style-type: none"> Area of floodplain wetland protected. Number and extent of conservation practices to manage livestock access to streams and wetlands. Recognize federal and state wetland regulatory backstop. 	<ul style="list-style-type: none"> Area of vegetation associated with wetlands in areas of agricultural intersect 	<ul style="list-style-type: none"> The priority for agricultural and water resources is to improve efficiency of water use; the Working Group recognizes tradeoffs may occur as efficiencies may reduce wetland areas

²¹ Wetlands intentionally created by irrigation activities are not considered a critical area

²² See water quality goals and benchmarks for wetlands under streams and rivers

Critical Area Goal	Critical Area Protection Benchmark	Performance Metric (Implementation)	Performance Metric (Resource measurement)	Relationship to Agricultural Viability
				<ul style="list-style-type: none"> Continue to allow ongoing agriculture to manage drainage through legally established drain tiles, crop rotations, reduced tillage, irrigation management, etc. to reduce ponding
	<ul style="list-style-type: none"> In areas of critical area intersect with agricultural activities, and at the watershed level: Manage invasive species in and around wetlands, and maintain native species diversity. 	<ul style="list-style-type: none"> Number and extent of Integrated Pest Management practices, prescribed grazing, or other measures designed to manage invasive species in agricultural intersect areas surrounding wetlands. 	<ul style="list-style-type: none"> Qualitative change in native plant diversity showing degradation relative to baseline, based on expert information (e.g. Noxious Weed Control Board). 	<ul style="list-style-type: none"> Invasive species can be agricultural pests and/or nuisance species and lead to production loss
Area of wetlands intersect per Chapter 5: Countywide 2,710 acres 0.4% Alkali-Squilchuck 1 acres 0.1% Lower Yakima 1,427 acres 0.6% Rock-Glade 1,281 acres 0.3%				
Floodplains				
In areas of critical area intersect with agricultural activities, and at the watershed level: Protect natural floodplain functions.	<ul style="list-style-type: none"> At the watershed level: Maintain floodplain connectivity in areas of agricultural intersect. 	<ul style="list-style-type: none"> Area of agricultural activities compatible with floodplain functions. 	<ul style="list-style-type: none"> Area of floodplain wetlands and wetlands with high habitat functions in in area of intersect 	<ul style="list-style-type: none"> Recognize agricultural activities and techniques that are compatible with flooding.
Area of wetlands intersect per Chapter 5: Countywide 14,169 acres 2.1% Alkali-Squilchuck 187 acres 0.0% Lower Yakima 6,247 acres 2.8% Rock-Glade 7,735 acres 1.7%				

Critical Area Goal	Critical Area Protection Benchmark	Performance Metric (Implementation)	Performance Metric (Resource measurement)	Relationship to Agricultural Viability
Geologically Hazardous Areas				
<p>In areas of critical area intersect with agricultural activities, and at the watershed level: Protect the integrity of steep slopes associated with agricultural production.</p>	<ul style="list-style-type: none"> ▪ In areas of critical area intersect with agricultural activities, and at the watershed level: Maintain integrity of steep slopes in areas of agricultural intersect. through the following: <ul style="list-style-type: none"> ▪ Avoid increases in erosion. ▪ Avoid steep and unstable slopes or help to stabilize such slopes where practical. 	<ul style="list-style-type: none"> ▪ Number and extent of conservation practices for slope stability (e.g. contour planting, retaining native vegetation, irrigation efficiencies). 	<ul style="list-style-type: none"> ▪ Area of natural vegetation retained along steep slopes adjacent to agricultural activities. 	<ul style="list-style-type: none"> ▪ Aim is to maintain or improve agricultural sustainability through improving soil health and minimizing erosion.
<p>Areas of Steep Slopes per Chapter 5: Steep slopes>15%: Countywide 4,294 acres 0.6% Alkali-Squilchuck 817 acres 43.4% Lower Yakima 2,222 acres 1.0% Rock-Glade 1,225 acres 0.3%</p>				

Exhibit 7-2. Goals, benchmarks, and monitoring approaches to voluntarily enhance critical area functions

Critical Area Goal	Critical Area Enhancement Benchmark	Performance Metric (Implementation)	Performance Metric (Resource measurement)	Relationship to Agricultural Viability
Streams/Rivers				
Support efforts of the Yakima Basin Integrated Water Resource Management Plan (YBIWRMP) to enhance flows necessary to protect salmonids.	<ul style="list-style-type: none"> In areas of critical area intersect with agricultural activities, and at the watershed level: Increase voluntary measures to enhance flow in Yakima River during critical periods. See also aquifer recharge. 	<ul style="list-style-type: none"> Number and extent of additional conservation practices installed that allow for water use efficiency. Number and extent of voluntary water exchanges, storage, transfers, voluntary regional agreements, and/or water trusts maintained or established related to agricultural use. 	<ul style="list-style-type: none"> Percentage of conservation practices functioning as designed to protect water quality. Trends in water quality directly attributable to agriculture. 	<ul style="list-style-type: none"> Aim is to increase water right stability for senior water rights holders, and increase water availability for junior water rights holders.
At the watershed level: Encourage voluntary enhancement of surface water quality in streams, wetlands, and agricultural drains in hydrologic study areas ²³	<ul style="list-style-type: none"> At the watershed level: Increase voluntary implementation of conservation practices to enhance surface water quality conditions related to runoff and erosion associated with agricultural activities. 	<ul style="list-style-type: none"> Number and extent of conservation practices to limit runoff and erosion due to agricultural activities and to manage livestock access to streams and wetlands. 	<ul style="list-style-type: none"> Progress toward meeting Total Maximum Daily Load (TMDL) standards for suspended sediments and toxics where related to agricultural activities in Benton County. 	<ul style="list-style-type: none"> Provide incentives for irrigation and nutrient management to increase crop yield and quality while reducing loss of inputs via leaching or runoff. Encourage water reuse.
	<ul style="list-style-type: none"> At the watershed level: Promote voluntary practices to enhance riparian vegetation to support biofiltration and bank stability in areas of agricultural intersect. 	<ul style="list-style-type: none"> Number and extent of conservation practices to manage livestock access to streams and wetlands. 	<ul style="list-style-type: none"> Area of riparian cover in areas of agricultural intersect. 	

²³ An assumption is that federal and state pesticide application requirements apply in any case, and, as a result, we are not including as a specific performance measure.

Critical Area Goal	Critical Area Enhancement Benchmark	Performance Metric (Implementation)	Performance Metric (Resource measurement)	Relationship to Agricultural Viability
	<ul style="list-style-type: none"> ○ Improve partially functioning riparian areas with poor existing vegetative cover that has an ability to recover. ○ Enhance impaired riparian vegetation where tree or shrub cover is lacking. ○ Priority is given to basins where the benchmark of riparian area protection of functions and values is at risk of degrading compared to baseline and affects fish and wildlife species. Second priority is other areas of focus per county, state, regional, tribal priorities for enhancement. 	<ul style="list-style-type: none"> ▪ Number and extent of riparian planting/protection projects. 		

Critical Area Goal	Critical Area Enhancement Benchmark	Performance Metric (Implementation)	Performance Metric (Resource measurement)	Relationship to Agricultural Viability
Upland Habitat (Shrub Steppe)				
At the countywide level ²⁴ : Encourage voluntary enhancement of shrub-steppe habitat and connectivity without restricting ongoing or new agricultural activities	<ul style="list-style-type: none"> In areas of critical area intersect with agricultural activities: Promote voluntary measures to enhance shrub-steppe habitat and shrub-steppe corridors with the first priority areas where the benchmark of shrub-steppe protection of functions and values is at risk of degrading compared to baseline. Enhancement opportunities should include first current blocks and currently utilized corridors and second historical or likely suitable corridors that could be established or renewed or other priorities as directed by the Work Group. 	<ul style="list-style-type: none"> Area of shrub-steppe habitat enhanced with emphasis on high or very high habitat concentration areas, linkages, or pinch points²⁵. 	<ul style="list-style-type: none"> Area of intact shrub steppe habitat in areas of agricultural intersect. Area of high or very high habitat concentration areas, linkages, or pinch points²¹ in critical areas and areas of agricultural intersect. 	<ul style="list-style-type: none"> Incentive programs (e.g. shrub-steppe banking) and/or compensation for voluntary shrub-steppe and/or habitat linkage conservation should be developed and implemented.
At the countywide level: Encourage voluntary enhancement of shrub-steppe habitat to improve resiliency to fire in areas of agricultural intersect.	<ul style="list-style-type: none"> In areas of critical area intersect with agricultural activities: Encourage diversity of native grasses in place of cheatgrass to promote resiliency. 	<ul style="list-style-type: none"> Number and extent of conservation practices implemented to control cheatgrass and encourage native grasses, such as: 	<ul style="list-style-type: none"> Area of cheatgrass Area of native grasses Number of Work Group coordination efforts with fire response and emergency managers 	<ul style="list-style-type: none"> Unmanaged fire events threaten agricultural productivity

²⁴ The goal and benchmark for shrub-steppe habitat is at the countywide level in recognition that wildlife habitats and corridors do not follow watershed basin boundaries and to enable the Work Group to focus on priorities for protection and enhancement.

²⁵ As mapped by the Washington Wildlife Habitat Connectivity Working Group, 2012, Washington Connected Landscapes Project: Analyses of the Columbia Plateau Ecoregion.

Critical Area Goal	Critical Area Enhancement Benchmark	Performance Metric (Implementation)	Performance Metric (Resource measurement)	Relationship to Agricultural Viability
		<ul style="list-style-type: none"> ○ Prescribed grazing, ○ Avoid disturbance of seedbank, or stockpile removed soils and reapply following disturbance, ○ Plant native grasses, ○ Integrated Pest Management (including managed grazing) to reduce noxious weeds and control invasive species establishing desired vegetation, or ○ Other measures. 		<ul style="list-style-type: none"> ▪ A diverse assemblage of native grasses provides better forage than cheatgrass ▪ See agricultural viability aim related to rural fire districts
<p>At the watershed level: Encourage voluntary enhancement of native plant community diversity in shrub-steppe habitats in areas of agricultural intersect.</p>	<ul style="list-style-type: none"> ▪ At the watershed level: Promote voluntary practices to reduce invasive species on agricultural lands and enhance native species diversity. 	<ul style="list-style-type: none"> ▪ Number and extent of measures to control invasive species and enhance native species diversity, including host plants for pollinators. 	<ul style="list-style-type: none"> ▪ Change in native species diversity in areas of agricultural intersect based on expert information (e.g. Noxious Weed Control Board) 	<ul style="list-style-type: none"> ▪ Incentive programs to encourage rotational grazing and more intensively managed grazing should be developed and implemented. ▪ Invasive species can be agricultural pests and/or nuisance species and lead to production loss

Critical Area Goal	Critical Area Enhancement Benchmark	Performance Metric (Implementation)	Performance Metric (Resource measurement)	Relationship to Agricultural Viability
Aquifer Recharge				
In areas of critical area intersect with agricultural activities, and at the watershed level: Encourage voluntary enhancement of groundwater recharge in areas of declining water tables or where recharge can help maintain base flows for rivers and streams.	<ul style="list-style-type: none"> At the watershed level: Promote voluntary on-farm water conservation practices, such as irrigation water management and efficient irrigation systems in areas with agricultural wells. At the watershed level: Encourage implementation of groundwater recharge by passive infiltration or direct injection. 	<ul style="list-style-type: none"> Number and extent of on-farm irrigation efficiencies installed (acre-feet conserved). Number and extent of recharge projects implemented. Number and extent of other measures per Groundwater Plan. Progress toward implementing County Groundwater Plan implementation (per plan schedule). 	<ul style="list-style-type: none"> Acre-feet recharged. 	<ul style="list-style-type: none"> Allow agricultural access to new water supplies created by conservation or recharge projects that exceed environmental baseline. Incentives for on-farm water conservation practices should be implemented. Groundwater recharge through flooding of fields (passive infiltration to create cool water refugia) could provide a source of additional income from hunting.
At the watershed level: Encourage voluntary enhancement of groundwater quality in areas of agricultural intersect.	<ul style="list-style-type: none"> In areas of critical area intersect with agricultural activities, and at the watershed level: Promote voluntary conservation practices that minimize leaching of nitrogen and other contaminants into groundwater. Support development and implementation of Benton County Groundwater Community Action Plan 	<ul style="list-style-type: none"> Number and extent of conservation practices (including irrigation efficiencies) to limit agricultural leaching of nutrients and pesticides. Area of wetlands enhanced. 	<ul style="list-style-type: none"> Trends in groundwater monitoring results (only measures reflecting agricultural practices since 2011) as collected per County Groundwater Plan as resources allow. 	<ul style="list-style-type: none"> Nutrient management activities could increase crop yield and quality while reducing loss of inputs via leaching or runoff. Encourage use of incentives to implement.

Critical Area Goal	Critical Area Enhancement Benchmark	Performance Metric (Implementation)	Performance Metric (Resource measurement)	Relationship to Agricultural Viability
Wetlands				
At the watershed level: Encourage voluntary enhancement of the functions and values of wetlands in areas of agricultural intersect.	<ul style="list-style-type: none"> In areas of critical area intersect with agricultural activities, and at the watershed level: Promote voluntary practices to enhance natural wetlands in the county, with a priority towards floodplain wetland functions along the Yakima and Columbia Rivers. 	<ul style="list-style-type: none"> Number and extent of wetland restoration, enhancement, and creation projects implemented in areas of intersect with a priority along the Yakima and Columbia Rivers 	<ul style="list-style-type: none"> Area of vegetation associated with wetlands in in areas of agricultural intersect. 	<ul style="list-style-type: none"> The priority for agricultural and water resources is to improve efficiency of water use; the Working Group recognizes tradeoffs may occur as efficiencies may reduce wetland area. Enhancement of wetland hydrology could support maintenance of wetland functions.
	<ul style="list-style-type: none"> In areas of critical area intersect with agricultural activities, and at the watershed level: Promote voluntary practices to reduce invasive species in and around wetlands, and enhance native species diversity. 	<ul style="list-style-type: none"> Number and extent of Integrated Pest Management practices, to reduce invasive species, prescribed grazing, or other measures. Number and extent of native planting projects. 	<ul style="list-style-type: none"> Distribution and abundance of invasive species. Distribution, abundance, and composition of native species. 	<ul style="list-style-type: none"> Invasive species can be agricultural pests and/or nuisance species and lead to production loss.
Floodplains				
In areas of critical area intersect with agricultural activities, and at the watershed level: Encourage voluntary enhancement of natural floodplain functions.	<ul style="list-style-type: none"> In areas of critical area intersect with agricultural activities, and at the watershed level: Promote voluntary practices to enhance floodplain connectivity. 	<ul style="list-style-type: none"> Number and extent of floodplain enhancement projects. 	<ul style="list-style-type: none"> Area of floodplain wetlands and wetlands with high habitat functions in area of intersect 	

Critical Area Goal	Critical Area Enhancement Benchmark	Performance Metric (Implementation)	Performance Metric (Resource measurement)	Relationship to Agricultural Viability
Geologically Hazardous Areas				
At the watershed level: Encourage voluntary measures to reduce erosion of steep and unstable slopes associated with agricultural production.	<ul style="list-style-type: none"> At the watershed level: Promote voluntary conservation practices to reduce erosion of steep and unstable slopes associated with agricultural production. 	<ul style="list-style-type: none"> Number and extent of conservation practices for slope stability (e.g. contour planting, retaining native vegetation, irrigation efficiencies). 	<ul style="list-style-type: none"> Area of natural vegetation retained along steep slopes adjacent to agricultural activities. 	<ul style="list-style-type: none"> Aim is to maintain or improve agricultural sustainability through improving soil health and reducing erosion. Incentives for soil health and erosion control should be implemented.

Exhibit 7-3 summarizes aims and activities that are intended to maintain and enhance agricultural viability and that are associated with critical area protection. It should be noted that there are no formal measurable benchmarks for agricultural viability, and success toward meeting agricultural viability goals does not affect the County’s eligibility to participate in the VSP. Agriculture viability aims and activities are meant to help the County plan for resource lands and to help the local agricultural economy.

Although VSP eligibility does not hinge on agricultural viability aims and activities, it should be recognized that the aims and activities captured in Exhibit 7-3 can be vital to both maintaining agricultural viability and protecting critical areas. For example, the Working Group recognizes the devastating effect that frequent fires have on shrub-steppe habitats and species. These fires also significantly impact grazing value of rangelands; however, rangeland activities are most often not responsible for starting the fire. The VSP will advocate for fire prevention measures on adjoining public lands, as well as coordinated firefighting efforts that protect rangeland areas. If these advocacy efforts are successful, they will make significant strides in protecting shrub-steppe habitat in Benton County, as well as maintaining agricultural viability.

Exhibit 7-3. Agricultural viability aims, incentives, and activities associated with critical area protection and enhancement

Agricultural Viability Aim	Activities
Maintain existing agricultural areas and accommodate future expansion of agriculture.	<ul style="list-style-type: none"> ▪ Ensure that agricultural uses are not involuntarily restricted by surrounding landscape and that agricultural activities, including artificial irrigation facilities and drains, are not regulated as habitat. ▪ Maintain agricultural production areas free from residential encroachment. ▪ Identify lands that are likely to transition to agricultural use or move from grazing or dryland farming to irrigated farming as priority areas for agricultural expansion.
Maintain and increase reliability and availability of irrigation water.	<ul style="list-style-type: none"> ▪ Support implementation of Yakima Basin Integrated Water Resource Management Plan ▪ Encourage use of water trusts ▪ Develop flexible infrastructure (wells, storage, pumps) drawing from within and out of basin ▪ Develop emergency irrigation allocation plan, which allows transfer of water during periods of drought (also known as water wheeling).
	<ul style="list-style-type: none"> ▪ Enhance on-farm irrigation efficiency with precision agriculture and other efficiency measures. ▪ Enhance efficiency of irrigation distribution. ▪ Develop and implement incentives for on-farm water conservation practices. ▪ Support modifying water rights laws to eliminate potential incentives to waste water. ▪ Support allocation of new water rights from the John Day/McNary pool (WAC 173-531A).

Agricultural Viability Aim	Activities
Support actions that benefit both stream functions and agricultural viability.	<ul style="list-style-type: none"> ▪ Implement off-channel watering. ▪ Encourage programs that provide matching funds for conservation measures. ▪ Commodity buffers.²⁶ ▪ Support implementation of the Benton County Groundwater Community Action Plan.
Promote voluntary conservation practices to control water stargrass and other invasive plant abundance and prevent new populations.	<ul style="list-style-type: none"> ▪ Promote voluntary conservation practices to control water stargrass and other invasive plant abundance and prevent new populations.
Protect agriculture from unmanaged fire.	<ul style="list-style-type: none"> ▪ Support fire suppression and prevention in cooperation with rural fire districts, and state, tribal, and federal wildlife managers, with the first priority area being the Blackrock Area of Benton County. ▪ Establish other priority areas for fire suppression and prevention in cooperation with rural fire districts, and state, tribal, and federal wildfire managers. ▪ Firebreaks established along critical zones. ▪ Managed grazing and other measures to minimize fire risk.
Support actions that protect and enhance soil health and land productivity	<ul style="list-style-type: none"> ▪ Develop and implement long-term incentives for on-farm soil conservation and soil health practices. ▪ Support and develop programs providing new opportunities for soil conservation (i.e. cover crop and direct seed technologies).
Promote regulatory stability for producers in Benton County.	<ul style="list-style-type: none"> ▪ Continued applicability of VSP.
Ensure adequate farm-to-market infrastructure	<ul style="list-style-type: none"> ▪ Storage and Food Distribution Establishments serving the county, and volume of storage and distribution; Covered Employment and Businesses. ▪ Roads are maintained to ensure adequate access to markets.

²⁶ <http://www.capitalpress.com/Water/20160323/commodity-buffers-pay-farmers-same-as-crops>

Agricultural Viability Aim	Activities
including production and distribution.	
Increase community support, technical assistance, and public education about the agricultural economy, viability, and stewardship.	<ul style="list-style-type: none"> ▪ Education offerings, economic development entities, commodity groups, and others that support agricultural economy at higher education such as recruitment. ▪ Recruitment of supporting sectors.
Reducing sources of agricultural damage.	<ul style="list-style-type: none"> ▪ Options for farmers to reduce potential for damage and to reduce their production expenses are disseminated by technical assistance providers. USDA Economic Research Service, Census of Agriculture, Department of Revenue, technical assistance services.
Promote new technology and research and development that benefits agricultural innovation, production, and energy conservation.	<ul style="list-style-type: none"> ▪ Number of producers using business planning and technical assistance services.

7.2 PARTICIPATION OBJECTIVES

Participation and stewardship goals and benchmarks are to be identified in the Voluntary Stewardship Program (VSP) Work Plan.

RCW 36.70A.720 Watershed group's duties - Work plan - Conditional priority funding.

(1) A watershed group designated by a county under RCW 36.70A.715 must develop a work plan to protect critical areas while maintaining the viability of agriculture in the watershed. The work plan must include goals and benchmarks for the protection and enhancement of critical areas. In developing and implementing the work plan, the watershed group must:

(c) Develop goals for participation by agricultural operators conducting commercial and noncommercial agricultural activities in the watershed necessary to meet the protection and enhancement benchmarks of the work plan;

WHY PARTICIPATE?

Work together with other farmers to promote volunteerism versus additional regulatory controls.

Be recognized for the conservation and stewardship you already do.

Find out about practices that make efficient use of natural resources and support greater yields and produce quality.

Enhance the marketability of agricultural products.

Farmers and ranchers directly participate in a VSP by implementing conservation projects on their properties, often with the help of participating technical providers.

Examples of such activities include the creation of individual stewardship plans and implementation of conservation practices such as irrigation efficiencies, grazing management, and others. See Appendix G for a checklist that could lead to the development of an individual stewardship plan. The checklist a component of a Stewardship Plan so that it is protected from disclosure.

Indirect participation of agricultural producers in stewardship activities consists of many of the standard industry practices identified in Chapter 3, Agricultural Context, that are implemented due to the initiative of a producer without the use of a federal, state, or non-profit incentive program. Examples of standard practices that have protective or beneficial impacts to critical areas are identified in Appendix G Checklist. Because many practices are installed without participation in a particular program, but they have the effect of protecting or enhancing critical areas, the presence of these practices should be tracked and monitored.

Communication Steps

The VSP will be implemented through the voluntary participation of private agricultural producers. To encourage these producers to participate, it is anticipated that the Benton Conservation District will contact each producer with information on VSP. The message will include what VSP is, how it could benefit the producer, and how to participate. Potential communication steps with producers are outlined below.

Exhibit 7-4. Participation, Checklists, and Interface with Technical Providers

ACTIVITY	DETAILS
Step 1: Using the VSP Work Plan priorities and benchmarks, and information on producers in areas of critical area intersect, identify producers who may be interested in VSP	<p>Agricultural owners in areas of critical area intersect are estimated by watershed in Exhibit 7-5 and by watershed and critical area in Exhibit 7-6. More detail is in Appendix L.</p> <p>Consider goals and benchmarks in Section 7.1 and 7.2 and Appendix I, to determine priorities for contact and participation as part of outreach strategies in Appendix J.</p>
Step 2: Invite producers to participate	The Conservation District and other groups could send a letter/postcard to agricultural producers, introducing them to VSP and inviting them to participate. See Outreach Plan Appendices for a draft letter.
Step 3: Producer fills out the short checklist	<p>Prior to interfacing with the Conservation District, the District could provide a flyer and a short form to the producer to get some information ahead of a walk through.</p> <p>And/or the short-form could serve as a self-certification form for larger producers where there are more staff resources and less need to interface with technical providers.</p>
Step 4: Producer meets with Technical Service Provider	Technical providers fill in long form based on a one-on-one discussion with the producer.

Agricultural Producers in Areas of Intersect

Based on a review of 2012 Benton County assessor data regarding agricultural parcels intersecting critical areas in the county, the total number of unique names is 4,484. The total may overstate owners since some parcel records appear to be the same person but may have additional middle names, etc. that cause them to be unique inadvertently. This information is a starting point to understanding the largest pool of potential VSP participants.

Exhibit 7-5. Agricultural Owners in Areas of Critical Areas Intersect

Watershed	Irrigated	Drylands	Rangelands	Numeric Total of Agricultural Types	Total Unique Parcels
Alkali - Squilchuck	4 (248 acres)	1 (776 acres)	4 (831 acres)	9	4
Lower Yakima	2,488 (30,286 acres)	750 (64,197 acres)	302 (60,005 acres)	3,540	3,087

Watershed	Irrigated	Drylands	Rangelands	Numeric Total of Agricultural Types	Total Unique Parcels
Rock - Glade	1,140 (61,076 acres)	285 (6,455 acres)	148 (12,604 acres)	1,573	1,393
Total	3,632 (91,609 acres)	1,036 (71,428 acres)	454 (73,439 acres)	5,122	4,484

Source: Benton County Assessor 2016, The Watershed Company, 2017, BERK Consulting 2017.

The number of property owners and acres in the intersect are identified in Appendix L. The appendix tables address more extensive and complex critical areas such as Priority Habitats and Species, subsets of shrub-steppe and habitat linkages, hydrologic study areas, and critical aquifer recharge areas. This may be a starting point to identifying the most effective outreach process within WRIAs.

For example, in the Lower Yakima WRIA, there are 152 properties over 40 acres in size and making up about 36,000 acres in the intersect with shrub-steppe. Focusing on contacting these producers would be more effective and efficient than contacting the 223 properties with 274 acres of intersect with shrub-steppe.

Exhibit 7-6. Acres of Intersection and Property Size

WRIA & Parcel Size	Critical Aquifer Recharge Area	Geologic Hazard Areas	Priority Habitats & Species	Shrub-Steppe	Hydrologic Study Areas	Total Parcel Acres
Lower Yakima						
Acres of Intersect by Critical Area Type and Parcel Size						Acreage Sum
>40	19,287	38,015	113,050	35,954	3,508	186,497
20-40	3,194	912	608	447	451	7,409
<20	4,902	1,117	529	274	454	9,197
Count of Parcels in Intersect by Critical Area Type and Parcel Size						Parcel Count
>40	331	364	212	152	200	447
20-40	211	170	48	29	95	255
<20	2,164	1,193	353	223	504	3,491
Rock - Glade						
>40	56,352	35,513	10,440	9,044	3,642	418,146
20-40	886	234	134	134	97	1,925
<20	1,827	250	21	17	107	2,802
Count of Parcels in Intersect by Critical Area Type and Parcel Size						Parcel Count
>40	206	297	66	56	108	330
20-40	48	50	8	7	15	71
<20	1,067	359	45	30	108	1,355
Alkali - Squilchuck						
Acres of Intersect by Critical Area Type and Parcel Size						Acreage Sum
>40	212	1,069	1,005	330	16	1,366
All Agricultural Types	Count of Parcels in Intersect by Critical Area Type and Parcel Size					Parcel Count
>40	4	5	5	2	3	5

Note: Totals will differ from the overall intersect because this data only includes private ownership, and additionally, ownership data is recent 2016, not from 2011.

Participation Goal

Promote education, volunteerism, and stewardship of agricultural land and critical areas.

Participation Benchmarks

- A.** Launch VSP outreach program and promote education regarding VSP and conservation practices.
- B.** Sufficient participation by commercial and non-commercial agricultural operators that achieves the protection of critical area functions and values across WRIA basins.
 1. Contact 20% or more of producers annually.
 2. Maintain average annual support to 30 producers. Increase average annual support if funding is sufficient.

3. Annually review priorities for implementation and outreach strategies with the Work Group. Determine priorities based on area of intersect and location, producer interest and need, available monitoring results, and available resources, or other factors developed by the Work Group and Technical Service providers.
- C. Indirect participation by commercial and non-commercial agricultural operators in VSP conservation practices is maintained or increased over 10 years on agricultural land.

Measurement

1. Indicators of outreach and education include
 - Number of targeted outreach events
 - Number/percentage of landowners contacted
 - Number of event attendees
 - Number of VSP participation signs and marketing materials distributed
 - Education opportunities provided
 - Survey of potential VSP participants regarding awareness and knowledge of VSP
2. Indicators of direct participation include:
 - Technical assistance provided (as tracked through meetings, calls, applications, and contracts with technical assistance providers)
 - Number of farms, acres, conservation practices, etc. implemented
 - Number of applications submitted for conservation practice assistance (technical or financial)
 - Checklists completed: See Appendix G for a checklist.
3. Indirect participation in common stewardship practices may be tracked and reported using one or more methods:
 - Mapping and imagery interpretation with on-the-ground verification, as needed, of practices in place; and
 - Random sampling of farmers and ranchers in the field by technical assistance providers with willing landowners, or
 - Phone, mail, or online surveys, or
 - Census of agriculture or other broadly gathered and published information (only available periodically).

7.3 AGRICULTURAL VIABILITY AIMS, TRACKING AND INCENTIVES

This section provides a synthesis of agricultural viability aims included in Section 7.1 for agriculture within the agriculture-critical area intersect with some of the results of the Chapter 3 strengths, weaknesses, opportunities, and threats (SWOT) analysis to create a full suite of agricultural viability aims addressing both economic and environmental sustainability.

Suggested activities to improve agricultural viability are presented to encourage the program goal of “maintaining and enhancing the viability of agriculture in the watershed” (RCW 36.70A.725). These are not formal measurable benchmarks, nor do they determine whether the plan meets compliance. Their purpose is to help Benton County do its planning for resource lands and to help the local agricultural economy. Suggested aims, incentives, and activities relate to the protection and enhancement of agriculture in the watershed. These should be considered throughout implementation, monitoring, and adaptive management of the VSP Work Plan. **Priorities for evaluation and implementation include promoting conservation practices that avoid unnecessary regulations and increase agricultural viability in Benton County.**

Suggested Agricultural Viability Aims:

Agricultural Viability Aims I through VI were identified in Section 7.1 and are more specific to the interface with critical areas. Aims VII to XI are also listed below and more broadly address the aim of supporting the agricultural economy. **Agricultural viability aims are considered Priorities for evaluation and implementation:**

- AG Aim-I. Maintain existing agricultural areas and accommodate future expansion of agriculture.
- AG Aim-II. Maintain and increase reliability and availability of irrigation water.
- AG Aim-III. Support actions that benefit both stream functions and agricultural viability.
- AG Aim-IV. Protect agriculture from unmanaged fire.
- AG Aim-V. Support actions that protect and enhance soil health and land productivity.
- AG Aim-VI. Reducing sources of agricultural damage by pests.
- AG Aim-VII. Promote regulatory stability for producers in Benton County.
- AG Aim-VIII. Ensure adequate farm-to-market infrastructure including production and distribution.
- AG Aim-IX. Increase community support, technical assistance, and public education about the agricultural economy, viability, and stewardship.
- AG Aim-X. Reducing sources of agricultural damage.
- AG Aim-XI. Promote new technology and research and development that benefits agricultural innovation, production, and energy conservation.

Suggested Agricultural Viability Tracking Measures

- AG Track-1. Increased agricultural crop production and economic value annually.
- AG Track-2. Designated agricultural land in Comprehensive Plan continues to be protected.
- AG Track-3. Water resources necessary for producers are available and reliable.
- AG Track-4. Reduced erosion of productive land and improved water quality.
- AG Track-5. Promote voluntary conservation practices to control water stargrass and other invasive plant abundance and prevent new populations.
- AG Track-6. Fire coordination and prevention activities are developed with growers.
- AG Track-7. Producers have more regulatory stability in Benton County through continued application of VSP Program.

- AG Track-8. On-farm and commercial storage, aggregation, and distribution services are available.
- AG Track-9. Necessary supplies, equipment, and other farm inputs are accessible and available.
- AG Track-10. Higher education, economic development council, and local governments include programs, policies, and community engagement that support agricultural economy.
- AG Track-11. Producers have access to farm business expertise, training, and practical research that advances farm profitability and conservation.

Suggested Agricultural Viability Incentives and Activities:

- Incentive-1 Ensure that agricultural uses are not involuntarily restricted by surrounding landscape and that agricultural activities, including irrigation facilities and drains, are not regulated as habitat.
- Incentive-2 Identify lands that are likely to transition to agricultural use or move from grazing or dryland farming to irrigated farming as priority areas for agricultural expansion.
- Incentive-3 Maintain agricultural production areas free from residential encroachment.
- Incentive-4 Support implementation of Yakima Basin Integrated Water Resource Management Plan.
- Incentive-5 Encourage use of water trusts.
- Incentive-6 Develop flexible infrastructure (wells, storage, pumps) drawing from within and out of basin.
- Incentive-7 Develop emergency irrigation allocation plan, which allows transfer of water during periods of drought (also known as water wheeling).
- Incentive-8 Enhance on-farm irrigation efficiency with precision agriculture and other efficiency measures.
- Incentive-9 Enhance efficiency of irrigation distribution.
- Incentive-10 Develop and implement incentives for on-farm water conservation practices.
- Incentive-11 Support modifying water rights laws to eliminate potential incentives to waste water.
- Incentive-12 Support allocation of new water rights from the John Day/McNary pool (WAC 173-531A)
- Incentive-13 Implement off-channel watering.
- Incentive-14 Encourage programs that provide matching funds for conservation measures.
- Incentive-15 Support technical providers that offer commodity buffer programs for willing landowners.
- Incentive-16 Support implementation of the Benton County Groundwater Community Action Plan.

- Incentive-17 Promote voluntary conservation of corridors, shrub-steppe banks, or easements with willing landowners.
- Incentive-18 Support fire suppression and prevention in cooperation with rural fire districts, and state, tribal, and federal wildlife managers, with the first priority area being the Blackrock Area of Benton County.
- Incentive-19 Establish other priority areas for fire suppression and prevention in cooperation with rural fire districts, and state, tribal, and federal wildfire managers.
- Incentive-20 Encourage firebreaks to be established along critical zones.
- Incentive-21 Develop and implement long-term incentives for on-farm soil conservation and soil health practices.
- Incentive-22 Support and develop programs providing new opportunities for soil conservation (i.e. cover crop and direct seed technologies).

8.0 Monitoring, Reporting, and Adaptive Management

The VSP Work Group is responsible for ongoing monitoring, reporting, and adaptive management of the Work Plan implementation. [RCW 36.70A.720](#) describes the schedule and actions the Work Group must follow during implementation of the plan.

(b)(i) Not later than five years after the receipt of funding for a participating watershed, the watershed group must report to the director and the county on whether it has met the work plan's protection and enhancement goals and benchmarks.

(ii) If the watershed group determines the protection goals and benchmarks have been met, and the director concurs under RCW [36.70A.730](#), the watershed group shall continue to implement the work plan.

(iii) If the watershed group determines the protection goals and benchmarks have not been met, it must propose and submit to the director an adaptive management plan to achieve the goals and benchmarks that were not met. If the director does not approve the adaptive management plan under RCW [36.70A.730](#), the watershed is subject to RCW [36.70A.735](#).

(iv) If the watershed group determines the enhancement goals and benchmarks have not been met, the watershed group must determine what additional voluntary actions are needed to meet the benchmarks, identify the funding necessary to implement these actions, and implement these actions when funding is provided. (RCW 36.70A.720)

The statute further requires reporting, evaluation and, if necessary, adaptive management at “ten years after the receipt of funding... and every five years thereafter.” Section 7 identifies specific benchmarks and monitoring and measuring efforts for each.

8.1 MONITORING CONTEXT

Evaluation focuses on the intersect of critical areas with agricultural activities. Monitoring results would be reported at the watershed level. Additionally, adaptive management thresholds in Appendix I define when a closer look at results would occur based on evaluation results.

Activities that do not fit within the VSP definition for “agricultural activities” or that are outside the scope and/or jurisdiction of the VSP will generally be excluded and will not be counted against the agricultural community for VSP monitoring and reporting purposes. Such non-agricultural activities include but are not limited to fires, floods, natural disasters, GMA-regulated conversions, changes in eligibility for federal program, changes in federal program funding contract conditions, technical mapping corrections, mapping errors, changes beyond a producer’s control, etc. ...). Similarly, data or reports on mixed resource metrics or parameters affected by both agricultural and non-agricultural actors and factors will generally be excluded for purposes of determining compliance with VSP critical area baseline protection requirements or success in meeting critical area protection and enhancement goals and benchmarks. Mixed-activity resources

metrics may however be useful as trend indicators to help focus VSP enhancement efforts on high priority areas.

Agricultural viability aims will be considered during monitoring, though are not formal measurable benchmarks per Section 7. It is acknowledged that national and international trends in the market for agricultural products are beyond the control of this Work Plan.

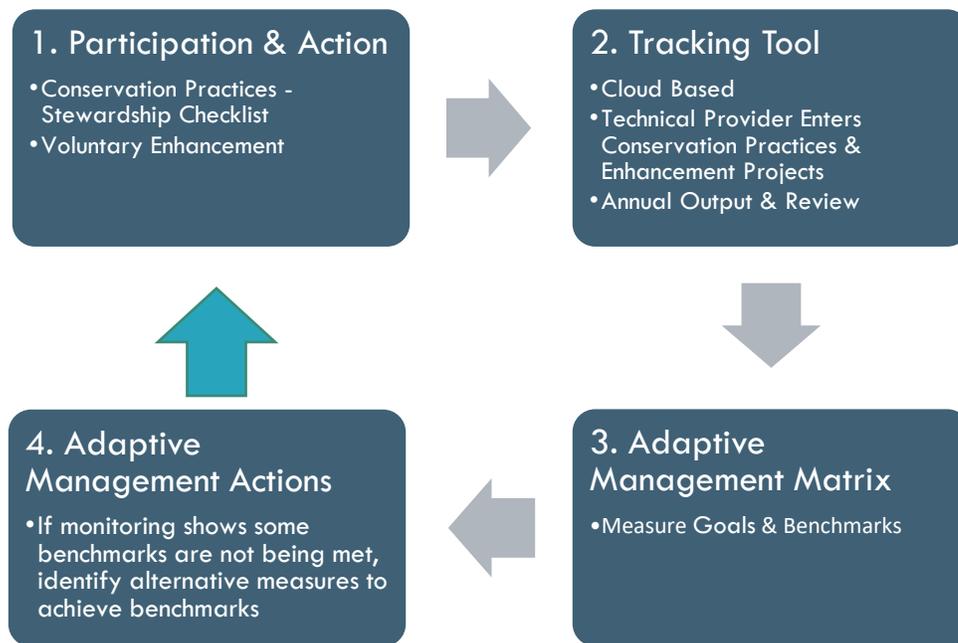
8.2 MONITORING TOOLS

Three components of monitoring, reporting, and adaptive management have been developed with this Work Plan, as illustrated with Exhibit 8-1, and described below:

- **Stewardship Checklist:** BCD will work with growers on individual stewardship plans. The Stewardship Checklist serves as an individual stewardship plan referenced in the VSP law to help each farmer contribute to the goals and benchmarks of the Benton County VSP Work Plan. The results of the checklist regarding conservation practices installed post July 2011, and new desired conservation practices are linked to each type of critical area. Technical assistance providers (e.g. lead provider BCD, and other providers such as NRCS and WSU-Extension) would be available to go over the checklist with the producers to provide advice and potential funding resources. A short form is also available for an initial screen with a Technical Service Provider or an independent producer who does not participate in a cost-share program. See Appendix G. The results of each checklist will be input (with anonymity) into the Technical Assistance Provider Tracking Tool below. Appendix H also provides example handouts for producers linking goals, benchmarks, and conservation practices.
- **Technical Assistance Provider Tracking Tool:** A Technical Assistance Provider Tracking Tool will be developed in ARC Collector or ARC Pro, or a similar product type based on the goals and benchmarks of this Work Plan and the Stewardship Checklist following Work Group review and input. The tool has been tested during Work Plan development; the target for launching use of the tool is in Year 1 of plan implementation. It would allow the technical assistance providers to enter information about conservation practices or enhancement/restoration projects that are installed voluntarily by VSP participants. The lead technical assistance provider BCD would enter information into the cloud-based survey in the field or from any location and it would immediately update a spatial database. Other providers could provide BCD information from checklists or other conservation practice tracking information. Annually, the results of the tracking tool can be summarized and provided in a report to the Watershed Work Group about the extent and type of conservation practices included, and general information on the basin where the practice is occurring, as well as the goals and benchmarks supported by the conservation practices identified in the individual stewardship plans.
- **Voluntary Stewardship Program (VSP) Adaptive Management Matrix:** This matrix is based on an example provided by the Washington Department of Fish and Wildlife representative to the Technical Panel as a form that would ensure tracking of benchmarks, thresholds at which a closer look would be taken if it appears a benchmark is not being met, responsibilities, and potential funding. Based on Chapter 7, the adaptive management matrix

lists each critical area goal and benchmark, voluntary enhancement measure, and agricultural viability aim, and identifies more specifically: what will be measured (performance metric), how it will be measured, what results will produce an action (adaptive management action threshold), responsibilities for monitoring, and frequency of monitoring. Appendix I contains a proposed matrix. The Work Group is encouraged to review the Adaptive Management Matrix to consider the number of benchmarks, the level of effort to implement them, and priorities given the likely constrained resources for implementation.

Exhibit 8-1. Monitoring Program Steps



8.3 MONITORING ROLES, RESPONSIBILITIES, AND TIMELINE

As described in Chapter 6, the Benton Conservation District (BCD) is the lead Technical Service provider. Benton County Planning Department (BCPD) will serve as administrator of the work plan monitoring and implementation. Exhibit 8-2 illustrates ongoing, annual, and biennial and five-year activities by the BCD and other implementers. Details are included in the Adaptive Management Matrix in Appendix I.

- Ongoing activities by BCD include conservation practices and voluntary enhancement with willing landowners and VSP Participation events. As part of cost-share agreements, the Technical Assistance Provider will prepare an implementation plan and on-site monitoring as appropriate.
- Annually, BCD will evaluate the Tracking Tool statistical output to describe conservation practices and voluntary enhancement projects entered during the prior year and present it to the Work Group. Annually, BCD will prepare an annual report describing VSP implementation based on the technical assistance agreements with willing landowners and any other grants or programs that implement VSP efforts.

- Biennially and every five years, BCD would conduct mapping and aerial interpretation, surveys, or convene an expert panel on fish and wildlife or other critical area conditions where needed to address a lack of data or a need for interpretation. There could be a voluntary subgroup of the VSP Work Group with expertise in critical areas and agriculture who can review monitoring results in detail and provide recommendations to the full Work Group.

A budget has been prepared in conjunction with the Adaptive Management Matrix in Appendix I. See Appendix N. Monitoring that requires considerable financial resources would depend on state funding.

Exhibit 8-2. Adaptive Monitoring Matrix



Ongoing

- Conservation Practices and Voluntary Enhancement Projects with Willing Landowners
- VSP Participation Events / Activities



Annual Monitoring

Type 1

- Tracking Tool: Conservation Practices and Voluntary Enhancement Projects
- Annual Agency Reports



Biennial and 5-Year Monitoring
Type 2

- Mapping and Aerial Interpretation
- Producer Survey (Field Sample, Phone, Online)
- Convene Expert Panel (On a Critical Area System)

Photo Credits: BCD, Benton County Planning, BERK Consulting,

8.4 ASSIST STATE AGENCIES IN THEIR MONITORING PROGRAMS

The VSP law indicates Work Plans should identify how the plan would assist state agencies in their monitoring programs. Following are different ways the Work Plan would support other agencies' monitoring programs:

- In general, the biennial and five-year reports would include monitoring results at a watershed scale that may benefit other agencies' monitoring of critical areas functions and values. The monitoring guiding principles call for use of multiple methods to monitor (e.g. conservation practices, mapping/imagery interpretation, expert panels) and results would be more complete over time as more years of trend data are available. The Work Group recognizes the importance of anonymity in supporting voluntary participation in the VSP; therefore, site-specific monitoring information remain confidential with the Technical Service Providers. However, watershed-scale monitoring trends would be shared with state agencies.
- The Work Group would share corrections to agricultural mapping. BCD has collaboratively worked with the WSDA in the past on agricultural mapping and this can continue as appropriate.
- The Work Plan monitoring program would draw on state, federal, and regional monitoring such as the Yakima Basin Integrated Water Plan.

8.5 SATISFY ANY OTHER REPORTING REQUIREMENTS OF THE PROGRAM

The Adaptive Management Matrix in Appendix I identifies for each benchmark a frequency of monitoring that is either annual, two-year, or five-year marks. At the biennial and five-year marks, there are reports to be submitted to the Conservation Commission as required in the law:

- **Type 1:** Annual, e.g. Tracking Tool Output.
- **Type 2:** Complete by September 1 of each biennium prior to required periodic evaluations and January of each 5-year reporting period, with review time by Work Group.

Chapter 9 and Appendix I lists the timeline of the biennial and five-year reports, and Appendix M provides a preliminary monitoring report outline. The Work Group is responsible for completing the reports. Benton County Planning Department will submit work plan monitoring reports once they are Work Group approved.

8.6 IMPLEMENTATION RESOURCES

A preliminary budget (in 2017 dollars) is included in Appendix N outlining expected staff and minimum monetary resources that may be required to implement the monitoring program. The budget is not a required part of the Work Plan and is conceptual. BCD will create and implement a budget, and review it with the Work Group, which may change annually or as otherwise needed.

9.0 Plan Approval Process and Timeline

The Conservation Commission Director must approve the Work Plan within three years of funding or the County must comply with the non-VSP (regulatory) critical area protection requirements of RCW 36.70A.735. See Exhibit 9-1.

The Work Group submits the VSP Work Plan to the Conservation Commission Director, who gives it to the Technical Panel for review. (RCW 36.70A.720 (2)(a)) The Technical Panel has 45 days to make a recommendation. If the Technical Panel says the Work Plan doesn't pass the statutory Work Plan Approval test, the Work Group must modify and resubmit the Work Plan.

If the Conservation Commission Director does not approve the Work Plan within two years and nine months of the County's receipt of funding, the Director must submit the Work Plan to the Statewide Advisory Committee for resolution. The Statewide Advisory Committee has final say. If the Statewide Advisory Committee recommends Work Plan approval, the Conservation Commission Director must approve it.

Exhibit 9-1. VSP Work Plan Preparation, Approval, and Monitoring Timeline

	Action	Timeline
1.	Receipt of funding to create a VSP Watershed Work Plan.	January 2016
2.	Prepare a watershed work plan within two years 7.5 months after the receipt of funding (two years nine months, minus 45-day review period).	Submit by July 12, 2018
3.	Approval of Work Plan. Director of the State Conservation Commission and technical panel (see RCW 36.70A.735) approves work plan within two years and nine months after receipt of funding - technical panel has 90 days to review and provide response to Director.	October 2018 if plan approved
	<ul style="list-style-type: none"> If no agreement in two years nine months, work plan is sent to the Statewide Advisory Committee made up of representatives of environmental, agricultural, local governmental, and tribal agencies and stakeholders. 	
	<ul style="list-style-type: none"> If no agreement in three years, the work plan does not go into effect and an alternative regulatory path must be selected. See RCW 36.70A.735 for alternative paths. 	
4.	Conduct periodic evaluations, institute adaptive management, and provide a written report of the status of plans and accomplishments to the county and to the commission within sixty days after the end of each biennium.	August 2019, 2021, 2023 et seq.
5.	Report on whether goals and benchmarks have been met in five years after receipt of funding, and also at the ten year mark and every five years after that.	January 2021 January 2026, et seq.
6.	Adaptive management or additional voluntary actions and funding may need to be identified if goals and benchmarks are not met.	ongoing after Jan. 2026

Source: RCW 36.70A.700-760; BERK Consulting 2017.

10.0 VSP Definitions

Agricultural Activities is defined in the legislation for the Voluntary Stewardship Program as follows:

"Agricultural activities" means all agricultural uses and practices as defined in RCW [90.58.065](#)."

RCW 90.58.065 (2) (a) *"Agricultural activities" means agricultural uses and practices including, but not limited to: Producing, breeding, or increasing agricultural products; 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 that the replacement facility is no closer to the shoreline than the original facility; and maintaining agricultural lands under production or cultivation;*

(b) "Agricultural products" includes but is not limited to horticultural, viticultural, floricultural, vegetable, fruit, berry, grain, hops, hay, straw, turf, sod, seed, and apiary products; feed or forage for livestock; Christmas trees; hybrid cottonwood and similar hardwood trees grown as crops and harvested within twenty years of planting; and livestock including both the animals themselves and animal products including but not limited to meat, upland finfish, poultry and poultry products, and dairy products;

(c) "Agricultural equipment" and "agricultural facilities" includes, but is not limited to: (i) The following used in agricultural operations: Equipment; machinery; constructed shelters, buildings, and ponds; fences; upland finfish rearing facilities; water diversion, withdrawal, conveyance, and use equipment and facilities including but not limited to pumps, pipes, tapes, canals, ditches, and drains; (ii) corridors and facilities for transporting personnel, livestock, and equipment to, from, and within agricultural lands; (iii) farm residences and associated equipment, lands, and facilities; and (iv) roadside stands and on-farm markets for marketing fruit or vegetables; and

(d) "Agricultural land" means those specific land areas on which agriculture activities are conducted.

Agricultural viability can be defined as the ability of a farmer or group of farmers to:

- productively farm on a given piece of land or in a specific area,
- maintain an economically sustainable farm business,
- keep the land in agriculture long-term
- steward the land so it will remain productive into the future, and

- foster a natural growth and maturation of opportunities and activities often brought about by experience, exploration, ingenuity and technology.

Conservation Practices refer to practices that improve the ecological outcomes of agricultural activities. Conservation Practices may include Conservation Practice Standards, defined by the Natural Resource Conservation Service (NRCS). NRCS conservation practice standards contain information on why and where the practice is applied, and it sets forth the minimum quality criteria that must be met during the application of that practice in order for it to achieve its intended purpose(s).

Critical areas include the following areas and ecosystems: (a) Wetlands; (b) areas with a critical recharging effect on aquifers used for potable water; (c) fish and wildlife habitat conservation areas; (d) frequently flooded areas; and (e) geologically hazardous areas. "Fish and wildlife habitat conservation areas" does not include such artificial features or constructs as irrigation delivery systems, irrigation infrastructure, irrigation canals, or drainage ditches that lie within the boundaries of and are maintained by a port district or an irrigation district or company. RCW 36.70A.030(5)

Note: See Appendix B for definitions of each critical area and mapping criteria.

Enhance is defined in the legislation for the Voluntary Stewardship Program as follows:

"enhance" means "to improve the processes, structure, and functions existing, as of July 22, 2011, of ecosystems and habitats associated with critical areas." RCW 36.70A.703

In the context of this plan, Enhancement would be indicated by a positive change (improvement) in the metric (e.g. new irrigation efficiencies are installed).

Functions and Values is not a phrase defined in GMA itself, but is defined in various State rules (WAC 365-196-830(6)) and scientific and professional literature. State rules that implement GMA indicate that functions are "the conditions and processes that support the ecosystem." The conditions and processes referenced in the definition can "operate on varying geographic scales ranging from site-specific to watershed and even regional scales." Wetland protection guidance offers a definition of values that can be generalized to other critical areas: "wetland processes, characteristics, or attributes that are considered to benefit society." Wetlands and other habitat is necessary and beneficial for wildlife; biodiversity of habitat and species is in turn a benefit to society. Some values of critical areas could be promoted in the Work Plan as a way to promote participation, e.g. water quality as benefiting agricultural operators and the community more broadly.

Protect is defined in the legislation for the Voluntary Stewardship Program as follows:

"Protect" or "protecting" means to prevent the degradation of functions and values existing as of July 22, 2011.