Washington State Department of Ecology

Water Resources Program

Final Technical Review Report of

Colville Watershed Response to the 2018 Streamflow Restoration Act (RCW 90.94) – December 16, 2019 Addendum to the WRIA 59 Watershed Plan

Principal Author – John Covert, LHG
Contributing Authors - Jim Pacheco, Habitat Biologist

Dated: February 7, 2020

I. VERIFICATION OF COMPLIANCE WITH SUBMITTAL REQUIREMENTS OF RCW 90.94.020

Ecology has reviewed the WRIA 59 Watershed Plan Addendum (Addendum) in light of the requirements of RCW 90.94.020 and affirms that the document was submitted by the WRIA 59 Planning Unit (Planning Unit) prior to the December 31, 2019 timeline agreed to by the Planning Unit and Ecology for consideration under the Interim NEB Guidance and that the planning process followed the statutory process outlined in the law.

II. RCW 90.94.020 TECHNICAL REVIEW

1. OVERVIEW

The Planning Unit has produced and approved an Addendum to the Colville Watershed Management Plan, dated December 16, 2019, which addresses the requirements of RCW 90.94. This document provides the Streamflow Restoration Section technical staff's review of that Addendum.

In addition to the coordination and technical assistance provided by Ecology to the Planning Unit, Ecology provided two specific documents to help them address the requirements of RCW 90.94:

> Interim Guidance for Determining Net Ecological Benefit for streamflow restoration planning and water permit mitigation pilots under the 2018 Streamflow Restoration Act (Ecology Publication 18-11-009, June 2018b)
>
> Streamflow Restoration Recommendations for Water Use Estimates (Ecology Publication 18-11-007 - ESSB 6091, June 2018a)

The expectations presented in these two documents represent Ecology's initial recommendations regarding ways to address the requirements of RCW 90.94, issued in June 2018 to support planning units in WRIAs 1 and 11 who are required by the statute to have their plans adopted no later than February 1, 2019. Ecology's thinking regarding the implementation RCW 90.94 evolved since the June 2018 issuance of the Interim NEB Guidance and Water Use Estimates guidance, and Ecology replaced both of these interim guidance documents with permanent guidance in mid-2019. The permanent guidance is intended to apply to watershed plans prepared for the remaining thirteen RCW 90.94-affected WRIAs. On March 6, 2019, the WRIA 59 Watershed Management Partnership asked Ecology to review their WRIA 59 Watershed Plan Addendum under the Interim NEB Guidance as they were already developing their Addendum under the Interim NEB Guidance. On April 4, 2019, Ecology accepted that request and agreed to review the Addendum under the Interim Guidance so long as it was received by December 31, 2019. Ecology received the Addendum on December 23, 2019.

Methods provided in the two above guidance documents are not rigid requirements and planning units can apply other credible methods. Ultimately, watershed plan updates must be judged against the requirements of RCW 90.94. In order to do, Ecology's strategy is to: (1) review the actions that planning units determine to be necessary to offset potential impacts to instream flows associated with permit-exempt domestic

consumptive water use; and, (2) evaluate whether the plan updates will result in a Net Ecological Benefit (NEB) to instream resources within the water resource inventory area.

Sections 2 through 6 of this technical review provide technical staff's synopsis and review of the elements discussed in the Planning Unit's Addendum. Figures and Tables from the Addendum have been pasted into this document. Section 7 provides technical staff's NEB determination.

2. ASSESSMENT OF POTENTIAL IMPACTS

The Planning Unit evaluated three methodologies to estimate rural population growth within the watershed over the twenty year timeline established in RCW 90.94 (January 19, 2018 through January 18, 2038). They looked at population growth information provided by U.S Census data; Washington State Office of Financial Management (OFM) data; and Stevens County Land Services Department historical building permit data. The Planning Unit concluded that the Census and OFM projections were not helpful in estimating new population growth because the state and federal databases focused on overall growth patterns in the county rather than new uses outside of cities and public water system service areas with WRIA 59. The Planning Unit determined the county database was more reliable for projecting average growth over the planning period.

Between 2001 and 2017, 950 new permits for rural homes utilizing domestic exempt wells within WRIA 59 were issued by Stevens County. Those permits were geospatially located by their parcel centroid within the WRIA. On average, the Planning Unit determined that 56 homes per year were constructed within the watershed over that time period. Utilizing the past historic records of permits, and assuming a growth pattern similar for the next twenty years, the Planning Unit estimated 1,118 additional new homes relying on permit-exempt domestic wells will be constructed in WRIA 59 through 2038.

Ecology's Interim NEB Guidance recommended that planning units partition the WRIA into suitably-sized subbasins or sections of subbasins so that consumptive use impacts can be calculated for discreet areas. The Planning Unit adapted the subbasin delineation that had evolved from the development of their Watershed Plan activities related to their 2007 Plan Update (under RCW 90.82). The Planning Unit divided their watershed in 19 subbasins for this plan Addendum (as identified in their Table 7 and Figure 1, reproduced below).

Summary of Subbasins Located in WRIA 59 Watershed		
Upper Watershed	**Middle Watershed**	**Lower Watershed**
Sheep Creek	Colville River South	Colville River North
Deer Creek	Sherwood Creek	Gold Creek
Grouse Creek	Chewelah Creek	Haller Creek
Bulldog Creek	Thomason Creek	Mill Creek
Cottonwood Creek	Blue Creek	Little Pend Oreille River
Waitts Creek	Stensgar Creek	
Huckleberry Creek	Stranger Creek	

Table 7. Summary of Subbasins in WRIA 59

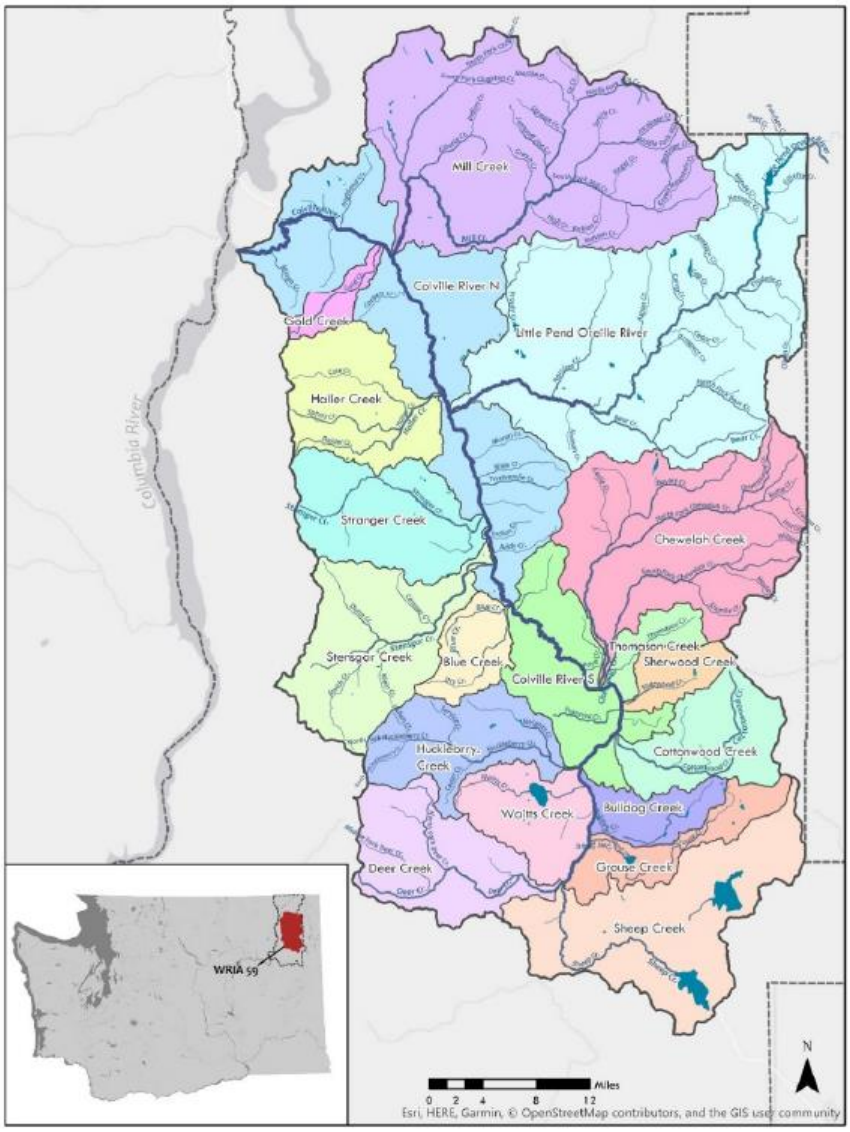


Figure 1. WRIA 59 Overview Map

The Planning Unit utilized their historical building permit data and their subbasin delineations to estimate the number of new permit-exempt wells expected to be drilled in each subbasin over the twenty year timeline for the Addendum.

In order to estimate the future consumptive use impacts to surface water from new permit-exempt domestic wells in WRIA 59, the Planning Unit estimated total water use for both indoor and outdoor uses for the estimated 1,118 new homes anticipated to be built within the 19 subbasins. They followed Ecology's recommendations for estimating water use (published in our June, 2018a Recommendations for Water Use Estimates publication). Within Stevens County, the average household size is 2.48 people per home (U.S. Census data). The Planning Unit chose to use Ecology's recommended average indoor use of 60 gallons per day per person and an indoor consumptive use value of 10 percent for homes connected to septic systems.

This results in the 20-year buildout for the total 1,118 new homes of 18.6 acre-feet per year of indoor household consumptive use.

To estimate future outdoor water use, the Planning Unit conducted an aerial GIS imagery analysis to estimate the existing average irrigated lawn size within the WRIA and for each subbasin. They used a sample of 274 randomly selected properties from the list of 950 new building permits constructed within the WRIA. For the purposes of this analysis, they considered lawn to by any outdoor watering of lawn, gardens, and/or landscaping that could be visually identified on aerial photographs. Measured lawn sizes ranged from zero to 2.38 acres. Eighty-five of the 274 properties surveyed contained no visible evidence of outdoor watering of lawns or gardens. Fourteen lawns had irrigation footprints larger than 0.5 acres. The average lawn-size for WRIA 59 presented at the bottom of Table 4 is 0.1468 acres. However, this value cannot be calculated from the subbasin numbers listed in Table 4. The average of the table values is 0.1455 (which is the number used in their Table 6 for the calculation of the consumptive use numbers for the WRIA). This small discrepancy is also present in Appendix A tables.

The Addendum identifies differences in average lawn sizes between subbasins and between aquifer types (see their Figures 7 and 8 reproduced below). Subbasins whose wells are completed predominately in bedrock aquifers have the smallest average lawn sizes. Bedrock wells are typically poor producers. They often have a hard time producing enough water to cover indoor uses, let alone reliably provide enough water to maintain outdoor irrigated footprints.

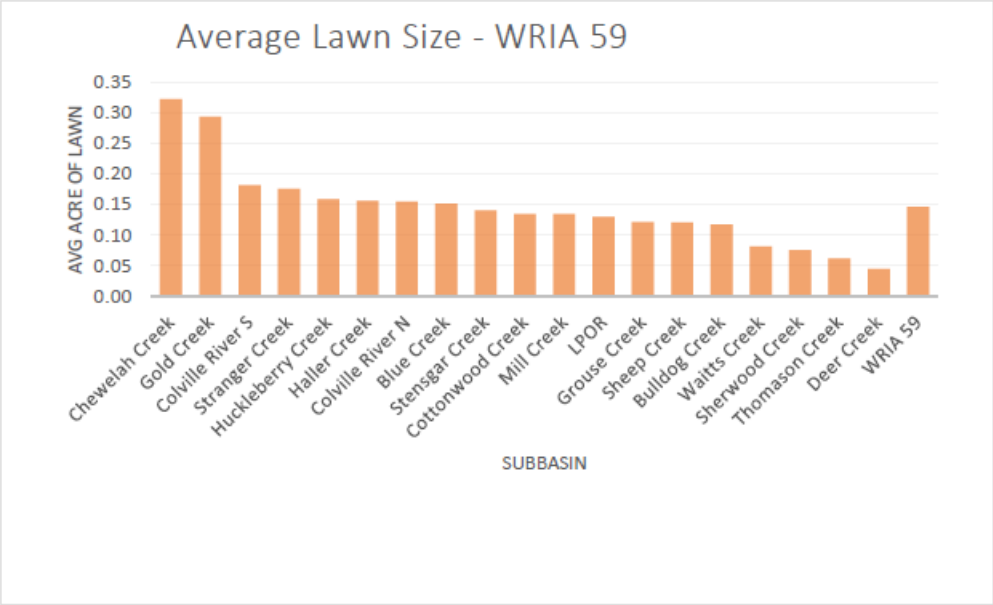


Figure 7. Average Lawn Size

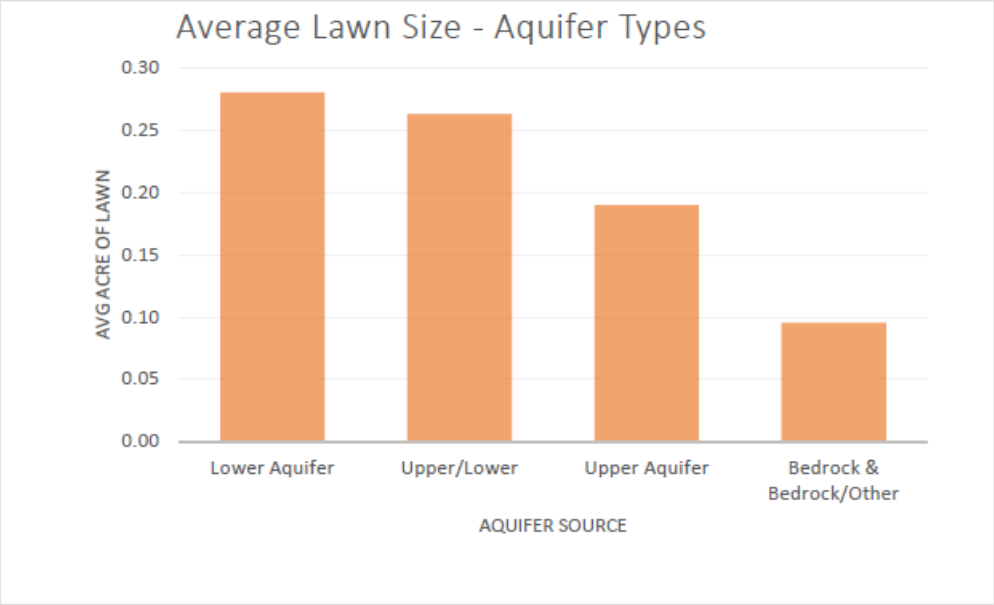


Figure 8. Average Lawn Size - Aquifer Types

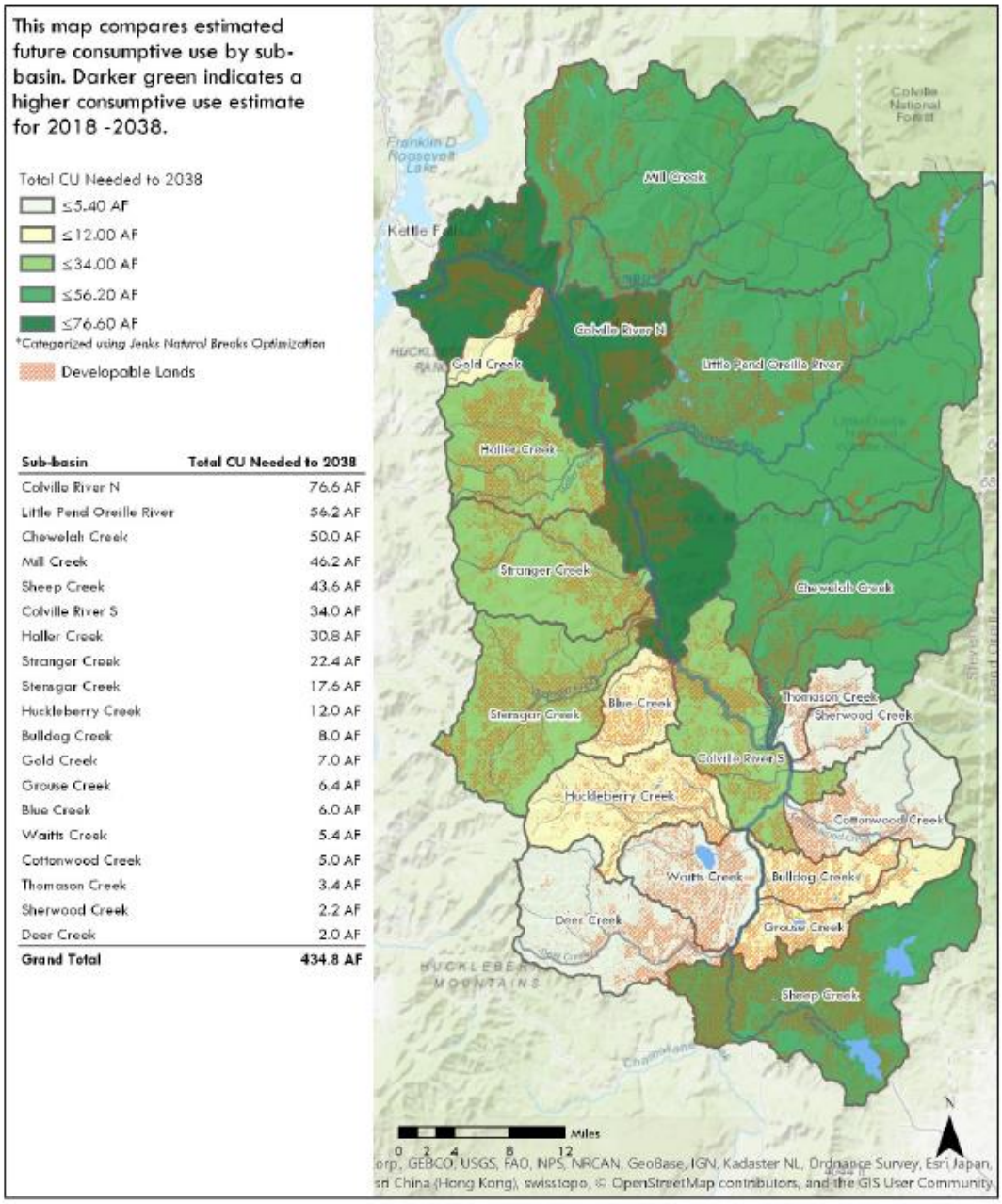
In order to estimate the irrigation water needs for the 19 subbasins, the Planning Unit followed Ecology's recommendation and used the standard crop irrigation requirement for pasture/turf as published in the Natural Resources Conservation Service's Washington Irrigation Guide to calculate the volume of water needed to water the anticipated outdoor spaces. For WRIA 59, the appropriate Crop Irrigation Requirement (CIR) is 26.025 inches per year. This methodology likely overestimates the volume of water used by most homeowners as it's the rate needed to produce a commercially viable crop. Ecology Guidance 1210 was used to estimate total irrigation requirements and consumptive uses. This lead to an application efficiency of 70 percent, a consumptive use of 80 percent, and a return flow of 20 percent to be applied to the average lawn size by subbasin for the appropriate number of anticipated new homes over the twenty year timeline. The Planning Unit's Table 6 presents the anticipated consumptive uses for the 1,118 new homes for both indoor and outdoor uses for all nineteen subbasins (see their Table 6, reproduced below).

Consumptive Use by WRIA 59 Subbasins for 20 Years and Comprehensive Plan Update

Subbasin	Homes/Yr	Cu Indoor (AF/Yr)	Average Lawn Size (acres)	Cu Lawn (AF/Yr)	Total Cu/Year (AF-for annual homes)	Homes in 20 yrs	Total Cu (AF/yr) through 2038	Total Cu (AF/yr) through 2040 for Comp Plan
Colville River N	9.53	0.16	0.1554	3.67	3.83	190.60	76.6	84.3
Little Pend Oreille	8.24	0.14	0.1307	2.67	2.81	164.80	56.2	61.8
Chewelah Creek	3.06	0.05	0.3229	2.45	2.50	61.20	50.0	55.0
Mill Creek	6.59	0.11	0.1347	2.20	2.31	131.80	46.2	50.8
Sheep Creek	6.88	0.11	0.1211	2.07	2.18	137.60	43.6	48.0
Colville River S	3.65	0.05	0.1820	1.65	1.70	73.00	34.0	37.4
Haller Creek	3.82	0.06	0.1563	1.48	1.54	76.40	30.8	33.9
Stranger Creek	2.47	0.04	0.1765	1.08	1.12	49.40	22.4	24.6
Stensgar Creek	2.41	0.04	0.1403	0.84	0.88	48.20	17.6	19.4
Huckleberry Creek	1.47	0.02	0.1594	0.58	0.60	29.40	12.0	13.2
Bulldog Creek	1.29	0.02	0.1180	0.38	0.40	25.80	8.0	8.8
Gold Creek	0.47	0.01	0.2941	0.34	0.35	9.40	7.0	7.7
Grouse Creek	1.00	0.02	0.1220	0.30	0.32	20.00	6.4	7.0
Blue Creek	0.76	0.01	0.1515	0.29	0.30	15.20	6.0	6.6
Waitts Creek	1.24	0.02	0.0818	0.25	0.27	24.80	5.4	5.9
Cottonwood Creek	0.71	0.01	0.1350	0.24	0.25	14.20	5.0	5.5
Thomason Creek	0.94	0.02	0.0624	0.15	0.17	18.80	3.4	3.7
Sherwood Creek	0.53	0.01	0.0759	0.10	0.11	10.60	2.2	2.4
Deer Creek	0.76	0.01	0.0453	0.09	0.10	15.20	2.0	2.2
TOTAL	**55.82**	**0.91**	**0.14554211**	**20.83**	**21.74**	**1116.40**	**434.8**	**478.3**

Table 6. Consumptive Use by Subbasin

Combining the indoor consumptive uses and the outdoor consumptive uses for the 1,118 new homes anticipated by 2038, the Planning Unit estimates that new domestic exempt groundwater well users will have a total consumptive use impact of 434.8 acre-feet per year. These new impacts will be distributed amongst the subbasins as defined in their Figure 9, reproduced below.



Map showing development pressure by subbasin based on Consumptive Use Estimates.

Figure 9. Development Pressure by Consumptive Use

The Planning Unit determined that in order to move forward with the RCW 90.94 process, it would be most beneficial to focus water offset projects within the ten subbasins ranked as having the highest projected development pressures. These include: Colville River North, LPOR, Sheep Creek, Mill Creek, Haller Creek, Colville River South, Chewelah Creek, Stranger Creek, Waitts Creek, and Stensgar Creek (mostly the green shaded subbasins on their Figure 9).

The Planning Unit has determined that their consumptive use impacts analysis is conservative. They believe their estimation of 434.8 acre-feet is an over-estimation, and that the actual consumptive use impacts from the anticipated growth will likely be less. However, they also acknowledge that the overall uncertainty of achieving the NEB in the basin will be contingent on the availability of funding for the implementation of the proposed projects (discussed below), and the continued operation and maintenance funding to keep the mitigation projects operational.

Technical staff conclude that the Planning Unit fulfilled its obligations to adequately identify and quantify the anticipated consumptive use impacts from the projected number of new domestic exempt water wells over the statutory timeline. Their analysis was thorough and robust. It was conducted at both the subbasin and WRIA scale which allows a meaningful determination of the impacts. They have calculated the size and distribution of the impacts on both an annual basis and an instantaneous basis (see their Table 18, reproduced below on page 15) at the subbasin scale.

3. PLANNING UNIT ANALYSIS OF OFFSET PROJECT STRATEGIES

RCW 90.94 requires planning units to develop actions "necessary to offset potential impacts to instream flows associated with permit-exempt domestic water use." The Planning Unit considered 48 separate projects in their initial list of offset projects and actions. The Planning Unit segregated the projects in their plan into three categories including: (1) Acquiring senior water rights; (2) Developing Natural and Constructed Infrastructure; and (3) Habitat Enhancement. The plan also prioritizes the projects based on four main considerations:

- Location of the Project
- Type of Project
- Certainty of Success
- Cost Effectiveness

The Planning Unit evaluated the certainty of success by considering two factors: (1) the certainty of the project occurring, and (2) the certainty of the project benefits.

The Planning Unit also considered the cost-effectiveness of projects, specifically considering the overall estimated costs including upfront construction and acquisition costs as well as long-term operation and maintenance costs.

The Planning Unit considered adopting a scoring matrix, but determined that a more effective approach was to collaborate and discuss the projects individually. In the end, the Planning Unit agreed that it wanted to identify high and medium priority projects (their terminology) and not rank them in a numerical order. They considered "high priority" projects as generally those projects that are "shovel ready" with project benefits generally understood and anticipated to provide an overall net ecological benefit to WRIA 59[1]. Their "medium

[1] See page 34 in the WRIA 59 Watershed Plan Addendum

priority" projects are those identified as providing generally understood and anticipated ecological benefits to WRIA 59[2].

The Addendum discusses sixteen high and medium priority projects, and the appendices contain as much detail as is available for all sixteen of the projects discussed below.

3.1 HIGH PRIORITY PROJECTS

The Planning Unit identified ten projects as high priority because these projects will provide consumptive use water offsets, and habitat benefits within WRIA 59. The projects identified include consumptive use offsets, flow mitigation, and habitat improvement projects. The projects are in many different subbasins and provide benefits throughout the watershed. The projects have local support, technical merit and achieve the requirement to offset the impacts of future domestic water uses and improve ecological functions in the watershed.

Water Offset Projects

Five of the high priority projects are water offset projects (see their Table 12, reproduced below, with Project numbers added by technical staff). Three are water right acquisitions and two are infiltration projects that will provide retimed, flow benefits. When realized, the Stensgar Creek Water Right Acquisition (Project 13) will provide at least 19.4 acre-feet per year of offset. The Stranger Creek Water Right Acquisition (Project 14) will provide 35 acre-feet per year of offset. The Waitts Lake Creek area Water Right Acquisition and Mitigation Source Substitution (Project 15) will provide 451.45 acre-feet of offset water on an annual basis. The Haller Creek (Reidel Creek) Infiltration (Project 7) is a managed aquifer recharge (MAR) project and will retime and offset a minimum of 31 acre-feet per year of water in the Haller Creek Basin. The Little Pend Oreille River Infiltration (Project 8) is also an MAR project and will retime and offset a minimum of 61.8 acre-feet per year.

Projected Flow Benefits from High Priority Projects				
Project #	Subbasin	Mitigation Type	Downstream Flow benefit (AF / cfs)	Projected Mitigation Time
13	Stensgar Creek	Surface Water Cert	19.4 AF / 0.07 cfs	during irrigation season (5/15-10/10)
14	Stranger Creek	Surface Water Cert	35 AF / 0.13 cfs	May 15 to September 30
15	Waitts Lake Creek	Storage Certificate with timed release	451 AF / 1.54 cfs	May 15 through October 10
7	Haller Creek	SW Diversion 3/15 to 5/15 w/ GW Infiltration	31 AF / 0.04 cfs	Attenuated Annually
8	Little Pend Oreille River	SW Diversion w/ GW Infiltration	61.8 AF / 0.09 cfs	Attenuated Annually

Table 12. Projected Flow Benefits from High Priority Projects

[2] See page 34 in the WRIA 59 Watershed Plan Addendum

The Planning Unit has assigned offset volumes for all but two of these projects based on their goal of offsetting the volume of anticipated, consumptively used water within the projects' respective subbasins. They acknowledge that the storage projects will likely have the capacity to infiltrate more water than they are claiming. The Planning Unit has specific water right acquisitions in mind associated with the Stranger Creek and Waitts Lake projects, that include definite offset volumes (35 and 451.45 acre-feet respectively). They have secured funding (from Ecology) to purchase the Waitts Lake water rights and anticipate applying for funding to purchase the Stranger Creek water right in 2020. A specific right to purchase has not yet been identified for the Stensgar Creek Water Right Acquisition Project, but they have determined that multiple rights with consumptive use volumes large enough to cover the new uses in that subbasin (19.4 acre-feet per year) do exist, and the Planning Unit supports a project to encourage the acquisition of such a right from willing sellers at a market price. The Haller Creek Project has a specific site identified and they have done prefeasibility work (funded by Ecology) to scope out hydrogeologic conditions and preliminary site engineering work. This project site is located on Washington Department of Natural Resources property just above the confluence of Reidel Creek and Haller Creek. The prefeasibility work has included drilling two exploratory wells, conducting a percolation test, developing a land elevation survey, developing preliminary engineering design diagrams, and generating a rough cost estimate. The results are presented in Addendum Appendix E. The Little Pend Oreille River (Project 8) had a specific site identified and they did prefeasibility work (funded by Ecology). The prefeasibility work (summarized in Appendix A) included drilling an exploratory well, land survey work and preliminary site engineering. The prefeasibility work concluded that a MAR on that site would be expensive and not likely yield the desired results. The work identified additional sites that could have potential and the Planning Unit supports the development of an MAR project in this subbasin. More work is needed to develop Project 8.

Habitat Improvement Projects

The Planning Unit also identified five high priority projects that are non-water offset projects that provide habitat improvement for the Colville River watershed: Chewelah Creek and Colville River Restoration (Project 1), Chewelah Creek Streambank Restoration (Project 2), Lower Mill Creek Flood Management (Project 9), and Claude Pierce/Kaniksu Ranch WRP Stream Restoration (Project 11). These projects will enhance the ecosystem of the Colville River Basin by improving stream geomorphology, riparian habitat, and groundwater retention. The fifth Non-Water Offset Project is identified as Watershed Improvement Best Management Practices (Project 16), and that project proposes to develop local resources of best management practices for small scale-storage that will increase organic matter and carbon content in soil; water conservation and irrigation efficiencies across all subbasins.

The Chewelah Creek and Colville River Restoration (Project 1) proposes to improve the instream and riparian habitat in the lower reach of Chewelah Creek and the confluence of Chewelah Creek and the Colville River. The project is focused on portions of Chewelah Creek and the Colville River that were historically dredged and straightened. The project will improve riparian habitat, bank stabilization, create a braided channel, improved channel terracing, installation of large woody debris and re-meandering of the channel. This project will improve hydrologic functions of the stream and floodplain, which in turn will improve natural ecological functions within the stream and river. Ecology authorized funding to support prefeasibility funding for HEC-RAS modeling, land surveying and preliminary engineering. The results of this prefeasibility work are

presented in Addendum Appendix D. The project was developed in consultation with private property owners and staff from Stevens County Conservation District (SCCD) and Stevens County Land Services.

The Chewelah Creek Streambank Restoration (Project 2) proposes to improve a reach of riparian habitat of Chewelah Creek in the City of Chewelah. SCCD proposes to install large woody debris, large rocks and other natural and artificial materials to improve instream habitat. The project will help reduce the sediment loading in the lower reaches of Chewelah Creek and the Colville River. The project will utilize bioengineering techniques in tandem with structure protection constructed from natural elements. This project has included stake-holder involvement, preliminary engineering has been completed, and hydraulic project approval and environmental review has been done. Additional funding is needed to implement the project.

The Lower Mill Creek Flood Management (Project 9) is a water storage project that proposes to improve habitat in Mill Creek and store and retime spring flows. There will be substantial habitat improvements from this project because current unabated flooding produces large amounts of suspended and bedload material being added to the creek, aggrading the channel bottom. This effort, led by SCCD, has stakeholder involvement and support, and will provide habitat benefits to Mill Creek and downstream the Colville River. The Planning Unit believes this project will improve groundwater storage and provide flow benefits in the summer and fall low-flow months. However, the Planning Unit did not attempt to quantify the flow benefits of this project since more design is needed. The project is located on Mill Creek, about two miles above its confluence with the Colville River near where highway 395 crosses the creek. A preliminary needs assessment has been done, but further work is needed to consider project opportunities for habitat improvement.

The Claude Pierce/Kaniksu Ranch WRP Stream Restoration (Project 11) proposes to increase storage in a natural depression near Deer Lake to improve fish and wildlife habitat. The Project site is located in the headwaters of the Colville River. The project proposes to improve instream resources by reconnecting the stream to adjacent floodplain; increase stream sinuosity and complexity; and install beaver dam analogs to improve wetland functions. There is an unnamed fish-bearing stream that dissects a meadow which has become deeply incised. The stream channel's incision has disconnected it from the floodplain. The project will encourage storage in a natural depression to improve fish and wildlife habitat and expand current restoration efforts. Some work in the area has already been completed. The project proposes additional work in the area to improve habitat upstream of Deer Lake.

3.2 MEDIUM PRIORITY PROJECTS

The Planning Unit identified five medium-priority water offset projects and two medium-priority non-water offset projects in the Colville River watershed (see their Table 14, reproduced below with Project numbers added by technical staff). As with their analysis of the high priority projects, the Planning Unit has assigned offset volumes for these medium priority projects based on the goal of offsetting the volume of anticipated, consumptively used water within the projects' respective subbasins. They acknowledge that the storage projects will likely have the capacity to infiltrate more water than they are claiming.

The Planning Unit identified two MAR projects in the Chewelah Creek subbasin as medium priority. The Healy Valley Infiltration (Project 4) and Chewelah Creek Infiltration (Project 3) propose to store streamflows from Chewelah Creek in the spring and infiltrate and improve streamflows in the late summer season.

The Healy Valley Infiltration Project is in the headwaters of the South Fork Chewelah Creek. The project will divert flows during the high flow period in the spring and distribute water through a shallow aquifer recharge facility in the Wilson Healey Meadow area. The project proposes to infiltrate at least 27.5 AF (half of the projected demand). A site on public land in section 22 was evaluated by GeoEngineers in 2003. The Planning Unit recommends considering a site farther upstream in sections 23 or 24 on private land (all in T33N. R41E.). Feasibility work is needed. Retimed storage will improve summer flows on the South Fork with cooler groundwater discharge and will help to alleviate spring runoff flooding problems downstream within the City of Chewelah at the City Park.

The Chewelah Creek Infiltration Project is located on the North Fork Chewelah Creek on private property formerly appurtenant to a Chewelah Creek water right. Currently, the former water right diversion and conveyance infrastructure is in place which would be utilized for the diversion. The property owner is interested in considering an infiltration project on the property to improve flows in Chewelah Creek. Groundwater is anticipated to be about 25 feet below land surface at this location. Retimed storage will improve summer flows on the North Fork with cooler groundwater discharge and will help to alleviate spring runoff flooding problems downstream within the City of Chewelah at the City Park. Feasibility work is needed.

The Planning Unit identified the Colville River North Surface Storage and Retiming (Project 5), located on the City of Colville's property, as medium priority. The City of Colville and Washington Department of Fish and Wildlife are working on this project to improve water storage and habitat for waterfowl. This project proposes to improve water storage with approximately 15 acres of surface storage through improvement to wetland habitat on City property. This project will also provide additional habitat improvements, by increasing habitat for waterfowl and improving wetland function. The Planning Unit believes this project will improve groundwater storage and provide flow benefits in the summer and fall low-flow months. The Planning Unit did not attempt to quantify the flow benefits of this project because more design needs to be completed.

The Planning Unit identified the Mill Creek Infiltration (Project 10) as a medium priority project. The Mill Creek Infiltration Project proposes to store and infiltrate water on DNR property in the Mill Creek subbasin. The project will divert flows during the spring high flow period and distribute water through a shallow aquifer recharge facility. Preliminary site review has been conducted, but additional site feasibility is needed to evaluate and determine a preferred site. The project will be designed to recharge flows to Mill Creek during the low flow summer and fall months to increase stream flow with cooler groundwater.

The Planning Unit identified the Loon Lake/Sheep Creek (the Addendum uses two different names for this project) Infiltration (Project 12) as medium priority. This project proposes to capture spring flows from Loon Lake through Sheep Creek and then convey and infiltrate the excess flow on Stevens County's property currently being used as a gravel pit. This project proposes to divert flows from Sheep Creek, downstream of Loon Lake, during the spring high flow period and distribute water through a shallow aquifer recharge facility. The project will be designed to recharge flows during high flow periods, to then provide cool groundwater water to Sheep Creek during the low flow summer and fall months.

Projected Flow Benefits from Medium Priority Projects				
Project #	Subbasin	Mitigation Type	Downstream Flow benefit (AF / cfs)	Projected Mitigation Time
12	Sheep Creek	SW Diversion 3/15 to 5/15 w/ GW Infiltration	48.0 AF / 0.07 cfs	Attenuated Annually
4	N.F. Chewelah Creek	SW Diversion 3/15 to 5/15 w/ GW Infiltration	27.5 AF / 0.04 cfs	Attenuated Annually
3	S.F. Chewelah Creek	SW Diversion 3/15 to 5/15 w/ GW Infiltration	27.5 AF / 0.04 cfs	Attenuated Annually
10	Mill Creek	SW Diversion 3/15 to 5/15 w/ GW Infiltration	50.8 AF / 0.07 cfs	Attenuated Annually

Table 14. Projected Flow Benefits for Medium Priority Projects

Note: Above table does not contain Colville River North Surface Storage and Retiming (Project 5), since those benefits have not been estimated.

The Planning Unit identified two medium priority projects that are Non-Water Offset Projects that provide habitat improvement for the Colville River watershed: Colville River North Surface Storage and Retiming (Project 5) and Colville River Bank Stabilization/Habitat Enhancement (Project 6). The Planning Unit identified the Colville River North Surface Storage and Retiming [also listed by the Planning Unit as a medium priority offset project, but without quantifying an offset volume] as a project that will provide habitat benefits including improving habitat for waterfowl. The project has been supported by the Washington Department of Fish and Wildlife as a project that will likely increase diversity of flora and fauna on the property and improve wetland function. The Planning Unit identified the Colville River Bank Stabilization and Habitat Enhancement project as medium priority to provide habitat enhancement because it will improve the riparian habitat of the Colville River. The project proposes to improve riparian habitat through bioengineering plantings, large woody debris and native planting. This project will improve the riparian habitat of the Colville River, slow instream flows and improve bank storage. This project is a continuation of work completed by Stevens County Conservation District's work on adjacent property.

3.3 PROJECT ANALYSES

The location of all sixteen high and medium priority projects can be seen in their Figure 10, reproduced below.

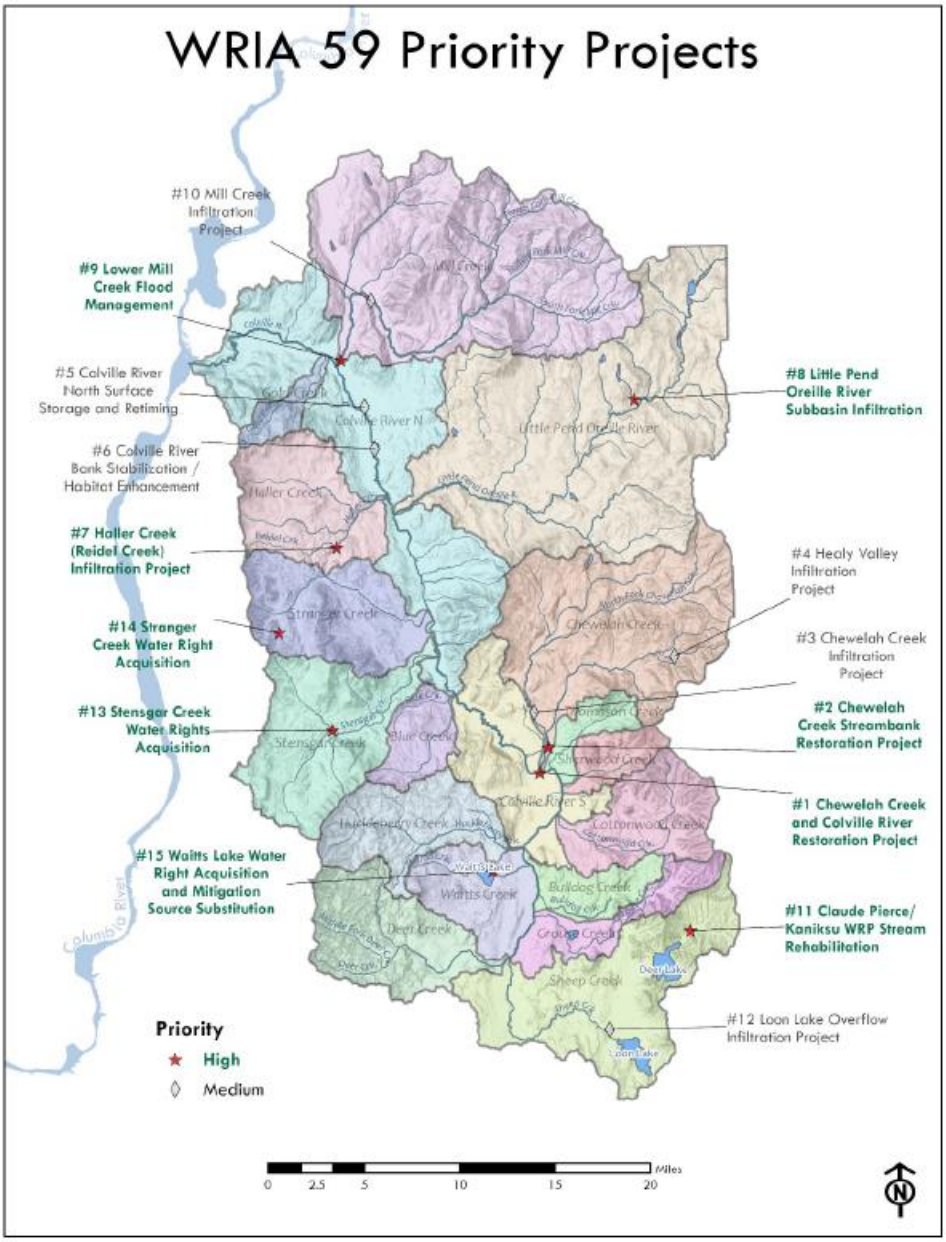


Figure 10. Location of Priority Projects in Colville River Watershed

The County applied for additional funding from Ecology in April, 2019. They were awarded a grant to conduct prefeasibility studies on five of their identified projects (see their Table 9, reproduced below). Results from this work has been incorporated into their Addendum. Specific technical memorandums resulting from the prefeasibility work are included in the Addendum Appendices.

Prefeasibility Studies	
Project Number	**Project Name**
1	Chewelah Creek and Colville River Restoration Project
5	Colville River North Surface Storage and Retiming
7	Haller Creek (Reidel Creek) Infiltration Project
8	Little Pend Oreille River Subbasin Infiltration
14	Stranger Creek Water Right Acquisition
16	Watershed Improvement Best Management Practices (WRIA-wide)

Table 9. Prefeasibility Studies

The projected flow benefits from the high priority projects (their Table 12) totals 598.2 acre-feet per year. The projected flow benefits from the medium priority projects (their Table 14) totals 153.8 acre-feet per year. The Planning Unit's estimated offset benefits from their portfolio of high and medium priority projects totals 752 acre-feet per year. These numbers are intentionally conservative, as the Planning Unit has chosen to estimate the offset potential from most of their projects as being equivalent to the estimated offset volume calculated for their respective subbasins' forecasted growth.

Two of the high priority water right acquisition projects have offset quantity estimates tied to the consumptive use evaluations of their respective water rights. Projects 14 and 15 have a combined 486 acre-feet of offset potential. 451 acre-feet has already been put into Trust with the purchase of the Waitts Lake water rights (Project 15) that was funded by an Ecology grant awarded in 2019. With this purchase, the County has secured enough offset water to cover (at the WRIA scale) the projected consumptive use of the forecasted 1,118 new exempt wells expected in the WRIA over the twenty year timeline (established as 434.8 acre-feet per year, see their Table 6 reproduced above). Stevens County intends to apply for grant monies[3] to secure the other water right acquisition (Project 14) in 2020 that would secure (if successfully awarded) an additional 35 acre-feet per year. The remainder of the seven water offset projects and their respective offset volumes total 266 acre-feet per year. As these seven projects are developed in the future, the Planning Unit's estimate of 752 acre-feet per year of water offset benefit will most likely underestimate the volume realized over the twenty-year timeline. 752 acre-feet per year is 173% of 434.8 acre-feet per year. At a steady-state rate, 752 acre-feet per year is equivalent to 1.04 cfs of offset water.

The Planning Unit has compared the consumptive use impacts resulting from the anticipated new domestic-exempt uses with the offset volumes at the subbasin scale. They believe their offset projects will deliver 2.1 cfs and 752 acre-feet per year to streams within the watershed that will more than offset the calculated impacts of 434.8 acre-feet per year (0.6 cfs). All told, their analysis suggest that the streams in the WRIA will

[3] See page 38 in the WRIA 59 Watershed Plan Addendum

experience a net positive offset of 1.5 cfs (see their Table 18, reproduced below). This table includes some errors and an additional discussion of this and a corrected table can be found in Section 7 below.

Attenuated Flow Impacts: Permit-exempt Groundwater Use Relative to Proposed Mitigation Projects

Subbasin	*Permit Exempt Water Uses (CU) (AF) in 2038*	*Permit Exempt Water Uses (CU) (cfs) in 2038*	*Chapter 90.94 RCW Projects*	*Flow Offset*	*Flow offsets*
Blue Creek	6	-0.0083	Yes		-0.0083
Bulldog Creek	8	-0.0111	Yes		-0.0111
Chewelah Creek	50	-0.0692	Yes	0.08	0.0108
Cottonwood Creek	5	-0.0069	Yes		-0.0069
Deer Creek	2	-0.0027	Yes		-0.0027
Gold Creek	7	-0.0097	Yes		-0.0097
Grouse Creek	6.4	-0.0088	Yes		-0.0088
Haller Creek	30.8	-0.0426	Yes	0.0426	0
Huckleberry	12	-0.0166	Yes		-0.0166
LPOR	56.2	-0.0778	Yes	0.09	0.0122
Mill Creek	46.2	-0.0639	Yes	0.07	0.0061
Sheep Creek	43.6	-0.0603	Yes	0.07	0.0097
Sherwood Creek	2.2	-0.003	Yes		-0.003
Stranger Creek	22.4	-0.031	Yes	0.14	0.109
Stensgar Creek	17.6	-0.0243	Yes	0.07	0.0457
Thomason	3.4	-0.0047	Yes		-0.0047
Waitts Creek	5.4	-0.0075	Yes	1.54	1.5325
Colville River N	76.6	-0.6	Yes	2.1	1.5

Definition: Yes — Includes projects identified as High and Medium Priority, including the Watershed Improvement Best Management Practices (Project 16)

Table 18. Summary by Subbasin

3.4 POLICIES

The Planning unit has chosen not to recommend any changes to policies established in RCW 90.94.020(4)(d) such as fees or annual maximum withdrawal rates and consequently the Addendum does not require a rule change to WAC 173-559.

4 PLANNING UNIT DISCUSSION OF NET ECOLOGICAL BENEFIT

The WRIA 59 Planning Unit finds that the projects identified in their Addendum, after accounting for new projected permit-exempt domestic uses of water, will provide a net ecological benefit to WRIA 59[4]. They estimate that new permit-exempt domestic uses established between 2018 and 2038 will have a total consumptive water impact of 434.8 acre-feet per year. The Planning Unit identified the subbasins that will likely have the most new permit-exempt domestic uses in the future. Future growth in WRIA 59 will likely occur in Sheep Creek, at the southern end of the watershed, and the areas around the Cities of Colville and Kettle Falls. Relying on historic data, the Planning Unit identified the following basins as most likely having the most new permit-exempt domestic water uses:

- Colville River North;
- Little Pend Oreille River;
- Chewelah Creek
- Mill Creek;
- Sheep Creek; and
- Haller Creek

The Planning Unit focused its efforts on finding projects to offset impacts in these tributary subbasins. Infiltration and storage projects provide enhancement to instream resources by recharging groundwater with diverted high spring flows and natural release of the spring runoff water to groundwater to supplement base flows in the later low-flow season. The proposed projects are designed to cause minimal impacts to the watershed during the diversion period. Infiltration projects propose to divert or withdraw water during high flow periods (typically late March through May) and convey to infiltration or storage projects. The infiltration galleries distribute water to the subsurface that will percolate to the shallow aquifer and increases the storage within the aquifer system in the watershed. The recharge to the aquifer has two potential benefits: 1) water will eventually return to the surface water in the basin as baseflow and increase the surface water flows as a source of cool groundwater; or 2) water can stay in the local aquifers and later be used by permit-exempt domestic water users, thus offsetting the water availability during the stream low flow periods. The shallow aquifer recharge projects will provide benefits both to the local tributaries and the greater watershed. The proposed projects will reduce stress on the surface water bodies and provide a net ecological benefit to the basin.

The infiltration and storage projects propose a seasonal diversion of water during high flow periods consistent with the Water Resources Program for the Colville River Basin, Chapter 173-559.050(1) that allows diversion for reservoir storage from November 1 through May 31. Recharge to the water table aquifer during high winter and spring flow months will enhance the fluvial environment by increasing low flow season stream flows with cooler groundwater, providing benefits to fish and aquatic resources. The proposed diversion of high flow water during spring run-off would capture the excess water which would directly flow from the basin during periods of low use, and re-time the water to flow through the hydrologic system during periods when the tributary water needs are present.

The flow benefits from projects identified in this Addendum are calculated based on whether the project will be a direct surface water improvement or groundwater recharge. Direct surface water improvement projects

[4] See page 45, Section 4.1, in the WRIA 59 Watershed Plan Addendum

are those that involves the acquisition of a water right for consumptive use offset or a mitigation project that involves a controlled timed discharge to the creek. For water right acquisitions, the flow benefits are reported for the duration of the diversion season (e.g. May 15th – October 10th of each year).

Shallow aquifer recharge has been used in other parts of the west to improve later season flows in tributaries and springs. The additional flows can improve habitat for wildlife, fish and other aquatic resources. In 2006 and again in the updated version in 2007, the WRIA 59 Watershed Plan identified water storage and recharge projects to augment summer low-flows as a habitat goal objective. Furthermore, the Watershed Plan encouraged the development of water storage, aquifer recharge and infiltration projects to increase water supplies in WRIA 59.

The flow benefits for projects recharging groundwater are calculated on an annual attenuated flow rate. These projects involve a diversion (proposed seasonally during high flow periods of March through May), into an infiltration gallery or pond. The diverted water would then slowly recharge the groundwater through the vadose zone, and upon entering the groundwater would return as base flow back to the streams. As hydrogeologic conditions (hydraulic conductivity, transmissivity, porosity, storativity, etc.) can vary in both a vertical and horizontal direction, the recharge water would eventually attenuate out to the natural aquifer flow regime. Return to base flow within the stream could not be estimated at a given time frame but is inferred to benefit the stream flow throughout the year as a steady-state discharge to baseflow.

The Planning Unit believes that projects identified in their Addendum will produce a total offset amounting to a 2.1 cfs addition to the mainstem Colville River during the irrigation season[5]. The assessment completed by the Planning Unit estimated that after 20-years, and construction of an additional 1,118 homes relying on permit-exempt wells, a consumptive use impact of 0.6 cfs would be experienced at the mouth of the Colville River. The projected flow benefits from the proposed projects are well above the 0.6 cfs projected impact.

The Addendum indicates that the projects identified by the Planning Unit will provide flow benefits to offset and exceed the projected impacts of new permit-exempt domestic water use. The projects identified will provide a complete offset and flow enhancement of permit-exempt domestic water use during the irrigation season and improve base flows during the summer.

In addition, Project 16, watershed improvement BMP's, promotes sustainable water use within all WRIA 59 to enhance flow by improving irrigation practices, soil conditions and groundwater retention. This WRIA-wide project will encourage and develop sustainable locally driven practices to improve the natural retention of groundwater through soil conservation and water use efficiencies. These small-scale projects can occur and improve overall health in the watershed. The Planning Unit also identified numerous habitat projects, more particularly described below that will provide flow benefits, including improving wetland function for retiming flows, widening and improving the instream flow complexity to slow down spring flows and encourage groundwater recharge. The Planning Unit elected to only quantify the flow benefits for water right acquisition and infiltration projects, however, the Planning Unit believes that the flow benefits from best management practices projects will exceed those quantified in the Addendum.

[5] See Section 7 in this document for technical staff's interpretation of the total offset instantaneous rate

In order to improve habitat function for instream resources, the Planning Unit developed a list of six habitat benefit projects to improve the instream resources of the Colville River watershed:

- Reduce temperature by improving riparian planting on the mainstem and tributaries;
- Improve diversity of native riparian vegetation;
- Widen, reconnect and create a sustainable meander corridor for the mainstem and tributaries;
- Improve instream habitat with large woody debris, vegetated side slopes and natural sediment transport;
- Increase groundwater storage and wetland function.

The Planning Unit identified habitat projects in Chewelah Creek, Mill Creek, Sheep Creek, and on the mainstem Colville River. The Chewelah Creek projects propose to improve riparian habitat, improve stream corridor meandering and instream habitat. The Mill Creek project proposes to improve habitat function and reduce prolonged flooding impacts. The Sheep Creek project includes improving wetland functions and stream corridor meandering through increased woody debris and beaver-analog projects. The Colville River projects propose to improve the instream and riparian habitat, reducing channelization and increasing groundwater recharge and adjacent wetland functions. The Planning Unit believes these projects will add shade and increase groundwater recharge to reduce stream flow temperatures in the summer.

The Planning Unit concluded that their Addendum provides a net ecological benefit to the Colville River Watershed as required by RCW 90.94.020 because it proposes projects that will fully offset and exceed the consumptive use and instream flow impacts of new permit-exempt domestic water uses from 2018 to 2038. Furthermore, many of the projects identified can be expanded in the future to provide additional offset for new permit-exempt domestic water uses after 2038.

Technical staff's NEB review is found in Section 7.0.

5.0 IMPLEMENTATION, MONITORING, MANAGEMENT, AND INTEGRATION

In Element 3 of the Interim NEB Guidance, Ecology suggests that the Addendum should explain how the Addendum projects are linked with other plans, actions and efforts in the watershed. As explained in the original watershed plan and earlier sections of their Addendum, local watershed planning efforts have been extensive in WRIA 59. Thousands of hours have been committed by engaged local citizens and local, state and federal entities to consider elements to improve the water resources in WRIA 59. The Planning Unit recognizes that these efforts will continue and that additional resources are needed to fund this work. Stevens County has been required to plan under the Growth Management Act since 1993. As part of that requirement, the County is mandated to protect/preserve water resources, including instream flows, water quality, and critical area functions and values. There is a water resource protection overlap amongst existing programs such as: Watershed planning under RCW 90.82, this Addendum (RCW 90.94), the Voluntary Stewardship program, Stevens County Critical Areas Ordinance, Stevens County Shoreline Master Program, water banking implementation, and other non-regulatory programs. The Stevens Country's Comprehensive Plan requires consistency between regulations and coordination of programs to enhance the success of inter-connected programs.

5.1 IMPLEMENTATION

Implementation of this Addendum will be performed by Stevens County[6] and other local groups including; the WRIA 59 Water Resources Management Board (Board) and the WRIA 59 Watershed Management Partnership (WMP). Seeking funding for continued local water resource planning efforts and development of projects identified in the watershed plan and this Addendum will be a significant part of implementation.

Local groups, including the Board, WMP and other entities such as the County, SCCD, and Tribes will seek funding for the projects identified in the Addendum. The Legislature authorized $300 million in capital funds to be dispersed between 2018 and 2033.

In 2019, Ecology adopted a rule to establish process and criteria for prioritizing and approving funding applications. Chapter 173-566 WAC. Under Ecology's rule, projects located in watersheds planning under RCW 90.94.020, like the Colville River Watershed, and included in watershed plans adopted under RCW 90.94.020 will be given "added priority". WAC 173-566-150. The projects identified for this Addendum were evaluated based on a collaborate approach of the Planning Unit. The SCCD and Stevens County have invested in the water resource planning in WRIA 59 for decades. The Board recognizes there is an active, knowledgeable base of local entities to implement projects. As each project is funded, implementation of that project will include funding to ensure long term success and consistency with other water resource protection measures.

5.2 MONITORING AND MANAGEMENT

Monitoring and managing of the projects identified in this Addendum will be completed through ongoing cooperative efforts from various groups which may include: The Board, WMP, SCCD, Stevens County and the Department of Ecology. Some or all these groups will need to identify funding sources to continue this work. Stevens County will be monitoring the Addendum to ensure the County maintains compliance with the Growth Management Act[7].

Stevens County will continue to account for permit-exempt domestic groundwater withdrawals. Monitoring actual versus projected new domestic exempt well locations and the rates being established, will enable groups to adaptively manage the implementation of this Addendum to ensure ongoing funding requests for priority projects align with changing impacts/needs. The Planning Unit considered the County's building permit tracking data to estimate the likely distribution of new permit-exempt domestic water uses in the subbasins, and has concluded that this database is the best tool for tracking the success of this Addendum. The Planning Unit's estimate is that there will approximately be, on average, an additional 56 new domestic users relying on permit-exempt groundwater withdrawals annually. Stevens County will continue to track each new building permit relying on a permit-exempt domestic groundwater withdrawal and geolocate the parcel in its GIS system. Review will be consistent with the recommendations for projects in this Addendum and the Stevens County Comprehensive Plan.

5.3 INTEGRATION

[6] See page 56 in the WRIA 59 Watershed Plan Addendum

[7] See Section 5.2 on page 57 in the WRIA 59 Watershed Plan Addendum to see Stevens County's commitments

The Planning Unit has made significant efforts to develop this Addendum considering the thousands of hours of work for watershed planning in WRIA 59 over the past 20 years. These efforts include, but are not limited to, the development of the Watershed Plan, Detailed Implementation Plan, Stream Flow Study, Toe-Width Study, Streamflow Monitoring, Instream Flow Amendment, Water Banking Feasibility, and the County's Voluntary Stewardship Plan and Stevens County Comprehensive Plan amendment currently underway and anticipated completion during 2020. This Addendum will be integrated into all the above referenced work products.

Stevens County's update to its Comprehensive Plan is proposed to be completed in 2020. Under the Washington State Supreme Court's holding in Hirst, Stevens County is considering available water resources for future permit-exempt domestic water uses. The estimates for future permit-exempt domestic water uses was developed based on Stevens County historical building permit data and in conjunction with its long-term planning under the Growth Management Act. Furthermore, Stevens County has invested resources into seeking projects to offset future permit-exempt domestic groundwater uses in accordance with its Growth Management Act requirements. Stevens County anticipates including this Addendum as a reference in its updated Comprehensive Plan[8].

The Planning Unit finds the integration and consistency with other programs will provide opportunities to seek priority project funding from multiple sources. Examples include projects that offset impacts from new/anticipated permit-exempt domestic uses, can also improve agricultural activity viability and provide critical areas protection. Tapping into multiple funding sources for projects that are consistent with multiple programs will help improve outcomes.

6.0 STATE ENVIRONMENTAL POLICY ACT

The State Environmental Policy Act (SEPA) (Chapter 43.21C RCW) requires state and local governments to consider potential environmental consequences of proposed actions, including project and non-project actions, during the decision-making stage. Under SEPA rules, non-project actions are defined as governmental actions involving changes to policies, plans and programs. WAC 197-11-774. Any non-project action must be reviewed under SEPA unless specifically exempted. The SEPA review consists of identification and evaluation of probable impacts of a proposed action, reasonable alternatives to the proposed action, and mitigation measures, before committing to a particular action.

In accordance with SEPA, Ecology issued a Final Environmental Impact Statement for Watershed Planning under Chapter 90.82 RCW (Ecology's FEIS). In 2004 and 2007, the WRIA 59 Planning Unit adopted Ecology's Final Environmental Impact Statement and Determination of Significance. The Watershed Plan also noted that the Plan does not require a permit, action or funding by any federal agency and therefore review under the National Environmental Policy Act was not triggered.

Stevens County is the Lead Agency for SEPA and the Watershed Planning and Addendum process in WRIA 59. Stevens County has evaluated Ecology's FEIS and determined that the actions proposed in the Watershed Plan Addendum are adequately addressed in the FEIS. The FEIS considers watershed planning actions, impacts and mitigation measures considered in this Addendum, specifically:

[8] See page 58 in the WRIA 59 Watershed Plan Addendum

• Transfer of Water Rights from Out of Stream Uses to Instream Uses (Sec. 6.8)
• Allocation of ground or surface water for mitigation measures (Sec. 6.10)
• Construct and operate new off-channel storage facilities (Sec. 6.21)
• Extent use of existing storage facilities to additional beneficial uses (Sec. 6.23)
• Construct and operate artificial recharge storage projects (Sec. 6.24)
• Implement instream habitat improvement projects (Sec. 6.42)
• Implement out-of-stream habitat improvement projects (Sec. 6.47)
• Move River Dikes Back (Sec. 6.48)
• Control sources of sediment (Sec. 6.50)
• Integrate habitat improvement into flood hazard reduction plans (Sec. 6.51)

Stevens County believes the mitigation actions identified in this Addendum align with the actions and impacts identified in the FEIS. An addendum to a Final Environmental Impact Statement can be used to include new analysis or information which does not substantially change the analysis of significant impacts and alternatives. Stevens County issued an Addendum to the FEIS describing the current Watershed Plan Addendum and provided notice according to WAC 197-11-625. SEPA documents for approval of the Plan Addendum are included in their Appendix F.

7.0 Technical staff's NEB Determination

Given the significance and certainty of the Waitts Lake water rights acquisitions, technical staff took a closer look at the attributes of the water rights associated with this purchase to better understand the offset volumes. The Addendum lists the consumptive use portion of the Waitts Lake water rights at 451.45 acre-feet per year. Over the listed irrigation season of May 15 through October 10, that translates to 1.54 cfs on a continuous basis. This would represent the change in flow that can be expected in the watershed from the retirement of this use if the water right diversion was completely from a surface water source. This is the number used in the Addendum. Reading through the water rights files in Ecology's WRTS system, there are both a groundwater right and a surface water diversion associated with the Planning Unit's Waitts Lake water rights acquisition. The October 2010 Extent and Validity analysis of the Rainbolt water right (G3-21870) indicates that historically, 198 acre-feet per year was supplied from the surface water sources associated with this farm. Since the consumptive use portion of the rights acquired is 451 acre-feet, that leaves 253 acre-feet coming from the groundwater source (451-198= 253). 198 acre-feet supplied over a 138 day irrigation season from the surface water source translates to 0.72 cfs on a continuous basis. The aquifer pumped for the groundwater right is a deep confined aquifer on the Colville valley floor. The impact from this use on surface water calculated at a steady-state rate is 253 acre-feet/724 acre-feet per cfs=0.35 cfs. For the irrigation season, the depletion of streamflow (or improvement in streamflow after the right is retired) would be 0.72 + 0.35 = 1.07 cfs for the consumptive use portion of this acquisition. This number is what the watershed would seasonally experience with the retirement of this consumptive use for the benefit of surface water in the watershed. As noted above, the Planning Unit's estimation is 1.54 cfs.

Adjusting the Planning Unit's Table 18 results for the seasonal impact for the Waitts Lake water rights changing from 1.54 to 1.07 cfs, results in the seasonal impacts from the whole portfolio of projects changing to 1.63 cfs (instead of the listed 2.1 cfs) for the watershed. The net positive offset for the watershed would consequently shift to 1.63-0.6=1.03 cfs (instead of the 1.5 cfs listed in Table 18). The overall results are the

same: flows in the watershed from the implementation of the portfolio of offset projects will be positive. The Waitts Lake water right acquisition alone is still larger than the expected consumptive use offset (in both acre-feet per year and in instantaneous cfs) from new domestic-exempt uses at the watershed scale. And as noted above, the Planning Unit has likely underestimated the offset volumes for their other water offset projects.

Technical staff notes that there appear to be several typos and two missing rows in the Addendum's Table 18. The table is missing a row for the Colville River S subbasin. The permit-exempt use for the Colville River N subbasin (last row in table) should be -0.106 cfs (instead of the listed -0.6 cfs). The 1.5 cfs in the bottom row right column should be -0.106 for the Colville River N subbasin (and not shaded green). The table should have included a Total row at the bottom of the table with the -0.6 cfs number as the total consumptive use offset for new permit-exempt uses for the whole WRIA, and 2.1 cfs for the flow offset for the entire WRIA. The net offset for the whole basin would be 1.5 cfs (and shaded green) according to the discussion in the Addendum. As noted above, technical staff believes it is more appropriate to modify the flow offset number for the Waitts Creek subbasin, which would change the total offset for the WRIA to 1.03 cfs instead of the listed 1.5 cfs. Technical staff created a revised Table 18 that is attached below.

Attenuated Flow Impacts: Permit-exempt Groundwater Use Relative to Proposed Mitigation Projects

Subbasin	*Permit Exempt Water Users in (CU) (AF) in 2038*	*Permit Exempt Water Uses (CU)(cfs) in 2038*	*Chapter 90.94 RCW Projects*	*Flow Offset cfs*	*Flow Offsets cfs*
Blue Creek	6	-0.0083	Yes		-0.0083
Bulldog Creek	8	-0.0110	Yes		-0.0110
Chewelah Creek	50	-0.0691	Yes	0.08	0.0109
Colville River S	34	-0.0470	Yes		-0.0470
Cottonwood Creek	5	-0.0069	Yes		-0.0069
Deer Creek	2	-0.0028	Yes		-0.0028
Gold Creek	7	-0.0097	Yes		-0.0097
Grouse Creek	6.4	-0.0088	Yes		-0.0088
Haller Creek	30.8	-0.0425	Yes	0.0426	0.0001
Huckleberry Creek	12	-0.0166	Yes		-0.0166
Little Pend Oreille	56.2	-0.0776	Yes	0.09	0.0124
Mill Creek	46.2	-0.0638	Yes	0.07	0.0062
Sheep Creek	43.6	-0.0602	Yes	0.07	0.0098
Sherwood Creek	2.2	-0.0030	Yes		-0.0030
Stranger Creek	22.4	-0.0309	Yes	0.14	0.1091
Stensgar Creek	17.6	-0.0243	Yes	0.07	0.0457
Thomason Creek	3.4	-0.0047	Yes		-0.0047
Waitts Creek	5.4	-0.0075	Yes	1.07	1.0625
Colville River N	76.6	-0.1058	Yes		-0.1058
WRIA Totals	434.8	-0.6		1.63	1.03

Definition:	Yes	Includes projects identified as High and Medium Priority, including the Watershed Improvement Best Management Practices (Project 16)

Ecology's Revised Table 18. Summary by Subbasin

On an annual basis, the projected consumptive use impact from 1,118 new permit-exempt domestic wells is forecast to be 434.8 acre-feet. Several of the offset projects involve retiring surface water diversions that will concentrate the improvement in streamflow to the irrigation season. The flow offset values in Table 18 are focused on the irrigation season improvements, which occur during the summer low flow season and as such provides the offset during critical flow periods when flows are lowest and water temperatures are highest. Other projects, particularly the proposed infrastructure projects, will provide year-round improvements to flow. The Waitts Lake acquisition project has both surface and groundwater components and provides a mixture of both seasonal and year-round benefits to flow. RCW 90.94 does not require offsets to be in-time or

within the same subbasin. In the WRIA 59 Addendum, there are sufficient offset quantities anticipated in eight of the subbasins (green shaded boxes in Table 18) and at the WRIA scale to offset the impacts from new domestic-exempt consumptive uses.

7.1 Adequacy of the Plan Analysis

Technical staff concludes that the Planning Unit has fulfilled its obligations to describe and evaluate the individual offset projects. Their narratives, and quantitative and qualitative assessments are as thorough as they can be at this stage in there development. The Addendum Appendices include maps, pictures, figures, and cost estimates when appropriate. The documents also include maps that show the lateral extent of the downstream reaches of streams that will be improved by the individual offset projects. They have targeted their offset projects to subbasins where they anticipate the most consumptive impacts. They also have prioritized projects and proposed the projects they believe are most achievable. Advocates/project proponents for ten of their sixteen projects have been identified. Their water right acquisitions fully cover the consumptive use impacts forecast over the twenty-year timeline at the WRIA scale.

RCW 90.94.020(4)(c) directs the department to evaluate whether the actions identified in the submitted plan "will result in a net ecological benefit to instream resources within the water resource inventory area". While Ecology intends to provide deference to the recommendations in a well-developed plan update, it is ultimately up to the agency to support its NEB decision. If adopted, Ecology will issue an appealable Order and will be responsible for defending its decision.

During technical staff's review, we considered the extent to which it appeared likely that particular mitigation strategies would occur and the benefits predicted for those strategies if they do occur. The degree of certainty for the projects varies considerably. Some projects listed in the Addendum are still conceptual at this point. Others have undergone pre-feasibility analyses and preliminary design work. The largest offset project, (the water rights acquisition at Waitts Lake) has already been secured through a 2019 grant from Ecology.

The descriptions and amounts of information provided for most of the individual offset projects meet most of Ecology's expectations for scientific rigor described in Ecology's Interim Guidance. For example, to properly characterize benefits to instream resources, the Interim Guidance indicates that plans should list and describe each habitat project with the following information when available:

- Information on the proposed project that includes a narrative description and a quantitative and/or qualitative assessment of how the project will contribute to NEB.
- Maps and drawings of the proposal.
- Performance goals and measures (e.g. success rates, duration of expected benefits, desired future conditions, etc.).
- The species, life stages and specific ecosystem structure, composition, or function addressed by the project.
- The length of stream or river reaches affected and the relative importance of the affected reach as habitat for focal species.
- Documentation of scientific sources, methods, and assumptions.

Much of this information is available in Appendix B and summarized within the Plan Addendum's Section 3.

In addition, the Interim Guidance indicates that plan addendums should address factors that inform the ecological effects of the consumptive water-use impacts and project benefits, and the likelihood of projects being implemented. Examples of plan and project information include:

- What is the estimated cost of completing planned projects? Is the plan financially viable?
- What other funding sources are available to support planned projects, and what additional funding is required?
- Are the projects in the plan achievable? Are there significant barriers to completion?
- How long will the positive impacts from planned projects extend as compared to the duration of the impacts being mitigated for?
- Will the plan include metrics and monitoring plans for evaluating plan success?
- Is maintenance needed to ensure lasting benefits? Is there a commitment to provide long-term maintenance?
- Are there contingency plans to address project uncertainties, including corrective actions that will be taken in the event projects fails to provide the proposed benefit in perpetuity?

The information described in these bullets was provided for many of the offset strategies in the Addendum. Most of the listed projects have cost estimates generated either from previous Watershed planning activities or directly from the prefeasibility studies conducted in 2019. Older project cost estimates were adjusted for inflation. None of the construction projects are funded or permitted and ready to proceed at this time, so those cost estimates are not firm. Nor does the Addendum identify how to provide for long-term maintenance costs for retiming projects in general. On the other hand, the water right acquisition project cost for Waitts Lake, is firm (as it's already been secured through a 2019 grant from Ecology). The water rights acquisition projects represent one-time project costs with permanent streamflow benefits that require no reoccurring costs (like operations and maintenance costs). The Waitts Lake acquisition represents an offset volume larger than the anticipated consumptive use offset required for the entire WRIA. Hence, even without the other water offset projects, the plan is achievable from the perspective of meeting the minimum requirement of offsetting the potential impacts to instream flows associated with permit-exempt domestic water use (RCW 90.94.020(4)(b)) at the watershed scale.

7.2 Spatial Distribution of the Offset Projects

The Addendum has a project portfolio that contains sixteen projects that are located within ten different subbasins. These include a mixture of water offset and habitat projects. The Planning Unit intentionally sought out projects in the subbasins where they expect the highest growth rates for new domestic-exempt wells. The plan includes projects that will improve habitat and/or streamflow on small tributary streams and along the mainstem Colville River. Most of the proposed construction projects are located on publically owned properties or on private land whose owners' are active participants, which increases the likelihood of gaining access to the properties needed to develop the projects. Project funding has not been secured for any of these construction projects to date. However, all of these projects have project advocates who are eligible to apply to Ecology's streamflow restoration grants program (WAC 173-566) if they so choose.

Most of the non acquisition water offset projects are sized to offset the volume of water anticipated to be needed for their respective subbasins. The Addendum acknowledges that most of these projects are likely going to be able to retime and store much more water than proposed. The Addendum implies that this strategy is intentional and that in the future they can be expanded "to provide additional offset for new permit-exempt domestic water uses after 2038". Clearly, the Planning Unit is thinking about the long-term implications of what comes after RCW 90.94's twenty-year timeline.

Ecology's Interim Guidance states:

> A Net Ecological Benefit determination means anticipated benefits to instream resources from actions designed to restore streamflow will offset and exceed the projected impacts to instream resources from new water use.

An evaluation of pumping impacts versus offsets needs to consider both the flow benefits and habitat benefits associated with the mitigation strategies. Regarding flow-related pumping impacts versus offsets, an important consideration is that the predicted consumptive use impacts are quite small relative to overall WRIA streamflow. In Appendix A of the Addendum, the Planning Unit compared the instantaneous consumptive use impacts (in cfs) by subbasin against their group's recommended instream flows developed during the RCW 90.82 process. New consumptive uses represent a fraction of one percent of these flows across the subbasins. The prediction of 0.6 cfs of cumulative consumptive use for all new permit-exempt domestic wells anticipated over the twenty-year timeline for the entire WRIA is equivalent to only 0.2 percent of the mean annual flow and about 0.9 percent of the average summer low flow at the Meyers Falls gage. Considering the small uses comprising that total are distributed throughout the entire watershed, it is clear that the effect of uses at any one specific location will be quite small.

There is no requirement that the mitigation strategies provided must offset all of the impacts created by pumping permit-exempt domestic wells in time and in the same locations. However, for NEB evaluation purposes, it is significant that the information presented in Table 18 suggests the proposed mitigation strategies do a good job of providing offsets throughout the WRIA, particularly in the subbasins where the most growth in domestic-exempt wells is expected to occur.

The Addendum assumes subbasin-wide benefits for all their project proposals. For offset determinations, this is correct, but to account for ecological benefits, Ecology needs to consider project location within the subbasin as we consider the ecological benefits. For example, Projects 1 and 2 provide benefits quite low on the Chewelah River. Although they will not add much benefit to the rest of the Chewelah subbasin, they do provide benefits to 40 miles of the Colville River which is above the areas of highest projected new use and encompasses over half of the watershed.

Alternatively, most of the other Projects are located higher up in their respective subbasins and above the areas of highest projected new use. Projects 4, 8, 11, 12, 14 in particular are located in the upper portions of their subbasins, and provide ecological benefits that exceed the needs of the individual subbasin. The benefits also continue downstream and contribute to the net impact over much of the watershed.

As discussed in the Addendum, approximately 72% of the watershed area is unlikely to see domestic-exempt well development as those areas are either: publicly owned; or within: flood zones, identified wetlands, lakes, cities, public water systems; or have steep slopes. The areas that are likely developable with permit-exempt domestic wells are confined to the lower tributary basins and the Colville River mainstem. The portfolio of 16 projects listed in the Addendum are well situated to offset the future consumptive uses.

Technical staff considered the areas where natural processes are restored, the locations of the projects and the habitat benefits presumed, and the net downstream benefits we could reasonably expect. Taken as a whole, the results indicate that, relative to the detriments created by future permit-exempt domestic wells anticipated in WRIA 59 over the twenty-year timeline, the offset approaches proposed would result in a net ecological benefit.

7.3 Relationship to Existing Plans and Current Watershed Protection Efforts

The Guidance explains that Ecology's evaluation of NEB will incorporate existing information on watershed-specific factors that are addressed during the planning process and rely heavily on input from local, state, federal and tribal resource managers, and water resources stakeholders participating in the planning process.

The Plan Addendum discusses the watershed's long-term commitment to watershed planning activities. Ecology adopted Chapter 173-559 WAC in the 1977. The Planning Unit began RCW 90.82 Watershed Planning activities in 1999. Since February, 2018, the Planning Unit has conducted 22 public meetings to develop this Addendum under RCW 90.94. As outlined in Section 5 above, watershed planning has consumed thousands of hours of committed citizens' time and the expertise of local, state, federal, and tribal entities. The Stevens County Conservation District and Stevens County have invested in water resource planning in WRIA 59 for decades. There is an active, knowledgeable base of local entities to implement projects. Stevens County, under its obligation to plan under the Growth Management Act is mandated to protect/preserve water resources including instream flows, water quality and critical area functions and values.

7.4 Uncertainty

Whether or not the Addendum would achieve a NEB depends upon the actual impacts from future exempt-well pumping, the reasonable likelihood that mitigation strategy projects will occur, and the accuracy of projected benefits from mitigation strategy projects.

For impacts from exempt-well pumping calculated by the Ecology-recommended method, technical staff agree with the methodology followed in the Addendum. The 434.8 acre-feet per year of consumptive use impacts anticipated by this Addendum was robustly determined by the Planning Unit.

The portfolio of mitigation projects proposed in the Addendum will offset the anticipated consumptive use impacts by virtue of the fact that the Planning Unit has already secured a water right that more than offsets the anticipated new consumptive uses. Additional projects, while not as certain to occur, will add a significant additional volume of offset water (300 acre-feet per year) once they are realized. This additional volume will likely be much bigger as the Planning Unit intentionally under-estimated potential offset volumes.

By far the most important uncertainty regarding all of the estimates relates to the habitat improvement projects. The Addendum does not provide detailed quantitative analyses about the habitat improvements

likely to result from the successful completion of the listed projects. However, qualitatively, the proposed habitat improvement projects will benefit instream resources as they improve riparian habitat and channel terracing, add large woody debris, re-meander stream channels, add shade, and generally improve hydrologic functions.

8. CONCLUSIONS

The Addendum makes clear statements that the WRIA 59 Colville watershed planning unit believes that a NEB will be achieved.

Chapter 2 in the Addendum laid out the methodology used by the Planning Unit to quantify the anticipated new consumptive uses over the twenty-year timeline. They predict 1,118 new houses relying on permit-exempt domestic wells will result in new consumptive uses totaling 434.8 acre-feet per year. In Chapters 3 and 4 they identify sixteen high and medium priority projects that are a mix of water right acquisitions, infrastructure projects, and habitat enhancement projects. They describe the range of anticipated benefits associated with the identified projects. They have already acquired water rights with a consumptive volume large enough to offset the anticipated new consumptive uses over the twenty-year timeline at the WRIA scale. Most of their additional projects have identified advocates/project proponents who will likely pursue funding to implement their respective projects. The additional projects in the Planning Unit's portfolio will offset projected impacts in multiple subbasins, enhance streamflow and biological function, and result in a net ecological benefit in WRIA 59. Taken as a whole, the results indicate that relative to the detriments created by future permit-exempt domestic wells anticipated in WRIA 59 over the twenty-year timeline, the offset strategies proposed will result in a net ecological benefit for the watershed.

Consequently, technical staff conclude that the plan developed in this Addendum meets the intent of the Legislature and requirements of RCW 90.94, and, when implemented, will result in a net ecological benefit to instream resources within WRIA 59.

9. REFERENCES

Appendix A WRIA 59 RCW 90.94 Planning Technical Memorandum on Estimation of Future Buildout and Consumptive Use Relative to Domestic Exempt Groundwater Supply Wells (WNR Group, May 31, 2019)

Appendix B WRIA 59 Management Plan Addendum Proposed Projects November 14, 2019

Appendix C WRIA 59 Feasibility Project - Preliminary Evaluation for Extent and Validity of Stranger Creek Water Right No. S3-21370 October 20, 2019

Appendix D WRIA 59 Feasibility Project – Technical Memorandum on Chewelah Creek / Colville River Restoration Project Feasibility October 31, 2019

Appendix E WRIA 59 Feasibility Project – Technical Memorandum on Reidel Creek Infiltration Project Feasibility October 31, 2019

Washington State Department of Ecology (June 2018a). *ESSB 6091 Streamflow Restoration – Recommendations for Water Use Estimates.* Publication 18-11-007. Retrieved from https://fortress.wa.gov/ecy/publications/documents/1811007.pdf

Washington State Department of Ecology (June 2018b). *Interim Guidance for Determining Net Ecological Benefit for streamflow restoration planning and water permit mitigation pilots under the 2018 Streamflow Restoration Act.* Publication 18-11-009. Retrieved from https://fortress.wa.gov/ecy/publications/summarypages/1811009.html

WRIA 59 Watershed Plan Addendum, Chapter 90.94 RCW, December 16, 2019