

December 2017 Kittitas County Voluntary Stewardship Program



DRAFT Work Plan

Prepared for Kittitas County Conservation District

December 2017 Kittitas County Voluntary Stewardship Program

DRAFT Work Plan

Prepared for

Kittitas County Conservation District 2211 West Dolarway Road, Suite 4 Ellensburg, Washington 98926

Prepared by

Anchor QEA, LLC 720 Olive Way, Suite 1900 Seattle, Washington 98101

TABLE OF CONTENTS

1	Intro	oductio	on	1
	1.1	Volun	tary Stewardship Program Overview	1
	1.2	Work	Plan Elements	3
		1.2.1	Work Plan Goals	3
		1.2.2	Work Plan Organization	4
	1.3	Work	Plan Development – Roles and Responsibilities	4
2	Kitti	tas Co	unty Regional Setting	6
	2.1	Kittita	s County Profile	6
		2.1.1	Water Resources	6
		2.1.2	Terrain and Soils	8
		2.1.3	Land Ownership	9
		2.1.4	Agricultural Land Use and Landcover	
	2.2	Agricu	Iltural Activities	
	2.3	Critica	ıl Areas	
		2.3.1	Critical Areas Definitions	13
		2.3.2	Critical Areas Functions and Values	14
	2.4	Comm	nunity Planning Areas	15
3	Base	eline ar	nd Existing Conditions	17
	3.1	Baseliı	ne (2011) and Existing Conditions	
		3.1.1	Wetlands	
		3.1.2	Fish and Wildlife Habitat Conservation Areas	
		3.1.3	Critical Aquifer Recharge Areas	27
		3.1.4	Geologically Hazardous Areas	
		3.1.5	Frequently Flooded Areas	
	3.2	Agricu	Iltural Viability Baseline Conditions	
4	Prot	ection	and Enhancement Strategies	
	4.1	Examp	oles of Stewardship Practices that Protect Critical Areas	
	4.2	Changes Since 2011 Baseline		
		4.2.1	NRCS Conservation Practices	
		4.2.2	Conservation District Led Practices	
		4.2.3	Conservation Reserve Program	
		4.2.4	Yakima Tributary Access and Habitat Program	41

		4.2.5	Yakima River Basin Integrated Water Resource Management Plan	42
		4.2.6	Regional Conservation Partnership Program – Yakima Integrated Plan – Toppenish to Teanaway Project	43
		4.2.7	Other Programs	43
		4.2.8	Changes in Agricultural Landcover since 2011	43
5	Goa	ls and	Measurable Benchmarks	
	5.1	Goals.		45
	5.2	Measu	ırable Benchmarks	
		5.2.1	Methods	52
		5.2.2	Benchmarks	55
	5.3	Indica	tors	58
	5.4	Monit	oring and Adaptive Management	60
6	Imp	lement	ation and Outreach	67
6	Imp 6.1	lement Frame	a tion and Outreach work for Implementation	67 67
6	Imp 6.1 6.2	l ement Frame Agricu	a tion and Outreach work for Implementation Iltural Producers Participation, Technical Assistance, and Outreach	67 67 67
6	Imp 6.1 6.2	Frame Frame Agricu 6.2.1	t ation and Outreach work for Implementation Iltural Producers Participation, Technical Assistance, and Outreach Organization Leads	67 67 67 67
6	Impl 6.1 6.2 6.3	Frame Frame Agricu 6.2.1 Monit	tation and Outreach work for Implementation Iltural Producers Participation, Technical Assistance, and Outreach Organization Leads oring, Reporting, and Adaptive Management	67 67 67 67 67
6	Impl 6.1 6.2 6.3 6.4	lement Frame Agricu 6.2.1 Monit Existin	tation and Outreach work for Implementation Iltural Producers Participation, Technical Assistance, and Outreach Organization Leads oring, Reporting, and Adaptive Management g Programs, Plans, and Other Applicable Regulations	
6	Impl6.16.26.36.4	Frame Frame Agricu 6.2.1 Monit Existin 6.4.1	tation and Outreach work for Implementation Iltural Producers Participation, Technical Assistance, and Outreach Organization Leads oring, Reporting, and Adaptive Management g Programs, Plans, and Other Applicable Regulations Existing Public Conservation Programs	
6	Impl6.16.26.36.4	Frame Agricu 6.2.1 Monitu Existin 6.4.1 6.4.2	tation and Outreach work for Implementation Iltural Producers Participation, Technical Assistance, and Outreach Organization Leads oring, Reporting, and Adaptive Management g Programs, Plans, and Other Applicable Regulations Existing Public Conservation Programs Private-Sector and Not-for-Profit Programs	
6	Impl6.16.26.36.4	Frame Agricu 6.2.1 Monite Existin 6.4.1 6.4.2 6.4.3	tation and Outreach work for Implementation Iltural Producers Participation, Technical Assistance, and Outreach Organization Leads oring, Reporting, and Adaptive Management g Programs, Plans, and Other Applicable Regulations Existing Public Conservation Programs Private-Sector and Not-for-Profit Programs Existing Plans and Guidance	67 67 67 67 67 67 67 67
6	Impl6.16.26.36.4	ement Frame Agricu 6.2.1 Monit Existin 6.4.1 6.4.2 6.4.3 6.4.3	tation and Outreach work for Implementation Iltural Producers Participation, Technical Assistance, and Outreach Organization Leads oring, Reporting, and Adaptive Management g Programs, Plans, and Other Applicable Regulations Existing Public Conservation Programs Private-Sector and Not-for-Profit Programs Existing Plans and Guidance Regulatory Environment	67 67 67 67 67 67 67 67 67
6	 Impl 6.1 6.2 6.3 6.4 6.5 	Frame Agricu 6.2.1 Monite Existin 6.4.1 6.4.2 6.4.3 6.4.4 Impler	tation and Outreach work for Implementation Iltural Producers Participation, Technical Assistance, and Outreach Organization Leads oring, Reporting, and Adaptive Management g Programs, Plans, and Other Applicable Regulations Existing Public Conservation Programs Private-Sector and Not-for-Profit Programs Existing Plans and Guidance Regulatory Environment mentation by Community Planning Area	67 67 67 67 67 67 67 67 67 67

TABLES

Table 1-1	VSP Roles and Responsibilities for Plan Development5
Table 2-1	Agricultural Landcover Summary10
Table 2-2	Agricultural Activity and Products12
Table 2-3	Size of Farms in Kittitas County Based on Agricultural Product Sales
Table 2-4	Critical Areas Functions14
Table 2-5	Agricultural Acres within each Community Planning Area [Preliminary numbers] 16
Table 3-1	Critical Areas Within Kittitas County Agricultural Lands [Preliminary Results]

Table 3-2	Agricultural Viability – Regional Elements	32
Table 3-3	Agricultural Viability – Farm Elements	33
Table 3-4	Agricultural Viability Strengths, Weaknesses, Opportunities, and Threats	34
Table 4-1	Examples of Critical Areas Stewardship Practices in Kittitas County (Implemented Under NRCS)	37
Table 4-2	Calculating Discontinuation for Stewardship Practices	39
Table 4-3	Top NRCS Conservation Enhancement Practices Implemented from 2011 to 2016.	40
Table 4-4	KCCD Lead Enhancement Projects Implemented from 2011 to 2016	40
Table 5-1	Wetland Protection and Enhancement Goals	46
Table 5-2	HCA Protection and Enhancement Goals	47
Table 5-3	CARA Protection and Enhancement Goals	49
Table 5-4	GHA (Erosion Hazard) Protection and Enhancement Goals	50
Table 5-5	FFA Protection and Enhancement Goals	51
Table 5-6	Key Stewardship Practices Crosswalk to National Functions Scores, Critical Areas, and Agricultural Viability	56
Table 5-7	Protection and/or Enhancement Benchmarks and Objectives (Enhancement Benchmarks Only Include Irrigated Areas, to be Updated with Other Areas)	57
Table 5-8	Producer Participation Goal and Adaptive Management for Low Enrollment	63
Table 5-9	Adaptive Management Process for Enrollment	64
Table 5-10	Adaptive Management Process for Critical Area Functions and Values Protection and Enhancement	65

FIGURES

Figure 1-1	Balanced Approach of Critical Areas Protection and Agricultural Viability	2
Figure 2-1	Water Resources and Precipitation in Kittitas County	8
Figure 2-2	Soil Types in Kittitas County	9
Figure 2-3	Land Ownership in Kittitas County	10
Figure 2-4	Agricultural Land Cover in Kittitas County	11
Figure 2-5	Community Planning Areas [Placeholder until areas are finalized]	16
Figure 3-1	VSP Crosswalk – Critical Areas Connection with Functions and Values	18
Figure 3-2	Distribution of Wetlands in Kittitas County	21
Figure 3-3	Distribution of Streams and Fish in Kittitas County	24
Figure 3-4	Distribution of Priority Habitats and Species in Kittitas County	26
Figure 3-5	Distribution of Critical Aquifer Recharge Areas and Species in Kittitas County	27
Figure 3-6	Distribution of Geologic Hazard Areas in Kittitas County	29

Figure 3-7	Distribution of Frequently Flooded Areas in Kittitas County	31
Figure 4-1	VSP Crosswalk – Functions and Values Connection with Stewardship Practices	35
Figure 5-1	VSP Crosswalk – Stewardship Practices Connection with Goals and Benchmarks	45
Figure 5-2	Direct and Indirect Effects of Practices on Critical Area Functions	55
Figure 5-3	Adaptive Management System	60

APPENDICES

Appendix A

ABBREVIATIONS

CAO	Critical Areas Ordinance
CARA	critical aquifer recharge area
CPPE	Conservation Practices Physical Effects
FEMA	Federal Emergency Management Agency
FFA	frequently flooded area
GHA	geologically hazardous areas
GMA	Growth Management Act
HCA	fish and wildlife habitat conservation areas
Integrated Plan	Yakima River Basin Integrated Water Resource Management Plan
KCCD	Kittitas County Conservation District
NRCS	Natural Resources Conservation Services
PHS	Priority Habitat and Species
RCW	Revised Code of Washington
VSP	Voluntary Stewardship Program
Watershed Group	Kittitas County VSP Watershed Group
Work Plan	Kittitas County VSP Work Plan
WRIA	Water Resource Inventory Area
WSCC	Washington State Conservation Commission
YTAHP	Yakima Tributary Access and Habitat Program



687 **5 Goals and Measurable Benchmarks**

688 RCW 36.70A.720(1) requires this Work Plan include goals and benchmarks for the protection and 689 enhancement of critical areas. The benchmarks must be measurable and designed to result in the 690 protection of critical area functions and values and the enhancement of critical areas functions and 691 values through voluntary, incentive-based measures.

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



708 Figure 5-1

709 VSP Crosswalk – Stewardship Practices Connection with Goals and Benchmarks



712 **5.1 Goals**

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

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

739 Table 5-1

740 Wetland Protection and Enhancement Goals

Goal #1: Protect and/or enhance wetland functions. Protection and enhancement: Special emphasis on key functions provided by wetlands Key Functions Wetland Functions

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

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

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

Objectives	Key Stewardship Practices	Existing Plans
Protect and voluntarily enhance acres managed using strategies that provide direct protections to wetlands and wetland buffers.	 Riparian Herbaceous Cover/Filter Strips Fencing Heavy Use Protection Stream Crossing 	 Washington Department of Fish and Wildlife's Management Recommendations for Washington's Priority Habitats and Species: Riparian Yakima Basin Integrated Water Resource Management Plan (2012)
Protect and enhance acres managed using strategies that promote water quality and hydrology functions by reducing erosion and improving water storage and filtration.	 Range Planting Managed Grazing Streambank and Shoreline Protection 	 Yakima Basin Integrated Water Resource Management Plan (2012) Naneum, Wilson, and Cherry Creeks Watershed Phase I Assessment (2017)
Protect and enhance acres managed using strategies that promote water quality and aquatic habitat functions by reducing inputs from runoff.	 Irrigation Water Management Sprinkler Systems Nutrient Management Riparian Herbaceous Cover/Filter Strips 	 Existing water quality data, such as Washington State Department of Ecology 303(d) list (see Appendix D for full list) Yakima Steelhead Recovery Plan (2009) Yakima Basin Integrated Water Resource Management Plan (2012) Naneum, Wilson, and Cherry Creeks Watershed Phase I Assessment (2017)



741

742 Table 5-2

743 HCA Protection and Enhancement Goals

Goal #2: Protect	Goal #2: Protect and/or enhance fish and wildlife habitat conservation area functions.		
Protection and enhancement: Special emphasis on key functions provided by fish and wildlife habitat conservation areas (HCAs)			
Key Functions	HCA Functions		
Water Quality	 Reduces siltation by stabilization streambanks from riparian vegetation Provides water filtration, sequestration of pollutants Reduces water temperature by providing shade 		
Hydrology	Stores and retains water to reduce flooding and support base flows in streams		
Soil	Reduces rate of erosion by providing vegetative cover		
Habitat	 Provides spawning, rearing and migratory habitat for fish, and riparian also provides refuge, nesting, and rearing areas for wildlife Provides aquatic habitat by supplying organic inputs (e.g., leaf fall, insects, and large wood) 		
	 Supports sensitive species lifecycles with forage, refuge, and migratory corridors 		

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

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

Objectives	Key Stewardship Practices	Existing Plans
Protect and/or enhance acres managed using strategies that promote habitat functions by restoring or creating new habitat structures.	 Stream Habitat and Improvement Management Streambank and Shoreline Protection Riparian Herbaceous Cover Habitat Restoration Tree/Shrub Establishment 	 Washington Department of Fish and Wildlife's Management Recommendations for Washington's Priority Habitats and Species: Shrub-steppe Riparian Washington Department of Natural
Protect and/or enhance acres managed using strategies that promote habitat functions by limiting trampling of habitat.	 Managed Grazing Watering Facilities Fencing Access Control 	 Resources Natural Heritage Program (rare plants and ecosystems) Yakima Steelhead Recovery Plan (2009) Yakima Basin Integrated Water Resource Management Plan (2012) Washington Connected Habitats Project (2010)



Goal #2: Protect and/or enhance fish and wildlife habitat conservation area functions.				
Protect and/or enhance acres managed using strategies that promote water availability for aquatic species and agricultural benefits.	 Irrigation Water Management Irrigation Pipeline Sprinkler Systems Trust Water 	 Yakima Steelhead Recovery Plan (2009) Yakima Basin Integrated Water Resource Management Plan (2012) Kittitas County Hazard Mitigation Plan (2012) Naneum, Wilson, and Cherry Creeks Phase I Assessment (2017) 		
Protect and/or enhance acres managed using strategies to protect fish-bearing streams and limit shoreline and watercourse degradation and enhance shoreline areas and watercourses.	 Stream Habitat Improvement and Management Streambank and Shoreline Protection Watering Facility Riparian Herbaceous Cover Fish and Wildlife Structure 	 Yakima Steelhead Recovery Plan (2009) Yakima Basin Integrated Water Resource Management Plan (2012) 		
Protect and/or enhance acres managed using strategies that promote water quality and aquatic habitat functions by reducing inputs from runoff (surface water quality).	 Irrigation Water Management Irrigation Pipeline Sprinkler Systems Trust Water Nutrient Management Pest Management Riparian Herbaceous Cover/Filter Strips 	 Existing water quality data, such as Washington State Department of Ecology 303(d) list (see Appendix D for full list) Yakima Steelhead Recovery Plan (2009) Yakima Basin Integrated Water Resource Management Plan (2012) Naneum, Wilson, and Cherry Creeks Phase I Assessment (2017) 		

745 Table 5-3

_

746 CARA Protection and Enhancement Goals

Protection and enhancement: Special emphasis on key functions provided by CARAs	Goal #3: Protect and/or enhance critical aquifer recharge area functions.							
	Protection and enhancement: Special emphasis on key functions provided by CARAs							
Key Functions CARA Functions	Key Functions	CARA Functions						
Water Quality • Infiltration through soil column and underlying geology improves groundwater quality	Water Quality	Infiltration through soil column and underlying geology improves groundwater quality						
Hydrology • Recharges groundwater resources	Hydrology	Recharges groundwater resources						

. .

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

...

- Ancillary agriculture benefits from implemented practices (increased soil, increased soil moisture, increased water use efficiency, weed management, pollinator/beneficial organism, and increased fertility)
- Reducing input costs associated with chemicals
- Reducing costs associated with irrigation and livestock watering

. .

- Financial incentives to offset start-up costs for new practices and infrastructure
- Hazardous materials spill containment and cleanup

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

748 Table 5-4

749 GHA (Erosion Hazard) Protection and Enhancement Goals

Goal #4: Protect and/or enhance geologically hazardous area (erosion hazard) functions.

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

Key Functions	GHA Functions
Water Quality	 Rate of soil erosion and associated movement of sediment deposited in surface waterbodies
Hydrology	Rate of groundwater infiltration and rate of surface water runoff
Soil	Rate of erosion as it relates to arable soil depth
Habitat	• Rate of erosion as it relates to sediment inputs to stream and wetland aquatic habitat

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

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

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

751 Table 5-5

752 **FFA Protection and Enhancement Goals**

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

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

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

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

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

Objectives	Key Stewardship Practices	Existing Plans	
Protect and/or enhance frequently flooded areas directly	 Riparian Herbaceous Cover Riparian Forest Buffer Tree & Shrub Planting Fencing Heavy Use Protection 	 Kittitas County Hazard Mitigation Plan (2012) Yakima Steelhead Recovery Plan (2009) Yakima Basin Integrated Water Deseurce Management Plan (2012) 	
Protect and/or enhance acres managed using techniques that limit soil compaction or trampling of habitat	Managed GrazingWatering FacilitiesFencing	 Naneum, Wilson, and Cherry Creeks Phase I Assessment (2017) 	
Protect and/or enhance acres managed using strategies that promote water quality, hydrology, soil, and habitat functions by reducing erosion and improving water storage and filtration.	 Range Planting Managed Grazing Sprinkler Systems 		

754 **5.2 Measurable Benchmarks**

755 5.2.1 Methods

This section identifies the measurable benchmarks required by RCW 36.70A.720 (1)(e) for:

1) protection of critical area functions and value; and 2) enhancement critical areas functions and

values through voluntary, incentive-based measures. Protection and enhancement benchmarks are

based on agricultural producer participation in key stewardship strategies that further the Work Plansgoals identified in Section 5.1.

- 761 Benchmarks are measured by tracking new and continued implementations of various stewardship 762 practices and associated stewardship on agricultural lands. Over time, the implementation of these 763 stewardship practices will be used to demonstrate that VSP is meeting the protection goals and 764 determine whether VSP is achieving the enhancement goals and benchmarks. See Appendix C for
- 765 initial results based on 2011 to 2016 participation data in key stewardship practices.
- The Work Plan includes two measurable benchmarks per RCW 36.70A.720 (1)(e):
- Protection Benchmarks (preventing the degradation of baseline functions existing July 22, 2011) The protection benchmark must be met to continue the voluntary, non-regulatory approach under VSP. For each protection goal, participation benchmarks are also identified and are designed to provide quantifiable measures that will ensure protection of the County's critical area functions and values is being achieved.
- 772 Enhancement Benchmarks (enhancements improve baseline critical area functions and • 773 values through voluntary and incentive based measures) – Meeting enhancement goals is 774 encouraged, but not required, to continue the voluntary, non-regulatory program under VSP 775 for protecting critical areas. At each 5-year benchmark reporting period, voluntary 776 enhancements of critical area conditions on lands used for agricultural activities are promoted 777 and accounted for. Benchmarks for enhancement are specific to the County and indicate if 778 voluntary measures are leading to desired improvements in critical area functions and values. 779 Enhancement also provides a measure of certainty that the VSP protection goal will be met if 780 some unforeseen, future agricultural related loss of critical area function(s) and/or value(s) 781 occurs.
- Benchmark quantities for stewardship practice enrollment are provided in 5-year reporting
 increments (2021 and 2026). The methods used to establish protection and enhancement benchmark
 values for stewardship practice participation included:
- Measuring historical enrollment data in key stewardship practices to develop an average
 annual enrollment quantity for each practice.

- 787 Connecting stewardship practices with specific benchmark goals based on the CPPE 788 scores for each practice developed by U.S. Department of Agriculture (USDA; NRCS 2017). 789 CPPE scores range between -5 and +5, with positive scores denoting a beneficial effect, and 790 negative scores having an adverse effect. USDA CPPE scores were averaged for the four key 791 functions, adjusted to include scoring criteria applicable to Kittitas County. See Appendix C for 792 details on how averaged CPPE scores were developed for Kittitas County. The CPPE scoring is 793 an interim step in determining whether protection and/or enhancement has occurred 794 compared to the VSP 2011 baseline. Under VSP, the relative changes in functions affected 795 from a given conservation practice will be tracked, e.g., a +4 increase moving to from a -2 to 796 +2, rather than the CPPE score of +2.
- 797 Setting anticipated disenrollment rate of agriculture lands that may not continue to 798 maintain the stewardship practice past the required lifespan or following the end of a 799 contract, or for other disenrollment reasons. Disenrollment or abandonment of practices can 800 be monitored to reduce this rate further based on actual data.
- 801 Setting protection benchmarks and performance objectives (see Table 5-7) by summing ٠ 802 the enrollment goal for similar practices that maintain baseline conditions of critical area 803 functions through replacing lost functions associated with discontinuation of practices (acres 804 calculated by anticipated discontinuation rates; see Table 4-2). Monitoring and tracking of the 805 protection benchmark will be refined during implementation.

Change from 2011 **Newly Enrolled Acres x Baseline Condition** Physical Effects Score

Disenrolled Acres x Physical Effect Score

806

What is Conservation Practice Physical Effect?

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

807

808

Setting enhancement benchmarks and performance objectives by:

- 809 Anticipated levels of future funding based on historic levels of stewardship funding and
- 810 estimates of future funding available through identified programs including the 811
 - Regional Conservation Partnership Program (RCPP), which is funded through 2021.

- However, the amount of funding will affect the amount of enhancement that occurs
 within the County. Including project acres that have implemented between 2011 and
 2016 above the protection performance objectives.
- 815 Enhancement benchmarks and performance objectives are in addition to the protection
- 816 benchmarks; therefore, estimated discontinuation acres have been incorporated into
 - the enhancement benchmark (see Table 5-7). Monitoring and tracking of the
- 818 enhancement benchmark will be refined during implementation.

Anticipated EnrolledHistoric EnrolledEnhancement above 2011Acres x PhysicalAcres x PhysicalBaseline ConditionEffect Score (Based on 2017 to 2027 project data)+Effect Score (Based on 2011 to 2016 enrollment data)-	Anticipated EnrolledHistoric EnrollncementAcres x PhysicalAcres x Physicalve 2011=Effect Score+e Condition(Based on 2017 to 2027 project data)(Based on 2011 to 2027 enrollment data)	ed cal Disenrolled e — Acres x Physical 2016 Effect Score a)
---	--	--

819

817

Rapid Watershed Assessments

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

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

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

- 820
- 821 Stewardship practices can be implemented within or directly adjacent to a critical area (see
- 822 Figure 5-2 for a conceptual representation). An example of a direct effect would include
- 823 implementing wetland restoration practices within or adjacent to an existing wetland critical area.
- 824 Indirect effects occur within agricultural areas that are not adjacent to or within critical areas but still
- 825 have indirect effects on resource functions.

826 Figure 5-2



827 Direct and Indirect Effects of Practices on Critical Area Functions

828

829 5.2.2 Benchmarks

830 Work Plan benchmarks are focused on measuring and tracking producer participation in

implementing key stewardship practices identified by the Watershed Group as having a benefit toone or more critical area functions and values.

Table 5-6 provides a crosswalk of the key stewardship practices identified for the Work Plan

834 benchmarks to critical areas, function protections based on the overall averaged CPPE function

effects score, and agricultural viability aims. The CPPE scoring shown in Table 5-6 indicates the most

beneficial effects (enhancements) to functions in green boxes (+5), no effect (0), and the most

837 detrimental effects to functions in orange (-5). See Appendix C for additional information on

838 methods applied for linking stewardship practices to function protections using CPPE function effects

and a more comprehensive list of stewardship practices.

Table 5-7 provides a summary of protection and enhancement measurable participation benchmarks

841 for the 5-year reporting increments (2021 and 2026). In predicting benchmark values for

842 enhancement, KCCD typically assumed 70% implementation would likely occur within the first 5-year

843 reporting timeframe (2021) while VSP implementation and outreach is developed and conducted,

and 30% would occur within the second 5-year reporting timeframe (2026). The protection

845 performance standard for each stewardship practice is based on historic records. New practices will

846 often replace an existing practice. Trends in stewardship practices and updates to the protection

847 performance standard that reflect the move to new stewardship practices will be included in the

2- and 5-year reports. Benchmarks may be adjusted through adaptive management as needed to

849 reflect the higher or lower physical effect of the new practice.



851 Key Stewardship Practices Crosswalk to National Functions Scores, Critical Areas, and Agricultural Viability

Key Stewardship Strategies		Key Stewardship Strategies	Crit (av	ical Area Functio eraged CPPE Fur	ns Protection Me action Effects Sco	trics re) ²	Critical Area Protections				5	Agricultural Viability	
Туре	NRCS Code	Key Practices ¹	Soil	Hydrology	Water Quality	F&W Habitat	WET	HAB	CARA	GHA	FFA	Aims	CPPE Metric ²
	449	Irrigation Water Management	2.25	2.00	2.55	3.50						Protect against erosion risk	1.56
Water	441	Micro-irrigation	0.50	2.00	2.00	1.00						Protect soil function	1.53
Management	430	Pipeline	1.00	1.33	1.14	0.00	•	•	•	•		Improve water availability	3.00
	442	Sprinkler System	1.25	2.25	1.55	1.00						Reduce input costs	1.00
Nutrient Management	590	Nutrient Management	0.83	0.00	3.50	0.00	•	•	•			Protect soil functionReduce invasive and nuisance speciesReduce input costs	1.55
Pest Management	595	Pest Management	2.00	0.00	4.00	2.00	•	•	•	•		 Protect soil function Reduce invasive and nuisance species Provide pollinator species/beneficial organisms habitat 	1.00
Soil	340 Cover Crop	Cover Crop	2.46	1.40	3.00	2.00						 Protect against erosion risk Protect soil function Reduce invasive and nuisance species 	1.93
Management	484	Mulching	2.50	0.60	0.83	1.00				•		 Provide pollinator species/beneficial organisms habitat Promote yield and fertility 	2.18
	550	Range Planting	3.10	0.75	1.33	2.67						Protect against erosion risk	1.70
Range	528	Managed Grazing	3.00	1.50	2.50	3.00	•	•		•	•	Protect soil function	1.50
Wanagement	614	Watering Facility	1.10	0.00	1.71	4.00						 Reduce invasive and nuisance species Promote vield and fertility 	0.00
	395	Stream Habitat Improvement and Management	2.50	0.00	2.00	3.00							1.18
	390	Riparian Herbaceous Cover	2.79	0.33	2.50	3.50						 Protect against erosion risk Protect soil function 	1.50
Habitat	391	Riparian Forest Buffer	2.47	0.67	2.83	4.00	•	•		•	•	 Reduce invasive and nuisance species 	1.92
Management	612	Tree/Shrub Establishment	2.97	1.50	2.08	3.00						Provide pollinator species/beneficial	2.21
	382	Fence	2.00	0.00	2.00	1.00						organisms habitat	1.30
	580	Streambank and Shoreline Protection	2.00	0.00	1.25	1.50						Protect against erosion risk	1.09
Stream Enhancement	396	Aquatic Organism Passage	0.00	0.00	2.00	2.67	•	•		•		 Protect soil function Reduce invasive and nuisance species	1.22
	587	Structure for Water Control	0.00	2.00	1.00	-1.00						Promote yield and fertility	1.44

852 Notes:

1. Key practices include those practices that address resource concerns and critical areas function protections and are widely implemented, anticipated for continued application, or identified as major practice trends anticipated in the future.

853 854 2. The NRCS Conservation Practice Physical Effects (CPPE) matrix was relied upon to develop an average function effects scores for the key function and practices. See Appendix C for full suite of stewardship practices CPPE scores.

855 3. Livestock management stewardship focuses on key practices that address on-field resource concerns and management.



857 Protection and/or Enhancement Benchmarks and Objectives (Enhancement Benchmarks Only Include Irrigated Areas, to be Updated with Other Areas)

	S	Stewardship Strategies	Historical Enro (2011 –	ollment Data 2016)	Protection Benchmarks a	nd Performance Objectiv	r es ^{b,c}	Enhancement Performanc	Benchmarks an e Objectives ^{b, c}	ıd
	Туре	Key Stewardship Practices ^a	Average Annual Enrollment in Key Practices	Estimated Yearly Disenrollment	Benchmark	2021 Performance Objective (Disenrollment x 10) ^d	2026 Performance Objective (Disenrollment x 15) ^d	Benchmark	2021 Performance Objective	2026 Performance Objective
	Water Management	Irrigation Water ManagementSprinkler SystemMicro-irrigation	1,043 acres	31 acres	No net loss in acres under water management	313 acres	469 acres		22,112 acres	31,589 acres
5	-	Irrigation Pipeline	16,913 feet	507 feet	No net loss in feet under water management	5,074 feet	7,611 feet		213,893 feet	305,561 feet
ersect	Nutrient Management	Nutrient Management	120 acres	8 acres	No net loss in acres under nutrient management	84 acres	126 acres		6,343 acres	9,062 acres
ct Inte	Pest Management	Pest Management	234 acres	16 acres	No net loss in acres under pest management	164 acres	246 acres	-	914 acres	1306 acres
ndire	Soil Management	Cover CropMulching	919 acres	64 acres	No net loss in acres under soil management	643 acres	965 acres	Enrolled units (e.g., acres and feet) based on:	4,447 acres	6,353 acres
	Range	Range PlantingManaged Grazing	238 acres	17 acres	No net loss in acres under range management	167 acres	250 acres	 Implemented projects from 2011 – 2016 Anticipated projects 	867 acres	1,239 acres
	Management ^e	Stock Watering Facility	19 facilities	<1 facility	No net loss of feet providing forest enhancement	5 facilities	8 facilities	funded for stewardship practices	74 facilities	105 facilities
ects	Habitat Management	 Stream Habitat Improvement and Management Riparian Herbaceous Cover Riparian Forest Buffer Tree/Shrub Establishment 	287 acres	20 acres	No net loss in acres under habitat management No net loss of feet providing habitat management	201 acres	302 acres	from 2017 –2027 ^f • Estimated annual disenrollment since 2011 at time of reporting	1,010 acres	1,443 acres
Inters		• Fence	28,407 feet	852 feet	No net loss of feet providing habitat management	Objective (Disenrollment x 10)4Objective (Disenrollment x 15)4Perform Benchmarkwater313 acres469 acresanagement5,074 feet7,611 feetbanagement5,074 feet7,611 feetutrient84 acres126 acresanagement164 acres246 acresanagement643 acres965 acresanagement643 acres965 acresanagement167 acres250 acresa forest5 facilities8 facilitiesa habitat201 acres302 acresa habitat8,522 feet12,783 feeta stream36 feet53 feeta stream1 project2 projectsa stream1 project2 projects	156,667 feet	223,810 feet		
Direct	Stream	Streambank and Shoreline Protection	119 feet	4 feet	No net loss in acres under stream enhancement	36 feet	53 feet		886 feet	1,266 feet
	Enhancement	Aquatic Species PassageStructure for Water Control	3 projects	<1 project	No net loss of feet providing stream enhancement	1 project	2 projects		27 projects	38 projects

858 Notes:

859 a. Key practices include those practices that address resource concerns and critical areas function protections and are widely implemented, anticipated for continued application, or identified as major practice trends anticipated in the future.

860 b. Measurable benchmarks are based upon the historic NRCS participation data (2011-2016) in key practices (see Note a). No net loss and enhancements will be measured based on estimated annual disenrollment rates for key practices from the 2011 baseline.

861 c. Benchmarks are anticipated to be adapted as new technologies and practices are applied by producers and unanticipated changes in environmental and market conditions would be addressed through the adaptive management process. Protection benchmarks are based on estimated disenrollment 862 rates. A more accurate estimate and understanding of which practices are discontinued can be used to modify these benchmarks.

863 d. Number is years between 2011 and benchmark year.

864 e. Livestock management stewardship focuses on key practices that address on-field resource concerns and management.

865 f. If the funding received is less than anticipated, enhancement benchmarks may be lower than predicted. However, as of 2017 the amount of implemented stewardship practices in the County are above the protection benchmark and all additional stewardship practices are providing enhancement of 866 critical areas functions and values.

868 5.3 Indicators

869 Indicators are measurable metrics associated with specific environmental variables (e.g., stream flow

at a particular location). Metrics can be monitored and analyzed over time to understand longer term
 trends related to specific critical area functions and values. Indicators affected by both agricultural

- and non-agricultural factors will generally not be used for purposes of determining whether
- 873 protection of baseline conditions is being achieved or goals and benchmarks are being met due to
- 874 the cost and difficulty involved in separating agricultural effects from non-agricultural effects. Such
- indicators may, however, be used to identify resource trends and focus enhancement efforts on high
- 876 priority areas or specific functions. Indicator data will be reviewed at least every 5 years to help focus
- technical assistance efforts and assess if the anticipated protection and/or enhancement of critical
- area functions is occurring. If an indicator shows a loss or gain in the baseline condition for a critical
- area function, it can be compared to the performance objectives for stewardship practices
- 880 implemented.

881 If this analysis does not account for the change, a more targeted evaluation and analysis of the

specific effects of agricultural activities can be made for the applicable parameter(s). This analysis

- 883 would be used to inform if the VSP is meeting the protection standard for critical area functions
- 884 within agricultural areas and the degree to which non-agricultural factors are influencing one or
- 885 more indicators.
- 886 The following indicators relate to the four major critical area functions:
- Water quality indicators will include Category 4 and 5 303(d) listings, focused on parameters that potentially have an agricultural source. Category 4 includes polluted waters that do not require a Total Maximum Daily Load (TMDL), and Category 5 waters are polluted and require a TMDL or other water quality improvement project. Appendix B-6 provides a listing of these parameters found in Kittitas County in 2016, acknowledging these parameters may be updated in the future. 303(d) listings within the County can be monitored using Washington State Department of Ecology's Water Quality tools found online at
- 894 http://www.ecy.wa.gov/programs/wq/303d/index.html.
- 895 **Hydrology indicators** will include tracking flow gauges through the U.S. Geological Survey • 896 (USGS), Washington State Department of Ecology, U.S. Bureau of Reclamation, Kittitas 897 Reclamation District (KRD), or other agencies. USGS water data is available online at 898 https://www2.usgs.gov/water/. Washington State Department of Ecology water data is 899 available online at https://fortress.wa.gov/ecy/eap/flows/regions/state.asp. U.S. Bureau of 900 Reclamation has gauges along the mainstem Yakima River, water monitoring sites can be 901 found online at https://www.usbr.gov/pn/hydromet/yakima/yaktea.html. KRD monitoring 902 occurs mostly on irrigation canals and is available online at:

- 903 http://krdistrict.org/manageme.htm. Groundwater monitoring wells are also present in Kittitas904 County to monitor groundwater quantity.
- Soil function indicators will include USDA Natural Resources Inventory (NRI) monitoring
 results related to erosion and soil functions and fertility. This monitoring should focus on
 locations within or adjacent to critical areas in relation to erosion issues, allowing for more
 natural erosion rates upland of critical areas. Interactive data viewers at the State level are
 available online at
- 910 https://www.nrcs.usda.gov/wps/portal/nrcs/rca/national/technical/nra/rca/ida/_
- 911 Habitat indicators will include evaluation of publicly available aerial imagery at the 5- and • 912 10-year performance review periods, based upon adequate resources provided through the state for VSP program implementation to assess critical area resource protections (primarily 913 914 HCAs and wetlands). Imagery evaluation will include a random sampling of areas⁴ within the 915 Work Plan's community planning areas. Analysis results will be summarized in the reporting at Community Area and County scales. Individual parcels will not be identified and producer 916 917 privacy will be maintained in the evaluation process. Priority habitats and species data available through Washington Department of Fish and Wildlife will also be evaluated in addition to other 918 919 related information that might or is expected to become available in the future, such as remote 920 sensing through Washington Department of Fish and Wildlife's High Resolution Change 921 Detection program, LiDAR, or other GIS approaches for habitat assessment, if this information is 922 made available to Kittitas County. Additionally, ground-truthing will be needed to ensure that 923 change detection data made available fits the scope and jurisdiction of the VSP. In addition to 924 remotely sensed data, fish abundance and distribution can be monitored and track using 925 passive integrated transponder (PIT) tag array, redd count, radio telemetry, and screw trap data. 926 Once data are obtained, analysis will be needed to determine if agricultural activities are the 927 cause of any identified degradations. Review of PHS updates and other relevant information 928 comparisons against the 2011 baseline conditions will be done in coordination with 929 Washington Department of Fish and Wildlife.
- Indicators provide important information for evaluating the Kittitas County VSP performance and
 informing adaptive management decisions as described in Section 5.4. Indicators may not be
 determinative of VSP success in maintaining 2011 baseline or better conditions as affected by
 agricultural activities as opposed to other changes at the landscape scale such as urbanization, major
 fire events, or long term climatic trends.

⁴ Random sample areas will include a representation of lands for VSP participants as well as other lands that may or may not have practices implemented on them, and these results will be extrapolated to the larger community areas and the County, in an effort to more accurately characterize critical areas protections achieved.



935 **5.4 Monitoring and Adaptive Management**

Adaptive management typically consists of a monitoring system to identify changes in the

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

942 Figure 5-3

943 Adaptive Management System



- Assess Data on participation goals and the indicators previously described are compiled by
 KCCD. The compiled information is used to identify issues, refine objectives, and understand if
 benchmarks are effective in protecting or enhancing critical area functions and values, and if
 indicators are sufficient to understand any change to critical area functions and values.
- 949 2. Update Benchmarks Based on the results of the assessment stage, updates to the protections
 950 and enhancement benchmarks could occur. These updates could represent changes to the level
 951 of participation necessary to meet a specific protection or enhancement standard. These
 952 updates could also reflect a change in the goals for a specific watershed or critical area function,
 953 or a shift from one set of conservation practices to another.
- 954 3. Implement and Monitor The approved Work Plan is put into action, concurrently with
 955 monitoring focused on documenting the protection and enhancement of critical area functions

- and values. Monitoring data are collected on various indicators and used to determine if specificfunctions and values are being protected.
- 958 4. **Evaluate** Participation data are evaluated relative to the protection and enhancement goals.
- 959 Differences between targeted goals and results are identified, and the causes for those
- 960 differences are investigated, including consideration of participation measures and indicators.
- 961 Goal adjustments are made as needed to maintain protection of critical area functions and 962 values.
- 963 5. Adjust Information learned in previous steps is used to adjust the participation benchmarks,
 964 stewardship practices, or level of incentive for enhancement.

Considering the Changes to Baseline Conditions

It's important to note changes to baseline conditions outside of VSP are likely to occur due to effects from climate change, natural events (e.g., floods, wild fires), or other changes outside of the scope of VSP (e.g., forest practices). Additional changes to baseline may occur in the County that are the result of activities outside of the County, such as effects to watercourses that occur upstream and outside of the County limits. These changes will not be counted against agriculture for VSP assessment purposes and will be documented through the reporting and adaptive management process.

- 965 The adaptive management process is iterative and would repeat cyclically at least every 5 years, as
- 966 part of the implementation of the VSP. If an adjustment is identified, the Watershed Group would
- 967 submit a written report identifying the results of the evaluation and a strategy to make the necessary
- adjustments to the Work Plan to the Washington State Conservation Commission (WSCC). If an
- adjustment is not necessary, then the report would simply state the results of the evaluation. In
- 970 either case, the process of adaptive management would be applied at least every 5 years.
- 971 Monitoring and adaptive management is based on two strategies
- 972 1. **Direct monitoring** of producer participation (Table 5-9)
- 973a.Enrolled acres monitoring. Direct monitoring of stewardship participation (enrolled974acres) in key stewardship practices is integral to the outreach strategy. Participation goals975were developed based on agricultural activities, critical area functions, and the anticipated976effects of implementing specific stewardship practices. During outreach and977implementation, enrollment data will be frequently reviewed to determine if participation
- 978 levels are adequate to meet the goals and benchmarks identified in Section 5.1 and 5.2.
- 979 b. Sample verification. In addition to monitoring enrollment acres, KCCD will also monitor a
 980 randomly selected sample of 10% of the reported projects, including
- 981 self-reported/funded, to verify the performance of the stewardship practices in terms of
- 982 implementation/application and maintenance, relying on the CPPE framework. The
- relative changes in functions affected from a given stewardship practice will be tracked in
 relation to baseline conditions, e.g., a +2 CPPE score for a practice will be captured as a
- 985 +4 if practices are moving to from a -2 to +2.

- c. Adaptive management trigger. If at any point after the first year the annual producer
 participation rate drops below 120% of the rate needed to meet the protection
 benchmark, measures would be taken to understand the situation. Since the trigger is
 above the necessary participation rate this allows the implementer to adjust before the
 protection benchmark is in jeopardy. Participation goals and objectives with potential
 adaptive management actions are described in Table 5-8.
- 992 d. Adaptive management process. Table 5-9 includes a more detailed description of the
 993 adaptive management process for enrollment, including specific thresholds for each of
 994 the key practices.

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

- a. Indicators. Indicators, identified in Section 5.3, will be used to assess whether the
 enrollment in VSP is having the anticipated effect of protecting and/or enhancing critical
 area functions and values. If enrollment goals are met, but indicators show a negative
 trend in critical area functions and values, it will be important to analyze whether this is
 related to agriculture, and respond accordingly.
- 1001 **VSP applicability.** Some indicators (e.g., stream temperature) may be responding to b. 1002 changes other than agricultural activities (e.g., climactic variability, reservoir operations). 1003 Where a link to changes in agricultural activities can be made, it may be important to also 1004 understand the contribution of other factors. Indicators of negative impacts related to 1005 changes in agriculture since 2011 would trigger additional stewardship practices, higher 1006 enrollment goals, or increased outreach as needed to mitigate these impacts. Because 1007 detection of long-term trends in environmental indicators is difficult, this review will occur 1008 every 5 years as part of VSP reporting.
- 1009 c. **Process.** Table 5-10 includes a description of how environmental indicators discussed in
 1010 Section 5.3 will be used to refine the goals and benchmarks of the VSP over time.

1013 **Producer Participation Goal and Adaptive Management for Low Enrollment**

Objectives/Benchmarks	Performance Metric/Monitoring Method	Identified Cause/ Adaptive Management Threshold	Adaptive Management Action	Who Monitors	When
		Key practice not consistent with agricultural viability	Identify alternative practices that provide similar function and are agriculturally viable		
Sufficient active participation by commercial and non-commercial	 Number of acres reported in key stewardship practices 	Incentives associated with key stewardship practice no longer available	Identify alternative funding or alternative practices that are more likely to be self-funded		Monitored every year Reported during the
agricultural operators (farmers and ranchers) over 10 years that achieves the	Number of VSP checklists submitted Sufficient producer participation processary	Inadequate reporting of voluntary participation	Increase outreach to producers		
protection of critical area functions and values at a County-wide watershed level. ¹	to meet protection and enhancement benchmarks	Change in agricultural practices that make key practices less applicable	Develop applicable practices that provide similar function		
		Changes in agricultural economy that make self-funded stewardship practice implementation difficult	Identify alternative funding or other incentives		
Passive participation by commercial and noncommercial agricultural operators in VSP stewardship practices is maintained or increased over 10 years on agricultural land (including but not limited to those listed in Table 5-6 and Appendix C, Attachment 2). ²	 Mapping and aerial photo evaluation and/or rapid watershed assessment of practices in place Random sampling of farmers and ranchers in the field by technical assistance providers with willing landowners 	Decline below the annual average enrollment rate identified in Table 5-9 in key stewardship practices	Increase outreach to producers	VSP Coordinator	Two-year status report and Five-year performance reports
Technical assistance and outreach is provided to agricultural producers to encourage stewardship practices and VSP participation.	Number of outreach and education eventsNumber of event attendees	Decline below the baseline annual average enrollment rate identified in Table 5-9 in key stewardship practices	Increase outreach to producers		

1014 Notes:

1015 1. Active participation includes stewardship activities reported either through publicly-funded programs or self-reported through the VSP checklist in coordination with the VSP Coordinator or technical assistance provider.

1016 2. Passive participation includes un-reported stewardship activities.

1017

1020 Adaptive Management Process for Enrollment

		Protection Metric ¹		Adaptive Management Trigger (120 % of Protection Metric)				
Туре	Adaptive Management Objective	(Annual)	Verification	(Annual)	Adaptive Management Action	Who Monitors	When	
Soil Management	Mulching	64 acres	10% verified through monitoring and visual	77 acres	Outreach with producers/review	Conservation District	Every year	
	Cover Crop		recognition		approach		, you	
Water Management	Irrigation Water Management	31 acres	10% verified through monitoring and visual recognition	37 acres	Outreach with producers/review	Conservation District	Every year	
	Sprinkler System		recognition		approach			
Nutrient Management	Nutrient Management	8 acres	10% verified through monitoring and visual recognition	10 acres	Outreach with producers/review approach	Conservation District	Every year	
Pest Management	Pest Management	16 acres	10% verified through monitoring and visual recognition	19 acres	Outreach with producers/review approach	Conservation District	Every year	
Stream Enhancement	Streambank and shoreline protection	4 acres	10% verified through monitoring and visual	4.5 acres	Outreach with producers/review	Conservation District	Every year	
	Channel Bed Stabilization		recognition		арргоаст			
	Range Planting	17 acros		20 acros				
Range Management	Prescribed Grazing	17 acres	10% verified through monitoring and visual recognition	20 acres	Outreach with producers/review	Conservation District	Every year	
	Watering Facility	1 facility		1 facility				
	Tree/Shrub Establishment							
Habitat Managament	Restoration of Rare and Declining Habitats	20 acres	10% verified through monitoring and visual	24 acres	Outreach with producers/review	Conconvotion District	Eventvear	
nabilal Management	Upland Wildlife Habitat Management		recognition		approach		Every year	
	Fence	852 feet		1,022 feet				

1021 Note:

1022 1. Metric is calculated based on annual to meet 2021 benchmark values identified in Table 5-7.

1025 Adaptive Management Process for Critical Area Functions and Values Protection and Enhancement

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

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

1027	6 I	mplementation and Outreach
1028	6.1	Framework for Implementation
1029 1030	6.2	Agricultural Producers Participation, Technical Assistance, and Outreach
1031 1032	6.2.1	Organization Leads
1033	6.3	Monitoring, Reporting, and Adaptive Management
1034	6.4	Existing Programs, Plans, and Other Applicable Regulations
1035	6.4.1	Existing Public Conservation Programs
1036	6.4.2	Private-Sector and Not-for-Profit Programs
1037	6.4.3	Existing Plans and Guidance
1038 1039	6.4.4	Regulatory Environment
1040 1041	6.5	Implementation by Community Planning Area

1043 **7 References**

- Ecology (Washington State Department of Ecology), 2010. Focus on Irrigation-Influenced Wetlands.
 Ecology Publication Number: 10-06-015. July 2010.
- 1046 Ecology, 2015. Manastash Creek Conservation and Tributary Enhancement Project. April 2015.
- Ecology 2017a. Yakima Basin Water-rights Case Coming to a Close. Department of Ecology News
 Release August 17, 2017. Available from: http://www.ecy.wa.gov/news/2017/063.html
- Ecology, 2017b. Washington State Water Quality Assessment 303(d)/305(b) List Search Tool. Cited:
 November 1, 2017. Available from:
- 1051 https://fortress.wa.gov/ecy/approvedwqa/ApprovedSearch.aspx.
- 1052 Kittitas County, City of Cle Elum, Town of South Cle Elum, and City of Ellensburg, 2013. Kittitas
 1053 County Regional Shoreline Master Program Update Shoreline Inventory and
- 1054 Characterization Report. Ecology Grant No. 1200054. May 2013.
- 1055 Kittitas County, 2017. Tax Revenue parcel data with Department of Revenue tax codes. Accessed1056 November 13, 2017.
- 1057 RCD (Washington Resource Conservation and Development Council), 2017. Yakima Tributary Access
 1058 and Habitat Program. Accessed November 15, 2017. Available at:
 1059 https://www.washingtonrcd.org/ytahp
- Schultz, R., and R. Vancil, 2016. Voluntary Stewardship Program An Alternative Approach for
 Protecting Critical Areas on Agricultural Lands While Maintaining the Viability of Agriculture.
- 1062 Environmental Land Use Law 42(1):9-15.
- 1063 USDA (U.S. Department of Agriculture), 2012. 2012 Census of Agriculture: County Profile Kittitas
 1064 County Washington. Available from:
- 1065https://www.agcensus.usda.gov/Publications/2012/Online_Resources/County_Profiles/Washin1066gton.
- 1067 WDFW, 2017. Species & Ecosystem Science, Shrub steppe Ecology. Accessed: January 12, 2017.
 1068 Available from: http://wdfw.wa.gov/conservation/research/projects/shrubsteppe/.
- Weibull, A., Ö. Östman, and Å. Granqvist, 2002. Species richness in agroecosystems: the effect of
 landscape, habitat and farm management. Biodiversity and Conservation 12(7):1335-1355.
- 1071 WSDA (Washington State Department of Agriculture), 2011. WSDA Crop Data Layer 2011.