

San Juan County Voluntary Stewardship Program Final Adaptive Management Plan



SAN JUAN ISLANDS



CONSERVATION
D I S T R I C T
SAN JUAN COUNTY, WASHINGTON

by San Juan Islands Conservation District,
on behalf of the San Juan County VSP Work Group

Approved November 9, 2021

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Introduction

The San Juan County Voluntary Stewardship Program (VSP) Work Group completed its Five-Year Report at the end of 2020, assessing progress toward meeting the protection and enhancement goals and benchmarks of the VSP Work Plan established in 2018. Findings of the report indicated that many protection and enhancement goals were not being met and that adaptive management is needed. In addition, it was found that a number of items in the original Work Plan needed to be modified in order to report progress in general over five-year periods. For example, in a few cases, goals were not designed to protect or enhance critical areas. In many cases, there was not a clear progression from performance metric, to benchmark, to goal, and benchmark datasets were not provided or available.

In response to these findings, an adaptive management plan was developed, and many changes were made to goals, benchmarks, and metrics for VSP progress reporting. The adaptive management plan was submitted concurrently, as required, with the five-year report in December of 2020. The VSP Technical Panel was generally supportive of the proposed changes in the initial Adaptive Management Plan, yet several areas were identified that needed further refinement. The San Juan Islands Conservation District has worked with the VSP Technical Panel to further refine the Adaptive Management Plan as follows:

This version of the 2021 Adaptive Management Plan clarifies the goals, benchmarks, and metrics used to monitor and report on VSP progress, as well as guiding programmatic changes that will enable the Watershed Work Group to meet the goals of protecting and enhancing critical areas on farmland while maintaining agricultural viability in San Juan County. This plan is intended to replace the 2020 Adaptive Management Plan that was submitted with the Five-Year Report. It is also intended to replace Table 13 in the original San Juan County VSP Work Plan, as well as individual goals, benchmarks, and metrics found in Chapter 5 of the Work Plan (specific page numbers can be found under each goal in Table 1 of this document). The Work Plan is available at:

<https://sccwagov.app.box.com/s/z4xzvoo5c54dz3hnkb3ixxc79rwsx7iu>

Adaptive Management Changes

The following logic was used in determining whether to propose adaptive management for areas that are unclear in the Work Plan:

1. Does the goal aim to protect or enhance critical areas? If not, revisions or deletions were made. For example, a goal to “Minimize flood damage to agricultural properties and operations” does not protect or enhance Frequently Flooded Areas (FFAs). (See Goal 15)
2. Does the benchmark help to measure achievement of the goal? If not, revisions were made. For example, the benchmark “Acreage of FFAs where they intersect with ag activity” gives us no indication of whether or how well we are protecting or enhancing FFAs. (See Goal 17)
3. Are there benchmarks to measure the *effectiveness* of critical areas protection and enhancement actions? If not, they were added. In most cases, there were only benchmarks that measure *implementation*. This is true for wetlands, fish and wildlife habitat conservation areas (FWHCAs), geologically hazardous areas (GHAs), and two of the three critical aquifer recharge areas (CARA).

4. Do the metrics correspond to the benchmark? If not, revisions were made. For example, although “Change in SVAP2 element scores” is a meaningful metric, it does not inform the benchmark, “ID actions taken to enhance streams.” (See Goal 5)

In addition to providing clarification on unclear benchmarks and metrics, we also identified areas in which goals or benchmarks were not met and have provided adaptive management changes that will help in their achievement. Generally, in these cases, we plan to increase outreach to farm operators, with the goal being to develop an Individual Stewardship Plan, implement best management practices, and ultimately see enhancement of critical areas on farmland. We also plan to focus outreach in geographic areas that are known to have concerns that affect critical areas, such as issues with livestock and water quality. If there are farms in these focus areas that have older farm plans in need of updating, we will approach them about entering VSP, make updates, and attempt to pursue cost share funding, if needed. GIS analysis will be used to identify where farms overlap with critical areas and priority watershed sub-basins. These basins are identified in the Work Plan and are defined as priorities for freshwater restoration that also contain agricultural activity.

Other changes include the removal of separate restoration goals for wetlands, streams, and Fish and Wildlife Habitat Conservation Areas. We found it unnecessary to have these as separate goals because they would ultimately be tracked and counted under enhancement as it is defined in the statute. Therefore, the three restoration goals were lumped with existing enhancement goals for each of the applicable critical areas. Additionally, where there were goals that combined protection and enhancement, they were split into separate goals.

Clarification on Protection and Enhancement Definitions

Through the process of completing the Five-Year Report, the Work Group determined that it had been misinterpreting how NRCS Conservation Practices, or BMPs, were accounted for in meeting protection and enhancement goals. The Work Group originally used a more literal definition of which BMPs would protect and which BMPs would enhance critical areas. For example, a fencing BMP would provide protection, and therefore meet protection goals, whereas a planting BMP would provide enhancement, and therefore meet enhancement goals. This interpretation is inaccurate. The Work Group now understands that an NRCS BMP, installed on or before the baseline date of July 22, 2011, and maintained as per NRCS specifications, meets protection implementation benchmarks¹. BMPs installed after the July 22, 2011 baseline date and maintained as per NRCS specifications may meet protection or enhancement benchmarks, depending on the state of the critical area the BMP affects. BMPs relevant to San Juan County that have the potential to protect or enhance each type of critical area are listed in Appendix A.

Further clarification on the difference between protection and enhancement and requirements of VSP is provided in the VSP statute:

- **Protect:** to prevent the degradation of functions and values existing as of July 22, 2011. RCW 36.70A.703(8).

¹ There are now separate implementation benchmarks and effectiveness benchmarks for each goal, so both types of benchmarks would need to be met in order to achieve any specific goal.

- **Enhance:** to improve the processes, structure, and functions existing as of July 22, 2011. RCW 36.70A.703(4).

Under this Adaptive Management Plan, the protection and enhancement goals have been separated from each other in order to create measurable benchmarks that reflect the difference between the two types of goals. Protection goals are intended to maintain the status of critical areas functions and values as of July 22, 2011, whereas enhancement goals are intended to improve critical areas functions and values from the same date, through the use of voluntary, incentive-based measures.

The consequences of not meeting VSP goals are different based on whether it is a protection or an enhancement goal. If after 10 years, **protection** goals and benchmarks have not been met, the county risks failing out of VSP, whereas if 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(2)(c)(iv), emphasis added. Although funding has not been provided to enhance critical areas, both protection and enhancement goals and benchmarks are included in the Work Plan.

Monitoring

Every metric that will be used to monitor VSP progress is now explicitly tied to a benchmark, and that benchmark tied to a specific goal. There are two broad types of monitoring that will take place for every goal: implementation monitoring and effectiveness monitoring. Implementation monitoring is the most basic level of monitoring used to determine what has been accomplished on the ground, i.e., which BMPs have been implemented, and how much. Effectiveness monitoring will attempt to address the question of how well critical areas on farmland are being protected and/or enhanced. Both types of monitoring will reference baseline conditions in 2011, where possible. When 2011 baseline conditions are unattainable due to BMP implementation since that time, it is assumed that as long as the BMP has been maintained and meets the NRCS standard, that the enhancement goal for implementation was met on that particular property. Baseline values for implementation monitoring will be collected using a BMP checklist for critical areas that occur on each property.

Effectiveness monitoring will be achieved using two types of analysis: spatial analysis and field monitoring. Washington’s Department of Fish and Wildlife High Resolution Change Detection (HRCD) data will be used to monitor changes in all critical areas that intersect with farmland. Results from HRCD analysis will provide an understanding of where changes are occurring on the landscape and can help to focus field monitoring and outreach in those change locations. Since HRCD is not designed to measure habitat gains, this data will only be used to monitor progress toward protection goals, i.e., maintaining baseline rates of change since 2011.

Spatial analysis will also be used in a small number of cases where streams intersect with land capability subclass “e” soils. Change in stream buffer widths will be measured using GIS and high resolution imagery to monitor vegetative buffers that help protect surface water quality from sedimentation that could occur on class e soils.

Field monitoring will consist of the following:

- For wetlands, NRCS Biology Technical Note-14
- For stream habitat in FWHCAs, Stream Visual Assessment Protocol, version 2
- For stream surface water quality in FWHCAs, water quality in-stream testing
- For upland habitat associated with FWHCAs, NRCS Biology Technical Note-14
- For Frequently Flooded Areas, NRCS Biology Technical Note-14

In addition to having a wider variety of field monitoring in general, the other major change in monitoring from the original plan includes a reduction in the amount and scope of water quality testing. We found that the original surface water quality monitoring plan for this program was too complex to undertake and was not adequate for measuring watershed health. It was written when the Conservation District had a water quality specialist on staff, along with testing equipment. The District no longer has the capacity to conduct water quality testing, and furthermore, the logistical difficulties associated with conducting this program were too great to overcome. For these reasons, we decided to take advantage of a monitoring program that is taking place in False Bay Watershed on San Juan Island and use this watershed subbasin as a model. This is a heavily studied watershed that has a large intersection with agricultural use, historic channelization, and several restoration projects that have taken place over the last 10 years. Water quality in-stream testing will be conducted by researchers at the University of Washington-Friday Harbor Laboratories. Using this watershed to begin with, we will continue to search for funding and other opportunities to collaborate with others, with the goal of establishing model watershed subbasins on Lopez and Orcas islands in the future and to develop an affordable and realistic monitoring plan.

Detailed protocols for each type of monitoring have been developed and will be used to guide all future monitoring for VSP. See Appendix A for implementation monitoring, Appendix B for spatial analyses, and Appendix C for field monitoring.

Changes to the original Work Plan, proposed by the new Adaptive Management Plan, are presented in Table 1. The columns in grey are the original goals, benchmarks, and metrics as described in Table 13 of the Work Plan. The subsequent columns in green are the proposed adaptive management changes to goals, benchmarks, and metrics, moving forward.

Table 1: Original Goals, Benchmarks, & Metrics with Adaptive Management Changes

Work Plan Table 13: <u>Goal</u> (with Work Plan page number)	Work Plan Table 13: <u>Benchmark</u>	Work Plan Table 13: <u>Performance Metrics and Indicators</u>	Adaptive Management: <u>Goal</u>	Adaptive Management: <u>Benchmarks</u>	Adaptive Management: <u>Metrics</u>	2011 Baseline (unless otherwise noted)				
WETLANDS Goal 1: Protect wetland functions related to water quality, water quantity, and habitat (page 63)	Identify actions taken to protect existing wetlands (e.g. fencing)	1. Number of acres of wetland protected by ISP actions. 2. Acres of wetlands in ISPs rolled up to County GIS wetland acreage layer	Goal 1: Protect wetland functions related to water quality, water quantity, and habitat (Keep original goal.)	Implementation ²			Number and size of wetland-related BMPs in operation	Number and size of wetland-related BMPs in operation (TBD)		
				1.1	Maintain baseline quantity of all wetland-related BMPs in operation					
				Effectiveness						
				1.2	Maintain baseline rates of canopy loss and impervious/ semi-impervious gain within wetlands	Rate of canopy loss and impervious/ semi-impervious gain in HRCD data	Rate of HRCD canopy loss and impervious/ semi-impervious gain within wetlands in agricultural areas			
				1.3	Maintain wetland function over time by monitoring and maintaining wetland vegetation	Wetland habitat assessment scores in NRCS Biology Technical Note-14	Collect baseline data during ISP site visits			
WETLANDS Goal 2: Enhance wetland functions related to water quality, water quantity, and habitat (page 63)	Identify actions taken to enhance wetland functions	1. Identify area of enhanced wetlands 2. Identify type of enhancement (See Table E-1 for list of enhancement activities) 3. Use % veg cover as a surrogate – supplement with ISP data	Goal 2: Enhance and/or restore wetland functions related to water quality, water quantity, and habitat (Although this goal was met, we are changing the language to be inclusive of restoration actions and removing the separate wetland restoration goal (Goal 3).)	Implementation			Number and size of new wetland-related BMPs	Number and size of wetland-related BMPs in operation (TBD)		
				2.1	Implement new wetland-related BMPs on 75% of farms with wetlands that have new ISPs written					
				Effectiveness						
				2.2	Overall improvement in wetland function by monitoring and enhancing wetland vegetation (increase in native plant cover, decrease in invasive plant cover)	Wetland habitat assessment scores in NRCS Biology Technical Note-14	Scores for wetland habitat assessment prior to enhancement/ restoration project, or collect baseline for enhancements that are already in place			

² Critical area-related BMPs for all implementation benchmarks are listed in Appendix A

Work Plan Table 13: <u>Goal</u> (with Work Plan page number)	Work Plan Table 13: <u>Benchmark</u>	Work Plan Table 13: <u>Performance Metrics and Indicators</u>	Adaptive Management: <u>Goal</u>	Adaptive Management: <u>Benchmarks</u>	Adaptive Management: <u>Metrics</u>	2011 Baseline (unless otherwise noted)																				
WETLANDS Goal 3: Encourage voluntary restoration of wetlands where they intersect with agricultural activities (page 63)	ID actions taken to restore wetlands (e.g., disable drainage tiles)	<ol style="list-style-type: none"> ISPs including revised wetland area maps following successful restoration actions. Updated wetland data layer from San Juan County GIS based on above. Voluntary or other restoration actions (SRFB or other) 	We are removing this goal to scale back in number and scope of goals; however, restoration is now included as an option in revised Goal #2.																							
FWHCA Goal 4: Protect Streams (page 69)	ID actions taken to protect streams (e.g., riparian fencing)	<ol style="list-style-type: none"> Quantify lineal feet of stream protected by ISP actions at the watershed scale. 	Goal 3: Protect Streams (Keep original goal.)	Implementation <table border="1" data-bbox="1050 808 1430 1438"> <tr> <td data-bbox="1050 808 1121 930">3.1</td> <td data-bbox="1121 808 1430 930">Maintain baseline quantity of all stream-related BMPs in operation</td> <td data-bbox="1430 808 1682 930">Number and size of stream-related BMPs in operation</td> <td data-bbox="1682 808 1978 930">Number and size of stream-related BMPs in operation (TBD)</td> </tr> <tr> <td colspan="4" data-bbox="1050 930 1978 979">Effectiveness</td> </tr> <tr> <td data-bbox="1050 979 1121 1141">3.2</td> <td data-bbox="1121 979 1430 1141">Maintain baseline rates of canopy loss and impervious/ semi-impervious gain within riparian zones</td> <td data-bbox="1430 979 1682 1141">Rate of canopy loss and impervious/ semi-impervious gain in HRCD data</td> <td data-bbox="1682 979 1978 1141">Rate of HRCD Canopy loss and impervious/ semi-impervious gain within riparian zones in agricultural areas</td> </tr> <tr> <td data-bbox="1050 1141 1121 1304">3.3</td> <td data-bbox="1121 1141 1430 1304">Maintain stream condition scores over time</td> <td data-bbox="1430 1141 1682 1304">SVAP scores for elements 4, 5, & 6 (riparian area quantity, quality, and canopy cover)</td> <td data-bbox="1682 1141 1978 1304">SVAP scores for elements 4, 5, & 6 (riparian area quantity, quality, and canopy cover)</td> </tr> <tr> <td data-bbox="1050 1304 1121 1438">3.4</td> <td data-bbox="1121 1304 1430 1438">Maintain water quality in False Bay Watershed over time</td> <td data-bbox="1430 1304 1682 1438">Temperature, nutrients, DO, bacteria</td> <td data-bbox="1682 1304 1978 1438">Water quality in-stream sampling</td> </tr> </table>	3.1	Maintain baseline quantity of all stream-related BMPs in operation	Number and size of stream-related BMPs in operation	Number and size of stream-related BMPs in operation (TBD)	Effectiveness				3.2	Maintain baseline rates of canopy loss and impervious/ semi-impervious gain within riparian zones	Rate of canopy loss and impervious/ semi-impervious gain in HRCD data	Rate of HRCD Canopy loss and impervious/ semi-impervious gain within riparian zones in agricultural areas	3.3	Maintain stream condition scores over time	SVAP scores for elements 4, 5, & 6 (riparian area quantity, quality, and canopy cover)	SVAP scores for elements 4, 5, & 6 (riparian area quantity, quality, and canopy cover)	3.4	Maintain water quality in False Bay Watershed over time	Temperature, nutrients, DO, bacteria	Water quality in-stream sampling		
3.1	Maintain baseline quantity of all stream-related BMPs in operation	Number and size of stream-related BMPs in operation	Number and size of stream-related BMPs in operation (TBD)																							
Effectiveness																										
3.2	Maintain baseline rates of canopy loss and impervious/ semi-impervious gain within riparian zones	Rate of canopy loss and impervious/ semi-impervious gain in HRCD data	Rate of HRCD Canopy loss and impervious/ semi-impervious gain within riparian zones in agricultural areas																							
3.3	Maintain stream condition scores over time	SVAP scores for elements 4, 5, & 6 (riparian area quantity, quality, and canopy cover)	SVAP scores for elements 4, 5, & 6 (riparian area quantity, quality, and canopy cover)																							
3.4	Maintain water quality in False Bay Watershed over time	Temperature, nutrients, DO, bacteria	Water quality in-stream sampling																							

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FWHCA Goal 5: Enhance Streams (page 69)	ID actions taken to enhance streams (e.g., riparian planting, # of fish passage barriers removed, in-stream structural enhancement activities etc.)	1. Change in riparian cover over time. 2. Change in SVAP2 element scores over time on protected stream reaches – reported by watershed.	Goal 4: Enhance and/or restore streams (Although this goal was met, we are changing the language to be inclusive of restoration actions and removing the separate stream restoration goal (Goal 6).)	Implementation			
				4.1	Implement new stream-related BMPs on farms with streams that have new ISPs written	Number and size of new stream-related BMPs	Number and size of stream-related BMPs in operation (TBD)
				Effectiveness			
				4.2	Overall improvement in stream function scores following enhancement and/or restoration project (increase in native plant cover, decrease in invasive plant cover)	SVAP scores for elements 4, 5, & 6 (riparian area quantity, riparian area quality, and canopy cover)	SVAP scores prior to project, or collect baseline for enhancements that are already in place
4.3	Improve water quality in False Bay Watershed following enhancement and/or restoration project to meet water quality standards 100% of the time	Temperature, nutrients, DO, Bacteria	Water quality in-stream sampling				
FWHCA Goal 6: Voluntarily restore streams where they intersect with agricultural activity (page 69)	ID actions taken to voluntarily restore streams	1. Area of stream restored over time.	We are removing this goal to scale back in number and scope of goals; however, restoration is now included as an option in revised Goal 4.				

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FWHCA Goal 7: Protect and Enhance Habitats and Species of Local Importance (page 69)	ID actions taken to protect and enhance habitats and species of local importance	1. Area of protected habitat for species of local importance. 2. Area of enhanced habitat for species of local importance.	Goal 5: Protect habitats and species of local importance (Although this goal was met, we are changing the language to only include protection, and having revised Goal 6 address enhancement.)	Implementation				
				5.1	Maintain baseline quantity of all upland habitat-related BMPs in operation	Number and size of upland habitat-related BMPs in operation	Number and size of upland habitat-related BMPs in operation (TBD)	
				Effectiveness				
				5.2	Maintain baseline rates of canopy loss and impervious/ semi-impervious gain within upland habitat	Rate of canopy loss and impervious/ semi-impervious gain in HRCD data	Rate of HRCD Canopy loss and impervious/ semi-impervious gain within upland habitat in agricultural areas	
5.3	Maintain habitat assessment scores over time	Habitat assessment scores in NRCS Biology Technical Note-14	Collect baseline data during ISP site visits					
FWHCA Goal 8: Encourage Voluntary Restoration of FWHC Areas (page 69)	ID voluntary restoration actions.	1. ID the area affected by voluntary habitat restoration actions.	Goal 6: Enhance and/or restore habitats and species of local importance (We are changing the language to include enhancement and restoration.)	Implementation				
				6.1	Implement new habitat-related BMPs on farms with upland habitat that have new ISPs written	Number and size of new upland habitat-related BMPs	Number and size of upland habitat-related BMPs in operation (TBD)	
				Effectiveness				
6.2	Overall improvement in habitat assessment scores following enhancement project	Habitat assessment scores in NRCS Biology Technical Note-14	Habitat assessment scores prior to enhancement project					
GHA Goal 9: Avoid and minimize the impacts of sedimentation, erosion, & landslide hazards on water quality and fish and	ID actions implemented to reduce sediment, erosion, and landslide impacts on GHAs.	1. ID the area affected. 2. Collect water quality samples in priority watersheds.	Goal 7: Avoid and minimize the impacts of sedimentation, erosion, and landslide hazards on water quality and fish and wildlife habitat by upland agricultural use	Implementation				
				7.1	Maintain baseline quantity of all GHA-related BMPs in operation	Number and size of GHA-related BMPs in operation	Number and size of GHA-related BMPs in operation (TBD)	

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wildlife habitat by upland agricultural use. (page 72)		3. Compare turbidity data over time.	(Keep original goal.)	Effectiveness			
				7.2	Maintain baseline rates of canopy loss and impervious/ semi-impervious gain within GHAs	Rate of canopy loss and impervious/ semi-impervious gain in HRCD data	Rate of HRCD canopy loss and impervious/ semi-impervious gain within GHAs in agricultural areas
				7.3	Maintain vegetative buffer widths around streams and wetlands where they intersect with class e soils	Buffer width around streams and wetlands that intersect with class e soils	Buffer width along streams and wetlands that intersect with class e soils
GHA Goal 10: Avoid and minimize damage to agricultural activities due to erosion, landslides, or other naturally occurring geologic events. (page 72)	ID actions implemented to manage landslide risk and stabilize steep slopes	1. ID the affected area. 2. Document installation of suitable native plants, or other measures taken, as appropriate, to minimize damage	Goal 8: Enhance geologically hazardous areas (We are removing the original goal because it does not protect or enhance GHAs, and adding an enhancement goal.)	Implementation			
				8.1	Implement new GHA-related BMPs on farms with GHAs that have new ISPs written	Number and size of new GHA-related BMPs	Number and size of GHA-related BMPs in operation (TBD)
				Effectiveness			
				8.2	Increase vegetative buffers around streams and wetlands where they intersect with class e soils to a minimum of 50'	Buffer width around streams and wetlands that intersect with class e soils	Buffer width along streams and wetlands that intersect with class e soils

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GHA Goal 11: Avoid activities that increase the natural rate of erosion, while protecting naturally occurring and beneficial ecological processes, such as feeder bluffs. (page 72)	ID actions implemented to manage landslide risk and stabilize steep slopes	1. ID the affected area. 2. Document installation of suitable native plants, or other measures taken, as appropriate, to minimize damage	We are removing this goal because the first part about erosion is addressed through the previous GHA goal, and the second part referring to feeder bluffs, does not apply to VSP. From the Work Plan (page 27) "agricultural activity in the marine shoreline in San Juan County is subject to regulatory review in compliance with the Shoreline Master Program."				
CARA Goal 12: Protect and maintain groundwater recharge and prevent the degradation of groundwater resources due to agricultural activities (page 76)	ID the # and types of BMPs implemented to increase water storage capacity.	1. ID the practices implemented and quantify increased water storage capacity to the extent possible.	Goal 9: Protect and maintain groundwater recharge (We revised this goal to only refer to groundwater recharge and created a new goal to address groundwater quality (see revised Goal 11).)	Implementation			
				9.1	Maintain baseline quantity of all groundwater recharge-related BMPs in operation	Number and size of groundwater recharge-related BMPs in operation	Number and size of groundwater recharge-related BMPs in operation (TBD)
				Effectiveness			
				9.2	Maintain baseline rate of impervious/ semi-impervious gain within CARAs	Rate of impervious/ semi-impervious gain in HRCD data	Rate of HRCD impervious/ semi-impervious gain within CARAs in agricultural areas
			Goal 10: Enhance groundwater recharge (this goal is added to monitor enhancement.)	Implementation			
				10.1	Implement new groundwater recharge-related BMPs on farms that have new ISPs written	Number and size of new groundwater recharge-related BMPs	Number and size of groundwater recharge-related BMPs in operation (TBD)

Work Plan Table 13: <u>Goal</u> (with Work Plan page number)	Work Plan Table 13: <u>Benchmark</u>	Work Plan Table 13: <u>Performance Metrics and Indicators</u>	Adaptive Management: <u>Goal</u>	Adaptive Management: <u>Benchmarks</u>	Adaptive Management: <u>Metrics</u>	2011 Baseline (unless otherwise noted)
<p>CARA Goal 13: Protect groundwater resources that support agricultural activities and balance competing needs for water while preserving natural hydrologic functions and their related ecological processes (e.g., water quality, and water quantity) (page 76)</p>	<p>ID the # and types of practices implemented to quantify agricultural use of groundwater resources (e.g., well meters).</p>	<p>1. Quantify amount of water needed to support agricultural use, to the extent possible to protect this right, while providing sufficient water for natural hydrologic cycles.</p>	<p>This is a complex goal that addresses the important need of quantifying agricultural use of groundwater; however, we have been unable to access the tools necessary to accurately estimate this use. We will continue to encourage actions such as well meter installations and staff gauges to quantify use and will reevaluate how to use that data as more of it becomes available. Given that this goal also directs us to balance competing needs for water, we will address it further under agricultural viability.</p>			
<p>CARA Goal 14: Prioritize watersheds with known contaminant problems for management that protects and improves water quality (page 76)</p>	<p>Analyze and report on groundwater quality in priority watersheds that have the greatest intersection with ag activity: False Bay and Garrison Bay on San Juan Island, Westsound and Doe Bay on Orcas, Swift Bay and Davis Bay on Lopez Island.</p>	<p>1. Groundwater quality data from San Juan County Public Health Department, State Department of Health data, Group B well data.</p>	<p>Goal 11: Prevent the degradation of groundwater resources due to agricultural activities</p> <p>(We are revising this goal to include some of the water quality degradation language that was removed from the first CARA goal (see Goal 12).)</p>	Implementation		<p>Number and size of groundwater quality-related BMPs in operation (TBD)</p>
				11.1	<p>Maintain baseline quantity of all groundwater quality-related BMPs in operation</p>	<p>Number and size of groundwater quality-related BMPs in operation</p>

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			Goal 12: Enhance groundwater quality (this goal is added to monitor enhancement.)	Implementation			12.1 Implement new groundwater quality-related BMPs on farms that have new ISPs written Number and size of new groundwater quality-related BMPs Number and size of groundwater quality-related BMPs in operation (TBD)
FFA Goal 15: Minimize flood damage to agricultural properties and operations (page 80)	Measure the acreage of Frequently Flooded Areas where it intersects with agricultural activity every 5 years. (Using SJC GIS mapping (inc. FEMA FIRM maps).	1. The acreage of frequently flooded areas protected by ISP actions.	We are removing this goal because it does not protect or enhance FFAs.				
FFA Goal 16: Protect and enhance Frequently Flooded Areas for habitat and groundwater recharge (page 80)	Measure the change in impervious surface area and vegetative cover in FFAs that intersect with agricultural activity over time.	1. Measure the change in impervious surface areas over time.	Goal 13: Protect Frequently Flooded Areas for habitat and groundwater recharge (Although this goal was met, we are changing the language to only include protection, and adding a new goal (14) to address enhancement.)	Implementation			13.1 Maintain baseline quantity of all FFA-related BMPs in operation Number and size of FFA-related BMPs in operation Number and size of FFA-related BMPs in operation (TBD)
				Effectiveness			
				13.2 Maintain baseline rates of canopy loss and impervious/ semi-impervious gain within FFAs	Rate of canopy loss and impervious/ semi-impervious gain in HRCD data	Rate of HRCD canopy loss and impervious/ semi-impervious gain within FFAs in agricultural areas	

Work Plan Table 13: <u>Goal</u> (with Work Plan page number)	Work Plan Table 13: <u>Benchmark</u>	Work Plan Table 13: <u>Performance Metrics and Indicators</u>	Adaptive Management: <u>Goal</u>	Adaptive Management: <u>Benchmarks</u>		Adaptive Management: <u>Metrics</u>	2011 Baseline (unless otherwise noted)
				13.3	Maintain habitat assessment scores over time	Habitat assessment scores in NRCS Biology Technical Note-14	Collect baseline data during ISP site visits
FFA Goal 17: Preserve natural flood control, stormwater storage, and drainage, and floodplain connectivity, including flood channels and/or high-flow channels (page 80)	Acreage of Frequently Flooded Areas where they intersect with ag activity.	<ol style="list-style-type: none"> 1. ID acreage/area of reconnected floodplain, by watershed. 2. ID BMPs implemented to increase surface water storage 3. ID BMPs implemented to protect floodplain 4. Quantify acreage/area protected by BMPs 	Goal 14: Enhance Frequently Flooded Areas for habitat and groundwater recharge (We are removing this goal but will still track BMPs in revised goals 13 and 14 that would accomplish these concerns. Revised Goal 14 will address enhancement.)	Implementation			
				14.1	Implement new FFA-related BMPs on farms with FFAs that have new ISPs written	Number and size of new FFA-related BMPs	Number and size of FFA-related BMPs in operation (TBD)
				Effectiveness			
				14.2	Overall improvement in habitat assessment scores following enhancement project	Habitat assessment scores in NRCS Biology Technical Note-14	Habitat assessment scores prior to enhancement project
Participation Goal 18: Maintain and Improve Ag Viability Over Time (page 50)	Achieve and maintain participation of agricultural producers of greater than 20 percent by 2020 and greater than 40 percent by 2025.	<ol style="list-style-type: none"> 1. Percent of agricultural producers participating in VSP. 2. Percent of agricultural acres of farms participating that intersect with critical areas. 	Goal 15: Maintain and improve agricultural viability over time (Keep original goal.)	15.1	Achieve and maintain participation of at least eight agricultural producers per year	The number of ISPs written or updated per year	
				15.2	Increase the proportion of farm acres with ISPs to 30% by 2025.	Agricultural acres of farms with ISPs as a percent of total agricultural acres	As of 2020, 22% of farm acres have ISPs.

Conclusion

In conclusion, this Adaptive Management Plan was designed to help San Juan County better meet its goals and benchmarks for protection and enhancement of critical areas on farmland. Many of the changes clarify how the San Juan Islands Conservation District will fulfill its responsibilities under the VSP Work Plan. Additionally, changes were made to address goals and/or benchmarks that have not been met. In these cases, additional work will be needed, usually in the form of outreach, to reach more farm operators and to increase the number of best management practices implemented to protect or enhance critical areas. With these changes moving forward, San Juan County will be better prepared to achieve its goals and benchmarks during the next five-year reporting period and into the future.

Appendix A: Implementation Monitoring

The purpose of implementation monitoring is to track what BMPs have been implemented where, and whether they are still in operation. Implementation monitoring will occur for all critical areas; Table A - 1 outlines the details of data collection that will occur. Subsequent tables identify the specific BMPs that will be tracked for each metric by critical area. The BMPs that were selected were identified based on their ability to improve critical area functions according to the NRCS Conservation Practices Physical Effects (CPPE) table. The CPPE table details in subjective language the physical effects that conservation practices have on resource problems. This estimation of physical effects is based on professional experience and available technical information.

Table A - 1 Implementation Monitoring for all Critical Areas

IMPLEMENTATION MONITORING FOR ALL CRITICAL AREAS	
Who	
	CD planners will collect this data
When	
	For new ISPs: Data will be collected during ISP inventory
	For existing farm plans: Data will be collected every five years for all existing farm plans on record
	For all other farms: Data will be collected every five years for all existing agricultural activities
How	
	For new ISPs: During ISP site visits, cooperators will be presented a checklist that identifies potential BMPs that could influence critical area functions (BMPS listed in Tables A-2 to A-8). Planners will assist with identifying and explaining BMPs. Cooperators will be asked to identify if any are in place, and if so, if they have been in place since mid-2011. Practices in place before mid-2011 that are still in operation will be counted toward the protection goal, whereas practices put in place since mid-2011 will be counted toward the enhancement goal.
	For all other farms: same as above, except cooperators will be contacted via email or letter.
	Tracking: Checklist results will be entered into tracking database and summarized annually in an implementation monitoring report.

Table A - 2 Implementation Monitoring for Wetlands

WETLANDS		
Goal 1: Protect wetland functions related to water quality, water quantity, and habitat		
Benchmark 1.1: Maintain baseline quantity of all wetland-related BMPs in operation		
Metric 1.1: Number and size of wetland-related BMPs in operation		
Goal 2: Enhance and/or restore wetland functions related to water quality, water quantity, and habitat		
Benchmark 2.1: Implement new wetland-related BMPs		
Metric 2.1: Number and size of new wetland-related BMPs		
Where		
Every farm that contains wetlands		
Location data: use Potential Non-tidal Wetlands from San Juan County Critical Areas layers		
Wetland-related BMPs		
<i>Select practices that can help protect or improve wetland water quality, water quantity, and habitat.</i>		
Name	Practice Number	Description
Access Control	472	The temporary or permanent exclusion of animals, people, vehicles, and equipment from an area.
Brush Management	314	The management or removal of woody (non-herbaceous or succulent) plants including those that are invasive and noxious.
Composting Facility	317	A structure or device to contain and facilitate an aerobic microbial ecosystem for the decomposition of manure, other organic material, or both, into a final product sufficiently stable for storage, on-farm use, and application to land as a soil amendment.
Cover Crop	340	Grasses, legumes, and forbs planted for seasonal vegetative cover.
Fence	382	A constructed barrier to animals or people.
Filter Strip	393	A strip or area of herbaceous vegetation that removes contaminants from overland flow.
Herbaceous Weed Treatment	315	The removal or control of herbaceous weeds including invasive, noxious, and prohibited plants.
Grassed Waterway (swale)	412	A shaped or graded channel that is established with suitable vegetation to convey surface water at a non-erosive velocity using a broad and shallow cross section to a stable outlet.
Nutrient Management	590	Manage rate, source, placement, and timing of plant nutrients and soil amendments while reducing environmental impacts.
Restoration of Rare or Declining Natural Communities	643	Restoring, conserving, and managing unique or diminishing native terrestrial and aquatic ecosystems.
Wetland Enhancement	659	The augmentation of wetland functions beyond the original natural conditions on a former, degraded, or naturally functioning wetland site; sometimes at the expense of other functions.
Wetland Restoration	657	The return of a wetland and its functions to a close approximation of its original condition as it existed prior to disturbance on a former or degraded wetland site.
Wetland Wildlife Habitat Management	644	Retaining, developing, or managing wetland habitat for wetland wildlife.

Table A - 3 Implementation Monitoring for FWHCAs-Streams

FISH & WILDLIFE HABITAT CONSERVATION AREAS - STREAMS		
Goal 3: Protect streams		
Benchmark 3.1: Maintain baseline quantity of all stream-related BMPs in operation		
Metric 3.1: Number and size of stream-related BMPs in operation		
Goal 4: Enhance and/or restore streams		
Benchmark 4.1: Implement new stream-related BMPs		
Enhancement: Number and size of new stream-related BMPs		
Where		
Every farm that contains streams		
Location data: use Fish Distribution layer (under FWHCAs) from San Juan County Critical Areas layers		
Stream-related BMPs		
<i>Select practices that can help protect or improve water quality, water quantity, and riparian habitat, including fish passage barrier removal.</i>		
Name	Practice Number	Description (from NRCS Conservation Practice Standard sheets)
Access Control	472	The temporary or permanent exclusion of animals, people, vehicles, and equipment from an area.
Brush Management	314	The management or removal of woody (non-herbaceous or succulent) plants including those that are invasive and noxious.
Composting Facility	317	A structure or device to contain and facilitate an aerobic microbial ecosystem for the decomposition of manure, other organic material, or both, into a final product sufficiently stable for storage, on-farm use, and application to land as a soil amendment.
Conservation Cover	327	Establishing and maintaining permanent vegetative cover .
Conservation Crop Rotation	328	A planned sequence of crops grown on the same ground over a period of time (i.e., the rotation cycle).
Cover Crop	340	Grasses, legumes, and forbs planted for seasonal vegetative cover.
Fence	382	A constructed barrier to animals or people.
Field Border	386	A strip of permanent vegetation established at the edge or around the perimeter of a field.
Filter Strip	393	A strip or area of herbaceous vegetation that removes contaminants from overland flow.
Forage and Biomass Planting	512	Establishing adapted and/or compatible species, varieties, or cultivars of herbaceous species suitable for pasture, hay, or biomass production.
Grassed Waterway (swale)	412	A shaped or graded channel that is established with suitable vegetation to convey surface water at a non-erosive velocity using a broad and shallow cross section to a stable outlet.
Heavy Use Area Protection	561	Stabilization or protection of an intensively used area.
Hedgerow Planting	422	Establishment of dense vegetation in a linear design to achieve a natural resource conservation purpose.
Herbaceous Weed Treatment	315	The removal or control of herbaceous weeds including invasive, noxious, and prohibited plants.
Irrigation System, Micro-irrigation	441	An irrigation system for frequent application of small quantities of water on or below the soil surface as drops, tiny streams, or miniature spray through emitters or applicators placed along a water delivery line.
Irrigation Water Management	449	The process of determining and controlling the volume, frequency, and application rate of irrigation water.
Nutrient management	590	Manage rate, source, placement, and timing of plant nutrients and soil amendments while reducing environmental impacts.
Prescribed grazing	528	Managing the harvest of vegetation with grazing and/or browsing animals with the intent to achieve specific ecological, economic, and management objectives.
Residue and Tillage Management, No Till	329	Limiting soil disturbance to manage the amount, orientation, and distribution of crop and plant residue on the soil surface year around.

Restoration of Rare or Declining Natural Communities	643	Restoring, conserving, and managing unique or diminishing native terrestrial and aquatic ecosystems.
Riparian Forest Buffer	391	An area predominantly trees and/or shrubs located adjacent to and up-gradient from watercourses or water bodies.
Riparian Herbaceous Cover	390	Grasses, sedges, rushes, ferns, legumes, and forbs tolerant of intermittent flooding or saturated soils, established or managed as the dominant vegetation in the transitional zone between upland and aquatic habitats.
Roof Runoff Structure	558	A structure that will collect, control, and convey precipitation runoff from a roof.
Stream Crossing	578	A stabilized area or structure constructed across a stream to provide controlled access for people, livestock, equipment, or vehicles.
Stream Habitat Improvement and Management	395	Maintain, improve, or restore physical, chemical and biological functions of a stream, and its associated riparian zone, necessary for meeting the life history requirements of desired aquatic species.
Streambank and Shoreline Protection	580	Treatment(s) used to stabilize and protect banks of streams or constructed channels and shorelines of lakes, reservoirs, or estuaries.
Structures for Wildlife	649	A structure installed to replace or modify a missing or deficient wildlife habitat component.
Tree-Shrub Establishment	612	Establishing woody plants by planting seedlings or cuttings, by direct seeding, and/or through natural regeneration.
Watering Facility	614	A watering facility stores or provides drinking water to livestock or wildlife.

Table A - 4 Implementation Monitoring for FWHCAs-Upland Habitat

FISH & WILDLIFE HABITAT CONSERVATION AREAS – UPLAND HABITAT		
Goal 5: Protect habitats and species of local importance		
Benchmark 5.1: Maintain baseline quantity of all upland habitat-related BMPs in operation		
Metric 5.1: Number and size of upland habitat-related BMPs in operation		
Goal 6: Enhance and/or restore habitats and species of local importance		
Benchmark 6.1: Implement new habitat-related BMPs		
Metric 6.1: Number and size of new upland habitat-related BMPs		
Where		
Every farm that contains upland habitat in a FWHCA		
Location data: use WDFW’s Priority Habitats and Species database		
Upland Habitat-related BMPs		
<i>Select practices that can help protect or improve habitats for species of local importance.</i>		
Name	Practice Number	Description
Access Control	472	The temporary or permanent exclusion of animals, people, vehicles, and equipment from an area.
Brush Management	314	The management or removal of woody (non-herbaceous or succulent) plants including those that are invasive and noxious.
Conservation Cover	327	Establishing and maintaining permanent vegetative cover .
Cover Crop	340	Grasses, legumes, and forbs planted for seasonal vegetative cover.
Early Successional Habitat Development	647	Manage plant succession to develop and maintain early successional habitat to benefit desired wildlife and/or natural communities.
Fence	382	A constructed barrier to animals or people.
Field Border	386	A strip of permanent vegetation established at the edge or around the perimeter of a field.
Filter Strip	393	A strip or area of herbaceous vegetation that removes contaminants from overland flow.
Forest Stand Improvement	666	The manipulation of species composition, stand structure, or stand density by cutting or killing selected trees or understory vegetation to achieve desired forest conditions or obtain ecosystem services.
Grassed Waterway (swale)	412	A shaped or graded channel that is established with suitable vegetation to convey surface water at a non-erosive velocity using a broad and shallow cross section to a stable outlet.
Heavy Use Area Protection	561	Stabilization or protection of an intensively used area.
Hedgerow Planting	422	Establishment of dense vegetation in a linear design to achieve a natural resource conservation purpose.
Herbaceous Weed Treatment	315	The removal or control of herbaceous weeds including invasive, noxious, and prohibited plants.
Nutrient management	590	Manage rate, source, placement, and timing of plant nutrients and soil amendments while reducing environmental impacts.
Prescribed grazing	528	Managing the harvest of vegetation with grazing and/or browsing animals with the intent to achieve specific ecological, economic, and management objectives.
Residue and Tillage Management, No Till	329	Limiting soil disturbance to manage the amount, orientation, and distribution of crop and plant residue on the soil surface year around.
Restoration of Rare or Declining Natural Communities	643	Restoring, conserving, and managing unique or diminishing native terrestrial and aquatic ecosystems.
Roof Runoff Structure	558	A structure that will collect, control, and convey precipitation runoff from a roof.
Structures for Wildlife	649	A structure installed to replace or modify a missing or deficient wildlife habitat component.
Tree-Shrub Establishment	612	Establishing woody plants by planting seedlings or cuttings, by direct seeding, and/or through natural regeneration.
Upland Wildlife Habitat Management	645	Provide and manage upland habitats and connectivity within the landscape for wildlife.
Watering Facility	614	A watering facility stores or provides drinking water to livestock or wildlife.
Wildlife Habitat Planting	420	Establishing wildlife habitat by planting herbaceous vegetation or shrubs.

Table A - 5 Implementation Monitoring for Geologically Hazardous Areas

GEOLOGICALLY HAZARDOUS AREAS		
Goal 7: Avoid and minimize the impacts of sedimentation, erosion, and landslide hazards on water quality and fish and wildlife habitat by upland agricultural use		
Benchmark 7.1: Maintain baseline quantity of all GHA-related BMPs in operation		
Metric 7.1: Number and size of GHA-related BMPs in operation		
Goal 8: Enhance geologically hazardous areas		
Benchmark 8.1: Implement new GHA-related BMPs		
Metric 8.1: Number and size of new GHA-related BMPs		
Where		
Every farm that contains a GHA		
Location data: use Category I and II GHAs from San Juan County Critical Areas layers		
GHA-related BMPs		
<i>Select practices that help to minimize erosion and prevent sedimentation.</i>		
Name	Practice Number	Description
Access Control	472	The temporary or permanent exclusion of animals, people, vehicles, and equipment from an area.
Conservation Cover	327	Establishing and maintaining permanent vegetative cover .
Contour Buffer Strips	332	Narrow strips of permanent, herbaceous vegetative cover established around the hill slope, and alternated down the slope with wider cropped strips that are farmed on the contour.
Contour Farming	330	Aligning ridges, furrows, and roughness formed by tillage, planting, and other operations to alter velocity and/or direction of water flow to around the hillslope.
Contour Orchard and Other Perennial Crops	331	Planting orchards, vineyards, or other perennial crops so that all cultural operations are done on or near the contour.
Cover Crop	340	Grasses, legumes, and forbs planted for seasonal vegetative cover.
Critical Area Planting	342	Establishing permanent vegetation on sites that have, or are expected to have, high erosion rates, and on sites that have physical, chemical, or biological conditions that prevent the establishment of vegetation with normal seeding/planting methods.
Fence	382	A constructed barrier to animals or people.
Filter Strip	393	A strip or area of herbaceous vegetation that removes contaminants from overland flow.
Grassed Waterway (swale)	412	A shaped or graded channel that is established with suitable vegetation to convey surface water at a non-erosive velocity using a broad and shallow cross section to a stable outlet.
Heavy Use Area Protection	561	Stabilization or protection of an intensively used area.
Hedgerow Planting	422	Establishment of dense vegetation in a linear design to achieve a natural resource conservation purpose.
Prescribed grazing	528	Managing the harvest of vegetation with grazing and/or browsing animals with the intent to achieve specific ecological, economic, and management objectives.
Residue and Tillage Management, No Till	329	Limiting soil disturbance to manage the amount, orientation, and distribution of crop and plant residue on the soil surface year around.
Tree-Shrub Establishment	612	Establishing woody plants by planting seedlings or cuttings, by direct seeding, and/or through natural regeneration.

Table A - 6 Implementation Monitoring for Critical Aquifer Recharge Areas-Recharge

CRITICAL AQUIFER RECHARGE AREAS - RECHARGE		
Goal 9: Protect and maintain groundwater recharge		
Benchmark 9.1: Maintain baseline quantity of all groundwater recharge-related BMPs in operation		
Metric 9.1: Number and size of groundwater recharge-related BMPs in operation		
Goal 10: Enhance groundwater recharge		
Benchmark 10.1: Implement new groundwater recharge-related BMPs		
Metric 10.1: Number and size of new groundwater recharge-related BMPs		
Where		
Every farm		
(CARA) Recharge-related BMPs		
<i>Select practices that help to retain water in the landscape and promote water conservation. Encourage cooperators to measure their own water levels.</i>		
Name	Practice Number	Description
Access Control	472	The temporary or permanent exclusion of animals, people, vehicles, and equipment from an area.
Conservation Cover	327	Establishing and maintaining permanent vegetative cover .
Conservation Crop Rotation	328	A planned sequence of crops grown on the same ground over a period of time (i.e., the rotation cycle).
Contour Farming	330	Aligning ridges, furrows, and roughness formed by tillage, planting, and other operations to alter velocity and/or direction of water flow to around the hillslope.
Contour Orchard and Other Perennial Crops	331	Planting orchards, vineyards, or other perennial crops so that all cultural operations are done on or near the contour.
Cover Crop	340	Grasses, legumes, and forbs planted for seasonal vegetative cover.
Field Border	386	A strip of permanent vegetation established at the edge or around the perimeter of a field.
Filter Strip	393	A strip or area of herbaceous vegetation that removes contaminants from overland flow.
Forage and Biomass Planting	512	Establishing adapted and/or compatible species, varieties, or cultivars of herbaceous species suitable for pasture, hay, or biomass production.
Grassed Waterway (swale)	412	A shaped or graded channel that is established with suitable vegetation to convey surface water at a non-erosive velocity using a broad and shallow cross section to a stable outlet.
Grazing Land Mechanical Treatment	548	Modifying physical soil and/or plant conditions with mechanical tools by treatments such as pitting, contour furrowing, and chiseling, ripping, or subsoiling. (For the purpose of fracturing compacted soil layers and improving soil permeability; reducing water runoff and increasing infiltration)
Irrigation System, Micro-irrigation	441	An irrigation system for frequent application of small quantities of water on or below the soil surface as drops, tiny streams, or miniature spray through emitters or applicators placed along a water delivery line.
Irrigation Water Management	449	The process of determining and controlling the volume, frequency, and application rate of irrigation water.
Prescribed grazing	528	Managing the harvest of vegetation with grazing and/or browsing animals with the intent to achieve specific ecological, economic, and management objectives.
Residue and Tillage Management, No Till	329	Limiting soil disturbance to manage the amount, orientation, and distribution of crop and plant residue on the soil surface year around.
Riparian Forest Buffer	391	An area predominantly trees and/or shrubs located adjacent to and up-gradient from watercourses or water bodies.
Riparian Herbaceous Cover	390	Grasses, sedges, rushes, ferns, legumes, and forbs tolerant of intermittent flooding or saturated soils, established or managed as the dominant vegetation in the transitional zone between upland and aquatic habitats.
Wetland Enhancement	659	The augmentation of wetland functions beyond the original natural conditions on a former, degraded, or naturally functioning wetland site; sometimes at the expense of other functions.
Wetland Restoration	657	The return of a wetland and its functions to a close approximation of its original condition as it existed prior to disturbance on a former or degraded wetland site.

Table A - 7 Implementation Monitoring for Critical Aquifer Recharge Areas-Groundwater Quality

CRITICAL AQUIFER RECHARGE AREAS – GROUNDWATER QUALITY		
Goal 11: Prevent the degradation of groundwater resources due to agricultural activities		
Benchmark 11.1: Maintain baseline quantity of all groundwater quality-related BMPs in operation		
Metric 11.1: Number and size of groundwater quality-related BMPs in operation		
Goal 12: Enhance groundwater quality		
Benchmark 12.1: Implement new groundwater quality-related BMPs		
Metric 12.1: Number and size of new groundwater quality-related BMPs		
Where		
Every farm		
(CARA) Groundwater quality-related BMPs		
<i>Select practices that can help prevent groundwater pollution.</i>		
Name	Practice Number	Description
Access Control	472	The temporary or permanent exclusion of animals, people, vehicles, and equipment from an area.
Composting Facility	317	A structure or device to contain and facilitate an aerobic microbial ecosystem for the decomposition of manure, other organic material, or both, into a final product sufficiently stable for storage, on-farm use, and application to land as a soil amendment.
Conservation Cover	327	Establishing and maintaining permanent vegetative cover .
Conservation Crop Rotation	328	A planned sequence of crops grown on the same ground over a period of time (i.e., the rotation cycle).
Cover Crop	340	Grasses, legumes, and forbs planted for seasonal vegetative cover.
Fence	382	A constructed barrier to animals or people.
Field Border	386	A strip of permanent vegetation established at the edge or around the perimeter of a field.
Filter Strip	393	A strip or area of herbaceous vegetation that removes contaminants from overland flow.
Grassed Waterway (swale)	412	A shaped or graded channel that is established with suitable vegetation to convey surface water at a non-erosive velocity using a broad and shallow cross section to a stable outlet.
Heavy Use Area Protection	561	Stabilization or protection of an intensively used area.
Irrigation System, Micro-irrigation	441	An irrigation system for frequent application of small quantities of water on or below the soil surface as drops, tiny streams, or miniature spray through emitters or applicators placed along a water delivery line.
Irrigation Water Management	449	The process of determining and controlling the volume, frequency, and application rate of irrigation water.
Nutrient management	590	Manage rate, source, placement, and timing of plant nutrients and soil amendments while reducing environmental impacts.
Prescribed grazing	528	Managing the harvest of vegetation with grazing and/or browsing animals with the intent to achieve specific ecological, economic, and management objectives.
Roof Runoff Structure	558	A structure that will collect, control, and convey precipitation runoff from a roof.
Riparian Herbaceous Cover	390	Grasses, sedges, rushes, ferns, legumes, and forbs tolerant of intermittent flooding or saturated soils, established or managed as the dominant vegetation in the transitional zone between upland and aquatic habitats.
Tree-Shrub Establishment	612	Establishing woody plants by planting seedlings or cuttings, by direct seeding, and/or through natural regeneration.
Stream Crossing	578	A stabilized area or structure constructed across a stream to provide controlled access for people, livestock, equipment, or vehicles.
Stream Habitat Improvement and Management	395	Maintain, improve, or restore physical, chemical and biological functions of a stream, and its associated riparian zone, necessary for meeting the life history requirements of desired aquatic species.
Watering Facility	614	A watering facility stores or provides drinking water to livestock or wildlife.
Wetland Enhancement	659	The augmentation of wetland functions beyond the original natural conditions on a former, degraded, or naturally functioning wetland site; sometimes at the expense of other functions.
Wetland Restoration	657	The return of a wetland and its functions to a close approximation of its original condition as it existed prior to disturbance on a former or degraded wetland site.

Table A - 8 Implementation Monitoring for Frequently Flooded Areas

FREQUENTLY FLOODED AREAS		
Goal 13: Protect Frequently Flooded Areas for habitat and groundwater recharge		
Benchmark 13.1: Maintain baseline quantity of all FFA-related BMPs in operation		
Metric 13.1: Number and size of FFA-related BMPs in operation		
Goal 14: Enhance Frequently Flooded Areas for habitat and groundwater recharge		
Benchmark 14.1: Implement new FFA-related BMPs		
Metric 14.1: Number and size of new FFA-related BMPs		
Where		
Every farm that contains an FFA		
Location data: use FFAs layer from San Juan County Critical Areas layers		
Stream-related BMPs		
<i>Select practices that can help to preserve natural flood control, stormwater storage, drainage, and floodplain connectivity, including flood channels and/or high-flow channels.</i>		
Name	Practice Number	Description
Access Control	472	The temporary or permanent exclusion of animals, people, vehicles, and equipment from an area.
Brush Management	314	The management or removal of woody (non-herbaceous or succulent) plants including those that are invasive and noxious.
Conservation Cover	327	Establishing and maintaining permanent vegetative cover .
Conservation Crop Rotation	328	A planned sequence of crops grown on the same ground over a period of time (i.e., the rotation cycle).
Contour Farming	330	Aligning ridges, furrows, and roughness formed by tillage, planting, and other operations to alter velocity and/or direction of water flow to around the hillslope.
Contour Orchard and Other Perennial Crops	331	Planting orchards, vineyards, or other perennial crops so that all cultural operations are done on or near the contour.
Cover Crop	340	Grasses, legumes, and forbs planted for seasonal vegetative cover.
Early Successional Habitat Development	647	Manage plant succession to develop and maintain early successional habitat to benefit desired wildlife and/or natural communities.
Fence	382	A constructed barrier to animals or people.
Field Border	386	A strip of permanent vegetation established at the edge or around the perimeter of a field.
Filter Strip	393	A strip or area of herbaceous vegetation that removes contaminants from overland flow.
Forage and Biomass Planting	512	Establishing adapted and/or compatible species, varieties, or cultivars of herbaceous species suitable for pasture, hay, or biomass production.
Grassed Waterway (swale)	412	A shaped or graded channel that is established with suitable vegetation to convey surface water at a non-erosive velocity using a broad and shallow cross section to a stable outlet.
Grazing Land Mechanical Treatment	548	Modifying physical soil and/or plant conditions with mechanical tools by treatments such as pitting, contour furrowing, and chiseling, ripping, or subsoiling. (For the purpose of fracturing compacted soil layers and improving soil permeability; reducing water runoff and increasing infiltration)
Hedgerow Planting	422	Establishment of dense vegetation in a linear design to achieve a natural resource conservation purpose.
Herbaceous Weed Treatment	315	The removal or control of herbaceous weeds including invasive, noxious, and prohibited plants.
Prescribed grazing	528	Managing the harvest of vegetation with grazing and/or browsing animals with the intent to achieve specific ecological, economic, and management objectives.
Residue and Tillage Management, No Till	329	Limiting soil disturbance to manage the amount, orientation, and distribution of crop and plant residue on the soil surface year around.
Restoration of Rare or Declining Natural Communities	643	Restoring, conserving, and managing unique or diminishing native terrestrial and aquatic ecosystems.
Riparian Forest Buffer	391	An area predominantly trees and/or shrubs located adjacent to and up-gradient from watercourses or water bodies.

Riparian Herbaceous Cover	390	Grasses, sedges, rushes, ferns, legumes, and forbs tolerant of intermittent flooding or saturated soils, established or managed as the dominant vegetation in the transitional zone between upland and aquatic habitats.
Stream Habitat Improvement and Management	395	Maintain, improve, or restore physical, chemical and biological functions of a stream, and its associated riparian zone, necessary for meeting the life history requirements of desired aquatic species.
Streambank and Shoreline Protection	580	Treatment(s) used to stabilize and protect banks of streams or constructed channels and shorelines of lakes, reservoirs, or estuaries.
Structures for Wildlife	649	A structure installed to replace or modify a missing or deficient wildlife habitat component.
Tree-Shrub Establishment	612	Establishing woody plants by planting seedlings or cuttings, by direct seeding, and/or through natural regeneration.
Watering Facility	614	A watering facility stores or provides drinking water to livestock or wildlife.

Appendix B: Effectiveness Monitoring – Spatial Analyses

The purpose of effectiveness monitoring is to tell us how BMPs are affecting critical area functions and values. Appendix B provides details for effectiveness monitoring that utilizes spatial analysis. Effectiveness monitoring for all critical areas using WDFW’s High Resolution Change Detection (HRCD) data is described in Table B-1. Effectiveness monitoring for Geologically Hazardous Areas and stream buffer widths is described in Table B-2.

Table B- 1 Effectiveness Monitoring with HRCD Data

ALL CRITICAL AREAS – HIGH RESOLUTION CHANGE DETECTION (HRCD)
Goals 1, 3, 5, 7, 9, 13
<p>Benchmark (common to all): Maintain baseline rates of canopy loss and impervious/semi-impervious gain within:</p> <ul style="list-style-type: none"> • Wetlands on farms • Riparian zones on farms • Upland habitat (FWHCAs) on farms • Geologically hazardous areas on farms • Critical aquifer recharge areas on farms (<i>impervious/semi-impervious gain only; not canopy loss</i>) • Frequently flooded areas on farms
Metric (common to all except CARA): Rate of canopy loss and impervious/semi-impervious gain in HRCD data
Metric 9.2 (CARA): Rate of impervious/ semi-impervious gain in HRCD data
Who
WDFW provides HRCD data, and San Juan County GIS performs final analysis to assess benchmarks
When
Three months prior to each five-year report due date, i.e., September 2025, September 2030, etc.
Where
All farms with wetlands
All farms with streams (use 100-foot stream buffer)
All farms with upland habitat associated with FWHCAs
All farms with geologically hazardous areas, categories I-a, I-b, I-c, II-a, II-b, II-c
All farms (for CARA)
All farms with frequently flooded areas
How
Use the WDFW handout entitled, “Tips for using HRCD change data for VSP monitoring and analysis,” which includes the following steps: <ul style="list-style-type: none"> • Find the intersection of agricultural land and the critical area • Clip HRCD change data to the area of intersection • Add new fields and calculate actual amount of change • Summarize data using pivot tables or method of your choice
Tracking: Results will be summarized in spatial analysis monitoring report.

Table B- 2 Stream Buffer Widths and Class “e” Soils

GHAs – Buffer widths
Goal 7: Avoid and minimize the impacts of sedimentation, erosion, & landslide hazards on water quality and fish and wildlife habitat by upland agricultural use
Benchmark 7.3: Maintain vegetative buffers around streams where they intersect with class e soils
Metric 7.3: Buffer width around streams that intersect with class e soils
Goal 8: Enhance Geologically Hazardous Areas
Benchmark 8.2: Increase vegetative buffers around streams where they intersect with class e soils
Metric 8.2: Buffer width around streams that intersect with class e soils
Who
CD
When
Three months prior to each five-year report due date, i.e., September 2025, September 2030, etc.
Where
All farms with category II-a geologically hazardous areas (land capability subclass “e” soils)
How
<ul style="list-style-type: none"> • Find the intersection of agricultural land and subclass “e” soils • Find the intersection of the above with streams • For baseline: Digitize riparian stream buffers around all riparian vegetation within these intersections using <i>2011 NAIP imagery</i>, and calculate average buffer width for each polygon • For current: Digitize riparian stream buffers around all riparian vegetation within these intersections using the <i>most recent NAIP imagery</i>, and calculate average buffer width for each polygon • Calculate the difference between the baseline and the most recent buffer widths • Summarize data using pivot tables or method of your choice-
Tracking: Results will be summarized in a spatial analysis monitoring report.

Appendix C: Effectiveness Monitoring – Field Protocols

The following field protocols will be used to provide a sample of a finer-grained dataset that remotely-sensed data cannot provide.

Table C- 1 NRCS Biology Technical Note-14

WETLANDS, FWHCAs (upland habitat), & FFAs – Tech Note 14
Goal 1: Protect wetland functions related to water quality, water quantity, and habitat
Benchmark 1.4: Maintain wetland function over time by monitoring and maintaining wetland vegetation
Metric 1.4: Scores for wetland rapid assessment protocol
Goal 2: Enhance and/or restore wetland functions related to water quality, water quantity, and habitat
Benchmark 2.2: Overall improvement in wetland function by monitoring and enhancing wetland vegetation
Metric 2.2: Scores for wetland rapid assessment protocol
Goal 5: Protect habitats and species of local importance
Goal 13: Protect and enhance Frequently Flooded Areas for habitat and groundwater recharge
Benchmarks 5.3 & 13.3: Maintain habitat assessment scores over time
Metrics 5.3 & 13.3: Habitat assessment scores in NRCS Biology Technical Note-14
Goal 6: Enhance and/or restore habitats and species of local importance
Goal 14: Enhance Frequently Flooded Areas for habitat and groundwater recharge
Benchmarks 6.2 & 14.2: Overall improvement in habitat assessment scores following enhancement project
Metrics 6.2 & 14.2: Habitat assessment scores in NRCS Biology Technical Note-14
Who
CD planners or other trained staff or volunteers
When
May through September, and every subsequent five years
For new ISPs: baseline data will be gathered during the inventory phase of the planning process
For existing farm plans: baseline data will be gathered from farms with existing farm plans as part of conversion process from farm plan to ISP
For farms implementing new BMPs (i.e., enhancement projects): gather baseline data prior to project, then every five years
Where
All farms with wetlands, all farms with FFAs, and all farms with upland habitat associated with an FWHCA
Up to six assessments per critical area type, completed each year, with new ISPs the priority
How
<ul style="list-style-type: none"> • Use NRCS Biology Technical Note – 14, Wildlife Habitat Evaluation Guide • Complete tabs for the type of land use present within the wetland, FFA, and/or FWHCA • Include 1-3 photo monitoring points at each site identified by GPS coordinates. Record coordinates on photo monitoring form. • Compare scores over time
Tracking: Results will be summarized in an annual field monitoring report that includes results from all field assessments.
Additional Details
WETLANDS: The initial site visit will either confirm San Juan County’s mapping, or lead SJICD staff to consult with a wetland biologist if they believe that site conditions do not match San Juan County’s wetland mapping. The wetland biologist will document existing conditions and submit proposed changes, if any, to San Juan County’s Community Development and Planning Department for their review and approval. San Juan County Community Development staff will review the documentation, and if approved, will request a change to the wetland map layer from San Juan County’s GIS Department based on the documentation provided.

FWHCAs: WDFW will be consulted for habitat management plan recommendations where occurrences of protected species under Fish and Wildlife Habitat Conservation Areas are confirmed in the field and VSP participants choose to implement the habitat management recommendations for mapped species. Staff will consult with WDFW and other habitat management agency staff (such as USFWS and NOAA Fisheries) every two years to ensure that published habitat management guidelines are the most current and up to date literature available.

Plant species protected under San Juan County's Fish and Wildlife Habitat Conservation Areas Ordinance are documented in San Juan County's GIS system. If a protected plant species were mapped as occurring on an Individual Stewardship Plan property, CD staff would seek to verify that species occurrence with a site visit, accompanied by a qualified expert as needed. Management of the species would occur in cooperation with Washington Natural Heritage Program rare plant botanists and follow management recommendations for rare plant species as documented in Washington DNR's [Rare Plant Field Guide](#).

Table C- 2 Stream Visual Assessment Protocol, Version 2

STREAMS – SVAP2	
Goal 3: Protect streams	
Benchmark 3.3: Maintain stream condition scores over time	
Metric 3.3: SVAP scores for elements 4, 5, & 6 (riparian area quantity, riparian area quality, and canopy cover)	
Goal 4: Enhance and/or restore streams	
Benchmark 4.2: Overall improvement in stream function scores following enhancement and/or restoration project	
Metric 4.2: SVAP scores for elements 4, 5, & 6 (riparian area quantity, riparian area quality, and canopy cover)	
Who	
CD planners or other trained staff or volunteers	
When	
For new ISPs: baseline data will be gathered during the inventory phase of the planning process; subsequent inventories collected every five years during July through August	
For existing farm plans: baseline data will be gathered from farms with existing farm plans as part of conversion process from farm plan to ISP; subsequent inventories collected every five years during July through August	
For farms implementing new BMPs (i.e., enhancement projects): gather baseline data prior to project, then every five years during July through August	
Where	
All farms with streams	
Up to six SVAPs completed each year, with new ISPs the priority	
SVAP will be conducted on all the following water type classifications: Type "S"= Shoreline, Type "F" = Fish, Type "Np"= Non-Fish, and Type "Ns"= Non-Fish Seasonal	
How	
<ul style="list-style-type: none"> • Use the Stream Visual Assessment Protocol, Version 2 from the NRCS National Biology Handbook • Complete Exhibit 1: Stream Visual Assessment Protocol 2 Summary Sheet, including 1-3 photo monitoring points at each site identified by GPS coordinates • Complete surveys for the following elements: 4. Riparian Area Quantity, 5. Riparian Area Quality, and 6. Canopy Cover 	
Tracking: Results will be summarized in an annual field monitoring report that includes results from all field assessments.	

Table C- 3 Water Quality in-stream Sampling

STREAMS –WATER QUALITY SAMPLING	
Goal 3: Protect Streams	
Benchmark 3.4: Maintain water quality in False Bay Watershed over time	
Metric 3.4: Temperature, nutrients, DO, bacteria	
Goal 4: Enhance and/or restore streams	
Benchmark 4.3: Improve water quality in False Bay Watershed following enhancement and/or restoration project to meet water quality standards 100% of the time	
Metric 4.3: Temperature, nutrients, DO, Bacteria	
Who	
San Juan County	
When	
Year-round	
Where	
False Bay Watershed	
How	
<ul style="list-style-type: none"> • Use data collected by University of Washington-Friday Harbor Laboratories, including temperature, nutrients, DO, bacteria • Compare to baseline data 	
Tracking: Results will be summarized in an annual field monitoring report that includes results from all field assessments.	
Additional Details	
Use False Bay as a model watershed. It is the most studied watershed, it has the biggest water quality issues, and a large intersection with agriculture. Lessons learned in the model watershed can be applied to other watersheds in the county. Pursue funding to develop similar monitoring watersheds on Lopez and Orcas islands.	