3.1 WATER QUANTITY RECOMMENDATIONS

A central purpose of watershed planning under Chapter 90.82 RCW is to provide for sufficient water quantity to serve human and instream needs while addressing water quality, instream flow, and habitat issues. Watershed management plans should incorporate, facilitate and support programs and actions to address water quantity issues.

3.1.1 Future Water Supply Strategies for People and Fish

Strategies for future water supply are described below. Each strategy is cross-referenced to the sections of Chapter 3 that contain the principal recommendations that would implement it.

- ***Emphasize Water Conservation:*** Emphasize implementation of all cost-effective water conservation measures, including public outreach and education as well as "building in" conservation for the long term through building and land use requirements. *(Sections 3.1.2(B), 3.1.7, and 3.6.)*
- ***Protect Instream Flows:*** Retain flows in all WRIA 18 streams and rivers to protect instream values to the extent possible. Establish instream flows to protect surface waters not already appropriated and close certain WRIA 18 streams and rivers (at least during low-flow seasons – see Section 3.3.2) to new appropriations. Minimize out-of-basin exports of water from WRIA 18 streams (however, the policy of "regionalizing" the use of existing Elwha River water rights in West WRIA 18 to meet new water demand would export water from the Elwha eastward as far as the Morse Creek watershed). *(Recommendation 3.1.3(A) and Section 3.3.2)*
- ***Continue Irrigation Water Management:*** Continue the implementation of Dungeness water management, water conservation, and water transfers under the Trust Water Agreement. Continue to implement water leases and land fallowing during low flow periods to reduce irrigation water demand and to protect Dungeness River flows. Complete and implement the CIDMP to guide irrigation water management. *(Section 3.1.8)*
- ***Emphasize Public Water Supply:*** Encourage new water demand to be served by the existing Group A public water systems wherever feasible. *(Sections 3.1.2(C) and 3.1.5)*
- ***Limit Exempt Wells where Public Water Service Can Be Feasibly Provided:***[1] Require new development to be served by public water systems rather than exempt wells wherever public water service is available in a reasonable timeframe and is cost-effective, in order to reduce the proliferation of new exempt wells in each sub-basin. *(Section 3.1.4(C) and Recommendation 3.1.5(C))*
- ***Regionalize West WRIA 18 Water Supply:*** Regionalize new public water service in West WRIA 18 to meet new demand largely from existing Elwha River and other Group A water rights. Encourage the use of existing interties between

[1] "Exempt wells" are exempt from the requirement to apply for a water right. However, they are not exempt from other requirements. An exempt well may be used for stockwatering, or to water a lawn or noncommercial garden up to ½ acre, or for single or group domestic use or industrial use not exceeding 5000 gallons per day (RCW 90.44.050).

the larger Group A public water systems (e.g., City of Port Angeles and Clallam PUD No. 1), and new interties to smaller systems to distribute Elwha River water to meet new demand in West WRIA 18 to the extent feasible and cost-effective. *(Section 3.1.5(D))*

- ***Investigate Groundwater Supply for New East WRIA 18 Water Supply:*** Focus upon ground water and water gained through savings or management (i.e. storage) as the resources with the most potential for residential and municipal development in East WRIA 18. In this area, direct all new wells, exempt or non-exempt, to the middle and deeper aquifers wherever these sources occur and provide a minimum 100' wellhead protection zone around all wells. Develop a legal mechanism to allocate an agreed-upon amount of saved water to development, while protecting instream flows and existing water rights. Emphasize water service to new development from the existing larger systems (City of Sequim, Clallam PUD) wherever feasible, with the goal of integrated water delivery systems, rather than a series of separate and local water delivery systems. Explore feasibility of utilizing deep aquifer sources to meet new water demand growth, if such development can demonstrate no impairment to limited surface waters. *(Section 3.1.4)*
- ***Availability of Water for Future Appropriation:*** As a mandatory element of watershed planning, Planning Units must indicate the availability of water for future appropriation.[2] The WRIA 18 future water supply strategy relies on the use of existing municipal water rights (Elwha River) in West WRIA 18, and on existing water systems, water management strategies, deep groundwater and a potential groundwater reserve for East WRIA 18 subbasins. A limited groundwater reserve, if established for the Dungeness planning area, would utilize water savings from efficiency and conservation, subject to existing law and the development of an intergovernmental agreement. *(Sections 3.1.4(D), 3.1.5(D), and 3.3.2)*
- ***Take Advantage of Water Reclamation and Reuse:*** Take advantage of all practical water reclamation and reuse opportunities (the most significant untapped opportunities are located in West WRIA 18). *(Section 3.1.10)*
- ***Study New Storage:*** Study new storage opportunities, including aquifer storage and recovery and new off-channel surface storage. Design or retrofit new land development to facilitate groundwater recharge and runoff to wetlands, small streams and groundwater. *(Section 3.1.9)*

3.1.2 Water Rights and Water Use Data

Issue: Complete data do not exist to document water use in Clallam County, either in rural areas or in many areas served by Group A Public Water Systems. Inconsistent results have been obtained from searches of the WRATS water rights database.

[2] Water may be appropriated by application to the Department of Ecology for a new water right.

Existing Conditions and Current Actions

The Department of Ecology Water Rights Application Tracking System (WRATS) was used to develop the WRIA 18 water rights analysis. Results from several different polls of the database in 2000 and 2002 produced results that varied considerably as to the amounts and geographic locations of existing water rights. Water rights data must be used with caution.

Chapters 249-290 and 246-291 WAC spell out Group A and Group B water system planning and reporting requirements for public water systems. Group A community water systems report water use data to the Washington State Department of Health whenever a Water System Plan is submitted for review and approval by the Department, a frequency of once every six years or less. Other Group A (noncommunity) and Group B systems generally retain water use data in their files available for inspection by the Department of Health. Clallam County has 73 Group A public water systems that are required to prepare either Water System Plans or Small Water System Management Programs. Most systems have met these requirements.

An existing and expanding stream gaging network is in place in WRIA 18. Ecology and the County maintain several real-time monitoring gages, which are web-accessible. Streamkeepers collect and maintain data on selected streams, Clallam County maintains a monitoring network, and Ecology conducts quarterly well monitoring. A wide variety of data on water use have been gathered and some have been geographically integrated through the Clallam County GIS in preparing this watershed plan.

Ecology entered rulemaking to comply with the State's 1993 water metering law as a result of a 1999 lawsuit. Under RCW 90.03.360, all new water rights and existing water rights greater than 1 cfs or drawing from sources supporting critical or depressed fish stocks must measure water use. Washington requires metering of all new water rights, and under the new rule (Chapter 173-173 WAC), Ecology has issued orders to water users totaling 80% of water use in 16 "fish critical" basins (including the Elwha-Dungeness). Metering requirements have not been applied to exempt wells, although RCW 90.44.050 allows metering to be required. Ecology's Stream Hydrology Unit has placed telemetered gages on Jimmycomelately, McDonald, Siebert, upper and lower Morse, and Ennis creeks, the Dungeness and Little rivers, and five WUA ditches. The USGS has telemetered gages on the Dungeness and Elwha rivers. Three staff gages have been placed by SHU on Indian Creek, and an additional three staff gages are available to be installed in WRIA 18 streams.

Desired Conditions and Outcomes

- A user-friendly water use database that is maintained in GIS, easy to update, and comprehensive.
- Accurate and accessible data on actual groundwater use in WRIA 18 via improved measurements and sampling activities.

Recommendations

A. Clearinghouse: The State and County should work together to build on existing information systems and develop an information clearing house for easy access to monitoring information. All Group A and B water system purveyors should

forward water source and water use information to a single designated clearinghouse. The Department of Ecology is the preferred depository for water data. Access to this database should be provided to both Clallam County and the Department of Health.

B. Water Use Measurement:

1. The clearinghouse should gather data from existing measurements of surface diversions, nonexempt wells, and exempt wells serving Group A and B water systems that are potentially in hydraulic continuity with WRIA 18 streams. Include commercial, industrial, and agricultural water use measurements (see 3.1.3 (B)). This should be coordinated with data gathering and monitoring proposed under Section 3.1.4 (D).
2. For the purpose of estimating average single residential use from an individual well, the County should seek funding to design and implement a multi-year voluntary water use measurement pilot study on a sample of willing participants using new and existing individual wells in the Dungeness River and a West WRIA 18 watershed.
3. Require all Group A and B systems to install service meters and source meters. (The purpose of water use measurement is for watershed management, not for charging individual well owners for the use of their water.)

C, Public Water Systems:

1. Require Group A and Group B systems to report the quantities of current water right certificates and permits, their service areas, their capacity to serve existing connections within these water rights, and their ability to serve new growth under their water rights.
2. All Group A public water systems in Clallam County should take steps to meet the requirements of WAC 246-290-100 for Water System Plans and Small Water System Management Programs, as determined by the Department of Health.
3. The County will work to maintain updated GIS information as to which parcels are served by Group A or Group B public water systems.

D. Water Rights Data: The Department of Ecology should work with Clallam County to resolve existing inconsistencies in the data regarding WRIA 18 water rights (see Section 2.3.1).

3.1.3 Surface Water Supply Sources

Issue: The watershed plan is required to address the availability of WRIA 18 surface water for future appropriation. Issues include the extent to which WRIA 18 should rely on surface water to meet new demand for out-of-stream water use, and the extent to which existing surface water rights, particularly on the Elwha River, should be used to meet new water demand.

Existing Conditions and Current Actions

Small Streams: Most small streams may be fully allocated if not over allocated. Many depend on groundwater for base flow during late summer and fall. Some historically ephemeral eastside streams have become perennial due to groundwater recharge from irrigation over the past century. Direct surface connections to the irrigation system and irrigation recharge have increased stream flows in the low-elevation independent drainages and some lower Dungeness River tributaries, and have lengthened such streams as Bell, Gierin, Cassalery, Cooper, Hurd and Matriotti creeks. Water conservation improvements are expected to lower the shallow aquifer water table, and reduce stream length.

Dungeness River: Flow variability is high in the Dungeness due to its short, steep configuration, rain-shadow location, and significant withdrawals of water. Low flows in late summer and fall are severely limiting; they impede adult salmon migration and decrease useable habitat in more than 10 miles of the lower river. Access to productive side channel habitat is impaired or lost at low flows. A "gap" has been identified in the Dungeness River between water needs for instream values and out of stream use. The "gap" has been narrowed by actions implemented following the completion of the DQ Plan (1994) but has not been eliminated (see discussion of irrigation water management recommendations in Section 3.1.8). In addition, human impacts, especially diking and the removal of large woody debris, have seriously degraded or eliminated salmonid habitat. Dungeness Chinook and pink runs have declined to critical levels. The river's Chinook, summer chum and bull trout stocks are listed as "threatened." The lower river is 303(d)-listed for instream flows.

Elwha River*:* Two major hydroelectric developments have altered the historic condition of the Elwha River. Channel conditions in the Lower Elwha have been dramatically affected by the construction of the two dams. Each dam created an upstream reservoir that together inundate approximately 6 miles of free-flowing riverine habitat. Dam removal and restoration is guided by a federally-managed planning process. The Elwha River has a steep slope, steepest at the headwaters (16% average gradient) and generally decreasing in the downstream direction. The river flows through several steep, narrow, bedrock canyons. From the Lake Mills reservoir downstream, past the park boundary and on to the river's mouth, the channel has been heavily impacted. The City of Port Angeles holds a large (150 cfs) water right on the Elwha River with an industrial purpose, amended to allocate up to 50 cfs for the WDFW fish hatchery. The City also holds a 50 cfs groundwater right that has a municipal drinking water purpose. The groundwater right is taken in hydraulic continuity with the river.

City of Sequim: The DQ Plan contains detailed recommendations regarding the City of Sequim use of Dungeness River water and sets forth recommended actions for the City. The City responded by developing and permitting additional wells and now relies primarily on groundwater. The City's order of priority for its water sources is (1) Port Williams wellfield; (2) Silberhorn wellfield; (3) Dungeness River Ranney collector. The City continues to operate the Dungeness River Ranney collector to maintain the system (about 200 gpm or 0.5 cfs, at times when the reservoir is not full). The City cannot change its Dungeness River water right to a groundwater source (as was recommended in the DQ Plan) without applying for a new water right. The City views the Dungeness River

source as critical for emergency supply (gravity flow could supply water from this source if all power were interrupted).

Desired Conditions and Outcomes

- A safe, sufficient, and reliable long-term public water supply consistent with habitat and other goals in this plan.
- Instream flows established by rule that are adequate to satisfy the important environmental values identified by the WRIA 18 Planning Units.

Recommendations

A. Basin of Origin: Throughout WRIA 18, surface water should not be transferred from its basin of origin beyond those transfers already authorized by the place of use specified in existing water rights (see Recommendation 3.9 (B) regarding Elwha River delivery). Respecting this general principle and recognizing that existing infrastructure and purveyor service area boundaries do cross subbasin boundaries, future water supply strategies should be developed and assessed in terms of service areas and infrastructure in place, existing water rights, impacts to salmon habitat and good economic and engineering practice for developing a water-efficient and cost-effective future water supply.

B. City of Sequim:

1. Pumping from the Dungeness River Ranney system during low flow periods should be reduced to the minimum flow needed to maintain that source as an emergency backup, in accordance with the City's water right and Department of Health regulations and permits.
2. The City should continue to incorporate findings from East WRIA 18 water resources studies into long-term planning strategies for water resources, based on best available science.[3]

3.1.4 Groundwater Supply Sources

Issue: Groundwater from deeper aquifers may be the source on which East WRIA 18 will rely for future water supply in order to conserve surface water for instream values and protect public health. It also has some potential to provide storage that could mitigate peak water demand impacts for West WRIA 18 public water systems. It is the principal source of water for single and small group domestic systems that are remote from Group A public water systems (using exempt wells). Key issues include (1) hydraulic continuity between surface and ground waters; (2) the protection of surface water in WRIA 18 without closing off access to groundwater supply; (3) whether sufficient groundwater exists to provide a reliable supply to meet future demand growth in East WRIA 18; and (4) the proliferation of exempt wells.

[3] Modified from DQ recommendation C.12.1.3

Existing Conditions and Current Actions

New groundwater rights in hydraulic continuity with surface water may generally not be issued by Ecology when streams are closed, when senior surface or groundwater rights would be impaired, or when an instream flow rule is in effect and minimum flows are not being met. The Clallam County Critical Areas Ordinance (Part Six) protects critical aquifer recharge areas.

Dungeness Planning Area/East WRIA 18: Groundwater is becoming well characterized in East WRIA 18, with past work by the USGS and a groundwater model recently developed with funding by the Department of Ecology (Ecology 2002). Recent studies have been completed by the USGS and BOR (Thomas et al. 1999, Simonds and Sinclair 2002, Bountry et al. 2002). USGS studies (Thomas et al. 1999) show that East WRIA 18 surface water, the shallow aquifer, and deeper aquifers are hydrologically connected. This could seriously constrain the ability to use groundwater supply to meet new water demand growth. Because hydraulic continuity diminishes in volume with depth, withdrawals from deeper aquifers may have substantially less impact on surface water (Thomas et al. 1999).

The City of Sequim responded to the 1994 DQ Plan recommendations by assessing the ability of deep wells at the Port Williams Wellfield to meet current and future needs. Based on the study, the City reduced the use of its Ranney System to a minimum and substantially reduced use of the Silberhorn Wellfield. A second study compiled all information from well logs, creek flows, precipitation, irrigation, and water quality sampling. The City completed its Water System Comprehensive Plan in November 2000, incorporating findings of this and other studies. The City has wellhead and watershed protection programs for City's aquifer recharge areas. The City worked with Ecology and DOH to assess requirements for filtration. It was determined that the Ranney system is a groundwater source not under the influence of surface water. The City is not required to provide filtration from this source.

Elwha-Morse Planning Area/West WRIA 18: Groundwater supply is not well characterized in West WRIA 18; however the Department of Health believes that wells in West WRIA 18 will not likely yield sufficient production for significant public water supply (pers. comm. John Ryding, DOH Regional Engineer). Studies underway to assess the potential for aquifer storage and recovery in West WRIA 18 suggest that aquifers are highly variable in their extent depth, are not large, and are generally not contiguous (Pacific Groundwater Group, unpublished data). No large pumping wells were identified, but many smaller wells exist. Preliminary conclusions suggest that groundwater discharge from unsaturated areas is relatively rapid. The Clallam syncline (an east-west trough cutting across West WRIA 18) and areas on plains between the incised stream drainages hold some potential for groundwater.

Exempt Wells[4]: RCW 19.27.097 provides that a County or City may impose conditions on building permits requiring connection to an existing public water system where the existing system is willing and able to provide safe and reliable potable water to the applicant with

[4] "Exempt wells" are exempt from the requirement to apply for a water right. However, they are not exempt from regulation in the same manner as all other appropriations of water. An exempt well may be used for stockwatering, or to water a lawn or noncommercial garden up to ½ acre, or for single or group domestic use or industrial use not exceeding 5000 gallons per day.

reasonable economy and efficiency. Currently, the County follows an agreement with the City of Sequim (the "SERP"). RCW 18.104.040 gives the departments of Health and Ecology joint authority to limit well construction in areas requiring intensive control of withdrawals. More than 5000 wells have been included in East WRIA 18 as part of groundwater modeling there.

Consolidation of Exempt Wells: RCW 90.44.105 allows consolidation of exempt wells with existing water systems.

Desired Conditions and Outcomes

- A safe, sufficient, and reliable long-term public water supply.
- Protection of surface stream flows in hydraulic continuity with groundwater withdrawals where streams are closed or minimum instream flows are in effect.
- Protection of groundwater quality in the development of new water supplies.
- Sustainable long-term use of groundwater.
- Resumption of water right processing which allows for orderly development meeting new water demand without impairment to surface water flows, groundwater and existing users.

Recommendations

A. Groundwater Withdrawals:

1. Allow groundwater withdrawals from deeper aquifers in continuity with surface water if impacts on stream flow are mitigated. Mitigation should address impacts to flows, water quality and temperature. For example, flow mitigation might be accomplished by returning an amount of water to the potentially affected stream reach equivalent to the calculated impact. This will be refined in intergovernmental agreements, as recommended below, in C-3 (a) and (b).
2. For all well construction activity in WRIA 18, follow and enforce the State Minimum Standards for Construction and Maintenance of Wells and the Water Well Construction Act or relevant Federal standards.[5]
3. Encourage all new water supply wells, including exempt wells, to be drilled to the second aquifer or lower in the Dungeness Planning Area/East WRIA 18. Also see 3.1.4(D) for further information on groundwater withdrawals in the Dungeness area.
4. For purposes of assessing aquifer and streamflow impacts, recharge capabilities of onsite septic systems should incorporate a realistic recharge quantity, such as 70-75% of in-house use, as well as recharge quality.
5. For all new well construction activity, make it clear that the date of priority (i.e., seniority) of a water right is the date the water is put to beneficial use, not the date the well was drilled.

[5] DQ recommendation C.11.4

B. Seawater Intrusion:

1. Seawater intrusion of water supply wells is known to have occurred in the past near the shoreline of WRIA 18. Given increasing development pressure throughout WRIA 18 and reduced irrigation recharge in East WRIA 18, the County and Cities should consider adopting a seawater intrusion policy, since areas of risk for seawater intrusion occur all along the WRIA 18 coastline. Review other seawater intrusion policies for potential ideas (Island, Jefferson, San Juan counties).

2. Develop subregional water management plans for areas where potential seawater intrusion has been documented.[6]

3. The County should consider requiring chloride tests as part of potable water requirements for building permits in some cases, such as within 1000 ft. of the shoreline or a documented exceedance of the drinking water standard for chloride (250 mg/L).

C. Exempt Well Regulation:

1. The County should undertake an outreach program to educate well drillers and landowners of the need to receive approval as recommended in this section before drilling new exempt wells. *(See Recommendations, Section 3.6.3)*

2. New exempt wells should be drilled only where public water service is unavailable. Unavailable means not within a reasonable timeframe, is not cost-effective, or is not feasible. If new development lies within a reasonable distance from the boundaries of the service area of a public water system, that public water system should have been contacted and requested to provide service prior to land use approval. *Note that this recommendation shall not be implemented by the County prior to definition of terms and proper codification including public review prior to adoption.*

3. Clallam County should approve building permits served by exempt wells only if public water service is unavailable according to other recommendations in this section.

   a) The County should allow exempt wells to serve new development in East WRIA 18 according to the intergovernmental agreement to be developed (see Recommendation 3.1.4 (D) below). *(See Section 3.6.3 with regard to the interaction between wellhead and septic zones of control and with regard to County oversight on well siting.)*

   b) In West WRIA 18, where stream closures have been recommended or established by rule (or indicated by the SWSL[7]), exempt wells may still be

[6] DQ recommendation C.11.9

[7] Surface Water Source Limitation (SWSL): In many small streams across the state, restrictions to protect fish already exist on some water right permits. Under RCW 77.50.050 the Department of Fish and Wildlife (WDFW) reviews water right applications and advises Ecology as to whether sufficient stream flow would remain to support fish populations if the water right were granted (WDFW's advisories are called SWSL files). For example, WDFW might advise issuing a water right with a **"low flow proviso,"** requiring diversion to cease when stream flow drops to the level specified by WDFW on the water right. When WDFW judges that diverting any additional water would leave insufficient water to support fish, this

developed according to exceptions developed in an intergovernmental agreement between the State and the County, at minimum. This agreement will be developed by summer 2004.

4. As part of the building permit review process, the County should advocate and require water conservation using best available designs, technologies, and current practices.

5. Where new development is proposed and public water service is unavailable as described in Recommendation C-2 above, formation of a water system is encouraged, and Ecology should consider issuing a water right for those systems. *Note that in areas where water rights will be administered through a groundwater reserve, that reserve must be established by rule prior to implementation of this recommendation.*

6. Those users currently connected to public water service should not be allowed to disconnect in order to use a new exempt well or to shift water use to an existing exempt well. Such users also should not be allowed to drill a new exempt well to augment water supply. Use of existing exempt wells within water system service areas should be discouraged, especially during late summer.

7. Consolidation of exempt wells (individual and group) to public water rights and service from existing Group A systems is strongly encouraged (with coordination between the County and water systems as recommended in section 3.1.5). Incentives for consolidation should be developed. The plumbing for unused wells should be removed and these wells properly decommissioned or dedicated to scientific purposes. *Note that implementation of this recommendation should be given high priority.*

8. WRIA 18 recommends to the Legislature that the RCW 90.44.050 exemption for individual residences (and associated outdoor water use) should be reduced to a more realistic withdrawal volume. This would not apply to wells serving Group B systems.

D. Intergovernmental Agreement for Dungeness Planning Area Groundwater Withdrawals: (the following version was accepted by the subcommittee on February 3, 2004)

Note: The Lower Elwha Klallam Tribe decided to abstain from voting on this recommendation, as mentioned in their cover letter to this plan.

Surface water flows in the Dungeness planning area of WRIA 18 and 17 are seasonally limited, with late season flows generally providing much less water than that needed to support both offstream uses and healthy fish stocks and ecosystems. Technical studies and the results of groundwater modeling for east WRIA 18 indicate a significant connection between the Dungeness River and area aquifers. This situation has contributed to a delay in decision making on water right applications. The current pattern of water development and

agency might advise that all water right applications be denied for the entire stream. This has led Ecology to **close** some streams to further consideration of water right applications.

unmanaged withdrawals, including use of wells exempt from water right permits, poses risks to water quality and stream flows.

Clallam County, the Department of Ecology, and the Jamestown S'Klallam Tribe will work over the next six months to create an intergovernmental agreement identifying a groundwater reserve or other water management vehicle consistent with existing law that will facilitate land use planning, managed growth and protection of instream flows in the Dungeness watershed. The following shared goals of the governments will be addressed in the intergovernmental agreement:

- Protect, restore, and increase flows in the Dungeness River necessary for fish and wildlife populations and habitat, particularly during critical periods of the year;
- Provide certainty in meeting the future water needs of people, while protecting existing rights and without reducing or otherwise adversely altering existing flows that are necessary for fish and wildlife;
- Identify and fully mitigate future water use impacts to surface waters where recommended instream flows for fish are not met, during fish-critical times; and
- Implement conservation practices and innovative water management strategies across the watershed, such as surface water storage, aquifer storage and recovery, improved management or curtailment of late season use by existing and new water users, public outreach and education, and other measures listed in the Plan.

For the purposes of this section of the Plan, mitigation is defined as the following: Modifications of actions that (1) avoid impacts by not taking a certain action or parts of an action; (2) minimize impacts by limiting the degree or magnitude of the action and its implementation; (3) rectify impacts by repairing, rehabilitating, or restoring the affected environment; (4) reduce or eliminate impacts over time by preservation and maintenance operations during the life of the action; or (5) compensate for impacts by replacing or providing substitute resources or environments.[8]

Potential Conservation, Regulatory and Management Tools

The means of achieving the above goals will be through implementation of various tools including conservation, innovation, regulation, and measurement. For example, water for new development will be obtained from existing water rights, conservation and efficiency, water resource management measures (such as a groundwater reserve) and other mechanisms, rather than new development relying on traditional paths such as using exempt wells or obtaining new appropriations of water. The effects of growth on streams and rivers will be minimized and mitigated, and late season impacts on regulated surface waters or

[8] From the glossary of "Forest Ecosystem Management: An Ecological, Economic, and Social Assessment," July 1993, Report of the Forest Ecosystem Management Assessment Team (USFS, NOAA, NMFS, BLM, USFWS, NPS, EPA).

fish populations will especially be avoided. Several of the primary tools necessary to achieve the common goals are as follows:

Conservation Measures: The County will institute a coordinated series of voluntary and regulatory water use conservation and efficiency measures that would affect existing wells, in addition to new public and exempt wells.

Historically, water savings and improvements to Dungeness stream flows have come from changes in irrigation infrastructure. These water savings are protected by the 1998 Trust Water Right MOU and allocated 2/3 to instream flows and 1/3 to future adjudicated agricultural uses. If water savings are put to beneficial agricultural use or come from other sources, details would need to be addressed in the intergovernmental agreement described in this section.

Innovative Water Management Projects: The County and other entities will explore and implement innovative ways of returning water to aquifers and streams through aquifer storage and recovery, off-channel surface storage, etc.

One avenue of investigating the potential for use of deep aquifers could be through a collaborative effort between resource managers and a developer or other entity. A developer (or other entity) might drill a deep test well for purposes of a) assessing water availability and potential impairment of existing rights for purposes of securing a water right, b) providing information on deep aquifer conditions, c) conducting pumping tests to try to assess effects on surface water, and d) providing information to help verify the 2003 regional ground water model.

Such an exploration of the potential for deep wells to provide water without impairing surface waters could be pursued through the use of preliminary permits. A preliminary permit is issued to a water right applicant when the application is lacking information upon which to make a decision. Although the combination of deep aquifer water and mitigation of late season effects might well be a feasible source of supply, there is no prior guarantee of a water right as the result of work under a preliminary permit.

Regulatory Controls: If a formal agreement is considered necessary by the County and state, once it has been finalized and signed by at least the County and Ecology, legally-enforceable regulatory controls will be pursued with the following goals: (1) favoring larger water systems over individual wells, (2) regulating the safe siting and minimum depth (second aquifer) of wells, and (3) conservation, such as restricting the use of outdoor lawn irrigation allowed from new groundwater development managed within the groundwater reserve. Elements of public water system plans, growth management plans, GMA and zoning ordinances, and building ordinances related to water development, use and delivery will not be inconsistent with and will support adopted ordinances and rules implementing the watershed plan.

The County and Ecology will develop approaches to joint, concurrent management of the reserve and will each be responsible for implementation of appropriate regulations.

Measurement and Tracking: The County, Ecology and others will monitor withdrawals, water use, static water levels, and stream flows through:
(1) measuring trends in use and results of conservation,

(2) estimating, through voluntary metering, the amount of water withdrawn by individual exempt wells,
(3) tracking the quantity of new domestic groundwater use, including that covered by new or existing water rights and new exempt community wells [Return flow (quality *and* quantity) from septic systems will be considered in reviewing *consumptive* water use (amount withdrawn minus amount of return flow).],
(4) evaluating situations with possible well interference or impairment of existing water rights,
(5) verifying regional groundwater model results, and
(6) determining the need for new or adjusted policies.

Future Water Availability Framework

The proposed approach would be to define a mechanism that reserves a limited amount of ground water. This amount would be replenished, over a length of time to be defined later, from conservation water savings or aquifer or off-channel storage, provided use of such reserved water would not degrade fish populations, or habitat, or beneficial uses and is mitigated. Details of the legal framework for such a reserve and associated mitigation requirements would need to be worked out in the intergovernmental agreement and in the watershed plan's implementation plan and rule.

These approaches share the following common elements:

1. A groundwater reserve for a finite amount will be established by rule; the reserve will be for human domestic needs (limited outdoor use) and not subject to interruption.
2. The amount of water set aside for the reserve (i.e., x cfs) will be restored to the river over a length of time to be defined later.
3. Once the reserve has been fully allocated, additional water for domestic needs and other development will need to be obtained or mitigated through other measures such as storage or other mechanisms. Capacity for new groundwater development beyond the reserve will be created from water efficiency savings, retirement of existing water rights, re-use, or other means of providing water supply (e.g. off-channel storage or artificial aquifer recharge) that does not impinge on seasonally limited surface waters.
4. The potential will be explored for establishing geographic and quantitative groundwater extraction boundaries based on the 2003 regional groundwater model, the results of model runs of future build-out scenarios, efforts to characterize effects of groundwater withdrawals on stream flows, and other available technical information. Any delineation of boundaries will consider effects on fish habitat and instream flows, etc., as well as preliminary indications that withdrawals from deeper zones may affect surface water. Potential depth of wells, density of wells and extraction volumes will be evaluated. The aquatic habitat value of all fish-bearing streams within the watershed will be assessed and the potential effects of groundwater pumping (differentiating between various rates and depths of

pumping, such as between larger public supply wells and exempt wells) on these streams will be evaluated using existing information.

5. Regular monitoring of static water levels in each aquifer and stream flows will be conducted.
6. If requested by the Planning Unit following plan approval and based on staff availability, Ecology will take appropriate actions to process pending water right applications. In order for Ecology to issue new water rights, applications would still need to meet all tests for water availability, beneficial use, and no impairment of existing rights or the public interest, as well as including mitigation of effects on surface waters.
7. The intergovernmental agreement will consider developing direction for the defining of areas within the Dungeness watershed for early processing of water right applications.

Elements of a Reserve if Established

If a reserve appears to be the most practical approach for making water available for future development, then legal obstacles associated with establishment would need to be explored. Regardless of the mechanism eventually developed, a rule element establishing water for future allocation should outline the processes for evaluating water savings and availability, reallocating saved water, and addressing mitigation requirements. The rule elements should be based on the following, at minimum:

a. Capacity for new ground water development would first come from a groundwater reserve established by rule and not interruptible.
b. While the reserve is being used, development of additional sources of water would occur, such as through storage, reclamation, desalinization, saved water or other means of providing water supply that does not impinge on limited surface waters.
c. Following full use of the reserve, future appropriations could make use of these additional sources, either for direct withdrawal or through use as a mitigation tool.
d. The County and Ecology would agree on an as-yet-undefined split in allocation from the reserve between exempt wells (including both individual and community) and non-exempt groundwater rights.
e. Cumulative quantities allocated through water-related decisions by the State and County could not exceed the reserve amount agreed to in the intergovernmental agreement and established by rule.
f. The reserve quantity will be defined in the rule, and is anticipated to be based on the consideration of a number of factors, including current zoning and parcels, potential build-out over the next 20-years (see next paragraph for criteria), fisheries resources, instream flow data, and results of groundwater modeling.
g. All new permit-exempted and permitted withdrawals would be debited from the reserved quantity, which would be based on X gpd (to be defined by rule)

per household with limited outdoor use and incorporating a factor for septic recharge (unless on sewer).

h. Withdrawals from the reserve would be monitored as described under "Measurement and Tracking," above, and reviewed annually by the County and Ecology (at a minimum) to determine the extent of remaining water.

i. Both public and individual systems will be able to draw from the reserve; those requiring water rights will still need to satisfy the tests for a water right.

j. High levels of water conservation and efficiency would be required as a condition for use of reserved water as part of a building permit or water right. This would apply to both inside and outside water use efficiency. Use of reserve water for outdoor use would be limited in extent and possibly require curtailment of late season use or other measures to minimize impacts. (See Section 3.1.7 and Appendix 2-D for proposed water conservation measures.) In addition, an outreach program would be conducted encouraging all users in seasonally water-short areas to limit late summer water use.

E. WRIA 18 Groundwater Modeling and Research:

1. Hydrogeologic research should be pursued as a critical component to the future stewardship, allocation and management of water resources of the region. Current groundwater studies should be continued and extended across West WRIA 18 to assess the location (both geographically and at depth), quantity, quality, and feasibility of extraction of groundwater supplies.

2. A hydrogeologic assessment should include identification of areas of recharge and discharge. If current studies indicate it, further, more detailed investigation of the potential for aquifer storage and recovery should be conducted, considering both physical and legal constraints.

3. The East WRIA 18 groundwater model should be maintained in sufficient detail to allow analysis of how the groundwater system will respond to alternative scenarios of future water development and use. The Dungeness groundwater model advisory committee should continue to guide and advise on the use of the model.

4. The West WRIA 18 groundwater characterization in process should be used to further the future stewardship, allocation and management of water resources of the region.

5. Conduct well monitoring with the objective of long-term aquifer assessment and in the context of long-term surface water gaging.

    a. Continue ambient well water level monitoring in East WRIA 18 (Ecology and County). Evaluate current network for efficiency, whether wells are representative of aquifers, geographical coverage, and data gathering plan. Conduct some continuous water level measurements in an established well network.

    b. Evaluate potential benefits of placing monitoring wells in the vicinity of dike setbacks. Place monitoring wells in the lower river and at Kincaide

Island. Place continuous recorders in wells believed to be highly responsive to surface water.

6. Query the East WRIA 18 groundwater model to determine priorities to convert existing surface water users to groundwater (e.g., some irrigation areas) and effects of such conversion.
7. Focus future studies on the following areas: Blyn, West Sequim Bay, East Sequim Bay, West of Siebert Creek, and West WRIA 18 subbasins to be determined by the West WRIA 18 Watershed Council (see Recommendation 3.8.1).
8. Conduct periodic groundwater quality studies as described in Section 3.2. With regard to seawater intrusion affecting groundwater supplies, obtain chloride data as an indicator of seawater intrusion.

3.1.5 Public Water Supply (i.e., via Group A and B drinking water systems)

Issue: As compared to small community systems or the proliferation of exempt wells, public water systems can provide reliable, cost-effective service with relatively less environmental impact and greater opportunities for water resources management to meet watershed planning goals.

Existing Conditions and Current Actions

WRIA 18 is served by 73 Group A public water systems and 261 Group B public water systems. These serve nearly 17,000 connections and more than 43,000 persons (67% of Clallam County population [Census 2000]) in the WRIA. Growth is projected in and near areas served by existing Group A public water systems, as well as in rural areas not served by public water systems, where exempt wells are expected to be drilled to meet needs.

Water System Planning Issues: There is a desire among the County and WRIA 18 participants to implement water system planning and other tools to control the proliferation of exempt wells and/or individual wells. The County already regulates the development of Group B water systems under delegated state authority. Where a critical water supply problem exists, public water supply may be coordinated. Clallam County has indicated that it does not wish to pursue CWSP. However, the County may wish to adopt a regulation that requires any person seeking water service to connect to a public water system if service is available in a timely manner, at a reasonable cost. The reasons for implementing this type of planning and regulation in a watershed are:

- hydraulic continuity (shallow wells in particular)
- closure or desire to close small streams to protect instream values
- limited or poorly understood groundwater productivity on west side

Satellite Management: Chapter 246-295 WAC (Water System Coordination Act) sets forth requirements for Satellite Management Agencies (SMA). One SMA has been approved in WRIA 18 (under Washington Water Service, managing Sunshine Acres [230 connections] and Lee Water Co [70 connections] north of Sequim). Clallam PUD is considering SMA status.

Large Group A Public Water Systems: The City of Port Angeles November 2001 Water System Comprehensive Plan documents that existing Elwha River water rights are capable of handling projected growth through the year 2020 and projects modest growth at a rate of 0.5% per year, through 2020. The population served is projected to grow from nearly 21,000 persons today to a combined City and East UGA Annexation Area total of 23,194 in 2020.

The City of Sequim November 2000 Water System Comprehensive Plan documents that existing wells and water rights are capable of handling projected growth through the year 2018 (with water conservation). The Sequim water plan identifies 1,362 connections, and projects growth at a greater rate than does the City of Port Angeles, at 2.7% per year through 2020. The population served is projected to grow from 4,510 persons in 2001 to a combined City and UGA total of 7,094 (5,550 ERUs) in 2018. The City has not been approached for intertie and is not seeking interties.

Clallam County PUD issued its new draft Water System Comprehensive Plan in March 2003. The Plan covers four Group A public water systems within the incorporated and unincorporated areas of Clallam County which lie within WRIA 18. The four systems served a total population of 7,118 in the year 2000, but no projection of population to be served in future years is given. Projected growth is 1.0% per year or more, depending on the system. New water rights are needed for the PUD to serve projected growth in the Carlsborg system and in other areas within WRIA 18. In Carlsborg, a water deficiency is projected by 2021; the deficiency exceeds 234,000 gpd based on source adequacy or exceeds 61,000 gpd based on water rights adequacy. Existing sources would be inadequate to serve projected maximum day demand (MDD) by 2013 and existing water rights will be inadequate to serve projected MDD by 2018. An additional 200 gpm source is required to satisfy projected MDD through 2021. The Evergreen system is projected to have only a small reserve capacity to serve by 2021.

Elwha River Regional Water Supply: In 1999, the City of Port Angeles prepared a Preliminary Evaluation of Elwha Dam Removal Mitigation Alternatives and Integration with Regional Supply Objectives (CH2M Hill 1999), to develop a feasibility concept for initial discussion as a basis for agreement with other local water purveyors (Glenn Cutler letter to EMMT dated June 22, 2000). The City's stated purpose was to "consider regionalization as one possible solution to providing for safe and secure water for those users impacted by the removal of the Elwha dams." The Preliminary Evaluation identified a potential regional service area and investigated alternatives to develop capacity "to supply all customers between the Elwha River and Morse Creek." The area includes Clallam County PUD No. 1, the Black Diamond Water District, the Dry Creek Water Association, and the Lower Elwha Klallam Tribe (CH2M 1999 p. 13). The report concluded that the City of Port Angeles serving as bulk water supplier may represent one of the best opportunities for long-term reliable water supply to the region (CH2M Hill 1999, p. 13).

A key question in evaluating this future water supply strategy is the size of the region that should be considered for bulk water wholesaling. The City has expressed interest in serving water within the UGA and wholesaling within West WRIA 18, but is concerned about serving growth outside the UGA in West WRIA 18 and is not interested in distributing Elwha River water via intertie to the Clallam PUD to East WRIA 18. The City currently supplies all customers within City limits, not including the Elwha industrial water

system customers (Daishowa) on a retail basis and most of the PUD customers west of Morse Creek on a wholesale contract basis through the PUD. Most of the PUD service area west of Morse Creek lies within the unincorporated Port Angeles Urban Growth Area (UGA) and some of the Dry Creek Water Association service area is also within the Port Angeles UGA. Although portions of these service areas and all of the Black Diamond service area are located outside the Port Angeles UGA, the City believes that it might ultimately supply them, whether through future annexation or on a wholesale contract basis. The City has held discussions with other West WRIA 18 water purveyors regarding additional supply.

The *Preliminary Evaluation* summarizes the various mitigation alternatives and finds that each is equally suitable for effective integration into a regional water supply plan. It also lists connections required for each adjacent water system that could be supplied from the City's system. However, at the time the City found that "a regional water system does not appear to have any significant support from the area's water purveyors" and consequently the City has not pursued the idea further (Glenn Cutler letter to EMMT dated October 25, 2000).

Desired Conditions and Outcomes

- A safe, efficient, and reliable long-term public water supply consistent with habitat and other goals in this plan.
- Water rights, interties, or water conservation sufficient to allow existing public water systems to meet future growth within their current and projected service areas.
- Coordination among water systems to achieve efficient service and efficient use of WRIA 18 water sources.
- Connection of new development to public water service wherever feasible, limiting the proliferation of exempt wells.
- Water supply strategies that assure public water service will be available to meet buildout potential in the timeframes required.
- New public water service provided by the existing larger Group A public water systems wherever feasible, with Group B water systems serving those locations where Group A service is unavailable and where the infrastructure, financial and management capacity exists to meet requirements under WAC 246-291.
- Expansion of existing larger Group A systems' service areas where demand growth occurs outside current public water system service areas, where feasible, and where consistent with UGA boundaries and Growth Management Act planning.

Recommendations

A. Evaluate Measures Contained in the Coordinated Water System Planning for Application to WRIA 18: Based on findings made through the 2514 watershed planning process, Clallam County should evaluate which elements of the Water System Coordination Act, if any, the County and WRIA 18 Group A water systems wish to adopt into local regulation. An initial planning meeting should be convened with the Clallam County, interested Group A systems, affected Tribes, and the Washington Departments of Health and Ecology to discuss what degree

of coordinated water system planning, if any, may be desired. As part of the initial evaluation, the involved jurisdictions should consider the potential advantages of incorporating parts of the Water System Coordination Act into County ordinance.

1. Consider adopting the utility review procedure to regulate exempt wells and direct land development to public water service.
2. Consider encouraging Satellite Management Agencies.
3. Review examples of well drilling and water system regulations from other counties such as Jefferson, Walla Walla, and Skagit counties.
4. Consider an annual operating permit or other fee-for-service mechanisms for water systems regulated by the County.

B. New or Amended Water Rights for Public Water Service:

1. Recognizing projected buildout and new growth within and beyond current service areas, Group A systems should make application to Ecology for water rights needed to serve that growth with water use efficiency, take steps to extend service areas to serve that growth where feasible and cost-effective, and initiate capital facility planning to support these steps (along with coordination between Group A systems, as described elsewhere in this subsection).
2. New or amended water rights should be granted only where Group A or B water systems require new or expanded water rights to serve new connections under development in conformity with this watershed plan and City or County comprehensive and regional planning and where they are implementing water conservation measures (see Section 3.1.7). (If a Group B system expands and uses >5000 gpd, then a water right permit would be needed. If a Group B takes on 15 or more connections, then Department of Health regulations for Group A systems will apply.)

C. Connection to Public Water Service: Growth should be managed by directing those who want to develop land in growth areas (R1 zones in particular) to public water service, preferably larger Group A systems (see Recommendations 3.1.4 C 1-8). Connection to public water systems should be required for all new development inside or adjacent to the boundaries of service areas for all 1.25-acre lots (and smaller) wherever service is legally and economically feasibly available (or can be created by a new Group B system). *Note that this recommendation shall not be implemented by the County prior to definition of terms and proper codification including public review prior to adoption.*

D. Regional Water Supply: Explore the ability and willingness of the existing larger Group A systems in WRIA 18 to serve on a more regional basis coordinated with other existing Group A systems. The following should be considered:

1. Capacity of these Group A systems' existing water rights to meet forecasted growth in water demand.
2. Willingness of the Group A systems to provide water supply for expanded use.
3. Limits embodied in water right "place of use."

4. Relationship between regional service and GMA growth plans (urban growth areas) and Water System Comprehensive Plans, with an objective to contain growth within UGAs.

5. Efficiencies and expanded public water system service potential provided by existing and potential interties. Interties with other water purveyors within the DQ region should be permitted where it can be demonstrated that interties will cause no negative impacts on instream flows or hydraulic continuity, and that groundwater withdrawals will remain within safe, sustainable levels.[9]

6. Geographic boundaries of the areas that these Group A systems are willing or able to serve (see Recommendation 3.9.1 B limiting transport of Elwha River water east as far as the Morse Creek watershed).

7. Effects of expanded public water service on Elwha River and other surface water source flows and instream flow requirements for fish (with watershed management coordinated through the West WRIA 18 Watershed Council, see Recommendations 3.8.1 A-D). This should consider:

    a. Whether and to what extent a minimum instream flow requirement would affect the extension of service under existing water rights.

    b. Changes in instream flow requirements due to stream geomorphology changes as dam sediments are passed (e.g., low flow duration curves). A defensible approach should be investigated toward recommending minimum instream flow.

    c. Other demands on Elwha River and other surface water source flow, including unquantified federal and tribal water rights.

    d. Availability and ability of new water storage (including groundwater storage) to offset impacts on Elwha River and other surface water source fish flows (see Recommendation 3.1.9.A).

    e. Coordination with the ongoing Elwha River Restoration Group.

    f. “Fish triggers” defined by snowpack conditions and Elwha River flows. (see Recommendation 3.9.1 F)

    g. The option of developing an HCP specifying interim flows during dam removal and river stabilization, and long-term flows, with an adjusted regime of fish triggers, after the river stabilizes and habitat is restored.

8. Water conservation requirements that should attend regional delivery of Elwha River water. Include both short-term curtailment and long-term conservation considerations.

    a. Curtailment: Emergency Water Shortage Response Plans of purveyors of Elwha River water.

    b. Conservation: seek to build in long-term reductions in water use via building codes (see water conservation Section 3.1.7).

[9] DQ recommendation C.12.4

9. Other water supply and storage options (see Sections 3.1.3, 3.1.4, 3.1.9, and 3.1.10), including desalinization, water reclamation, aquifer storage and recovery, and off-channel surface storage.

E. Disincentives for small Group A systems: Work with state and federal agencies overseeing drinking water systems to reduce disincentives for creating small (e.g., 15-100 connections) water systems, such as by adding flexibility to water quality testing based on source information, recent test results, etc:

3.1.6 Enforcement and Relinquishment of Unused Water Rights

Issue: Illegal water diversions are known to occur throughout WRIA 18, and need to be controlled as much as possible.

Existing Conditions and Current Actions

Some streams across WRIA 18 have illegal surface diversion. There are also reports of commercial irrigation occurring from unpermitted wells.

Desired Conditions and Outcomes

- Cessation of illegal surface diversions and use of unpermitted wells for commercial purposes in WRIA 18.

Recommendations

A. Water Rights Relinquished or Abandoned: The Washington Department of Ecology is requested to investigate water rights that can be relinquished (in part or entirely) or abandoned, taking into consideration limitations on Ecology's staff, budget, and authority. Opportunities will be taken to reconcile water rights during review occurring as part of transfers and changes. Pursuit of relinquishment of unused rights is dependent on funding and prioritization by the planning unit. This is not intended to affect owners of valid water rights.

B. Illegal Diversions: Ecology will work with local jurisdictions to jointly pursue action against illegal water users. Funding will be sought for stream patrol personnel to assist with water rights enforcement. The planning unit will prioritize streams for periodic investigation. Ecology should consider establishing an internet site for reporting the existence of illegal diversions.

C. Illegal Wells: Clallam County and Ecology should investigate wells drilled without public record or permit.

D. Education: An outreach effort should be undertaken to inform the public about the conditions under which surface water diversions are legal.

E. Funding: WRIA 18 recommends to the State Legislature that funding for Ecology enforcement personnel should be increased to allow regular reconnaissance of illegal diversions and followup action to enforce against them, with initial focus on priority basins.

3.1.7 Water Conservation

Issue: The conservation and wise use of existing water supplies is a priority to extend surface and ground water supplies, protect instream values, and reduce uncertainties regarding future growth in demand for water.

Existing Conditions and Current Actions

Conservation is the most cost-effective way to extend limited water supplies for the foreseeable future. It will be reflected in equipment, landscaping, reuse and water use, and construction codes, rate structures, and other measures. The DQ Plan (1994) set forth these goals, which remain important today:

- ***Goal 1:*** To manage water conservation based on hydrologic cycles and ecosystem principles.
- ***Goal 2:*** To satisfy our current or future surface water needs within our current water rights, without new or additional water rights, by using conservation and achievable technology.

Clallam County's Critical Areas Ordinance requires BMPs and performance standards. Outdoor residential use is not regulated by the County. The City of Sequim Comprehensive Plan and Titles 17 & 18 of the Sequim Municipal Codes also apply. Section 2.3.3 describes measures undertaken by public water systems and commercial irrigation in WRIA 18 to conserve water.

Emergency Water Shortage Response Plans: The City of Port Angeles has prepared an Emergency Water Shortage Response Plan, and the Water Users Associations include water shortage response in their Rules and Regulations.

Comprehensive Water System Plans: The cities of Sequim and Port Angeles have prepared Comprehensive Water System Plans containing conservation plan chapters.

City of Sequim Response to DQ Plan Recommendations: The DQ Plan proposes detailed conservation actions for the City of Sequim (DQ recommendation C.12.2). The City has responded in a variety of ways. A water conservation chapter is incorporated in the November 2001 Water System Comprehensive Plan. Over the past 20 years, City water use per capita has dropped from 280 gpcd to less than 170 gpcd. This compares favorably with other municipalities in similar climates. The Sequim City Council is empowered to implement mandatory restrictions during shortages or for health or environmental reasons. This was last done during a 1994 water shortage. The City has accomplished an approximately 40% reduction in per capita use since the 1980s. The City requires water conservation on all new construction, remodel and plumbing permits. Commercial uses are required to meet the conservation requirements listed in the recommendation. The City's Utility Rate Task Force Committee regularly reviews the City's water rate structure. The current rate structure is an inclined block rate (various higher rates apply after 800 cf of monthly residential or commercial use). The City has installed new meters for all uses and production points. A seasonal water rate has not been adopted, as the inclined block rate is believed to stimulate conservation. The City has an ongoing conservation education program.

Desired Conditions and Outcomes

- Cost-effective water conservation of scarce WRIA 18 water sources allows water to remain instream for environmental values, and creates a sustainable water supply.
- Full and ongoing implementation of Water Users Association *Comprehensive Water Conservation Plan* for the East WRIA 18 irrigation system and of the water conservation portions of Group A public water system *Water System Comprehensive Plans* that have been written for the cities of Port Angeles and Sequim and the Clallam PUD.
- Expanded residential water conservation the smaller Group A water systems, Group B systems, and individuals acting voluntarily to conserve water used for indoor and outdoor purposes in the home.
- Drought response planning in place incorporating a staged approach with appropriate triggers based on snowpack and stream flow conditions for the larger Group A public water systems.
- Late season low-flow demands on stream flows largely reduced or eliminated.

Recommendations

A. Water Conservation Education and Outreach:

1. Distribute a water use survey to local residents to assess current uses of water and perceptions about water use. The survey developed and used by the City of Tacoma should be examined (the Tacoma survey found that high water users were often very conservation oriented, but lacked the knowledge of effective water conservation practices).
2. Encourage the development of water conservation education programs in the school districts. The benefits of environmental education in children and young adults are well documented. Aside from establishing good stewardship practices at an early age, there is also a tendency of influencing adults with whom these children interact.
3. Encourage local water purveyors to attend regional and national water conservation conferences (i.e., AWWA) to be familiar with new information and technologies.
4. Target exempt well owners for education on water conservation.
5. Establish a water resource conservation education program.[10] This is typically considered to be the most difficult element of a water conservation program to maintain, but one of the most important. The program should address:
    a. Lifestyle changes.
    b. Strategies for education and increased public awareness to encourage voluntary conservation.
    c. Targets for water conservation for each user group including achievable technology.

[10] DQ Recommendation R.4.2.4 and R.4.2.10, including subheads

d. Conservation and reduction goals, considering "targeting" by user groups and including consideration of all water sources.

B. Regional Water Conservation Planning and Standards:

1. Conservation and efficiency strategies should be developed and implemented region-wide to provide the most efficient use of all water resources.[11]

2. Coordinate water conservation plans of water purveyors, including drinking water systems and irrigation systems. Develop area-specific County water conservation planning. Identify and target population growth areas outside of UGAs, as well as areas within UGAs that are served by irrigation water. Acknowledge commercial agriculture as first priority use for irrigation water.

3. Clallam County and all WRIA 18 purveyors, including cities, the PUD, and small water systems, should develop conservation plans implementing best available designs and technology, using current practices and meeting the goals and standards set forth in this section. Building and domestic water conservation standards should be tied to well and building permits (County and cities).

4. Public entities should pursue and provide demonstration or model projects to encourage conservation and reuse. Government grants and programs (State and local) should be sought for surface and groundwater planning, and integration of implementation activities.[12]

5. The "Clallam County Water Purveyors Group" (including Dry Creek Water and other providers) should reconvene to look at water conservation and water loss accountability, as well as definitions for timely and reasonable, etc.

C. Water Shortage Response Planning:

1. All Group A purveyors drawing from surface water sources should develop and implement water shortage response plans during critical water periods. These plans should prioritize water uses during such periods. The plans should establish emergency water conservation programs for all users under extreme drought conditions, and voluntary reductions in use under all less extreme conditions.

2. A regional water modeling and monitoring system should be developed to avoid a water crisis in a low water year. It should provide for an early warning system, invoking a staged series of management options. Projections should be done and thresholds established for use in times of critical low water/ drought to alert the region before a water crisis occurs.[13]

3. Water Shortage Response Plans should include staged "fish triggers," conservation goals, and incentives or disincentives modeled on those developed by the City of Port Angeles and the Lower Elwha Klallam Tribe (see 3.9.1). Each stage should be distinct.

[11] DQ Recommendation R.4.1

[12] DQ Recommendation R.4.2.5

[13] DQ Recommendation R.4.2.4(d)

4. Water Shortage Response Plans should be adopted by ordinance when they are to be implemented by local jurisdictions and should include appropriate enforcement provisions.

5. Purveyors of Elwha River water should be encouraged to adopt the City's WSRP, including water conservation procedures that will be implemented for each of the water shortage stages.

6. Clallam County, Clallam PUD, the cities of Sequim and Port Angeles, the Dungeness River Water Users Association, and other purveyors, should develop a coordinated Emergency Water Shortage Response Plan including "fish triggers" to implement a phased response plan with multiple triggers at stages as a low flow situation unfolds. These triggers should be adopted by ordinance and/or interlocal agreement, and apply first to surface water uses.

D. Seasonal Water Conservation:

1. A seasonal water conservation program should be implemented annually during the low flow period by the County, the Water Users Association, and all Group A and B purveyors. This should be required as a condition on any future water permits.

2. Industries are encouraged to schedule any annual maintenance shutdowns to coincide with typical low flow periods in the basin of origin.

3. Storage and fire protection measures should not require the development of new sources or instantaneous withdrawals in low flow periods; the requirements should apply consistently throughout all jurisdictions.

E. Comprehensive Water System Conservation Plans:

1. All Group A water systems should include within their Comprehensive Water System Plans a comprehensive water conservation chapter that sets forth specific provisions to reduce water consumption among residential, commercial and industrial users. Group A water systems are encouraged to fully implement the water conservation portions of their Water System Comprehensive Plans.

2. All Group A and B water systems should document actual progress in implementing conservation measures.

3. Municipal and County parks departments should adopt appropriate water conservation programs.

4. Group A water systems are encouraged to develop incentives for retrofits for all preexisting housing offered for sale which meet new water conservation standards for both residential and commercial water users.[14]

5. Public water supplies should be managed to encourage efficiency and meet health requirements.[15]

    a. Inform water users about State building regulations under the plumbing code concerning the use of efficient indoor fixtures.

[14] DQ Recommendation R.4.2.7

[15] DQ Recommendation C.14.1, including subheads

b. Develop a program to train and certify the operators of community water systems and implement it in coordination with County, State, and Federal system requirements.

c. Investigate a water master or other management regime for coordination and management of water systems in the area.

F. City of Sequim Water Audit:

1. The City of Sequim should continue its water audit program, which has an update to the Water Comp plan due in 2006.

2. The City of Sequim should strive to maintain or reduce its 2004 level of 9% lost and unaccounted for water.

G. Leak Detection: Regularly implement leak detection using approaches defined in approved Comprehensive Water System Plans. Where such plans are not in place, identify target pipelines and ditches and establish an ongoing leak detection program.

H. Water Conservation Rates, Rebates, and Incentives:

1. Encourage the adoption of water conservation-based utility rates for domestic, commercial, and industrial users. This may include tiered rate structures, seasonal pricing, or other means of assuring adequate water supply for instream and out-of-stream users.

2. Examine incentives for water conservation practices by residential, commercial and industrial users. Examples include rate reductions, tax incentives, and reduced wastewater charges.

3. Encourage the expansion and continuation of rebate programs for the purchase of energy and water efficient appliances. Encourage, and make available, water conservation devices for indoor and outdoor use, particularly for high consumptive water users.

4. Petition the State to define “conservation” to promote incentives for efficiency (e.g., eliminate taxes on conservation materials and equipment; provide rebates to provide conservation incentives).[16]

5. Investigate opportunities for using recharge fees, incentives for saving, and buyback programs to promote water conservation.[17]

6. Assess the economics of water conservation strategies including rates, time, “pay back,” timelines, and the condition/place of used water.[18]

I. Low Water Demand Landscaping:

1. Encourage the use of low water demand landscaping using native plants and appropriate lawn care maintenance practices.

[16] DQ Recommendation R.4.2.8

[17] DQ Recommendation R.4.2.11

[18] DQ Recommendation R.4.2.12

2. Require conservation BMPs for new and existing golf courses.[19]
3. Cut lawns to an appropriate height to reduce transpiration.
4. Provide incentives for landscaping companies to advertise as environmentally friendly and knowledgeable (Landscaping firms often provide maintenance recommendations that are counter to established water conservation techniques).
5. Encourage the use of appropriate frequency and volume of water in residential irrigation.
6. Provide public education as to how much and when to water lawns. Promote understanding that lawns will green up again after summer browning.
7. Programs and regulations should be developed for outdoor water conservation. These should include:[20]
    a. Restrictions on lawn watering, car washing and other low-necessity uses when supplies are short.
    b. The use of efficient low-flow sprinkler heads, pumps and other equipment, and drought-tolerant landscaping when there is no recharge potential.
    c. Prudent-practices guidelines and education on vegetative composition and total size of lawns, gardens and plantings.

3.1.8 Irrigation Water Management

Issue: The Sequim-Dungeness River Valley Agricultural Water Users Association (WUA) is the largest user of Dungeness River water, diverting water from five outtakes on the mainstem. Irrigation water recharges groundwater, augments wetlands, and affects flows in small streams. Irrigation diversions and low streamflows in summer and late fall have been identified as critically limiting to salmon production. The WUA have made significant improvements in reducing their diversions to benefit stream flows. Irrigation ditches provide conveyance for irrigation water as well as potentially providing pathways for stormwater and pollutants.

Existing Conditions and Current Actions

The 1994 Dungeness-Quilcene Water Resources Management Plan (DQ Plan) contains informal, but important agreements negotiated between the WUA and the Jamestown S'Klallam Tribe (JSKT) on the subject of water conservation and flow restoration. Following a recommendation of the DQ Plan, the 1998 Trust Water Rights Memorandum of Understanding between the Water Users and Ecology (MOU) was developed to institutionalize the agreements and protect the WUA's conserved water from relinquishment. A tentative determination of water rights was made and the irrigators agreed to adjust their water rights to reduce amounts substantially lower than those adjudicated in 1924. They further agreed to not divert more than 50% of the river's flow as measured at the USGS gage (although the "gap" identified in the DQ Plan

[19] DQ Recommendation R.4.2.9

[20] DQ Recommendation C.14.2, including subheads

remains -- notwithstanding this improvement). In practice, recent diversions have averaged 55 to 57 cfs over a season, with highest use sometimes up to 20 cfs more in early and mid-summer. WUA data indicate that irrigation water users have generally achieved diversions well below 50% of the river's flow, although the 50% threshold is more difficult to meet during the lowest flows in September and October. These steps and others outlined in the DQ Plan have been considered so innovative and constructive that the WUA and the JSKT have jointly received awards at the national and state levels.

Another tool used by the WUA is "split season" water leasing. During the 2001 drought, Ecology and the WUA reached agreement on removing 1,000 acres from irrigation that otherwise would have been watered, from August 1 to September 15. The WUA and Ecology have also negotiated similar leases for 2003 through 2005, covering the same portion of the irrigation season. These leases help in addressing another agreement reached in the DQ Plan, to achieve more than 50% of the flow in the river, particularly after September 1.

The Trust Water MOU includes a process for allocating conserved water to temporary trust status. One-third of water conservation savings placed in temporary trust is held for adjudicated uses (irrigation), and the remaining two-thirds is dedicated to instream flows. When conservation is considered largely implemented, Ecology will issue superseding certificates and create a permanent trust water right for instream flows.

The Dungeness Valley irrigation system has been the subject of several studies over the years. The impacts of reduced irrigation were modeled by the USGS in 1983. In 1999 the USGS completed a study characterizing the relationship between the irrigation system and groundwater in the Dungeness valley, to provide a detailed basis for modeling effects of changes in the irrigation system. This study gathered extensive new data on surface water, small streams, ditch leakage and effects of irrigation.

In 1999 the Comprehensive Agricultural Water Conservation Plan for the Sequim Dungeness Water Users Association was completed for WUA agricultural irrigation facilities. This effort also included modeling to assess effects of changes in irrigation efficiency, primarily by updating the earlier USGS model and incorporating the USGS data being gathered at that time. Irrigation use was evaluated in depth by the USGS (1999) and the Montgomery Water Group (MWG) (1999). Canal losses were also evaluated by MWG in 1993, and in 1999 MWG and USGS worked together to refine these numbers. Impacts of implementation of the Water Conservation Plan on small streams, wetlands, wells, and groundwater levels have been thoroughly evaluated in a 2003 Ecology EIS on the plan, using a newly developed groundwater model.

Several entities have undertaken implementation of the Conservation Plan. The WUA and the JSKT have collaborated on many projects. The Jamestown S'Klallam Tribe has obtained funding from Federal and State sources to improve irrigation infrastructure and conveyance efficiency. The Clallam Conservation District (CCD) administers an Irrigation Efficiencies Program, a program designed to help irrigators conserve water by upgrading their irrigation systems. The CCD has also funded piping projects to improve water quality. Both the CCD and the Natural Resources Conservation Service (NRCS) often assist in evaluating current system efficiency and with designing projects.

Irrigation water use is monitored by real-time measurement and data is summarized weekly by the WUA. The diversion data is posted on Ecology's website; the WUA publishes annual reports summarizing diversions, tailwater measurements, irrigated acreage, and completed projects.

There has been a general shift in the agricultural base to less water-intensive crops and practices. In addition, there is a trend towards increasing domestic non-potable use of irrigation water, with a reduction in commercially irrigated acreage. Irrigated acreage has decreased to less than half the historic amount. Although several commercial irrigators still farm in the Dungeness Valley, a significant portion of already-subdivided agricultural land is currently rented by farmers in order to do so. A program to preserve agricultural farmland is aimed at maintaining the land base for commercial agriculture.

The WUA adopted detailed Rules and Regulations implementing many features recommended through the DQ process. Of an original total of 9 districts and companies, restructuring has reduced the number to 7 and the WUA is considering further consolidation. The WUA has funded the position of Water Use Coordinator since 1993, and each member company or district has a ditch rider responsible for managing the system. A Comprehensive Irrigation District Management Plan (CIDMP) is underway to ensure that operation of the irrigation system is in compliance with the Endangered Species Act and the Clean Water Act.

Desired Conditions and Outcomes

- Water Users Association Comprehensive Water Conservation Plan implemented in full.
- Irrigation water use continues to be monitored and managed in cooperation with DRMT.
- Residential customers of the WUA are educated regarding water use efficiency, lower water use landscaping, and the need for late season conservation.
- Irrigation water use and facilities operate in compliance with the Endangered Species Act and Clean Water Act.
- Commercial agriculture has a healthy economy and future in the Dungeness Valley.

Recommendations

(Also see Section 3.3 for recommendations regarding irrigation water management as it affects wetlands and small streams.)

A. Continue to improve the management of the Sequim-Dungeness River Valley Agricultural Water Users Association (WUA) and irrigation districts/companies:

1. WUA districts and companies are encouraged to pursue further consolidation of operations and maintenance, as warranted.

2. The WUA should continue funding a water use coordinator on an ongoing, seasonal basis to record water use, recommend efficiency measures, coordinate cooperation between ditches, and enforce cutbacks in low flow periods.[21]
3. The WUA should continue its participation in the Dungeness River Management Team.
4. WUA districts and companies should respect the authority of the water use coordinator to enforce agreements among and between WUA districts, companies, Tribes and other entities, in order to avoid the expense of having to hire a watermaster or stream patrol person.[22]
5. Encourage voluntary compliance with the guidelines for prioritization of water uses for times when flows are critically low.[23] (*These guidelines are described in the WUA's Drought Response Plan, within their Rules and Regulations*. *See Appendix 1-C*).
6. The Clallam Conservation District should continue to work with WUA districts and companies, with input from the Department of Ecology, to develop a brochure for prospective water users (e.g. new or prospective buyers of property served by the irrigation system) which provides general information on the system, water conservation needs, late season water shortages, and the possibility of late summer cutbacks. The County should provide the resulting information to property owners served by the irrigation system.

B. Implement the 1998 Trust Water Memorandum of Understanding.

1. Continue improved water management and conservation so as to provide that no less than 50% of the instantaneous flow, as measured at the USGS gauge at River Mile 11.8, will remain instream.[24]
2. Once conservation measures have been fully implemented, complete the transfer of conserved water. Issue a State trust water certificate for instream flow purposes, and issue superseding certificates to the individual irrigation companies and districts for adjudicated uses that reflect water savings.
3. Continue to update water rights certifications where water rights have been relinquished and are not subject to the Trust Water MOU.
4. Assess water savings and the IFIM recommendations periodically with the participation of the DRMT, WUA, JSKT, and the Departments of Ecology and Fish and Wildlife.[25]

C. Complete and implement a Comprehensive Irrigation District Management Plan to ensure compliance with both the Endangered Species Act and the Clean Water Act.

[21] DQ Recommendation C.4
[22] DQ Recommendation C.2.4.1, modified
[23] DQ Recommendation C.2.1.3.d, modified
[24] DQ Recommendation C.2.1, modified
[25] DQ Recommendation C.2.1.3.c, modified

1. Ensure that outtakes and tailwaters are upgraded where necessary to minimize impact on salmonids.
2. Ensure presence of effective fish screens/barricades.
   a. Prevent fish from entering areas where they may be stranded by interruptions in irrigation flow.
   b. Conduct field checks to assure that effective fish screens or barricades are in place at irrigation return flow locations and diversions, including locations where small streams are being used for conveyance. Upgrade as needed.
   c. Consistent with the WUA Comprehensive Water Conservation Plan or subsequent studies, consider piping irrigation water around lowland East WRIA 18 small streams. (See Recommendations 3.1.8 F and G, below.)
3. Continue to seek and implement efficiencies to the irrigation system, such as piping leaky irrigation ditches and establishing reregulating reservoirs where appropriate.
4. Implement the WUA's Comprehensive Water Conservation Plan.
5. Recognizing that the DQ Plan recommended target flows (*see definition on following page*) of 100 cfs, which are often in excess of 50% of the instream flow in the late summer, review data and negotiate achievable flow targets for seasonal time periods necessary to protect and restore salmon now listed as threatened under the Endangered Species Act.[26]

D. Management Water Withdrawals: Identify and implement measures for reduction and management of water withdrawals between August 15 and October 15. Explore the possibility of revisions to the irrigation schedule which is currently April 15 – September 15[27]:

1. Investigate the feasibility of terminating *most* irrigation on September 1.
2. Allow later watering, specifically for seed crops, within the context of overall ESA compliance for the WUA. Arrange a special permit system for individual crops that need to continue watering after September 15. Identify an efficient method to deliver water to these users without major withdrawal.
3. Quantify the amount of, and define the use for, water withdrawals in the off-season. Incorporate this into the water right.
4. Manage the need for seasonal shifts on a year-to-year basis.
5. Consider a lease/buy-out of late season watering rights on a willing seller basis.
6. To the extent cost-effective and feasible, switch to groundwater sources for late season stock watering.
7. Ensure that the WUA Rules and Regulations are enforced (e.g. make certain that water users are not irrigating from stock flows outside of the irrigation season,

[26] DQ Recommendation C.2.1.3.b, modified

[27] DQ Recommendation C.2.3 with additions

prohibit the use of conveyed irrigation water to feed or maintain ornamental ponds, etc.). (*See Water Users Association Rules and Regulations*).

E. Continued Monitoring: Continue to monitor the impacts of reduced irrigation recharge on small streams, wells and groundwater.

F. In light of the critical status of Dungeness fish stocks, prohibit the intentional diversion of irrigation water from the Dungeness for augmenting wetlands or small streams.

G. In implementing changes to the irrigation system, consider the resulting impacts from changes in flow patterns and conveyance.[28]

1. Conveyance:
    a. Streams should not be used for irrigation ditch conveyance, except where no alternatives exist.[29] No new uses of streams for conveyance should be established. Where feasible, minimize or eliminate use of streams as conveyance (even though this is legally allowed under WUA water rights).
    b. Conduct an assessment to evaluate impacts to salmon that result from use of small streams for conveyance of irrigation water. Include an exploration of alternatives/solutions to conveyance of Dungeness River water through small streams.
2. Mimic Nature: In cases where streams do receive flow partially from agricultural diversion from the Dungeness River, flows should mimic nature as much as possible.[30]

[28] DQ Recommendation C.10.2A, modified
[29] DQ Recommendation C.10.2A.5, modified
[30] DQ Recommendation C.6.2.6, modified

Minimum vs. Target Flows

The DRMT considered two types of flows in developing this watershed plan: minimum instream flows and target flows. A *minimum instream flow* is a flow set by State rule (by Ecology), and applies to State water rights. It is junior to water rights in existence when it is adopted, and it, in essence, establishes a flow level below which new water rights will not be appropriated. A minimum instream flow generally has a priority date of the date of the rule establishing it; however, by law, instream flows established through 2514 planning have a priority date as of two years after the Initiating Governments first receive funding from Ecology. Although a minimum instream flow rule establishes the level of flow needed to fully protect and preserve fish and other instream environmental values, it does not guarantee that the flow level will be achieved because the rule may be junior to other water rights in the stream. Recommendations for minimum instream flows to be established by rule for the Dungeness River are listed in Section 3.13 and were established based on an updated review of the Dungeness River IFIM study, focusing primarily on instream flow requirements of chinook during spawning.

A *target flow*, as used in the DQ Plan, is a realistic instream flow goal that may be achievable either in the long run or in most years, following an evaluation of historical water use and fisheries needs as well as the implementation of water conservation measures. It was recognized during the preparation of the DQ Plan that target flows could not be achieved in all years due to potential drought conditions. In such cases, the agreement to divert no more than 50% of the flow as specified in the Trust Water Rights Agreement became the operative regulatory constraint on water withdrawals. However, during a severe drought in 2001 the WUA voluntarily passed a resolution that they would manage withdrawals to attempt to achieve instream flows of no less than 60 cfs below their diversions regardless of the relative percentages. Continuation of this policy is under discussion within the CIDMP process.

Similar to the DQ Plan's intent, target flows are used as an operational concept by the federal agencies (NOAA Fisheries/NMFS, and USFWS, collectively called “the Services”) with jurisdiction under the Endangered Species Act. The term “target flow” is not defined in law or regulation. Target flows have no relation to State water rights, including minimum instream flows, but may preempt them if formally established through an ESA compliance action such as a Habitat Conservation Plan or legal action brought under the ESA. Target flows for the Dungeness are expected to be formally established through the implementing agreements associated with the CIDMP, currently in progress. In addition to implementation through the CIDMP agreements, target flows may also be established through amendments to the Trust Water Rights MOU.

3.1.9 New Water Storage

Issue: Increased water storage may facilitate the provision of water supply for fish, population growth, and economic development. Storage may enable fish flow requirements to be met during low flow periods and improve the reliability of water supply for existing water rights.

Existing Conditions and Current Actions

The Legislature created a water storage task force in 2000 to examine the role of increased water storage in providing water supply for fish, population growth, and economic development. The Governor has come out in favor of an increased role for water storage in providing water supply. Potential sites for off-channel storage are currently under review.

NRCS explored options for reservoir storage in the upper Dungeness, with Tribes and WDFW. The consensus was that even during high winter flows, water supplies may not be sufficient to both fill a reservoir and provide water for fish. WUA reregulating reservoirs may provide another means for future surface water storage. Additional storage tanks to store water for urban peak use also have been suggested.

Groundwater flow in WRIA 18 generally appears to be from the south, originating in the Olympic range to the north and discharging to salt water. It is uncertain that water stored in an aquifer under these circumstances would be retained and available when it is wanted. A groundwater storage study is underway in West WRIA 18, funded by the additional 2514 grants made available to WRIAs for water storage studies. Irrigation storage studies are also underway in East WRIA 18.

Desired Conditions and Outcomes

- Sufficient storage capacity to ameliorate the impacts of water demand for irrigation and public water supply purposes during peak water demand periods and low flow periods.

Recommendations

A. Investigate Potential Off-channel Reservoir Storage Sites:

1. Storage sites for public water systems should be explored throughout WRIA 18.
2. In order to provide water during low flow periods and offset irrigation diversions, the possibilities for off-channel storage of water from irrigation diversions should continue to be investigated in East WRIA 18, including ongoing and new studies addressing storage for late season irrigation. The benefits and drawbacks of off-channel storage to the Dungeness River system should be studied and recommended actions implemented as funding allows. Study should explore large and small storage reservoirs, in-line reservoirs on ditches, and farm ponds.[31]

[31] DQ recommendation C.3, C.3.1 and 3.1.1

3. Funding for construction of off-channel storage at sites identified for the Agnew Irrigation District should be pursued immediately. This storage could potentially offset as much as 10 cfs of irrigation demand during the late summer low flows. The planning unit recommends this as a high priority project for early implementation for watershed planning. In addition, the potential for sites east of the river should be further reviewed. Although early investigation indicated no cost-effective sites to serve current irrigation needs, there may be appropriate storage sites available to provide water for other types of beneficial uses. Further work on this should be pursued as warranted.

B. Release of Stored Water: Investigate any water quality issues associated with releasing stored water into the river during low-flow periods.

C. On-Channel Storage: There should be **no** on-channel storage in the Dungeness River or other WRIA 18 rivers and streams due to habitat concerns, cost-effectiveness, and lack of demonstrated need.[32]

3.1.10 Reclaimed Water Supply

Issue: The reclamation and reuse of treated wastewater can extend water supply by satisfying outdoor purposes in areas where existing water supplies are under pressure. It can also augment streamflows and groundwater supplies through infiltration.

Existing Conditions and Current Actions

No treated wastewater source was identified in East WRIA 18 that is not already being developed for reuse. Most domestic sewage in the Sequim-Dungeness area is disposed by individual septic systems. In West WRIA 18, water reuse potential exists with the City of Port Angeles wastewater treatment plant and the Daishowa industrial facility.

City of Port Angeles Treated Wastewater: The City does not measure effluent flows from its wastewater treatment facility but assumes that it is approximately equal to influent, which ranges from 1 to 11 million gallons per day, with an average of 2.62 million gallons each day.

Daishowa Industrial Water Effluent Streams: The Daishowa facility discharges approximately 8 to 9 MGD at a point 1000 feet offshore in the Strait of Juan de Fuca (Dean Reed, pers. comm., February 6, 2003).

City of Sequim: The City operates a Class A reclamation facility that produces approximately .5 MGD, delivering approximately .3 MGD of that total to a variety of municipal nonpotable uses as well as 0.1 cfs to Bell Creek for "enhancement" flows. The City of Sequim has a centralized sewer system serving an area about 3.5 square miles and a population of about 4,400 people.

The City of Sequim is developing facilities to reuse 100% of its municipal wastewater, treated to a Class A standard, in a manner that provides the greatest environmental and economic benefit to the community. Designated as a "demonstration project" by the State Legislature, the Sequim project reviewed stream flow augmentation to Bell Creek, City

[32] DQ recommendation C.3.2 and R.7, extended to all of WRIA 18

maintenance and industrial uses, landscape irrigation, habitat enhancement, golf course turf irrigation, and agricultural irrigation alternatives. The impetus for the program was an agreement signed by the City in 1994 with the Washington State departments of Ecology and Fish and Wildlife related to the closure of Sequim Bay shellfish beds due to the location of the City's wastewater outfall. With the development of Class "A" reuse water and the extension of the City's sewer outfall, approximately 3,000 acres of shellfish beds have been opened.

The City's proposal includes use of reclaimed water for various municipal purposes, irrigation of Carrie Blake Park, for a WSDOT wetland mitigation project, and to augment stream flow in Bell Creek. The City estimates the following potential increases to Dungeness River flows associated with its reuse projects:

- An increase of 2.6 MGY (0.01 cfs) based on replacement of existing potable water use at Carrie Blake Park.
- An increase of 48 MGY (0.2 cfs) based on augmenting streamflows in Bell Creek with a minimum of 0.1 cfs year-round (assuming Highland Irrigation District agrees to reduce diversions from the Dungeness by 0.2 cfs in consideration of receiving this supply from Bell Creek)
- 14.4 MGY from substituting reclaimed for potable water for various City uses.

Bell Creek augmentation may help offset potential impacts due to reductions in irrigation recharge (including the potential to dewater the upper reaches of the creek). Alternatively, conversations have been held with Highland District to take reclaimed water for irrigation and reduce diversions from the Dungeness River (Montgomery Water Group 1999). The Highland District parcel in question is 28 acres and has a demand of approximately 0.28 cfs. Irrigation by treated wastewater would also relieve the Highland District from having to convey water to the farm via Bell Creek. Infiltrate that surfaces in Bell Creek will further reduce the demand for diversion from the Dungeness River conveyed to irrigators via Bell Creek.

Sunland Water Reuse: Sunland, a residential retirement community of over 600 homes and condominiums, applies about 30 inches of treated wastewater to a 30-acre infiltration area for ground water recharge, according to Montgomery Water Group (1999). Carey (1998) critically reviewed the potential for ground water contamination at the application site and found a high potential for ground water contamination to the shallow aquifer. She recommended a number of improvements, including bringing the application rate within design guidelines to avoid downgradient increases in nitrate concentrations. According to Carey, the grass crop watered by the project was not harvested. The project is permitted to apply up to 130,000 gpd. More recently, Sunland has significantly improved the level of treatment applied to their wastewater, and are in the process of getting a Class A effluent permit. (Ann Soule, personal comm., December 2003)

Potential for New Small Package Reclaimed Water Systems

- Four Seasons Ranch (Morse Creek watershed) is on a community drain field; if there are 200-300 homes there may be sufficient capacity to convert to a small package water reuse plant.

- Existing or new golf courses with at least 200-300 unsewered homes in proximity to the golf course may be able to install a small community water reuse plant and use the reclaimed water for golf course irrigation.

Desired Conditions and Outcomes

- Maximum cost-effective water reclamation and reuse in WRIA 18 for park and lawn irrigation, infiltration to recharge groundwater and stream base flows, and other allowable purposes.

Recommendations

A. Feasibility Study: Jurisdictions or industries which have water supply needs should study the feasibility of obtaining wastewater for reuse or storage and treating it according to water quality needs.

B. Golf Course Water Reuse: For new golf courses and those existing golf courses where feasible, golf course irrigation by reclaimed water from residences in proximity to the golf course should be investigated. This would include septic conversion to a small package treatment plant and distribution of treated wastewater to the golf course irrigation system.

C. Stormwater Reuse: Investigate the feasibility of constructing stormwater retention facilities at parks and ballfields and reusing stormwater for park and field irrigation.

D. Land Use Plans and Codes: County and City zoning codes and land use plans should encourage use of reclaimed water for watering golf courses, parks and other high water demand uses.

E. Regulatory Barriers: Local jurisdictions should review their policies and regulations to ensure as far as possible that no barriers exist to water reuse and recycling for all types of use allowed under State law.

F. Water Quantity and Quality Issues: All water quantity and quality issues should be considered in the planning and siting of new developments and wastewater facilities.[33]

1. Research and analyze the use of wastewater for irrigation under the Ecology/Health Interim Guidelines for Wastewater Reuse, and implement a program on a pilot-basis at trial sites in the region. More information is needed regarding the effect of wastewater-use on streams, wetlands and groundwater. This includes what might result from run-off capturing facilities being fitted to any sizable percentage of newly-developed buildings. The use of various types of effluent for agriculture, gardens, golf courses, parks and other irrigation needs should be investigated.
2. Incorporate into water supply plans current and future municipal and public sewage disposal needs.

[33] DQ recommendation C.1.4.3 and subheads

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