GRAYS-ELOCHOMAN AND COWLITZ RIVER WATERSHED PLANNING

WATER RESOURCE INVENTORY AREAS (WRIAS) 25 AND 26

WRIA 26 WATER SUPPLY AND STREAM FLOW REVIEW

FINDINGS AND RECOMMENDATIONS

PREPARED BY THE LOWER COLUMBIA FISH RECOVERY BOARD

ADOPTED BY THE COUNTIES ON JUNE 17, 2014

APPROVED BY THE PLANNING UNIT ON NOVEMBER 14, 2013

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INTRODUCTION

This report is an initial product of the WRIA 25/26 Planning Unit (Planning Unit) review of certain water supply and stream flow provisions of the WRIA 25/26 Watershed Management Plan (Plan) adopted in 2006. Specifically, it documents the results of the Planning Unit's review of Plan provisions applicable to the Cowlitz River Basin regarding:

- The establishment of water reservations for cities, water districts, communities, rural domestic wells and other beneficial uses;
- The closure of watersheds to further water appropriations beyond recommended reservations; and
- The setting of instream flows to further the protection of fish, aquatic resources, and other beneficial instream uses.

The review was undertaken in response to public concerns that the Plan's recommended water reservations would be inadequate to meet the future needs of the people, cities and towns, communities, and businesses of Cowlitz River Basin. The concerns were voiced at the 2010 public hearings on a proposed Department of Ecology (Ecology) administrative rule implementing reservations, closures and stream flows recommended in the Watershed Plan.

In conducting the review, it was the goal of the Planning Unit to ensure that water resources be managed to meet the present and future needs of the region's people and, fish and wildlife. The Planning Unit worked to ensure that the review was conducted in an open, transparent manner. Planning Unit meetings were open to the public with advance notice. Public comment was taken at all meetings. Materials, information, and reports considered or used by the Planning Unit were made available to the public. All decisions by the Planning Unit were made in public meetings. Additional members were added to the Planning Unit to ensure broader citizen participation.

Based on its review, the Planning Unit is recommending significant changes to 2006 Plan's water supply and stream flow provisions. The recommendations contained in this report are intended to supercede and replace the closure, reservation, and stream flow recommendations contained in the 2006 WRIA 25/26 Watershed Management Plan. They do not represent a complete review and update of all water supply or stream flow provisions of the Plan.

Adoption of these Planning Unit recommendations as revisions to the 2006 watershed management plan requires the approval of the boards of county commissioners of Lewis, Cowlitz, Skamania, and Wahkiakum counties.

SUMMARY OF PROPOSED REVISIONS TO THE WATER PLAN

The Plan recommended that ***all*** subbasins in the Cowlitz River basin be closed to further groundwater appropriation beyond specific water reservations for cities, water districts, communities, rural domestic wells and other beneficial uses (Map 1). Reservations in the closed subbasins were based on estimates of projected future water needs for a 20-year period. Only the tidally influenced areas of the Cowlitz and Coweeman rivers were left open since future water appropriations in these areas would have no effect on instream flows. The Plan further recommended that most of the rivers and streams in the Cowlitz River Basin be closed to further surface water appropriations and that minimum instream flows be established for 10 rivers and streams.

Map 1 Closures as identified in the 2006 Watershed Management Plan

Based on its review of estimated water demands through 2030 and streams flows necessary to support threatened salmon and steelhead populations, the Planning Unit recommends that the 2006 Watershed Plan be revised as follows:

- The Upper Cowlitz, Cispus, Tilton, Mayfield, Toulte and Upper Coweeman subbasins should be open for further water appropriations with no reservations or restrictions on rural domestic (permit-exempt) wells with the following exceptions:
    - A reservation is recommended for City of Mossyrock to earmark water to meet the city's future needs; and
    - restrictions on permit exempt wells in the Hall/Snyder Creek, Upper Tilton River, and Minnie/Lake Creek.
- The Lower Cowlitz mainstem below the barrier dam should be open to future appropriations with specific water reservations for Cowlitz and Lewis counties and the cities of Castle Rock, Winlock, and Toledo;
- The establishment and maintenance of regional water supply systems drawing on Cowlitz River water to meet municipal and community water needs in Cowlitz and Lewis counties should be designated the highest water infrastructure priority in WRIA 26.
- Due to concerns over potential impacts on streamflows, the Olequa, Lacamas, Salmon, Arkansas/Delameter/ Monahan, Ostrander, Leckler and Owl subwatersheds in the Lower Cowlitz subbasin should be closed to further water appropriations beyond specific water reservations sufficient to meet anticipated domestic needs through 2030.
- Instream flows should be established for Olequa, Lacamas, Salmon, Arkansas/Delameter/ Monahan, Ostrander, Leckler and Owl Creeks.

The tidally influenced areas of the Columbia, Cowlitz and Coweeman rivers should remain open to future water appropriations as set forth in the 2006 watershed plan.

Table 1 provides a summary of specific subbasin recommendations. Map 2 illustrates those subbasins proposed to remain open to future water allocations. A more detailed discussion of these recommendations can be found in the individual subbasin sections of this report.

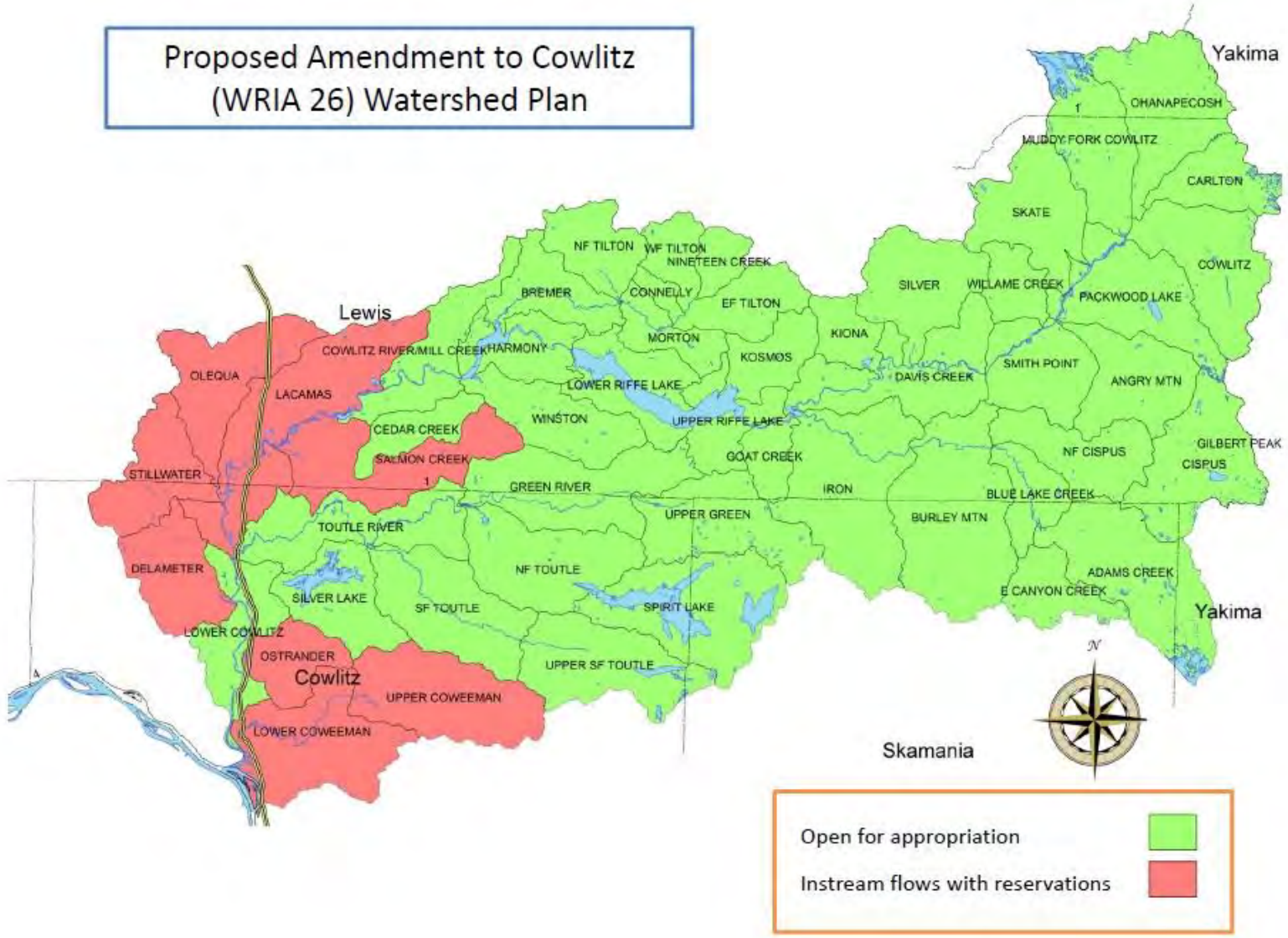
Given the uncertainties regarding available water supplies and future water demands, the Planning Unit recommends specific measures for reviewing and revising the Watershed Plan, as necessary, to address emerging issues. The goal of these measures is to address water supply and stream flow issues before they become problems which would impose hardship on the people and communities of the Cowlitz River Basin and/or adversely effecting threatened salmon and steelhead populations. It is recommended that the Planning Unit (or its successor), cities and counties, Ecology, WDFW, water purveyors and other federal and state agencies as appropriate should review reservations, instream flows, and closures for a subbasin when 75 percent of its reserve is depleted. In addition, the watershed plan, in its entirety, should be reviewed every 10 years. A review of the Plan would consider new information, changing conditions, or statutory modifications. Ecology may initiate a modification of the Watershed Management Rule based on the conclusions and recommendations of the Plan review. These recommendations are discussed in greater detail in the Implementation section of this report.

Subbasin	Subwatersheds	Closure	Instream Flow	Reservations	Comments
Upper Cowlitz	Silver Creek	Yes, SWSL	10 cfs (See comments)	None	SWSL - 10 cfs in natural channel at point of diversion at all times.
	Hall/Synder Creek	Yes, SWSL	No	0.042cfs - Permit exempt wells & small systems	SWSL - No water beyond that needed for domestic use should be granted. Reservation based on Lewis County full build-out of 117 households.
	All Remaining	No	No	No	
Cispus	All	No	No	No	
Mayfield	All	No	No	0.59cfs - Mossyrock	Reservation based on City estimate
Tilton	Upper Tilton Above confluence with East Fork	No	SWSL: 3.0 cfs	0.003cfs	Reservation based on Lewis County full build-out of 7 households. Additional water beyond reservation could be granted provided flows remain above SWSL recommended low flows.
	Minnie Creek/Lake Creek	No	SWSL: 1.0 cfs	0.048cfs	Reservation based on Lewis County full build-out of 131 households. Additional water beyond reservation could be granted provided flows remain above SWSL recommended low flows.
	All Remaining	No	No	No	
Toutle	All	No	No	No	Silver Lake, its tributaries, and Outlet Creek: • Recommend future development, especially commercial development, use Toutle Regional Water system when within service area. • Track households served by wells and small systems relative to planning assumption of 250 households in subwatershed over next 20 years. • Evaluate future water right applications for potential impacts on water quality.

TABLE 1 WRIA 26 SUBBASIN SUMMARY TABLE

Subbasin	Subwatersheds	Closure	Instream Flow	Reservations	Comments
Lower Cowlitz	Mainstem	No	None, other than those currently required pursuant to hydro license.	6.60cfs – Lewis County 6.42cfs – Cowlitz County 0.47cfs – Toledo 1.80cfs – Winlock 4.08cfs – Castle Rock (incl. communities of Toutle and Silver Lake.	• Allocation of the Lewis County and Cowlitz County reservations will be recommended by the county boards of commissioners. • No reservation proposed for Vader. Existing water rights for Vader expected to be adequate to meet 20-year demand.
	Mill	Yes	Yes	0.055cfs - Permit exempt wells & small systems	Reserve 0.055 cfs for permit-exempt wells and small systems in the Mill Creek subwatershed based on 2% of the 90% exceedence flow during the summer low flow period (2.73 cfs). It is estimated that this quantity will support a population growth of 384 people or 150 additional households. The estimated 20-year growth is 150 people or 58 households.
	Salmon	Yes	Yes	0.037cfs - Permit exempt wells & small systems	Reserve 0.037 cfs for permit-exempt wells and small systems in the Salmon Creek subwatershed based on 2% of the 90% exceedence flow during the summer low flow period (1.86 cfs). It is estimated that this quantity will support a population growth of 262 people or 102 additional households. The estimated 20-year growth is 160 people or 62 households.
	Lacamas	Yes	Yes	0.072cfs - Permit exempt wells & small systems	Reserve 0.072 cfs for permit-exempt wells and small systems in the Lacamas Creek subwatershed based on 2% of the 90% exceedence flow during the summer low flow period (3.59 cfs). It is estimated that this quantity will support a population growth of 505 people or 197 additional households. The estimated 20-year growth is 434 people or 169 households.
	Olequa	Yes	Yes	0.223cfs - Permit exempt wells & small systems	Reservation based on 20-year growth estimate of 1571 people/ 611 households in unincorporated areas.
				0.33cfs - Winlock	Olequa and Lower Cowlitz reservations based on City's 60% build-out
	Arkansas/ Delameter/ Monahan	Yes	Yes	0.077cfs – Permit exempt wells & small systems - Arkansas	Reserve 0.077 cfs for permit-exempt wells and small systems in the Arkansas subwatershed based on 2% of the 90% exceedence flow during the summer low flow period (3.83 cfs). It is estimated that this quantity will support a population growth of 539 people or 210 additional households. The estimated 20-year growth is 141 people or 55 households.
				0.050cfs – Permit exempt wells & small systems Delameter/Monahan	Reserve 0.050 cfs for permit-exempt wells and small systems in the Delameter/Monahan subwatershed based on 2% of the 90% exceedence flow during the summer low flow period (2.50 cfs). It is

					estimated that this quantity will support a population growth of 352 people or 137 additional households. The estimated 20-year growth is 282 people or 110 households.
	Leckler	Yes	Yes	0.040cfs - Permit exempt wells & small systems	Reservation based on 20-year growth estimate of 302 people/ 114 households
	Ostrander	Yes	Yes	0.060cfs - Permit exempt wells & small systems	Reservation based on 20-year growth estimate of people 461/ 174 households
	Owl	Yes	Yes	0.050cfs - Permit exempt wells & small systems	Reservation based on 20-year growth estimate of 380 people/ 143 households
	Other Tributaries to the Cowlitz	No	No	No	
Coweeman	All	Yes	Yes	0.60cfs - Permit exempt wells & small systems	Reserve 0.6 cfs for permit-exempt wells and small systems in the Coweeman subbasin based on 2% of the 90% exceedence flow during the summer low flow period (30 cfs). It is estimated that this quantity will support a population growth of 4,223 people or 1,643 additional households. The estimated 20-year growth is 774 people or 301 households.



Map 2 - Proposed Areas Open to Appropriation

PLANNING UNIT REVIEW PROCESS

In May 2010, the Department of Ecology held public hearings in Longview and Morton on proposed water management rules for WRIA 25 (Grays-Elochoman) and WRIA 26 (Cowlitz). The draft rules were based on recommendations set forth in the 2006 WRIA 25/26 Watershed Management Plan (Plan). At these hearings, widespread concern was voiced over the adequacy of proposed water reservations to meet the future needs of the people, cities and towns, communities, and businesses of Cowlitz River Basin. In response to these concerns, the WRIA 25/26 Planning Unit requested and Ecology agreed to discontinue the rule process until the Planning Unit could review the water supply and stream flow provisions of the Plan and, if warranted, recommend changes to those provisions.

As a first step in the review process, the Planning Unit increased its outreach efforts and attempted to renew participation among inactive Planning Unit members. The Planning Unit added three citizen members to the Planning Unit, including a representative from Lewis County and two from Cowlitz County. Meeting notices were distributed to over 200 interested parties electronically or by mail. Meeting materials were made available to public and comments were taken at all meetings.

The initial Planning Unit meetings were committed to taking public comment and reviewing the water management measures contained in the 2006 watershed management plan, including the methods and data used to generate population projections, water demand estimates, and instream flow recommendations. The Planning Unit questioned the adequacy of the data used in the 2006 plan and also found that the planning assumptions and methods used were not clear. As a result, it was decided that up to date information on water supply needs, fish resources, and stream flows should be gathered and analyzed. The Planning Unit also decided that all planning assumptions and analytical methods should be fully and clearly documented.

In conducting its original analyses, the Planning Unit assumed that groundwater withdrawals would have an instantaneous impact on stream flow, and the amount of consumptive use would be equivalent to the stream flow depletion (based on legal decisions at the time). The Planning Unit recognizes that the impact of water withdrawals seldom has an instantaneous impact of stream flows. It is further recognized that groundwater withdrawals may in some instances have little or no adverse impact on stream flows. However, given size of the Cowlitz watershed and the tremendous variation and diversity in geologic and hydrogeologic conditions, it is not possible to precisely predict the effect of future withdrawals on local stream flows. Accordingly, the Planning Unit agreed to use the 'instantaneous impact' premise for planning purposes, as it represents an estimate of maximum potential impact to stream flows. All demand estimates are in units of cubic feet per second, the common measure of streamflow, to facilitate comparisons.

FUTURE WATER SUPPLY NEEDS

The Planning Unit developed estimates of water supply needs through 2030 for the following Cowlitz watershed subbasins:

- Upper Cowlitz
- Cispus
- Tilton
- Mayfield
- Lower Cowlitz
- Toutle
- Coweeman

To allow for better analysis of local water supply and stream flow issues, each subbasin was further broken down into subwatersheds.

Municipal water suppliers provided updated demand estimates for the cities, towns, and several unincorporated communities. In Lewis County, demand estimates were obtained from Randle (Lewis County Water District #1), Packwood (Lewis County Water District #3), Mossyrock, Mayfield (Lewis County Sewer District #6), Winlock, Toledo, and Vader. In Cowlitz County, updated demand information was received from Castle Rock (including the Toutle Regional Water System), Beacon Hill Water and Sewer District, and Kelso. Updated demand information was not obtained from the City of Longview. Since the Longview water system draws from the tidally-influenced area, the withdrawal is assumed to not impact stream flows.

Because Lewis County is covered under the Growth Management Act (GMA), the county was able to provide zoning information to support growth and water demand projections in unincorporated areas. To develop these projections, Lewis County's Geographic Information Systems (GIS) department performed a build-out scenario analysis of potential development or new households in unincorporated areas. The methodology for this analysis can be found in Attachment A.

In Cowlitz County, only portions of the county are zoned, so a similar analysis could not be completed. For Cowlitz County, the Planning Unit revised population estimates based on the Washington Office of Financial Management's (OFM's) Small Area Estimates Program (SAEP). The SAEP distributes population estimates to special geographic areas, such as subbasins. The population estimates for each subbasin were then used to generate population projections to 2030 using OFM's medium growth rate for Cowlitz County. The population projections were then converted to number of households using OFM's average household size for Cowlitz County. The same approach was used to estimate the number of households in the lower Cowlitz tributary subwatersheds in Lewis County.

For both counties, the number of potential lots or households was then used to determine potential water demand from growth in unincorporated areas. The Planning Unit developed an estimate of water use for permit-exempt wells that included estimates of household indoor water use, outdoor use, and what portion of those uses are consumptive. The average total consumptive use was estimated at 236 gallons per day per household. The complete methodology can be found in Attachment B.

Water demand was also estimated for agricultural use in both counties. Background information was gathered from organizations associated with farming or agriculture in the region. It included information about past, present, and anticipated future conditions related to acreage of land in farms, average farm size, water use, and crops. With limited quantitative data available about potential agricultural growth, the Planning Unit applied a range of potential growth rates to irrigated acreage estimates from the 2007 Census of Agriculture (USDA 2007) in each county to determine potential increases in irrigated acreages by 2030. A standard irrigation rate was applied to each estimate of acreage growth to determine potential water demands associated with the increase in irrigated acreage. The complete details of the analysis can be found in Attachment C and D.

In Lewis County, estimates of commercial, tourism, and industrial water demand of unincorporated areas were assembled from the Water Analysis and Demand Forecast completed by BHC Consultants (2010) as part of the South Lewis County Subarea Plan (Attachment E). The range of potential water demand for these uses was modified slightly to account for acreage within Winlock's urban growth area

that was also included in Winlock's water demand estimate. In Cowlitz County, because no similar water demand forecast has been done for unincorporated areas and consistent zoning is not available throughout the unincorporated areas, commercial, industrial, tourist, and recreation (C/I/T/R) water demand was estimated based on projected population growth. Specifically, a ratio of the existing number of C/I/T/R acres to support the existing population was applied to the projected growth to 2030 in each Cowlitz County subbasin. A range of potential water demand was then applied based on the range used in the Lewis County Water Analysis and Demand Forecast (BHC Consultants 2010). Documentation of this methodology can be found in Attachment F.

FISH RESOURCES AND STREAM FLOWS

The Planning Unit established a Fish and Flow Work Group in 2011 to further evaluate the needs of fish in relation to flows and habitat in the streams in WRIA 26. Lower Columbia Chinook, Coho, and Chum salmon and Steelhead trout are listed as threatened under the federal Endangered Species Act (ESA). In the Cowlitz watershed, these listed species are comprised of 24 distinct populations, more than any other watershed in the Lower Columbia.

The Fish and Flow Work Group initially included staff from the LCFRB, Ecology and the Washington Department of Fish and Wildlife (WDFW), and two citizen representatives and a citizen alternate from the Planning Unit. As the group made progress, additional Planning Unit members and interested parties participated, including the mayor of Winlock and representatives from the Lewis and Cowlitz planning departments and the Cowlitz Conservation District.

The Work Group began its work by reviewing the water and habitat needed by local salmon population for migration, spawning, and rearing. The Group then focused their analysis on identifying tributaries in WRIA 26 where conflicts might occur between habitat and flow needed for fish and potential out of stream water uses.

The Fish and Flow Work Group developed a categorization of streams in WRIA 26 based on importance to fish, existing conditions, flow observations, existing development, potential future development, current land use and ownership, and other factors. The categorization was used to identify tributaries where water withdrawals could have a potential adverse impact on stream flows needed for fish. The detailed methods used to develop this categorization, as well as the categorization itself can be found in Attachment G.

The Department of Ecology provided some updated hydrographs for tributaries in WRIA 26. These updated hydrographs include gage data from USGS and Ecology gages. WDFW and Ecology use the 90% exceedence flow, a measure of low flow conditions that are the greatest stressor for fish, to determine water available to allocate to other uses. As a guideline, these agencies use 1-2% of the 90% exceedence flow as a tolerable reduction of flow and thus available habitat for fish. For details on calculating the 1% of the 90% exceedence flow, see Attachment H. Where gage data was not available, WDFW and Ecology staff collected flow measurements at several streams of concern. While these flows are generally represented by one or two single measurement points, they provided useful information for the Fish and Flow Work Group to use as a measure of the magnitude of low flows in these streams. These flow measurements can be found in Attachment I.

After identifying potential tributaries of concern, the Fish and Flow Work Group further refined their analysis to focus on smaller subwatershed areas, or areas that drain to a particular tributary of concern. For Lewis County subwatersheds, the Lewis County GIS Department refined their full build-out analysis of unincorporated areas using subwatershed boundaries provided by LCFRB staff. The GIS data provided by Lewis County includes the number of potentially developable parcels in each subwatershed. Similar to the initial water demand analysis, the Fish and Flow Work Group then applied the 236 gallon per day per household consumptive use estimate to these parcels to determine potential demand, and thus potential streamflow impact, in each subwatershed.

In Cowlitz County, OFM provided population estimates from the SAEP based on the subwatershed boundaries provided by LCFRB staff. OFM did caution that the quality of these estimates is reduced because of the small size of the area. Using these population estimates for each subwatershed, the Fish and Flow Work Group applied OFM's medium growth rate to project population growth to 2030 for each subwatershed. These projections were converted to number of households using OFM's average household size for Cowlitz County. The Fish and Flow Work Group then applied the 236 gallon per day per household consumptive use estimate to these households to determine demand, and thus potential streamflow impact, in each subwatershed.

WATER MANAGEMENT RECOMMENDATIONS

The Fish and Flow Work Group developed initial water management reports for each of the 7 subbasins in the Cowlitz watershed. The reports summarized projected future water needs, water availability, fish resources and stream flows and made recommendations regarding whether a subbasin or subwatershed should be closed to further water appropriations, whether water should be reserved for future development and land uses, and whether instream flows should established to help protect fish resources.

The Planning Unit considered the draft reports and provided feedback to the Fish and Flow Work Group. The Planning Unit also took public comments on the drafts. The Fish and Flow Work Group refined the drafts based on the comments from the Planning Unit and public. The Planning Unit reached tentative agreement on water management recommendations for the Upper Cowlitz, Cispus, Tilton, Mayfield and Toutle subbasins in June 2012.

Unable to reach consensus on the water management recommendations for the Lower Cowlitz and Coweeman subbasins, the Planning Unit asked the Lewis and Cowlitz county commissioner members of the Planning Unit to work with Ecology, WDFW, and the City of Winlock to develop a recommendation addressing the outstanding issues. The issues included closures, minimum instream flows, and reservations for Lower Cowlitz subwatersheds and the Coweeman subbasin, and the availability of water to meet the future needs of the City of Winlock.

The Lower Cowlitz and Coweeman subbasin recommendations were revised based on the discussions between the county commissioners, the City of Winlock, and the state agencies and resubmitted to the Planning Unit in July 2013.

At the conclusion of the July Planning Unit meeting, several unresolved issues remained. These included watershed plan and rule reopener provisions, the City of Castle Rock reservation, the

Arkansas/Delameter/Monahan reservation and instream flow, the Coweeman reservation and instream flow, and the Cowlitz County reservation for future allocation. On October 24, 2013, the Lewis and Cowlitz county commissioner members of the Planning Unit and representatives of Ecology, WDFW, Cowlitz Conservation District, and the City of Castle Rock met and agreed to revisions of the Lower Cowlitz water management recommendations and watershed plan/rule reopener language addressing the remaining outstanding issues. The July draft of this report was revised to incorporate the revised language and was submitted to the Planning Unit for approval at its November 14, 2013 meeting.

WATER MANAGEMENT MEASURES IMPLEMENTATION

IMPLEMENTATION OVERSIGHT AND COORDINATION

The Planning Unit will coordinate and oversee the functions associated with the implementation of the water management measures, including:

- Monitoring the implementation actions to ensure consistency and compatibility with the 2006 intent of the water management measures;
- Advising the Department of Ecology on rule-making and implementation, including the granting or transferring of water rights;
- Coordinating efforts to monitor water supplies, stream flows, and water uses; Reviewing and, as needed, recommending changes to water management measures to address new information and statutory changes; and
- Providing the public the opportunity to participate in water management discussions and decision-making.

If the Planning Unit is not continued, Cowlitz, Lewis, Wahkiakum, and Skamania counties should in consultation with Ecology and WDFW periodically appoint a work group to conduct the above functions, particularly the reopening and review of the water management measures. In addition to Cowlitz, Lewis, Wahkiakum and Skamania counties, Ecology, and WDFW, the cities within WRIAs 25 and 26, other public water purveyors, and other groups or interests, as appropriate, should be invited to participate. An Interlocal agreement may be useful in defining how and when the counties would convene an ad hoc work group, how the role and responsibilities of the work group would be defined, and how administrative support would be provided.

REOPENING AND REVISING WATER MANAGEMENT MEASURES

The water management measures will be reviewed and revised, as necessary, to ensure that water resources in WRIAs 25 and 26 meet the present and future needs of the people, communities, local economies, and fish and wildlife. It is the intent of the reopener process to identify and resolve emerging issues before they result in hardship for people or adverse impacts for fish.

The water reservations proposed for certain subwatersheds are intended to provide adequate water supplies for development through 2030 while also maintaining stream flows for fish. It is understood that additional water for out-of-stream uses will be available in a subwatershed to the extent that Water

withdrawals have not resulted in a stream flow reduction which indicates a significant adverse impact on fish or other instream resources or water quality for the past 6 years.[1]

Further, if a water right or claim is abandoned or relinquished, the reservation for the applicable subwatershed shall be credited with the actual amount of water right not being used and subject to relinquishment based on Ecology's determination of the extent and validity of the right or claim. Upon demonstration to Ecology through written certification that a permit exempt well has been abandoned and decommissioned, the reservation for the applicable subwatershed shall be credited with the standard amount of water debited from the reservation for a permit exempt well.

The water management measures will be reopened for review and revision as necessary at least once every 10 years and when any reservation adopted by rule has been depleted by 75 percent. In addition the measures may also be reopened at any time upon the request of Ecology, WDFW, a city or county, or recognized or treaty tribes, provided that the Planning Unit (or its successor) determines that doing so is warranted based on statutory changes or new information indicating significant or unanticipated changes in population growth or land use trends, water supply needs, water quality, stream flows, ground water levels or habitat conditions.

The Planning Unit (or its successor), in consultation with Ecology and WDFW, will determine the scope of the review and develop a plan and schedule for conducting the review. Public notice of the review will be given and opportunities for public involvement and participation will be provided.

In conducting a review, the Planning Unit will consider the following information as appropriate:

1. New stream flow and groundwater data where available;
2. Assumed relationship among water use, stream flow, and water reserves/allocation;
3. Water allocated through new water rights and permit exempt wells;
4. Trends and forecasts in land use, projected population growth, and water demand;
5. Review of ESA-listed fish population and habitat status and trends;
6. Changes in applicable state and local laws, and land use plans;
7. Watershed Plan assumptions and information regarding water supplies, stream flows, water quality and habitat; or
8. Other new data or information the Planning Unit deems relevant to the review.

If a review involves a reservation that has been depleted by 75 percent or more, Ecology in consultation with the Planning Unit (or its successor) shall determine whether additional water is available within the subject subwatershed within 6 months of the initiation of the review.

Based on its review, the Planning Unit (or its successor) shall document its findings and, as necessary, adopt recommended amendments to the Plan. The Planning Unit shall forward its findings and recommendations to the legislative authority of each of the counties within WRIAs 25 and 26 for consideration and adoption in accordance with RCW 90.82.130.

[1] In assessing impacts, the 6-year trend will consider the number of smolt and spawners.

REVIEW AND AMENDMENT OF THE WATER MANAGEMENT RULE

Ecology, in consultation with the counties, other state agencies, and the WRIA 25/26 Planning Unit (or its successor), shall initiate a review, and a modification of the water management rule as appropriate, including when:

- Applicable statutory changes are enacted.
- Significant new information becomes available.
- Significant changes in conditions such as population growth and land use trends, water supply needs, stream flows, and ground water levels.
- Requested by Cowlitz, Lewis, Wahkiakum, and Skamania counties based on the findings and recommendations resulting from the Planning Unit review of the water management measures in the watershed plan.

SUBBASIN SUMMARIES AND RECOMMENDATIONS

UPPER COWLITZ

WATER DEMAND

Water demand in the Upper Cowlitz subbasin includes potential demand from municipal systems, agriculture, and residential growth in unincorporated areas. The Packwood and Randle water systems have adequate current water rights to meet their anticipated demand through the 20-year planning horizon. There is a potential for development of 1,011 additional parcels[i] in unincorporated areas in Lewis County. This yields a potential streamflow depletion of 0.37cfs. Water demand from agriculture was estimated using a range of potential growth rates.[ii]

Demand Category	Demand Estimate	Notes
Randle (Lewis Co #1)	0	Adequate water rights to 2030
Packwood (Lewis Co #3)	0	Adequate water rights to 2030
Unincorporated Areas	0.37cfs	Based on Lewis County's build-out scenario estimating the potential for development of 1,011 additional parcels.
Agriculture	0.7cfs – 3.5cfs	Range based on ag growth rates of 0.5% to 2%

STREAM CONSIDERATIONS AND WATER AVAILABILITY

Based on WDFW and Ecology guidelines of using 1% of the 90% exceedence flow as a measure of acceptable habitat loss and water availability, the water availability estimate for the mainstem Upper Cowlitz is 3.95cfs (measured at the Cowlitz River near Randle, RM 102.9).[iii]

The Upper Cowlitz subbasin supports populations of winter steelhead, fall Chinook, spring Chinook, and coho. All are listed as Threatened under the Federal Endangered Species Act (ESA). Winter steelhead, spring Chinook, and coho populations in the Upper Cowlitz are Primary populations for salmon recovery.[iv] Based on review by WDFW biologists[v] and evaluation of development potential[vi], the Fish and Flow Workgroup felt many streams in this subbasin were of low concern of streamflow impacts from development, and categorized them as Category A – of low concern. Some streams had higher levels of potential development and were categorized as Category B – monitoring and adaptive management recommended (no immediate concern). These streams include Butter Creek, Coal Creek, Hinkle Tinkle Creek, Kiona Creek, Lake Creek, Siler Creek, and Skate Creek. Silver and Hall/Snyder creeks have an existing Surface Water Source Limitation (SWSL) designation, and the Fish and Flow subgroup recommended retaining that designation; thus, they categorized those streams as Category E – active protective measure in place.

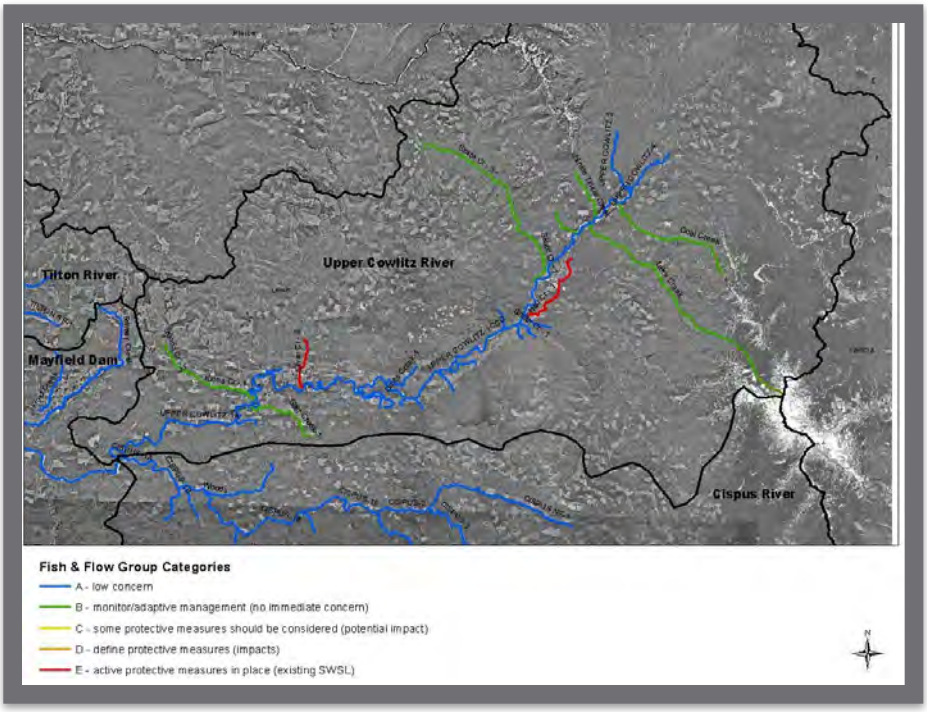


Figure 1. Map of Fish and Flow Group categories of concern for streams in the Upper Cowlitz subbasin.

WATER MANAGEMENT RECOMMENDATIONS AND IMPLICATIONS

Based on the potential demand compared to estimate of water availability, the Planning Unit recommends the following for the Upper Cowlitz subbasin:

- Existing water rights and permitted exempt wells are not affected
- No closures except Silver Creek and Hall/Snyder Creek, where existing SWSLs are in place
- Reservation of 0.042cfs for the Hall/Snyder Creek subwatershed for permit-exempt wells and small systems to support the full build-out potential of 117 parcels[vii, viii]
- Retain existing 10cfs SWSL stream flow in Silver Creek
- Water withdrawals within the Cowlitz River alluvial aquifer would not be subject to the existing SWSLs. The boundaries of the alluvial aquifer are determined to be the point where the topography changes from being “floodplain” (area of historical flows of the Cowlitz River) to “slope” (where the topography steepens).

ADDITIONAL NOTES

Tacoma Power has water rights to much of the water that enters their reservoirs from the Upper Cowlitz Basin. Some of these water rights date back to the 1920’s but include an exception allowing 20cfs be granted for community growth. Ecology has issued approximately 62cfs in water rights in the Upper Cowlitz basin. Tacoma Power has voiced no objection to the granting of these rights or to the granting of additional rights for future development in the Upper Cowlitz basin.

The Planning Unit has determined there is no conflict between instream and anticipated out-of-stream uses in most areas in the Upper Cowlitz. The Planning Unit recommends that the 62 cfs of water currently granted

under existing rights be reserved for use in the Upper Cowlitz. Ecology should account for any volume of water no longer being used under the current water rights and should be willing to issue future water rights up to the volume no longer being used under current water rights, assuming the location of the future water rights does not result in conflicts at the subwatershed level (i.e., does not impair existing rights or exceed water availability estimates for that subwatershed).

There is a high level of uncertainty in many of the demand and availability estimates, as well as uncertainty in projecting growth.

Once every 10 years or when 75 percent of a reservation has been used, the WRIA 25/26 Planning Unit or its successor, the Department of Ecology, and other interested parties will convene to:

- Review status of water reservations and streams flows;
- Consider new information regarding water needs, water availability, and stream flows;
- Develop options for additional future water supply, if needed; and
- Amend the Watershed Plan if necessary.

Ecology may initiate a modification of the Water Management Rule based on the conclusions of such a review.

See the WRIA 25/26 Water Management Measure Implementation section for a more thorough discussion of reopeners and plan/rule amendments.

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[i] Lewis County WRIA 26 Subbasins Domestic Water Use In Unincorporated Areas Potential Streamflow Depletion based on Development Potential at Build-Out Approved by the Planning Unit June 9, 2011; Revised June 7, 2013

[ii] 'WRIA 26 Lewis County Agriculture Lands and Water Analysis of Current Condition, Pending Water Rights, and Future Needs' approved by the WRIA 25/26 Planning Unit, August 11, 2011. Agriculture acreage was divided among subbasins using current Lewis County zoning.

[iii] Values provided by Jim Pachecos, Department of Ecology, January 31, 2011 email to Scott McKinney and Brad Caldwell, Department of Ecology.

[iv] Primary populations are those that are targeted for restoration to a high or greater level of viability in the *WA Lower Columbia Salmon Recovery and Fish & Wildlife Subbasin Plan* (LCFRB 2010).

[v] 'Tributary Prioritization Spreadsheet' developed by the Fish and Flow Workgroup, updated November 9, 2011.

[vi] Development potential was estimated by reviewing Lewis County's zoning GIS layer, adopted by Lewis County December 14, 2009 and amended December 27, 2010.

[vii] Lewis County GIS performed an analysis of potential build-out by LCFRB's subwatersheds. This demand estimate was based on that analysis ('Lewis County Unincorporated Area Water Demand Estimate by Subwatershed/Stream Impacted', September 16, 2011).

[viii] Small systems include water systems under fifteen connections (or the equivalent water use) providing water for human consumption. This may include domestic use as well as small commercial uses.

CISPUS

WATER DEMAND

Water demand in the Cispus subbasin includes a potential for development of 40 additional parcels in unincorporated areas in Lewis County. This yields a potential streamflow depletion of 0.015cfs[ix]. There is no anticipated municipal or agricultural water demand in the Cispus subbasin.

Demand Category	Demand Estimate	Notes
Unincorporated Areas	0.015cfs	Based on Lewis County's build-out scenario indicating potential development of 40 parcels

STREAM CONSIDERATIONS AND WATER AVAILABILITY

Based on WDFW and Ecology guidelines of using 1% of the 90% exceedence flow as a measure of acceptable habitat loss and water availability, the water availability estimate for the mainstem Cispus is 2.86cfs (measured at the Cispus River near Randle, RM 15.8).

The Cispus subbasin supports populations of winter steelhead, fall Chinook, spring Chinook, and coho. All are listed as Threatened under the Federal Endangered Species Act (ESA). Winter steelhead, spring Chinook, and coho populations in the Cispus are Primary populations for salmon recovery[x]. WDFW recommended high protection for streams in this basin because of the importance to fish populations[xi]. Because the basin is primarily zoned for forest use, the Fish and Flow Workgroup felt there was low concern of streamflow impacts from development; thus, they categorized all streams in this basin as Category A – of low concern.

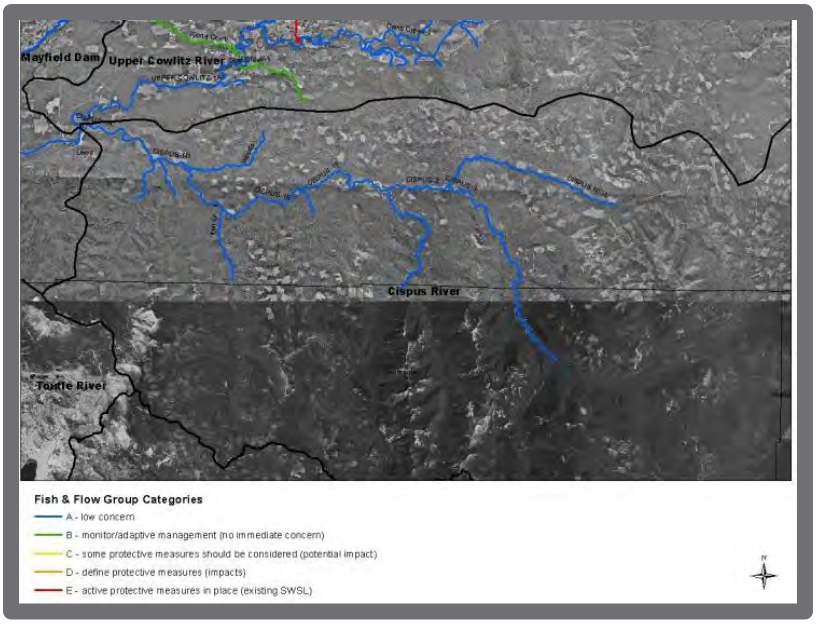


Figure 2. Map of Fish and Flow Group categories of concern for streams in the Cispus subbasin.

WATER MANAGEMENT RECOMMENDATIONS AND IMPLICATIONS

Based on the low potential demand compared to estimate of water availability, the Planning Unit recommends the following for the Cispus subbasin:

- Existing water rights and permitted exempt wells are not affected
- No closures and no instream flows
- No reservations

Under this scenario, water right applications would be processed in the order they are received.

ADDITIONAL NOTES

The Planning Unit recognizes the high level of uncertainty in many of the demand and availability estimates, as well as uncertainty in projecting growth.

Once every 10 years or when 75 percent of a reservation has been used, the WRIA 25/26 Planning Unit or its successor, the Department of Ecology, and other interested parties will convene to:

- Review status of water reservations and streams flows;
- Consider new information regarding water needs, water availability, and stream flows;
- Develop options for additional future water supply, if needed; and
- Amend the Watershed Plan if necessary.

Ecology may initiate a modification of the Water Management Rule based on the conclusions of such a review.

See the Watershed Management Measure Implementation section for a more thorough discussion of reopeners and plan/rule amendments.

[ix] Lewis County WRIA 26 Subbasins Domestic Water Use In Unincorporated Areas Potential Streamflow Depletion based on Development Potential at Build-Out Approved by the Planning Unit June 9, 2011; Revised June 7, 2013

[x] Primary populations are those that are targeted for restoration to a high or greater level of viability in the *WA Lower Columbia Salmon Recovery and Fish & Wildlife Subbasin Plan* (LCFRB 2010).

[xi] 'Tributary Prioritization Spreadsheet' developed by the Fish and Flow Workgroup, last update November 9, 2011.

MAYFIELD

WATER DEMAND

Water demand in the Mayfield subbasin includes potential demand from the Mossyrock and Mayfield municipal systems, agriculture, and residential growth in unincorporated areas. Mayfield has adequate current water rights to meet their anticipated demand. Mossyrock expects to need additional water rights within the 20-year planning horizon. There is a potential for development of 1,964 additional parcels[xii] in unincorporated areas in Lewis County. This yields a potential streamflow depletion of 0.72cfs. Water demand from agriculture was estimated using a range of potential growth rates. [xiii]

Demand Category	Demand Estimate	Notes
Mossyrock	0.59cfs	Based on City estimate
Mayfield (Lewis Co Sewer District #6)	0	Adequate rights to meet current demand estimate
Unincorporated Areas	0.72cfs	Based on Lewis County's build-out scenario indicating 1,964 potential developable parcels
Agriculture	0.7cfs – 3.2cfs	Range based on ag growth rates of 0.5% to 2%

STREAM CONSIDERATIONS AND WATER AVAILABILITY

Based on WDFW and Ecology guidelines of using 1% of the 90% exceedence flow as a measure of acceptable habitat loss and water availability, the water availability estimate for the mainstem Cowlitz River at Mayfield Dam is 23.1cfs (measured at Mayfield Dam, RM 50.6).[xiv] This value is inclusive of any flows from upstream measurement points and tributaries; thus, comparing this value to demand in this subbasin should also include analysis of potential upstream depletion.

The Mayfield subbasin supports populations of winter steelhead, fall Chinook, spring Chinook, and coho that are part of upstream populations in the Tilton, Cispus, and Upper Cowlitz. All are listed as Threatened under the Federal Endangered Species Act (ESA). Winter steelhead, spring Chinook, and coho populations in the Cispus and Upper Cowlitz are Primary populations for salmon recovery.[xv] Based on review by WDFW biologists[xvi] and evaluation of development potential[xvii], the Fish and Flow Workgroup felt that streams in this subbasin were of low concern of streamflow impacts from development, and categorized them as Category A – of low concern. Although several streams, Frost Creek, Rainy Creek, and Swofford/Sulphur Creek, had existing Surface Water Source Limitations (SWSLs), the Fish and Flow Workgroup recommended recategorizing them as Category A – of low concern after reviewing demand information on a subwatershed level.[xviii]

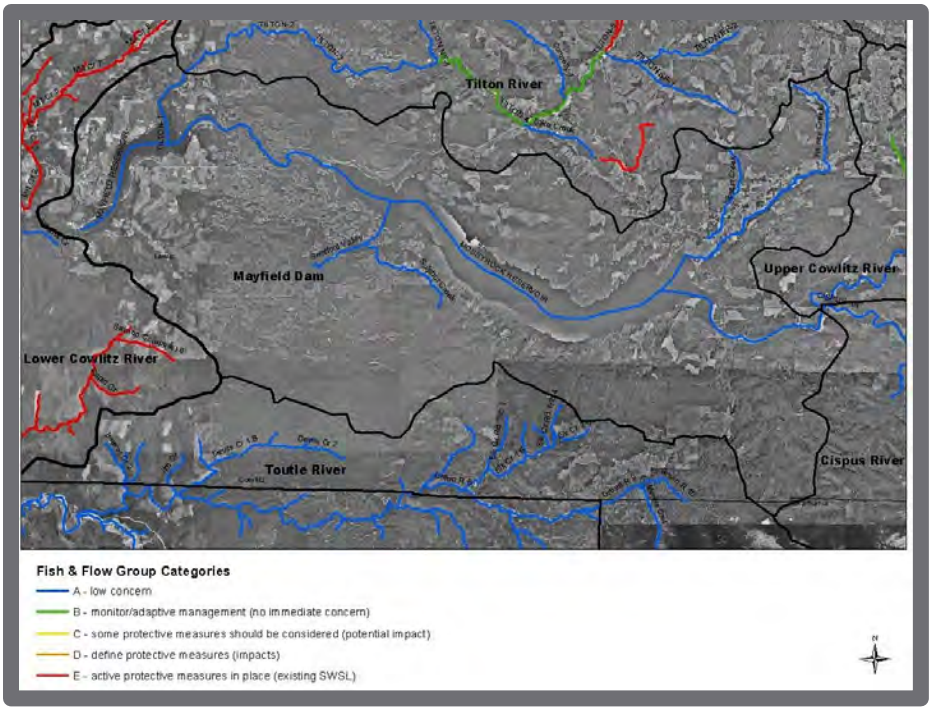


Figure 3. Map of Fish and Flow Group categories of concern for streams in the Mayfield subbasin.

WATER MANAGEMENT RECOMMENDATIONS AND IMPLICATIONS

Based on the potential demand compared to estimate of water availability, the Planning Unit recommends the following for the Mayfield subbasin:

- Existing water rights and permitted exempt wells are not affected
- No closures and no instream flows
- Reservation for Mossyrock of 0.59cfs. This reservation would be an acknowledgement by the Department of Ecology that 0.59 cfs is available to Mossyrock. Since the subbasin would be open to further water appropriations, the reservation would not represent a limit on the amount of water available to Mossyrock. However, in seeking water rights for quantities beyond the reservation the applicant would need to demonstrate that additional water is available as is currently required.

ADDITIONAL NOTES

The Planning Unit recognizes the high level of uncertainty in many of the demand and availability estimates, as well as uncertainty in projecting growth.

Once every 10 years or when 75 percent of a reservation has been used, the WRIA 25/26 Planning Unit or its successor, the Department of Ecology, and other interested parties will convene to:

- Review status of water reservations and streams flows;

- Consider new information regarding water needs, water availability, and stream flows
- Develop options for additional future water supply, if needed; and
- Amend the Watershed Plan if necessary.

Ecology may initiate a modification of the Water Management Rule based on the conclusions of such a review.

See the Watershed Management Measures Implementation section for a more thorough discussion of reopeners and plan/rule amendments.

[xii] Lewis County WRIA 26 Subbasins Domestic Water Use In Unincorporated Areas Potential Streamflow Depletion based on Development Potential at Build-Out Approved by the Planning Unit June 9, 2011; Revised June 7, 2013

[xiii] 'WRIA 26 Lewis County Agriculture Lands and Water Analysis of Current Condition, Pending Water Rights, and Future Needs' approved by the WRIA 25/26 Planning Unit, August 11, 2011. Agriculture acreage was divided among subbasins using current Lewis County zoning.

[xiv] Values provided by Jim Pachecos, Department of Ecology, January 31, 2011 email to Scott McKinney and Brad Caldwell, Department of Ecology.

[xv] Primary populations are those that are targeted for restoration to a high or greater level of viability in the *WA Lower Columbia Salmon Recovery and Fish & Wildlife Subbasin Plan* (LCFRB 2010).

[xvi] 'Tributary Prioritization Spreadsheet' developed by the Fish and Flow Workgroup, updated November 9, 2011.

[xvii] Development potential was estimated by reviewing Lewis County's zoning GIS layer, adopted by Lewis County December 14, 2009 and amended December 27, 2010.

[xviii] Lewis County GIS performed an analysis of potential build-out by LCFRB's subwatersheds. This demand estimate was based on that analysis ('Lewis County Unincorporated Area Water Demand Estimate by Subwatershed/Stream Impacted', September 16, 2011).

TILTON

WATER DEMAND

Water demand in the Tilton subbasin includes potential demand from the Morton municipal system, agriculture, and residential growth in unincorporated areas. Morton has adequate current water rights to meet their anticipated demand through the 20-year planning horizon. There is a potential for development of 509 additional parcels in unincorporated areas in the Tilton subbasin. This yields a potential streamflow depletion of 0.23cfs.[xix] Water demand from agriculture was estimated using a range of potential growth rates.[xx]

Demand Category	Demand Estimate	Notes
Morton	0	Adequate water rights to 2030
Unincorporated Areas	0.23cfs	Based on Lewis County's build-out scenario potential to develop 509 additional parcels
Agriculture	0.1cfs – 0.5cfs	Range based on ag growth rates of 0.5% to 2%

STREAM CONSIDERATIONS AND WATER AVAILABILITY

Based on WDFW and Ecology guidelines of using 1% of the 90% exceedence flow as a measure of acceptable habitat loss and water availability, the water availability estimate for the mainstem Tilton River is 0.62cfs (measured at Tilton River, RM 7.1)[xxi].

The Tilton subbasin supports populations of winter steelhead, fall Chinook, spring Chinook, and coho. All are listed as Threatened under the Federal Endangered Species Act (ESA). Based on review by WDFW biologists[xxii]and evaluation of development potential[xxiii], the Fish and Flow Workgroup felt most streams in this subbasin were of low concern of streamflow impacts from development, and categorized them as Category A – of low concern. One reach of the Tilton (Tilton-4) had higher levels of potential development and was categorized as Category B – monitoring and adaptive management recommended (no immediate concern). Several areas have an existing Surface Water Source Limitation (SWSL)[2] designation, and the Fish and Flow subgroup recommended retaining the low flow recommendation from those SWSLs; thus, they categorized those streams as Category E – active protective measure in place. These streams and/or reaches include Minnie Creek, Tilton-5, and Tilton-6.

[2] See Appendix H of the 2006 watershed management plan, Table H-4.

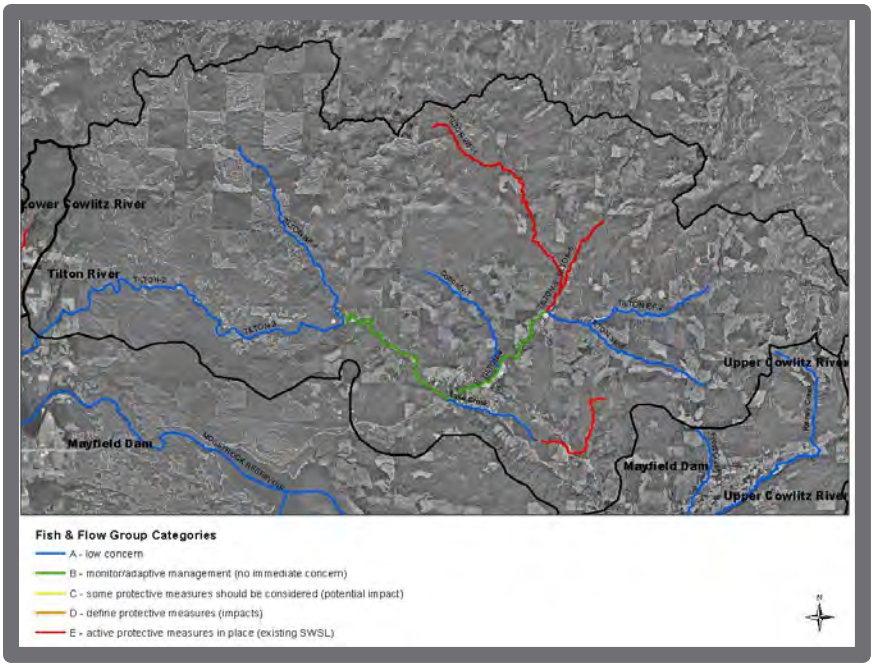


Figure 4. Map of Fish and Flow Group categories of concern for streams in the Tilton subbasin.

WATER MANAGEMENT RECOMMENDATIONS AND IMPLICATIONS

Based on the potential demand compared to estimate of water availability, the Planning Unit recommends the following for the Tilton subbasin:

- Existing water rights and permitted exempt wells are not affected
- No closures
- Minnie Creek, Tilton-5, and Tilton-6 –
    - Use SWSL recommended low-flows:
        - Upper Tilton above the confluence with the East Fork (approx. RM 22) – low flow of 3.0cfs
        - Minnie Cr – low flow of 1.0cfs;
    - Reserve 0.048cfs for the Minnie Creek/Lake Creek subwatershed for permit-exempt wells and small systems sufficient to meet estimated potential full build-out of 131 parcels[xxiv, xxv]; and
    - Reserve 0.003cfs for the Upper Tilton above the confluence with the East Fork for permit-exempt wells and small systems sufficient to meet estimated potential full build-out of 7 parcels[xxvi, xxvii]
    - Demand beyond the reservations could be allowed if it does not cause flows to go below SWSL recommended low-flows.

ADDITIONAL NOTES

The Fish and Flow Subgroup recognizes the high level of uncertainty in many of the demand and availability estimates, as well as uncertainty in projecting growth.

Once every 10 years or when 75 percent of a reservation has been used, the WRIA 25/26 Planning Unit or its successor, the Department of Ecology, and other interested parties will convene to:

- Review status of water reservations and streams flows;
- Consider new information regarding water needs, water availability, and stream flows
- Develop options for additional future water supply, if needed; and
- Amend the Watershed Plan if necessary.

Ecology may initiate a modification of the Water Management Rule based on the conclusions of such a review.

See the Watershed Management Measures Implementation section for a more thorough discussion of reopeners and plan/rule amendments.

[xix] Lewis County WRIA 26 Subbasins Domestic Water Use In Unincorporated Areas Potential Streamflow Depletion based on Development Potential at Build-Out Approved by the Planning Unit June 9, 2011; Revised June 7, 2013

[xx] 'WRIA 26 Lewis County Agriculture Lands and Water Analysis of Current Condition, Pending Water Rights, and Future Needs' approved by the WRIA 25/26 Planning Unit on August 11, 2011. Agriculture acreage was divided among subbasins using current Lewis County zoning.

[xxi] Values provided by Jim Pachecos, Department of Ecology, January 31, 2011 email to Scott McKinney and Brad Caldwell, Department of Ecology.

[xxii] 'Tributary Prioritization Spreadsheet' developed by the Fish and Flow Workgroup, updated November 9, 2011.

[xxiii] Development potential was estimated by reviewing Lewis County's zoning GIS layer, adopted by Lewis County December 14, 2009 and amended December 27, 2010.

[xxiv] Lewis County GIS performed an analysis of potential build-out by LCFRB's subwatersheds. This demand estimate was based on that analysis ('Lewis County Unincorporated Area Water Demand Estimate by Subwatershed/Stream Impacted', September 16, 2011).

[xxv] Small systems include water systems under fifteen connections (or the equivalent water use) providing water for human consumption. This may include domestic use as well as small commercial uses.

[xxvi] Lewis County GIS performed an analysis of potential build-out by LCFRB's subwatersheds. This demand estimate was based on that analysis ('Lewis County Unincorporated Area Water Demand Estimate by Subwatershed/Stream Impacted', September 16, 2011).

[xxvii] Ibid.

TOUTLE

WATER DEMAND

Water demand in the Toutle subbasin includes potential demand from agriculture and residential growth in unincorporated areas, as well as commercial, industrial, and office demand. The potential growth in unincorporated area was based on population projections through 2030. Based on the projections population would by grow an estimated 1,428 and potentially 529 new households. Water demand for this growth would result in a potential streamflow depletion of 0.19cfs.[xxviii] Water demand from agriculture was estimated using a range of potential growth rates. A range of potential commercial, industrial, tourist and recreation water demand was estimated based on an increase in acreage of those land uses.[xxix]

Demand Category	Demand Estimate	Notes
Commercial/Industrial/Tourist Recreation Use in Unincorporated Areas	0.47cfs – 9cfs	Range based on low to high use estimates
Unincorporated Areas Domestic Use	0.19cfs	Based on projected population growth of 1,428 people or 529 households by 2030
Agriculture	0.013cfs – 1.59cfs	Range based on ag growth rates of 0.5% to 2%

STREAM CONSIDERATIONS AND WATER AVAILABILITY

Based on WDFW and Ecology guidelines of using 1% of the 90% exceedence flow as a measure of acceptable habitat loss and water availability, the water availability estimate for the mainstem Toutle River is 2.89cfs (measured at RM 6.5).[xxx]

The Toutle subbasin supports populations of winter steelhead, fall Chinook, spring Chinook, chum, and coho. All are listed as Threatened under the Federal Endangered Species Act (ESA). The coho, winter steelhead, and fall Chinook populations in the Toutle are Primary populations for salmon recovery.[xxxi] Based on review by WDFW biologists[xxxii] and evaluation of development potential[xxxiii], the Fish and Flow Workgroup felt that many areas in this subbasin were of low concern of streamflow impacts from development, and categorized them as Category A – of low concern. The Silver Lake subwatershed was an area where a conflict was noted between potential development impacts and streamflow protection. The Fish and Flow Workgroup evaluated impacts on a subwatershed level, and based on their review, made specific recommendations listed below.

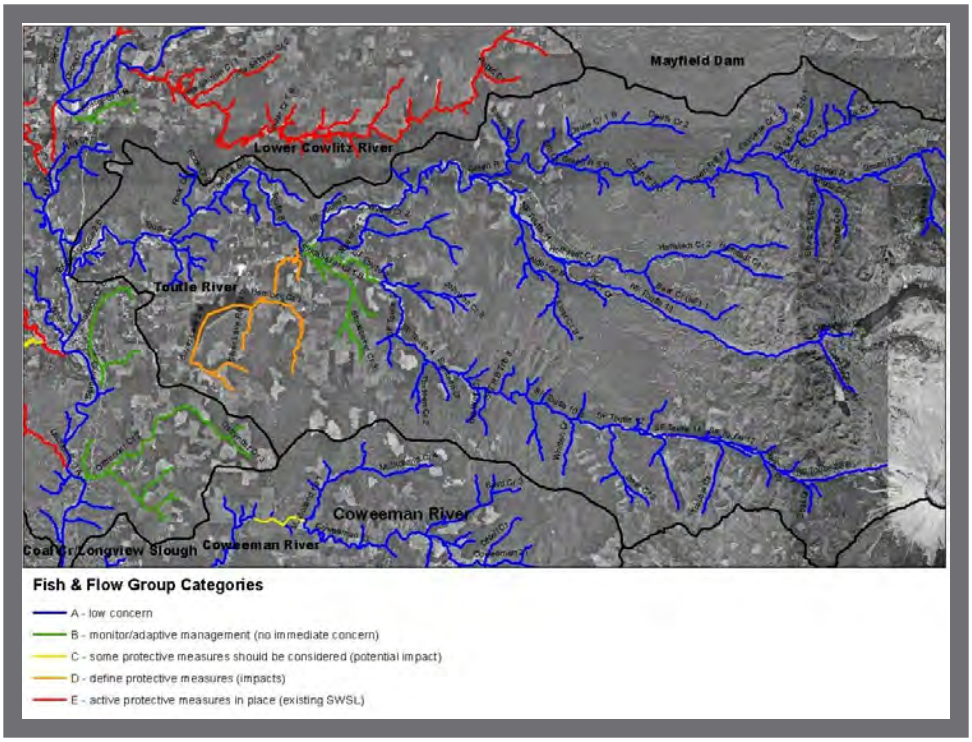


Figure 5. Map of Fish and Flow Group categories of concern for streams in the Toutle subbasin.

WATER MANAGEMENT RECOMMENDATIONS AND IMPLICATIONS

Based on the potential demand compared to estimate of water availability, the Planning Unit recommends the following for the Toutle subbasin:

- Existing water rights and permitted exempt wells are not affected
- All areas – no closures, no instream flows, no reservations
- Silver Lake, its tributaries, and Outlet Creek–
    - Recommend future development in subwatershed, especially commercial development, hook up to the Toutle Regional Water system within the service area
    - Ensure the number of wells and small systems be carefully tracked relative to the planning assumptions that project approximately 250 households in the subwatershed over the next 20 years; and
    - Recommend additional water right applications be evaluated for impacts to water quality.

Although the total Toutle demand estimate exceeds the water availability estimate, the Planning Unit recognizes that the Toutle Regional Water System, which draws water from the Cowlitz River, could offset some of the demand impacts.

ADDITIONAL NOTES

The Planning Unit recognizes the high level of uncertainty in many of the demand and availability estimates, as well as uncertainty in projecting growth.

Once every 10 years or when 75 percent of a reservation has been used, the WRIA 25/26 Planning Unit or its successor, the Department of Ecology, and other interested parties will convene to:

- Review status of water reservations and streams flows;
- Consider new information regarding water needs, water availability, and stream flows
- Develop options for additional future water supply, if needed; and
- Amend the Watershed Plan if necessary.

Ecology may initiate a modification of the Water Management Rule based on the conclusions of such a review.

See the Watershed Management Measures Implementation section for a more thorough discussion of reopeners and plan/rule amendments.

[xxviii] Cowlitz County WRIA 26 Subbasins Domestic Water Use In Unincorporated Areas from permit-exempt wells

Potential Streamflow Depletion based on Population Growth Projections to 2030, October 13, 2011, revised June 2013

[xxix] 'Water Demand for Commercial, Industrial, Tourist, and Recreation Uses in Unincorporated Cowlitz County Portions of the Lower Cowlitz, Toutle, and Coweeman Subbasins' provided by Cowlitz County December 29, 2011.

[xxx] Values provided by Jim Pachecos, Department of Ecology, January 31, 2011 email to Scott McKinney and Brad Caldwell, Department of Ecology.

[xxxi] Primary populations are those that are targeted for restoration to a high or greater level of viability in the *WA Lower Columbia Salmon Recovery and Fish & Wildlife Subbasin Plan*, (LCFRB 2010).

[xxxii] 'Tributary Prioritization Spreadsheet' developed by the Fish and Flow Workgroup, updated November 9, 2011.

[xxxiii] Development potential and subwatershed-level impacts were estimated by reviewing population projections to 2030 in each LCFRB subwatershed ('Cowlitz County WRIA 26 Select Subwatershed Domestic Water Use in Unincorproated Areas from Permit-exempt Wells Potential Streamflow Depletion based on Population Growth Projections to 2030', reviewed by the Fish and Flow Workgroup, November 7, 2011).

LOWER COWLITZ

WATER DEMAND

The Lower Cowlitz subbasin encompasses the Cowlitz watershed below Mayfield dam, excluding the Toutle and Coweeman subbasins. Water demand in the Lower Cowlitz subbasin is driven by the needs of several municipal water systems, agriculture, residential uses in unincorporated areas, as well as commercial, industrial, and office uses.

In the unincorporated areas of Lewis County there is a full build-out potential for development of 5,717 additional parcels or possible households under the County's current Comprehensive Plan.[xxxiv] The estimated full build-out water need is 2.10 cfs. Based on a 20-year growth projection, it is estimated that 0.38 cfs would be needed to support a population increase of 2,642 or 1048 additional households.[xxxv] The town of Vader indicates it has adequate water rights to meet their anticipated demand through the 20-year planning horizon. Winlock projects it will require an additional 2.14 cfs within the 20-year planning horizon and Toledo projects a need for an additional 0.47 cfs. Lewis County indicates a potential additional water demand for commercial, industrial, and office uses based on the South Lewis County Water Analysis and Demand Forecast.[xxxvi]

In Cowlitz County, population in the unincorporated areas is expected to grow by 6,449 people, creating 2,434 new households by 2030 and a potential water need of 0.89 cfs.[xxxvii] A range of potential commercial, industrial, tourist and recreation water demand in unincorporated areas was estimated based on a projected increase in acreage dedicated to those land uses.[xxxviii] The City of Castle Rock operates a regional water system that serves the residents of the City as well as the communities of Toutle and Silver Lake in the Toutle River subbasin. Castle Rock estimates that an additional 4.08 cfs will be needed to meet the needs of the regional water system through 2030. Other municipal water providers, Beacon Hill Water and Sewer District, Kelso, and Longview, have water sources within the tidally-influenced areas of the Cowlitz and Columbia Rivers, where additional withdrawals are not expected to impact stream flows.

For both Lewis and Cowlitz Counties, water demand from agriculture was estimated using a range of potential growth rates.[xxxix] A detailed list of the Lower Cowlitz water demand estimates is shown in Table 1 below.

Table 2 WRIA 26 Water Demand Estimates

Demand Category	Demand Estimate	Notes
Lewis County		
Winlock	2.14cfs	Based on 60% buildout[xl]
Toledo	0.47cfs	Although anticipated demand through 2028 is 0.34cfs, Toledo asks that 2006 Plan demand estimate of 0.47 be maintained[xli]
Vader	0	Existing water rights adequate to meet anticipated demand through 2030[xlii]
C/I/T/R	1.68cfs – 3.11cfs	Demand estimate range from South Lewis County Subarea Plan[xliii]
Unincorporated Areas Domestic Use	0.38cfs	Based 20-year population increase of 2,642 people and 1,028 households[xliv]. Lewis County full build-out scenario projects a development potential of 5,749 parcels requiring 2.10 cfs[xlv]
Agriculture	3.4cfs – 16cfs	Demand estimate range based on ag growth rates of 0.5% to 2%[xlvi]

Demand Category	Demand Estimate	Notes
Cowlitz County		
Castle Rock	4.08cfs	60% of full build-out to occur within 40 years. Service area includes City of Castle Rock and communities of Toutle and Silver Lake.[xlvii]
BHWSD	NA	Water source is in tidally-influenced area
Kelso	NA	Water source is in tidally-influenced area
Longview	NA	Water source is in tidally-influenced area
C/I/T/R Use in Unincorporated Areas	0.16cfs – 3.4cfs	Demand estimate range based on low to high use estimates[xlviii]
Unincorporated Areas Domestic Use	0.89cfs	Based on population growth projections to 2030[xlix]
Agriculture	0.031cfs – 3.81cfs	Demand estimate range based on ag growth rates of 0.02% to 2%[l]

STREAM CONSIDERATIONS AND WATER AVAILABILITY

WDFW and Ecology use 1-2% of the 90% exceedence flow during the summer low flow period as a general measure of acceptable habitat loss and water availability. Based on 1% of the summer 90% exceedence flow this measure, the water availability estimate for the mainstem Lower Cowlitz River is 25.76cfs (measured at Castle Rock, RM 17.3)[li]. This value is inclusive of any flows from upstream measurement points and tributaries; thus, comparing this value to demand in this subbasin should also

include analysis of potential upstream depletion, including estimated future demand in the Upper Cowlitz and Cispus subbasins.

The importance of the lower Cowlitz River and its tributaries to ESA-listed salmon and steelhead was also considered in assessing availability of water for out of stream uses. The Lower Cowlitz subbasin supports populations of winter steelhead, fall Chinook, chum and coho, all of which are listed as threatened under the ESA. The coho population in the Lower Cowlitz is a Primary population for salmon recovery.[lii] The Fish and Flow Workgroup and WDFW biologists evaluated fish use and flows for the mainstem Cowlitz and individual Cowlitz tributaries or subwatersheds.[liii] Development potential, estimated water needs and potential streamflow impacts for individual subwatersheds were also analyzed by Workgroup and WDFW and Ecology.[liv],[lv]

The potential impacts of future water appropriations on lower mainstem Cowlitz flows are of low concern given that flows are regulated and substantial in comparison to anticipated future demands. Given the relatively plentiful water available, no closure is proposed for the lower Cowlitz mainstem. The potential impacts of future water appropriations on flows in the major tributaries to the lower Cowlitz are of greater concern (see figure 6). Eight lower Cowlitz subwatersheds are proposed for closures with instream flows and reservations. A minimum of 2% of the 90% exceedance flow for the summer low flow period was used in setting reservations for 4 of the lower Cowlitz tributaries. For the remaining subwatersheds, the recommended reservations exceed the 2% of the 90% exceedance flow for the summer low flow period. These recommendations are based on the evaluations conducted by the Workgroup and the WDFW and Ecology. The recommended reservations are not expected to significantly impact streams flows needed to support Lower Cowlitz salmon and steelhead populations."

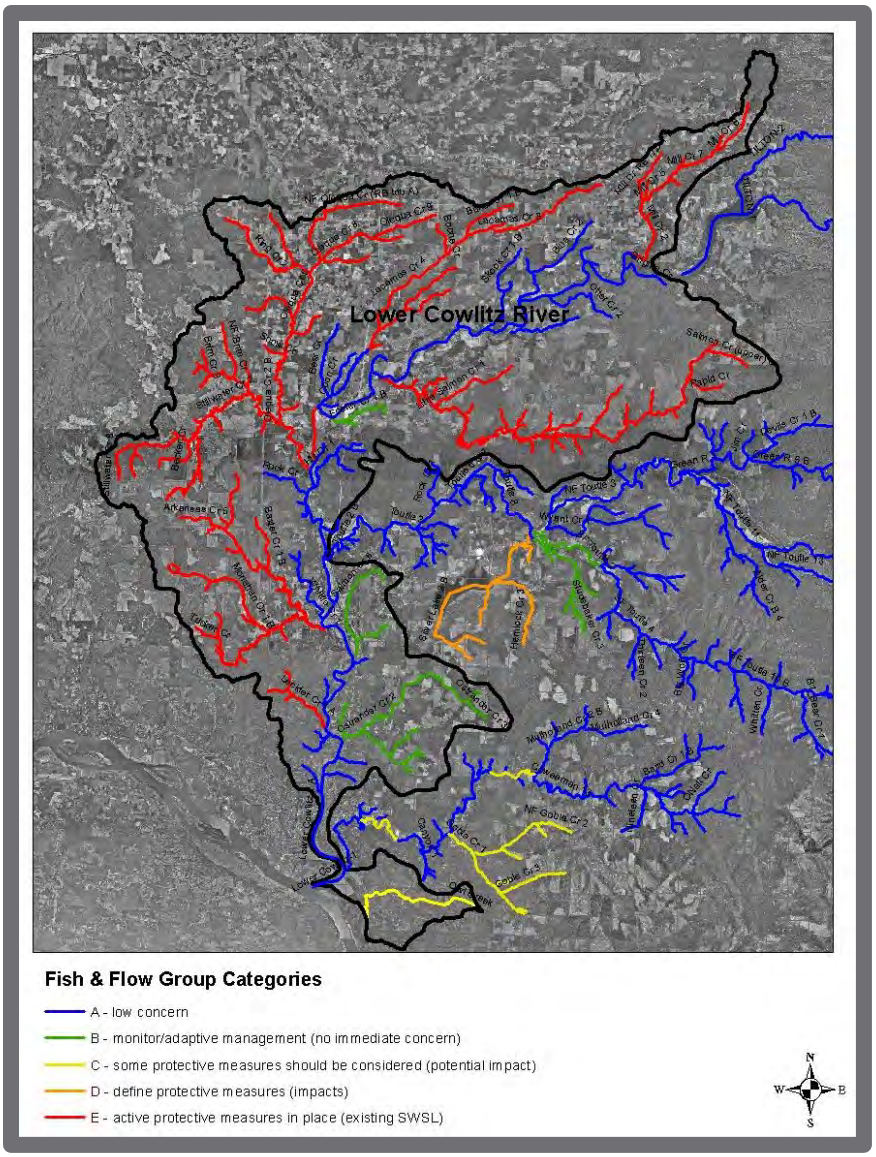


Figure 6. Map of Fish and Flow Group categories of concern for streams in the Lower Cowlitz subbasin (outlined in black).

WATER MANAGEMENT RECOMMENDATIONS AND IMPLICATIONS

The following recommendations are based on the potential water demand compared to estimate of water availability:

- General Subbasin provisions:
    - By law, no existing water right and permit exempt wells would be subject to or affected by any recommendation in this summary or any subsequent water management rule.
    - The following subwatersheds are closed to further water appropriation beyond the specific subwatershed reservations set forth below:

        - Mill Creek
        - Salmon Creek
        - Lacamas Creek
        - Olequa Creek
        - Arkansas/Monahan/Delameter Creeks
        - Leckler Creek
        - Ostrander Creek
        - Owl Creek

    - Instream flows, listed in Table 2, would be established for the following subwatersheds:
        - Mill Creek
        - Salmon Creek
        - Lacamas Creek
        - Olequa Creek
        - Arkansas/Monahan/Delameter Creeks
        - Leckler Creek
        - Ostrander Creek

    - If a reservation is depleted in a subwatershed with instream flow restrictions, new permit exempt wells will be allowed for in-house use only. "Domestic use" means use of water associated with human health and welfare needs, including water used for drinking, bathing, sanitary purposes, cooking, laundering, and other incidental household uses. The incidental uses must minimize the consumptive use of water. Examples of incidental household uses include, but are not limited to: Washing windows, car washing, cleaning exterior structures, care of household pets, and watering potted plants. Domestic use does not include other uses allowed under the groundwater permit exemption: Outdoor irrigation of up to one-half acre of noncommercial lawn or garden, stockwatering, and industrial use.

    - The infrastructure to deliver Cowlitz River water to the City of Winlock and the unincorporated areas of Lewis County is recognized as the highest priority water infrastructure need in WRIA 26 by Ecology, WDFW, and the members of the WRIA 25/26 Planning Unit. Ecology, the City of Winlock, and Lewis County will work together to plan, secure funding, and develop the needed infrastructure in a timely manner.

- Mainstem Lower Cowlitz (below Mayfield Dam)

    - The Mainstem Lower Cowlitz subwatershed is open to future water appropriation with no limits on permit exempt wells. The "open to appropriation" portion of the Cowlitz Mainstem alluvial aquifer extends from the confluence of Mill Creek and the Cowlitz River (located about 2.5 miles west of Mayfield Dam at approximately River Mile 49.5) west and south along the Cowlitz River floodplain to River Mile 7, which is near Rocky Point (a promontory located on the east side of the Cowlitz River just north of Kelso and just south of Lexington). In between River Mile 7 to River Mile 49.5 the Cowlitz River and the alluvial aquifer beneath the Cowlitz River is open to appropriation with no restrictions.

The boundaries of the alluvial aquifer are determined to be the point where the topography changes from being "floodplain" (areas of historical flows of the Cowlitz River) to "slope" (where the topography steepens). The accompanying maps (see section, Lower Cowlitz Mainstem Areas Open to Future Water Appropriations, page 44) that show the areas "open for appropriation" along the Cowlitz floodplain are delineated by the clear change in topography from "floodplain" to "slope" on both sides of the River's mainstem where floodplain occurs. Within the floodplain, it is assumed that groundwater is in direct hydraulic connection with the surface water flows of the Cowlitz River Mainstem. Cowlitz River Mainstem flows are regulated below Mayfield Dam by the Dam and are of historical discharge quantities that direct withdrawal from either the Cowlitz River Mainstem or from the alluvial aquifer will not impair the flows of the Cowlitz River. [lvi]

- The Mainstem Lower Cowlitz reservations are an acknowledgement by Ecology of the water available for appropriation within the jurisdiction of the applicable county or city. Since the subbasin would be open to further water appropriations, the reservation is not a limit on the amount of water available. However, in seeking water rights for quantities beyond the reservation, it would need to be demonstrated that additional water is available as is currently required by law.

- The specific amounts of water identified below are reserved for future allocations within Lewis and Cowlitz counties. The water would only be available for appropriation upon adoption of a water allocation plan by the county where the reservation applies. The allocation plan would be developed in consultation with the Planning Unit or its successor and adopted by the county through a public process.
    - Lewis County: 6.6 cfs (from mainstem Cowlitz).
    - Cowlitz County: 6.42 cfs (from mainstem Cowlitz).[lvii]

- The specific amounts of water identified below are reserved for cities within the Lower Cowlitz subbasin:
    - City of Winlock: 1.80 cfs (from mainstem Cowlitz).[lviii]
    - City of Toledo: 0.47 cfs reservation (from mainstem Cowlitz).
    - City of Vader: No reservation needed. Existing water rights expected to be adequate to meet 20-year demand estimate.
    - City of Castle Rock: 4.08 cfs reservation (from mainstem Cowlitz). Service area includes City of Castle Rock and communities of Toutle and Silver Lake.[lix]

- Mill Creek subwatershed

    - Reserve 0.055 cfs for permit-exempt wells and small systems[lx] based on 2% of the 90% exceedence flow during the summer low flow period (2.73cfs). It is estimated that this quantity will support a population growth of 384 people or 150 additional households. The projected 20-year growth is 150 people or 58 households[lxi.]

- Salmon Creek subwatershed

    - Reserve 0.037 cfs for permit-exempt wells and small systems[lxii] based on 2% of the 90% exceedence flow during the summer low flow period (1.86cfs). It is estimated that this

quantity will support a population growth of 262 people or 102 additional households. The estimated 20-year growth is 160 people or 62 households.

- Lacamas Creek subwatershed

  - Reserve 0.072 cfs for permit-exempt wells and small systems subwatershed based on 2% of the 90% exceedence flow during the summer low flow period (3.59 cfs). . It is estimated that this quantity will support a population growth of 505 people or 197 additional households. The estimated 20-year growth is 434 people or 169 households[lxiii].

- Olequa Creek subwatershed

  - Reserve 0.223 cfs for permit-exempt wells and small systems[lxiv] to fully satisfy the 20-year unincorporated residential growth estimate 1,571 people of 611 households[lxv].

  - City of Winlock:
    - Estimated 20-year demand is 2.14 cfs (60% build out).
    - Reserve 0.33 cfs from Olequa Creek for future demand.
    - Reduce 40% water system leakage (.27 cfs) to increase available water supply.
    - Evaluate the capacity of the Logan Hill aquifer to help meet future water needs.
    - Develop a regional water supply drawing from the Cowlitz River to assist in meeting future needs.

  - The total reservation for the Olequa subwatershed, including the City of Winlock, is 0.553 cfs or 6.3% of the 90% exceedence flow during the summer low flow period.

- Arkansas, Delameter, Monahan Creeks subwatershed (see figure 7)

  - Reserve 0.077 cfs for permit-exempt wells and small systems in the Arkansas subwatershed based on 2% of the 90% exceedence flow during the summer low flow period (3.83 cfs). It is estimated that this quantity will support a population growth of 539 people or 210 additional households. The estimated 20-year growth is 141 people or 55 households.[lxvi]

  - Reserve 0.050 cfs for permit-exempt wells and small systems in the Delameter/Monahan subwatershed based on 2% of the 90% exceedence flow during the summer low flow period (2.50 cfs). It is estimated that this quantity will support a population growth of 352 people or 137 additional households. The estimated 20-year growth is 282 people or 110 households[lxvii]

- Leckler Creek subwatershed

  - Reserve 0.040 cfs for permit-exempt wells and small systems[lxviii] to fully satisfy the 20-year residential growth estimate of 302 people or 114 households.
  - The reservation for the Leckler Creek subwatershed 4% of the 90% exceedence flow during the summer low flow period.

- Ostrander Creek:

- Reserve 0.060 cfs for permit-exempt wells and small systems[lxix] to fully satisfy the 20-year residential growth estimate of 461 people or 174 households.

- The reservation for the Ostrander Creek subwatershed 14.3% of the 90% exceedence flow during the summer low flow period.

- Owl Creek subwatershed

  - Reserve 0.050 cfs for permit-exempt wells and small systems[lxx] to fully satisfy the 20-year residential growth estimate of 380 people or 143 households.

  - The reservation for the Owl Creek subwatershed 7.8% of the 90% exceedence flow during the summer low flow period.

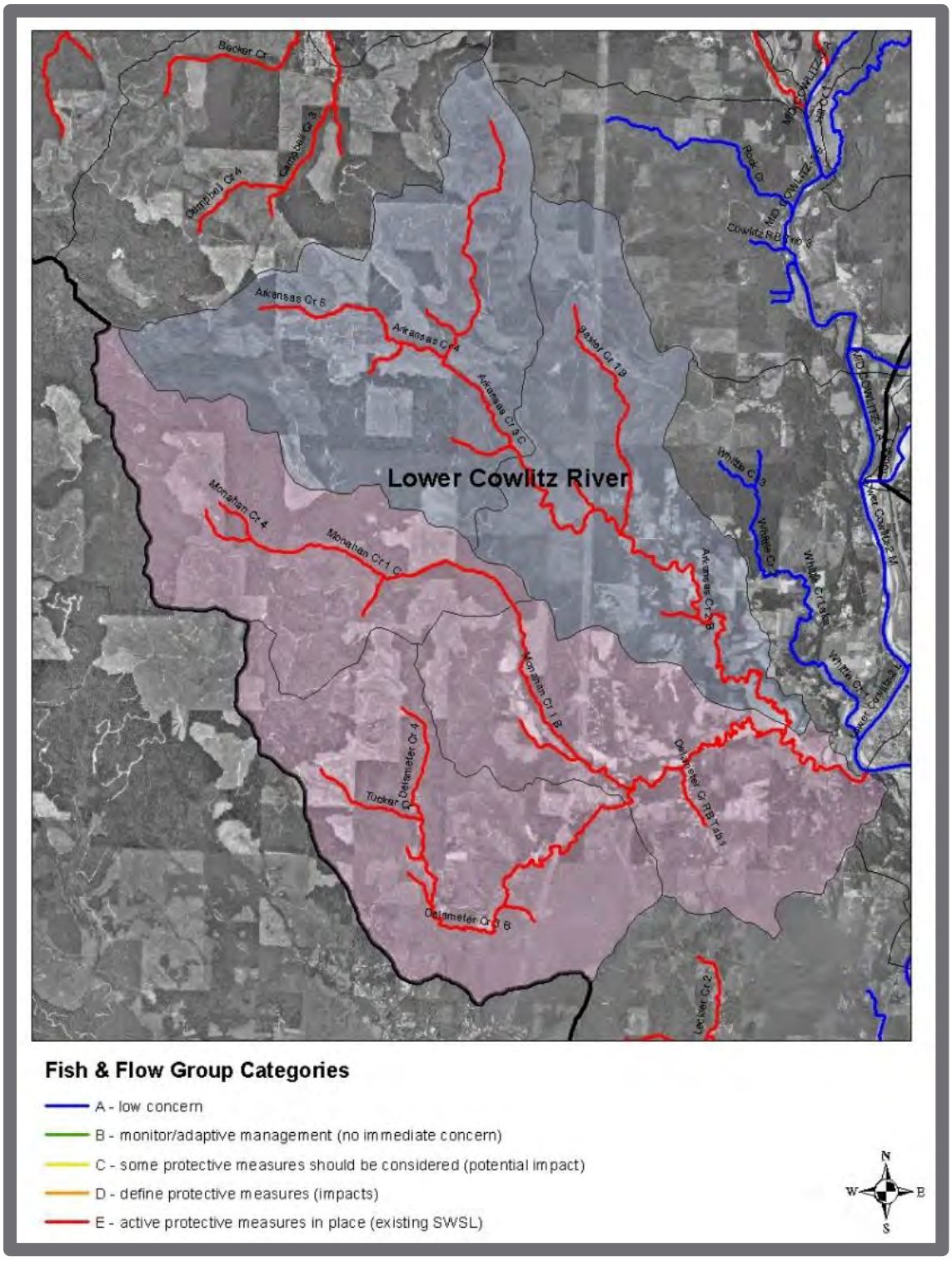


Figure 7. Map of the Arkansas Creek subwatershed and the Monahan/Delameter subwatershed.

Table 3 Instream Flows in the Lower Cowlitz Basin Tributary Streams (cubic feet per second)

Month	Stream and Management Control Point							
	Lacamas Creek, RM 0.3	Leckler Creek, RM 0.5	Mill Creek, RM 0.0	Olequa Creek, RM 6.5	Ostrander Creek, RM 0.6	Salmon Creek, RM 1.7	Arkansas Creek RM 2.7	Monahan/ Delameter Creeks RM 1.75
JAN	93	9	47	129	69	145	19	67
FEB	118	18	79	160	90	178	36	108
MAR	118	18	79	160	90	178	36	108
APR	118	18	79	160	90	178	36	108
MAY	118	18	79	160	90	178	36	96/55
JUN	79	12	53	107	60	118	24	41/25
JUL	79	12	53	107	60	118	24	17/12
AUG	33	3	20	48	23	55	8	12/13
SEP	140	3	20	193	104	217	8	15/30
OCT	140	9	47	193	104	217	19	67
NOV	140	9	47	193	104	217	19	67
DEM	93	9	47	129	69	145	19	67

In cells with 2 numbers, the first number applies to the first half of the month and the second number applies to the second half of the month.

ADDITIONAL NOTES

Once every 10 years or when 75 percent of a reservation has been used, the WRIA 25/26 Planning Unit or its successor, the Department of Ecology, and other interested parties will convene to:

- Review status of water reservations and streams flows;
- Consider new information regarding water needs, water availability, and stream flows
- Develop options for additional future water supply, if needed; and
- Amend the Watershed Plan if necessary.

Ecology may initiate a modification of the Water Management Rule based on the conclusions of such a review.

See the Watershed Management Measures Implementation section for a more thorough discussion of reopeners and plan/rule amendments.

[xxxiv] 'Lewis County WRIA 26 Subbasins Domestic Water Use In Unincorporated Areas Potential Streamflow Depletion based on Development Potential at Build-Out Approved by the Planning Unit June 9, 2011; Revised June 7, 2013 and the 'Lewis County Unincorporated Area Water Demand Estimate by Subwatershed/Streams Impacted', September 2011.

[xxxv] Population Estimates, Household, and Water use Projections for Lower Cowlitz, Lewis County, June 7, 2013.

[xxxvi] South Lewis County Water Analysis and Demand Forecast (February 2010).

[xxxvii] Cowlitz County WRIA 26 Subbasins Domestic Water Use In Unincorporated Areas from permit-exempt wells Potential Streamflow Depletion based on Population Growth Projections to 2030; October 13, 2011, revised June 2013.

[xxxviii] 'Water Demand for Commercial, Industrial, Tourist, and Recreation Uses in Unincorporated Cowlitz County Portions of the Lower Cowlitz, Toutle, and Coweeman Subbasins' provided by Cowlitz County December 29, 2011. Agriculture acreage was divided among subbasins using current proportions based on 2010 Land Use data from Ecology.

[xxxix]For Lewis County, based on 'WRIA 26 Lewis County Agriculture Lands and Water Analysis of Current Condition, Pending Water Rights, and Future Needs' approved by the WRIA 25/26 Planning Unit on August 11, 2011. Agriculture acreage was divided among subbasins using current Lewis County zoning.
For Cowlitz County, based on 'WRIA 26 Cowlitz County Agriculture Lands and Water Analysis of Current Condition, Pending Water Rights, and Future Needs' approved by the WRIA 25/26 Planning Unit on August 11, 2011. Agriculture acreage was divided among subbasins using current proportions based on 2010 Land Use data from Ecology.

[xl] City of Winlock, Washington, Buildable Land Inventory, Build out Analysis, and Future Water Needs, 2011.

[xli] City of Toledo, Water System Plan, November 2009.

[xlii] Informal communication with Shirley Cook, May 23, 2011. 2006 Watershed Plan indicates existing water rights sufficient to meet 20-year demand.

[xliii] South Lewis County Water Analysis and Demand Forecast (February 2010).
・For Lewis County, based on 'WRIA 26 Lewis County Agriculture Lands and Water Analysis of Current Condition, Pending Water Rights, and Future Needs' approved by the WRIA 25/26 Planning Unit on August 11, 2011. Agriculture acreage was divided among subbasins using current Lewis County zoning.
・For Cowlitz County, based on 'WRIA 26 Cowlitz County Agriculture Lands and Water Analysis of Current Condition, Pending Water Rights, and Future Needs' approved by the WRIA 25/26 Planning Unit on August 11, 2011. Agriculture acreage was divided among subbasins using current proportions based on 2010 Land Use data from Ecology.

[xliv] Population Estimates, Household, and Water use Projections for Lower Cowlitz, Lewis County, June 7, 2013.

[xlv] 236gpd consumptive use estimate for permit-exempt wells, *Estimate of Water Use for Exempt Wells in WRIAs 25 and* 26 memo adopted by the WRIA 25/26 Planning Unit on April 14, 2011, applied to the Lewis County Full Build-out Scenario and approved by the Planning Unit on March 10, 2011.

[xlvi] ・For Lewis County, 'WRIA 26 Lewis County Agriculture Lands and Water Analysis of Current Condition, Pending Water Rights, and Future Needs' approved by the WRIA 25/26 Planning Unit on August 11, 2011. Agriculture acreage was divided among subbasins using current Lewis County zoning.
・For Cowlitz County, based on 'WRIA 26 Cowlitz County Agriculture Lands and Water Analysis of Current Condition, Pending Water Rights, and Future Needs' approved by the WRIA 25/26 Planning Unit on August 11, 2011. Agriculture acreage was divided among subbasins using current proportions based on 2010 Land Use data from Ecology.

[xlvii] Data provided by the City of Castle Rock, May 2, 2013.

[xlviii] Water Demand for Commercial, Industrial, Tourist, and Recreation Uses in Unincorporated Cowlitz County Portions of the Lower Cowlitz, Toutle, and Coweeman Subbasins, December 29, 2011.

[xlix] Cowlitz County WRIA 26 Subbasins Domestic Water Use In Unincorporated Areas from permit-exempt wells Potential Streamflow Depletion based on Population Growth Projections to 2030, October 13, 2011, revised June 2013.

[l] WRIA 26 Cowlitz County Agriculture Lands And Water Analysis Of Current Condition, Pending Water Rights, And Future Needs memo approved by the Planning Unit, August 11, 2011.

[li] Values provided by Jim Pachecos, Department of Ecology, January 31, 2011 email to Scott McKinney and Brad Caldwell, Department of Ecology

[lii] Primary populations of fish are those that are targeted for restoration to a high or greater level of viability in the *WA Lower Columbia Salmon Recovery and Fish & Wildlife Subbasin Plan* (LCFRB 2010).

[liii] 'Tributary Prioritization Spreadsheet' developed by the Fish and Flow Workgroup, updated November 9, 2011.

[liv] Development potential by Lewis County's zoning GIS layer, adopted by Lewis County December 14, 2009 and amended December 27, 2010.

[lv] Lewis County GIS performed an analysis of potential build-out by LCFRB's subwatersheds (*Lewis County Unincorporated Area Water Demand Estimate by Subwatershed/Stream Impacted*, September 16, 2011). Development potential and subwatershed-level impacts in Cowlitz County were estimated by reviewing population projections to 2030 in each LCFRB subwatershed (*Cowlitz County WRIA 26 Select Subwatershed Domestic Water Use in Unincorporated Areas from Permit-exempt Wells Potential Streamflow Depletion based on Population Growth Projections to 2030*, reviewed by the Fish and Flow Workgroup on November 7, 2011).

[lvi] Ecology Memorandum, Mike Gallagher to Jennifer Holderman, Documentation of How the Map Determinations of Alluvial Aquifer Adjacent to the Cowlitz River Mainstem was Determine, June 29, 2013.

[lvii] Total:6.42 cfs based on:
- Castle Rock: 2.72 cfs – Castle Rock is a regional water system serving Castle Rock, Toutle, and Silver Lake.
- C/I/T/R: 1.78 cfs – This would provide for commercial/industrial/tourist uses in unincorporated Cowlitz County. 1.78 cfs is the midpoint of the estimated demand range
-Agriculture :1.92 cfs – This is the midpoint of the estimated demand range

[lviii] Reservation represents the estimated water needed to support 60% build out.

[lix] Ibid.

[lx] Small systems include water systems under fifteen connections (or the equivalent water use) providing water for human consumption. This may include domestic use as well as small commercial uses.

[lxi] Population Estimates, Household, and Water use Projections for Lower Cowlitz, Lewis County - June 7, 2013

[lxii] Small systems include water systems under fifteen connections (or the equivalent water use) providing water for human consumption. This may include domestic use as well as small commercial uses.

[lxiii] Ibid.

[lxiv] Small systems include water systems under fifteen connections (or the equivalent water use) providing water for human consumption. This may include domestic use as well as small commercial uses.

[lxv] Ibid.

[lxvi] Small systems include water systems under fifteen connections (or the equivalent water use) providing water for human consumption. This may include domestic use as well as small commercial uses.

[lxvii] Based on Caldwell/Beecher stream flow recommendations, April 30, 2013 and estimated consumptive use is 236 gpd/household. Estimated number of people/household is 2.57.

[lxviii] Small systems include water systems under fifteen connections (or the equivalent water use) providing water for human consumption. This may include domestic use as well as small commercial uses.

[lxix] Small systems include water systems under fifteen connections (or the equivalent water use) providing water for human consumption. This may include domestic use as well as small commercial uses.

[lxx] Small systems include water systems under fifteen connections (or the equivalent water use) providing water for human consumption. This may include domestic use as well as small commercial uses.

COWEEMAN

WATER DEMAND

Water demand in the Coweeman subbasin includes potential demand from agriculture and residential growth in unincorporated areas, as well as commercial, industrial, and office demand. The potential growth water demand in unincorporated area was based on an estimated population growth of 796 people or 305 new households through 2030 and estimated rate of consumptive water use of 236 gallons per day per residence[lxxi]. Water demand from agriculture was estimated using a range of potential growth rates[lxxii]. A range of potential commercial, industrial, tourist and recreation water demand was estimated based on an increase in acreage of those land uses[lxxiii].

Demand Category	Demand Estimate	Notes
Commercial/Industrial/Tourist Recreation Use in Unincorporated Areas	0.03cfs – 0.64cfs	Range based on low to high use estimates
Unincorporated Areas Domestic Use	0.11cfs	Based on projected population growth of 796 or 305 additional households by 2030
Agriculture	0.002cfs – 0.238cfs	Range based on ag growth rates of 0.5% to 2%

STREAM CONSIDERATIONS AND WATER AVAILABILITY

WDFW and Ecology use 1-2% of the 90% exceedence flow during the summer flow period as a general measure of acceptable habitat loss and water availability. Based on this guidance, the water available in the mainstem Coweeman River is between 0.3 and 0.6 cfs (measures at RM 7.0). [lxxiv].

The Coweeman subbasin supports populations of winter steelhead, fall Chinook, chum, and coho. The coho, winter steelhead, and fall Chinook populations in the Coweeman are Primary populations for salmon recovery[lxxv]. Based on review by WDFW biologists[lxxvi] and evaluation of development potential[lxxvii], the Fish and Flow Workgroup felt that many areas in this subbasin were of low concern of streamflow impacts from development, and categorized them as Category A – of low concern. The Goble Creek subwatershed and some reaches of the Coweeman River mainstem (Coweeman 3, 4, 10, 11, and 12) had higher levels of potential impact and were categorized as Category C – some protective measures should be considered (potential impact). The Fish and Flow Workgroup evaluated impacts on a subwatershed level.

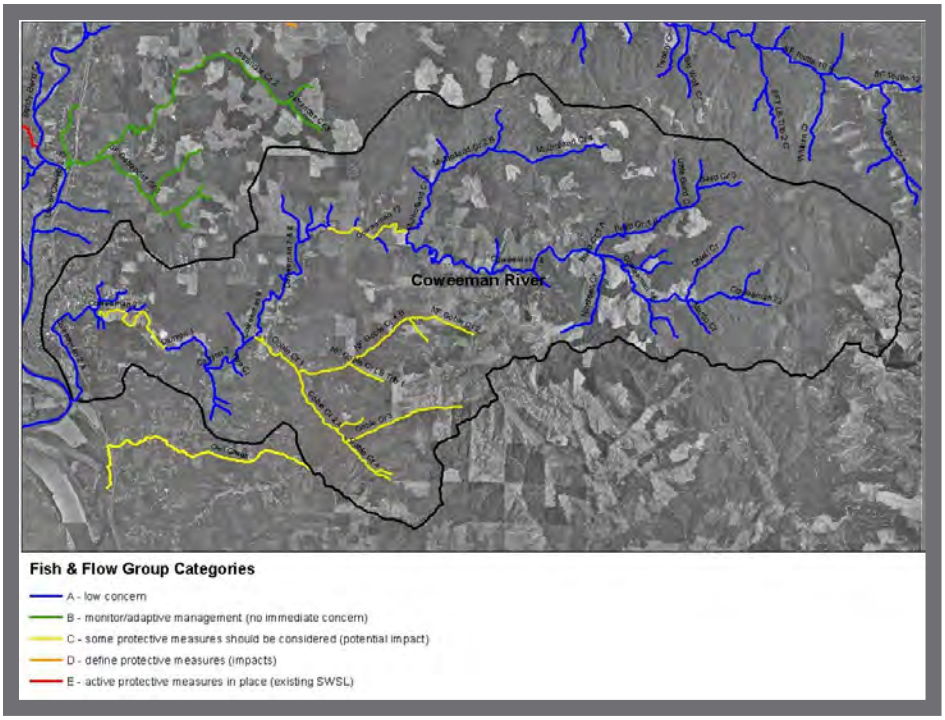


Figure 8. Map of Fish and Flow Group categories of concern for streams in the Coweeman subbasin (black boundary)

WATER MANAGEMENT RECOMMENDATIONS AND IMPLICATIONS

The following recommendations are based on the potential water demand compared to estimate of water availability:

- Closed to future appropriation of water beyond the reservations specified below.
- Existing water rights and permit exempt wells are not affected.
- Water available based on the 2% of the 90% exceedence flow is 0.6 cfs.
- Reserve 0.6 cfs for permit-exempt wells and small systems in the Coweeman subbasin based on 2% of the 90% exceedence flow during the summer low flow period (30 cfs). It is estimated that this quantity will support a population growth of 4,223 people or 1,643 additional households. The estimated 20-year growth is 774 people or 301 households.[lxxviii]
- When the reservation is depleted in areas with instream flows, new permit exempt wells would be allowed for in-house use only. "Domestic use" means use of water associated with human health and welfare needs, including water used for drinking, bathing, sanitary purposes, cooking, laundering, and other incidental household uses. The incidental uses must minimize the consumptive use of water. Examples of incidental household uses include, but are not limited to: Washing windows, car washing, cleaning exterior structures, care of household pets, and watering potted plants. Domestic use does not include other uses allowed under the groundwater permit exemption: Outdoor irrigation of up to one-half acre of noncommercial lawn or garden, stockwatering, and industrial use.

- Adopt the following stream flows[lxxix] from RM 3.6 to the headwater, including all tributaries, with the control point located in the vicinity of RM 5:
    - January 1 through January 31: 193 cfs
    - February 1 through May 31: 234 cfs
    - June 1 through June 30: 156 cfs
    - July 1 through July 31: 130 cfs
    - August 1 through September 15: 76 cfs
    - September 16 through September 30: 203 cfs
    - October 1 through December 31: 290 cfs

ADDITIONAL NOTES

Uncertainty exists in population growth projections and water demand and availability estimates.

Once every 10 years or when 75 percent of a reservation has been used, the WRIA 25/26 Planning Unit or its successor, the Department of Ecology, and other interested parties will convene to:

- Review status of water reservations and streams flows;
- Consider new information regarding water needs, water availability, and stream flows
- Develop options for additional future water supply, if needed; and
- Amend the Watershed Plan if necessary.

Ecology may initiate a modification of the Water Management Rule based on the conclusions of such a review.

See the Watershed Management Measures Implementation for a more thorough discussion of reopeners and plan/rule amendments.

[lxxi] Cowlitz County WRIA 26 Subbasins Domestic Water Use In Unincorporated Areas from permit-exempt wells Potential Streamflow Depletion based on Population Growth Projections to 2030, June 2013.

[lxxii] 'WRIA 26 Cowlitz County Agriculture Lands and Water Analysis of Current Condition, Pending Water Rights, and Future Needs' approved by the WRIA 25/26 Planning Unit, August 11, 2011. Agriculture acreage was divided among subbasins using current proportions based on 2010 Land Use data from Ecology.

[lxxiii] 'Water Demand for Commercial, Industrial, Tourist, and Recreation Uses in Unincorporated Cowlitz County Portions of the Lower Cowlitz, Toutle, and Coweeman Subbasins', Cowlitz County, December 29, 2011.

[lxxiv] Values provided by Jim Pachecos, Department of Ecology, January 31, 2011 email to Scott McKinney and Brad Caldwell, Department of Ecology.

[lxxv] Primary populations are those that are targeted for restoration to a high or greater level of viability in the *WA Lower Columbia Salmon Recovery and Fish & Wildlife Subbasin Plan* (LCFRB 2010).

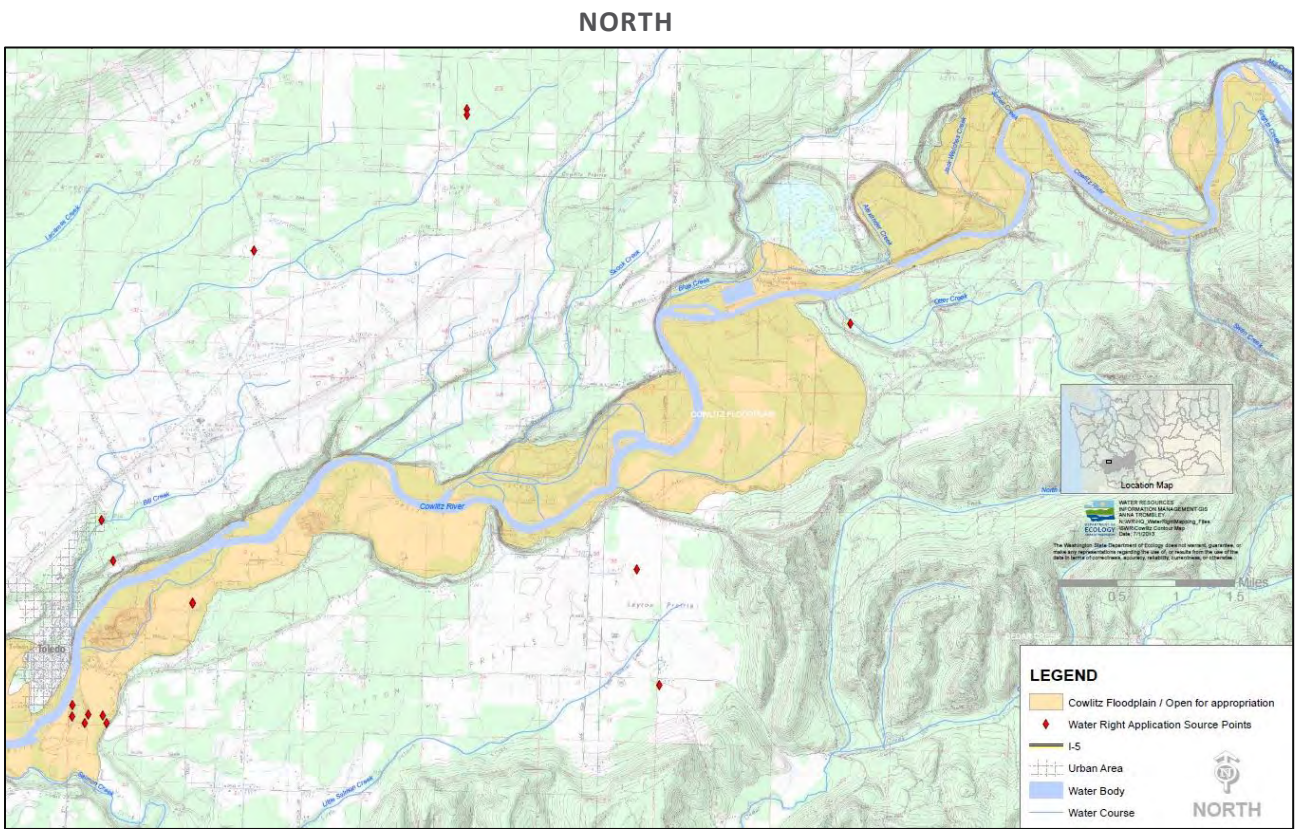
[lxxvi] 'Tributary Prioritization Spreadsheet' developed by the Fish and Flow Workgroup, updated November 9, 2011.

[lxxvii] Development potential and subwatershed-level impacts were estimated by reviewing population projections to 2030 in each LCFRB subwatershed ('Cowlitz County WRIA 26 Select Subwatershed Domestic Water Use in Unincorporated Areas from Permit-exempt Wells Potential Streamflow Depletion based on Population Growth Projections to 2030', reviewed by the Fish and Flow Workgroup, November 7, 2011).

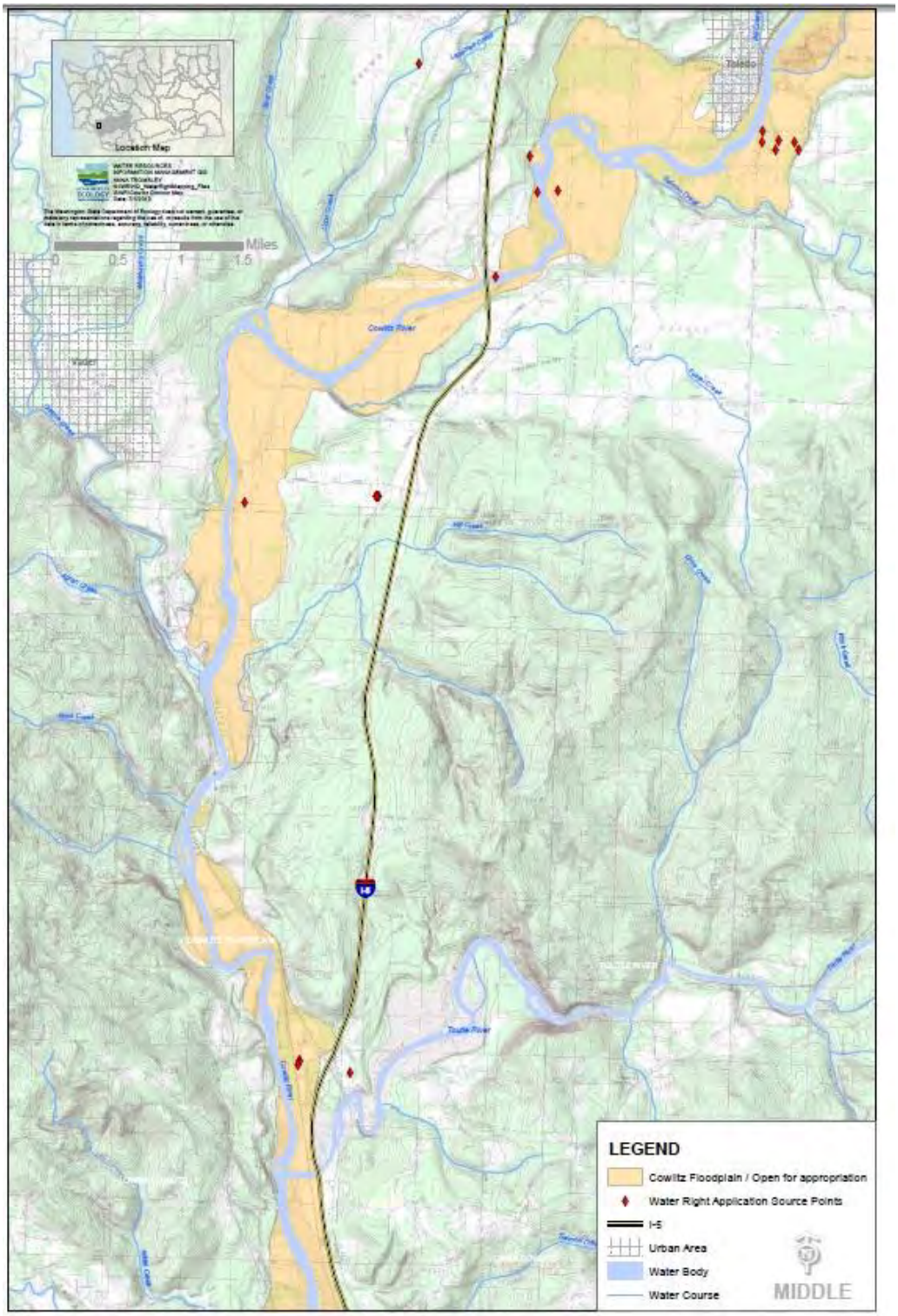
[lxxviii] Small systems include water systems under fifteen connections (or the equivalent water use) providing water for human consumption. This may include domestic use as well as small commercial uses.

[lxxix] 'Proposed Instream Flows for WRIAs 25 and 26', Table I-4, WRIA 25/26 Watershed Management Plan, July 2006.

LOWER COWLITZ MAINSTEM AREAS OPEN TO FUTURE WATER APPROPRIATIONS



MIDDLE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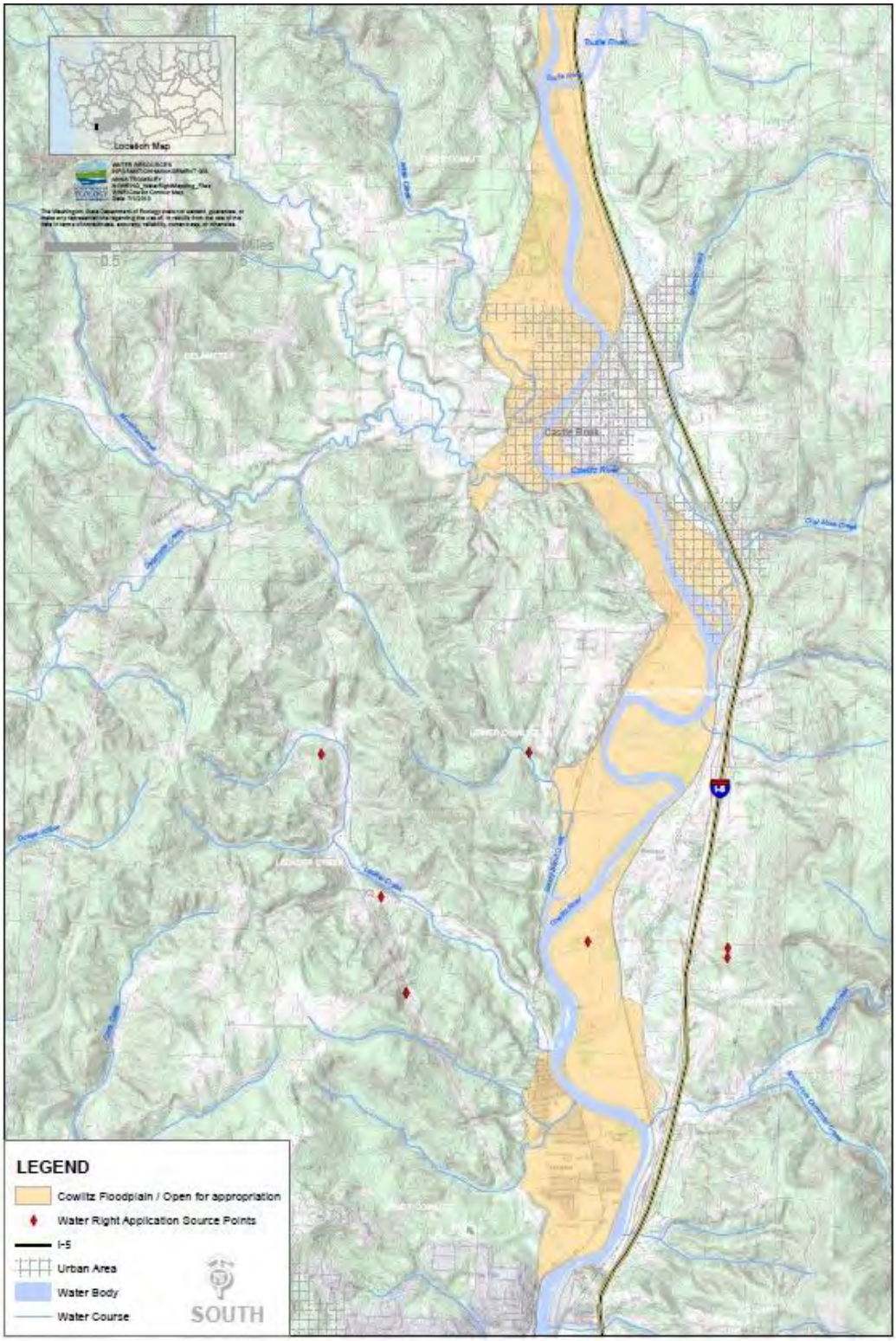
Water Course
MIDDLE

SOUTH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Cowlitz Floodplain / Open for appropriation
Water Right Application Source Points
I-5
Urban Area
Water Body
Water Course
SOUTH

REFERENCE DOCUMENTS FOR THE SUBBASIN SUMMARIES

2006 Watershed Plan recommends a reserve of 0.38 cfs for permit exempt wells. This reserve exceeds the estimated demand of 0.11 cfs based on population growth through 2030.

236gpd consumptive use estimate for permit-exempt wells, Estimate of Water Use for Exempt Wells in WRIAs 25 and 26 memo adopted by the WRIA 25/26 Planning Unit on April 14, 2011, applied to the Lewis County Full Build-out Scenario and approved by the Plan.

City of Toledo, Water System Plan, November 2009.

City of Winlock, Washington, Buildable Land Inventory, Buildout Analysis, and Future Water Needs, 2011.

Cowlitz County WRIA 26 Select Subwatersheds Domestic Water Use in Unincorporated Areas from permit-exempt wells Potential Streamflow Depletion based on Population Growth Projections to 2030, May 2012.

Cowlitz County WRIA 26 Subbasins Domestic Water Use in Unincorporated Areas from permit-exempt wells.

Data provided by the City of Castle Rock, May 2, 2013.

Development potential and subwatershed-level impacts were estimated by reviewing population projections to 2030 in each LCFRB subwatershed ('Cowlitz County WRIA 26 Select Subwatershed Domestic Water Use in Unincorporated Areas from Permit-exempt Wells Pot.

Development potential by Lewis County's zoning GIS layer, adopted by Lewis County December 14, 2009 and amended December 27, 2010.

Informal communication with Shirley Cook, Planning Unit member, May 23, 2011. 2006 Watershed Plan indicates existing water rights sufficient to meet 20-year demand.

Lewis County GIS performed an analysis of potential build-out by LCFRB's subwatersheds (Lewis County Unincorporated Area Water Demand Estimate by Subwatershed/Stream Impacted, September 16, 2011). Development potential and subwatershed-level impacts in Cowlitz County were estimated by reviewing population projections to 2030 in each LCFRB subwatershed (Cowlitz County WRIA 26 Select Subwatershed Domestic Water Use in Unincorporated Areas from Permit-exempt Wells Potential Streamflow Depletion based on Population Growth Projections to 2030, reviewed by the Fish and Flow Workgroup on November 7, 2011).

'Lewis County WRIA 26 Subbasins Domestic Water Use In Unincorporated Areas Potential Streamflow Depletion based on Development Potential at Build-Out Approved by the Planning Unit June 9, 2011; Revised June 7, 2013.

'Lewis County Unincorporated Area Water Demand Estimate by Subwatershed/Streams Impacted', September 2011.

Lower Cowlitz North Half and South Half Floodplain/Open Area Maps, Department of Ecology, June 2013.

Population Estimates, Household, and Water use Projections for Lower Cowlitz, Lewis County, June 7, 2013.

Primary populations are those that are targeted for restoration to a high or greater level of viability in the WA Lower Columbia Salmon Recovery and Fish & Wildlife Subbasin Plan (LCFRB 2010).

Small systems include water systems under fifteen connections (or the equivalent water use) providing water for human consumption. This may include domestic use as well as small commercial uses.

South Lewis County Water Analysis and Demand Forecast (February 2010).

Values provided by Jim Pachecos, Department of Ecology, January 31, 2011 email to Scott McKinney and Brad Caldwell, Department of Ecology.

Potential Streamflow Depletion based on Population Growth Projections to 2030; October 13, 2011, revised June 2013.

'Proposed Instream Flows for WRIAs 25 and 26', Table I-4, WRIA 25/26 Watershed Management Plan, July 2006.

'Tributary Prioritization Spreadsheet' developed by the Fish and Flow Workgroup, last update November 9, 2011.

'Water Demand for Commercial, Industrial, Tourist, and Recreation Uses in Unincorporated Cowlitz County Portions of the Lower Cowlitz, Toutle, and Coweeman Subbasins' provided by Cowlitz County December 29, 2011.

WRIA 26 Cowlitz County Agriculture Lands And Water Analysis Of Current Condition, Pending Water Rights, And Future Needs memo approved by the Planning Unit, August 11, 2011.

'WRIA 26 Lewis County Agriculture Lands and Water Analysis of Current Condition, Pending Water Rights, and Future Needs' approved by the WRIA 25/26 Planning Unit on August 11, 2011. Agriculture acreage was divided among subbasins using current Lewis County.