AGENDA

WRIA 15 Watershed Restoration and Enhancement Committee Meeting

June 4, 2020 | 9:30a.m.-2:00 p.m. | WRIA 15 Committee Webpage

Location
WebEx Only
(See instructions on next page)

Committee Chair
Stacy Vynne
Svyn461@ecy.wa.gov
(425) 649-7114

Handouts
- Agenda
- Discussion guide on project recommendations
- Revised technical memos
- Policy and adaptive management proposals

Welcome

9:30 a.m. | 5 minutes | Susan Gulick

Meeting Agenda and May Meeting Summary

9:35 a.m. | 5 minutes | Susan Gulick
Handout: Agenda

Updates and Announcements

9:40 a.m. | 10 minutes | Stacy Vynne, All

Projects Update

9:50 a.m. | 70 minutes |Stacy Vynne, Susan Gulick, All | Discussion
Handouts: Discussion Guide on Project Recommendations
Project Inventory
Project Resources

- Update on water rights acquisition projects from PGG
- Update on other projects (Anderson Island, McNeil Island, Great Peninsula Conservancy)
- Recommendation from project workgroup on projects for consultants to develop in more details
- Committee direction on projects to include in plan and projects for additional development by technical consultants
- Next steps

Plan Development

11:00 a.m. | 20 minutes | Stacy Vynne, All | Discussion
Handouts: Revised Technical Memos (Subbasins, Growth and Consumptive Use)

- Feedback on technical memos
- Upcoming plan chapters
- Questions/Discussion

Break

11:20 a.m. | 10 minutes | All

Policy and Adaptive Management: Potential Recommendations

11:30 a.m. | 80 minutes | Susan Gulick, All | Discussion
Handouts: *Policy Proposals*

- Overview of process to bring proposals forward
- New proposals
  - County Policies to Promote Connections to Group A systems
  - Study of County Planning Streamflow Restoration Effectiveness
  - Drought Response Program
- Updates on proposals from previous meetings
  - WDFW Project Tracking
  - Water Master
  - Adaptive Management
- Upcoming Proposals
  - Heads up on proposals that will be developed before our next meeting

Tribal Perspectives

12:50 p.m. | 60 minutes | Squaxin Island Tribe, Tribal Representatives | Presentation, Discussion

Public Comment

1:50 p.m. | 5 minutes | Susan Gulick

Next Steps and Action Items

1:55 p.m. | 5 minutes | Susan Gulick, Stacy Vynne

- Next meeting—Thursday, August 6, 2020, 9:30 a.m., Kitsap County Commissioner's Chambers, Port Orchard, 9:30-2:30 (anticipated, **WebEx Only Likely**)

NOTE: No meeting in July!

WRIA 15 Upcoming Meetings: https://ecy.box.com/v/WRIA15UpcomingMtgs

WebEx Information

WRIA 15 Committee Meeting

Meeting number (access code): 289 653 897

Meeting password: WRIA15Comm

Join meeting

Join by phone

+1-415-655-0001 US Toll

+1-206-207-1700 United States Toll (Seattle)

MEETING SUMMARY

WRIA 15 Watershed Restoration and Enhancement Committee Meeting

May 7, 2020 | 9:30 a.m. - 1:30 p.m. | WRIA 15 Committee Webpage

Location
WebEx

Committee Chair
Stacy Vynne McKinstry
Svyn461@ecy.wa.gov
(425) 649-7114

Handouts
- Agenda
- Revised technical memos
- Water Rights Assessment maps
- Project Inventory
- Project review homework
- Policy Recommendations

Attendance

Committee Representatives and Alternates *

Joel Purdy (*Kitsap Public Utility District*)
David Winfrey (*Puyallup Tribe)*
Stacy Vynne McKinstry *(WA Dept of Ecology)*
Greg Rabourn *(King County)*
Teresa Smith *(City of Bremerton)*
Allison Satter *(alternate - City of Bremerton)*
Dave Ward (*Kitsap County)*
Dave Nash *(alternate-Kitsap County)*
Zach Holt *(alternate - City of Port Orchard)*
Alison O'Sullivan (*alternate - Suquamish Tribe)*
Joy Garitone *(Kitsap Conservation District)*
Brittany Gordon *(WA Dept of Fish & Wildlife)*
Nam Siu *(WA Dept of Fish & Wildlife)*
Shawn O'Dell (*Washington Water Service - ex-officio)*
Austin Jennings (*alternate - Pierce County*)
Dan Cardwell *(Pierce County)*
Seth Book *(alternate - Skokomish Tribe)*
Dana Sarff (*alternate - Skokomish Tribe*)
Nate Daniel *(Great Peninsula Conservancy)*
Paul Pickett *(alternate - Squaxin Island Tribe)*
Randy Neatherlin *(Mason County)*
David Windom *(alternate – Mason County)*
Russ Shiplet *(Kitsap Building Association)*
Sam Phillips *(Port Gamble S'Klallam Tribe)*
Mike Michael *(City of Bainbridge Island)*

Committee Representatives Not in Attendance*

City of Gig Harbor
City of Poulsbo
Mason-Kitsap Farm Bureau (ex-officio)

Other Attendees

Susan Gulick *(Sound Resolutions, Facilitator)*
Angela Pietschmann (*Cascadia, Info Manager*)
Burt Clothier *(Pacific Groundwater Group)*
Bob Montgomery *(Anchor QEA)*
John Covert *(WA Dept of Ecology)*
Stephanie Potts *(WA Dept of Ecology)*
Angela Johnson (*WA Dept of Ecology*)
Paulina Levy (*WA Dept of Ecology*)
Joel Massmann (*Suquamish Tribe)*
Bennett Weinstein *(WA Dept of Ecology)*
Parker Wittman *(Aspect Consulting)*
Tristan Weiss *(WA Dept of Fish & Wildlife)*

**Attendees list is based on roll call and participants signed into WebEx.*

Meeting Agenda and March Meeting Summary

Susan summarized the last meeting and reviewed the agenda. *No revisions to the agenda.*

Stacy reviewed revisions to the April meeting summary provided by Squaxin Island Tribe. Ecology will post the final meeting summary on the committee webpage. *No further refinements to the meeting summary provided.*

Updates and Announcements

Stacy provided updates from Ecology:

- The competitive streamflow restoration grant round application closed on April 30, 2020. Ecology will post summaries and numbers from the grant round on the streamflow grants webpage by mid May. Ecology will review applications through August and anticipate leadership determination of final list for funding in September.
- COVID-19 plan: Ecology will continue to hold meetings remotely as long as there is sufficient participation from committee members. Please let Stacy or Susan know if you or your entity is unable to continue participating.
- Stacy will send calendar invitations for WRIA 15 committee meetings through February 2021 (booking extra holds for months with a fifth week; note no meeting in July).
- Plan development update: Ecology is piloting chapters for WRIA 10 and will then develop draft chapters for WRIA 15. First set of chapters for WRIA 15 review anticipated by early June. Chapters will cover background information, overview of watershed, summary of subbasin delineation, and results.
- Ecology met with the Department of Fish & Wildlife (DFW). DFW believes that beaver projects should count towards NEB, but offset value cannot be accurately quantified.
- Ecology met with representatives from the Skokomish Tribe and their consulting team (Aspect) to discuss their irrigation analysis.
- Ecology will meet with representatives from the Puyallup Tribe in May to check in across multiple committees.
- Ecology reached out to conservation districts (Kitsap, Pierce, and Mason Counties), lead entities (Hood Canal Coordinating Council, West Sound Partners for Ecosystem Recovery), and the Hood Canal Salmon Enhancement Group (HCSEG) for feedback on the WRIA 15 project list. Stacy will share feedback as received.
- Ecology will continue to post additional resources (e.g., information on metering pilot) to Box and share with the committee as they are ready.

Committee Feedback on Technical Memos

Ecology redistributed the Subbasin Delineation technical memo and the Growth and Consumptive Use technical memo in April for committee feedback. The committee reviewed comments together to decide which revisions are accepted. These technical memos will form the basis of plan chapters. All comments received are posted to Box.

Reference Materials

- Subbasin Memo
- Growth and Consumptive Use
- Review Comments

Discussion

- **Subbasin Delineation technical memo**
  - Sam Phillips (Port Gamble S'Klallam Tribe) requested more detail on how the committee will assess projects (closest to anticipated impact). The committee expressed no concerns about adding this detail.
  - Ecology will include a footnote explaining the term watershed characterization "assessment unit" and explain what is meant by the term in-text (i.e., start at a fine scale and work up to a broader scale).
  - Ecology will send revisions to technical consultants to finalize memo and use as the basis for plan chapter.
- **Growth and Consumptive Use technical memo**
  - Ecology received revisions from Pierce County, Kitsap PUD, and the Squaxin Island Tribe. Refer to Box for specific revisions.
  - The consultants will add detail to clearly identify how high and low growth scenario scenarios were calculated for Pierce and Kitsap Counties.
  - The committee agreed to keep using the terms "Water System Data Method" (and describe up front that this data came from Kitsap PUD) and "USGS Groundwater Data Method" to describe consumptive use methodologies.
  - Paul Pickett (Squaxin Island Tribe) wanted to make sure language describing the USGS method is clear.
  - Nam Siu and Tristan Weiss (WA Dept of Fish & Wildlife) expressed DFW's continued concern regarding consumptive use sampling methodology and whether the samples collected are representative of the population.
    - Ecology and DFW will meet in 2 weeks to further discuss how to address DFW's concerns in the plan. DFW has stated that concerns with the methods will not impact their approval of the plan.
    - Ecology invites DFW and others to provide "dissenting opinion" memos if they disagree with methodology in plan (to be included as an appendix).
  - Stacy will redistribute the memo with edits for final review from committee.

Projects: Status and Needs

Burt Clothier (Pacific Groundwater Group) provided an update on PGG's water rights assessment and associated maps of initial results. PGG is not prioritizing water rights that have priority dates later than the instream flow rule (rule already takes precedence over these rights). PGG is only included finalized rights (no applications/claims) in its list.

The committee discussed potential projects within the island subbasins—Vashon/Maury; Bainbridge Island; and South Sound (Anderson/McNeil and Ketron Islands)—to: (1) determine if there are sufficient projects to offset potential impacts; (2) identify gaps; and (3) provide direction to the technical consulting team for further development of projects.

At the April committee meeting, members were asked to highlight projects with the highest [realistic] potential for offset in the short term (by subbasin) for further discussion at the May meeting. Stacy summarized the results of this homework assignment, noting that over 40 projects were identified as a priority for further investment of resources.

Reference Materials:

- Water Rights Acquisition Assessment
- WRIA 15 Project Inventory
- April 2020 – Project Homework
- WRIA 15 Web map

Discussion:

- **PGG Water Rights Assessment**
  - Paul Pickett (Squaxin Island Tribe) agrees with using a geographic analysis approach at the subbasin level, and that areas within the subbasin may need special focus. He suggested PGG work with representatives from each subbasin to further narrow down and vet the list of water rights (based on local knowledge of growth patterns and salmon streams). Paul recommends caution when screening out potential water rights completely at this time.
  - Joel Purdy (Kitsap PUD) expressed concern around Ecology's incomplete source dataset used by PGG in their analysis. The map does not capture groundwater rights in regions where known rights exist. PGG is working with Ecology staff to revise and refine the dataset.
  - Burt wants to work with members of the committee subbasin by subbasin to prioritize water rights for further vetting. The Project Work Group will discuss PGG's analysis in more detail during May 21st meeting. The committee should send subbasin recommendations and/or requests for refinement of the water rights to Stacy by May 19th to be considered in the workgroup discussion.
- **Project Inventory – Bainbridge Island**
  - The inventory includes habitat, stream augmentation, and storage projects (provided by City of Bainbridge Island representatives).
  - Mike Michael (City of Bainbridge Island) noted that the City is continuing to identify projects internally and with stakeholders on the island. The City is working with Bob Montgomery (Anchor QEA) to vet a potential gravel pit infiltration project near the Tilz site on the island. ~~The City is working with Bob Montgomery (Anchor QEA) to vet a potential gravel pit infiltration project at a till site on the island.~~
- **Project Inventory – South Sound Islands (Anderson, McNeil, and Ketron)**
  - No projects proposed yet (but growth projections are minimal). Stacy Vynne (Ecology) will reach out to Nisqually Lead Entity to discuss project options.
  - Brittany Gordon (DFW) noted that the McNeil Island Wildlife Area may have options for restoration projects. DFW would not sponsor these project as they do not have water impacts to offset, but it is an opportunity to partner if other groups need a project. Stacy will reach out to discuss McNeil Island project options with Tristan Weiss (DFW).
- **Project Inventory – Vashon/Maury**
  - Project list currently includes water rights projects that came out of a project in King County and a potential MAR project from John Covert.
  - Greg Rabourn (King County) noted he is looking into several potential projects with interested parties, including: a Shingle Mill Creek beaver dam analogue; Upper Judd / Shingle Mill Creek conservation easements; Beall Creek fish passage. Stacy will follow up with Greg to add projects to the inventory.
- **Project Inventory – Overall**
  - Brittany Gordon (DFW) recommended the committee continues to identify additional projects (especially in Hood Canal) to include in the inventory to mitigate uncertainty.

    - Dave Ward (Kitsap County) would like to revisit whether this project list is sufficient after the committee has made more progress on quantifying the associated offset benefits.
    - Joel Purdy (Kitsap PUD) added a project related to KPUD stream augmentation wells. In Kitsap County basins where offset is most needed, KPUD to install wells that are dedicated only for stream augmentation. Pumping rate could be adjusted for season, precipitation rates (e.g. drought) or number of permit exempt wells as adaptive management component. A single well could provide the entire offset for a subarea. [Note potential conflict with Foster court decision – project idea under discussion with Ecology.]
- **Direction for technical consultants**
    - Over 40 projects identified by committee members as priority for further development and inclusion in the plan. The Project Work Group will discuss the results of April's homework assignment and develop a short list of projects they would like the technical consultants to further develop and bring back to June committee meeting for further discussion / refinement.
    - Paul Pickett (Squaxin Island Tribe) would like technical consultant support on the "Wastewater reclamation infiltration - City of Belfair" project.
    - Dave Ward (Kitsap County) would like the technical consultants to discuss the "Infiltrate County Owned Gravel Pit Near Port Orchard Airport" project with Jon Brand (Assistant Director of Public Works - retiring soon).

Consumptive Use

Stacy summarized the special committee meeting held on April 22nd to discuss whether the group could reach agreement on a consumptive use estimate / path forward. Participants shared perspectives on what they support and preferred estimates; two general points of view emerged: (1) group supports using outdoor irrigation method as high end consumptive use estimate; (2) group supports using outdoor irrigation method as a starting consumptive use estimate (leaving option open to consider additional safety factor within consumptive use or other components of the plan).

Parker Wittman (Aspect Consulting on behalf of Skokomish Tribe) presented the results of Aspect's irrigation analysis for the Skokomish Tribe. The results of the Tribe's analysis help validate consumptive use assumptions. The committee will consider including results memo as a reference/appendix as an approach to planning for dry years.

Reference Materials:

- 4/22 Meeting Summary (special meeting of committee subgroup to discuss consumptive use)
- Skokomish Irrigation Analysis slide presentation

Discussion:

- WRIA 22/23 (Chehalis Basin) has a similar offset target and agreed to use the outdoor irrigation method to estimate consumptive use without including an additional safety factor. A summary of their consumptive use results are available on Box.
- The committee agreed to put the consumptive use conversation on hold for now and revisit it when the committee has a draft plan, a more built-out project list, and has further developed recommendations for policy and adaptive management.

Refinement of Policy Recommendations for Plan

A workgroup met on April 27 to discuss a path forward for developing and vetting policy recommendations. Susan shared a policy/regulatory recommendation proposal template that committee members could use to bring proposals to the committee. She also walked through the input Ecology has received to date on plan recommendations. The committee discussed proposals from the Department of Fish & Wildlife and Squaxin Island Tribe.

Reference Materials:

- WRIA 15 Policy and Regulatory Recommendations
- April 27 Workgroup Meeting Notes
- Proposal template
- Policy and Adaptive Management Proposals

Discussion:

- **Proposal Template**
  - Stacy will distribute the proposal template for feedback and then share a final version. Policy leads should use the template going forward when brining forward proposals for discussion with the committee.
- **Project Implementation Tracking Proposal**
  - Tristan Weiss (Dept of Fish & Wildlife) proposed using the Salmon Recovery Portal (SRP) as a pilot for project implementation tracking. Tracking projects through planning and implementation phases will enhance the Committee's ability to conduct implementation monitoring at the sub-basin and WRIA scale, monitor grant funding, identify plan successes and deficiencies, and streamline project development. This proposal is for all eight WRECs.
  - SRP would memorialize proposed efforts in plan and allow for basic implementation monitoring. Information tracked would include location, project proponents, project goals, phases of each project, anticipated offsets / ecological benefits, and cost over time.
  - DFW would fund the initial costs associated with uploading projects in basin; develop quality assurance protocols; and facilitate aspects of conversation with RCO.
  - Local support will be needed for collecting and loading data.
  - Trained University of Washington Olympic Natural Resources Center data stewards would help with initial setup in SRP. Committee members noted that it's important to have a long-term plan for monitoring and data stewardship so that initial time investments are worthwhile. DFW would need ongoing local support to monitor project implementation.
  - SRP seems to have the flexibility needed to handle a diversity of projects/actions statewide. Tracking policy actions and conservation efforts may be more challenging. A concern was raised that SRP may only tell part of the story (not a go-to place for all plan information, such as policy recommendations).
  - Ecology could consider including a requirement in the streamflow restoration grants to capture critical project information into SRP.
  - Paul Pickett (Squaxin Island Tribe) noted the need to track offsets for completed projects and real water, which could be linked to Ecology reporting requirements.
  - Committee members should contact Stacy or Tristan if they are interested in working with DFW to further develop the proposal.
- **Water Master Proposal**

- Paul Pickett (Squaxin Island Tribe) presented a proposal for an Ecology Water Master to help with compliance and enforcement of regulations (i.e., assessing instream flows; looking for illegal water uses; education, outreach, and technical assistance; and complaint response).
- Stacy noted that Ecology has limited compliance and enforcement staff spread across the Northwest and Southwest regions. These staff focus on large water right violations that have the greatest potential impact to (1) the instream resource and (2) senior water rights holders. The new enforcement positions created in last year's budget were funded for orca recovery efforts and are focused on watersheds with the greatest Chinook salmon populations. While Ecology is not opposed to a new Water Master position, clarity is needed around how the position would be funded and how the position relates (or doesn't) to the Streamflow Restoration planning process and permit exempt well use.
- Randy Neatherlin (Mason County) does not support Water Master enforcement within the County but supports the education/outreach idea.
    - Dan Cardwell (Pierce County) noted that right now state law already authorizes Ecology to enforce permit exempt well limits. Dan will connect with Mason County.
    - Dave Ward (Kitsap County) noted that county lines are political, not ecological, so enforcement should be considered WRIA-wide. Dave raised the concern that we might be identifying a solution for problem that may not exist.
- The committee agreed to defer further Water Master discussion until the committee has determined which recommendations to include in its plan.

- **Other Issues**
    - Paul Pickett described the outcomes of his discussions with Pierce County staff on policy and adaptive management issues.
    - He also offered two points: 1) to finalize the plan the Committee will need to understand the trade-off of a high CU number versus a package of policy and ~~AM~~adaptive management items that really get implemented. 2) He would like specific ideas from the counties to put in the plan, not just good intentions.

Public Comment

No public comment.

Action Items for Committee Members

- Send subbasin recommendations/requests and any specific areas for focus for PGG regarding the water rights analysis to Stacy by May 19th for consideration at the May 21st project workgroup meeting.
- ~~Provide feedback to PGG on geographic parsing of the water rights analysis.~~
- Provide feedback on Growth and Consumptive Use technical memo to Stacy by May 19th.
- Let Stacy know if you'd like to join the Project Workgroup meeting on May 21st.
- Provide feedback on policy/regulatory recommendation proposal template by Friday, May 15th.
- Reach out to Stacy or Tristan if you want to further engage in development of the project implementation tracking tool proposal.

Action Items for Ecology and Consultants

- Ecology will redistribute the Subbasin Delieantion and Growth and Consumptive Use technical memos with edits to the committee for final review.
- Stacy will reach out to (1) Nisqually Lead Entity to discuss project options for South Sound; and (2) DFW to discuss McNeil Island project options.
- Stacy will share the results of the WRIA 22/23 consumpitve use discussion.

Upcoming Meetings

- Next Project Workgroup meeting: Thursday, May 21, 2020.
- Next committee meeting: Thursday, June 4, 2020, 9:30 a.m., WebEx.

Discussion Guide: Projects for Detailed Development

WRIA 15 Committee Meeting June 4, 2020

Purpose of Discussion

The committee will need to select a subset of projects to develop in detail for consideration of their offset or habitat value for the watershed restoration and enhancement plan. The purpose of today's discussion is to review recommendations from the project workgroup and determine if there are additions or revisions to the proposed short list of projects.

Background

The Streamflow Restoration law (90.94.030) lays out minimum requirements for watershed plans. The law states that: "*The watershed restoration and enhancement plan should include recommendations for projects and actions that will measure, protect, and enhance instream resources and improve watershed functions that support the recovery of threatened and endangered salmonids. Plan recommendations may include, but are not limited to, acquiring senior water rights, water conservation, water reuse, stream gaging, groundwater monitoring, and developing natural and constructed infrastructure, which includes but is not limited to such projects as floodplain restoration, off-channel storage, and aquifer recharge. Qualifying projects must be specifically designed to enhance streamflows and not result in negative impacts to ecological functions or critical habitat*." (90.94.030 (3)(a)). In addition, "*At a minimum, the plan must include those actions that the committee determines to be necessary to offset potential impacts to instream flows associated with permit-exempt domestic water use*." (90.94.030 (3)(b)). The projects must also meet a net ecological benefit (90.94.030 (3)(c)).

Ecology has hired HDR as the technical consultant firm to support development of components for the plan. HDR is able to support the committee in exploring project ideas, and developing a subset of projects in detail to evaluate their offset or habitat benefit, feasibility for implementation, and alignment to committee priorities. **We have budget to develop up to ten projects in detail**. (A sample of a detailed project description for the Kingston Wastewater Treatment Plant Reclaimed Water Project is available here.) The consultants are able to gather more information about a larger set of projects to help the committee discern which projects merit detailed development, but the consultants will not be able to develop more than ten projects in detail.

Considerations for the Committee

The WRIA 15 Project Inventory currently contains over 120 projects that provide offset or habitat value. The committee has discussed many projects on the list in detail as committee members and partners have brought forward the projects for consideration. At this time, projects will only be removed from the list if they raise a concern from a committee member. The committee needs to identify a subset of projects that HDR can develop in more detail for further consideration in the plan and their contribution towards offset or habitat improvements. The committee has not yet discussed how to organize the project list (tiering, prioritization, etc), but will do so at a future meeting.

The workgroup met on May 21 for a workshop to review projects in detail. The workgroup identified a short list of projects to explore further and a short list of projects to develop in detail. The

recommendations below are based on the expertise of workgroup members, partners, and the technical consultant team. The consultants will bring all information prepared for projects back to the committee for further discussion.

A. List of **projects to further explore** to determine if projects are worth consideration in the project inventory or for detailed development (projects are highlighted in blue in the project inventory so that you easily identify them).
   NOTE: *this list does not consider water right acquisition assessment recommendations forthcoming from PGG; this list can be added to by the committee over the next few months.*
   1. Filucy Bay Floodplain Enhancement (South Sound)
   2. Belfair Wastewater Reclamation Infiltration (South Sound)
   3. Big Beef Creek Restoration (North Hood Canal)
   4. Little Anderson Creek/Asbury/Newberry Woods Acquisitions (North Hood Canal)
   5. Manzanita Project (Bainbridge Island)
   6. M&E Farms (Bainbridge Island)
   7. Johnson Farm (Bainbridge Island)
   8. Tertiary Treatment Facility (Bainbridge Island)

B. List of **projects to develop in detail** for consideration in the plan ((projects are highlighted in green in the project inventory so that you easily identify them).
   NOTE: *this list does not consider water right acquisition assessment recommendations forthcoming from PGG; this list can be added to by the committee over the next few months.*
   1. Gig Harbor Golf Course Water Use/Artondale Package (South Sound)
   2. Infiltration of Gravel Pit near Port Orchard Airport (South Sound)
   3. Big Beef DNR Parcel Storage Project (North Hood Canal)
   4. Reclaimed Water and Augmentation from Silverdale Water District (West Sound)

Note that the Mason County onsite offset project is under development per request of the WRIA 14 Committee and HDR will share the results with the WRIA 15 Committee once completed.

Questions for the Committee

1. Are there any additional projects on the project inventory that should be considered for:
   a. Further exploration?
   b. Detailed development?
2. Are there any projects listed above that you don't feel are worth time by the consultants to further explore or develop in detail?
3. Recognizing we have limited budget for developing projects in detail, does the committee want to have any habitat projects developed in detail? If so, how should we select that subset of projects?

Technical Memorandum
WRE Committees Technical Support

To:	Stacy Vynne McKinstry, Washington State Department of Ecology
From:	Bob Montgomery, Anchor QEA; Chad Wiseman, HDR
Date:	February 12, 2020 (original); May 27, 2020 (revised)
Subject:	WRIA 15 Subbasin Delineation (Work Assignment WA-01, Task 2)

Commented [VMSJ(1]: Added revised date

1.0 Introduction

HDR is providing technical support to the Washington State Department of Ecology (Ecology) and the Watershed Restoration and Enhancement (WRE) committee for Water Resource Inventory Area (WRIA) 15. The Streamflow Restoration law (Revised Code of Washington [RCW] Chapter 90.94) requires that WRE plans include actions to offset new consumptive-use impacts associated with permit-exempt domestic water use. RCW 90.94.030(3)(b) states, "The highest priority recommendations must include replacing the quantity of consumptive water use during the same time as the impact and in the same basin or tributary." Therefore, delineations must be developed for the subbasins in WRIA 15 that will be used as a spatial framework for growth projections, consumptive-use estimates, and priority offset projects. The Net Ecological Benefit (NEB) evaluation will also be based on this framework. This technical memorandum addresses the basis for subbasin delineation in WRIA 15 (Kitsap).

Commented [VMSJ(2]: From Paul
Do you recall why the three South Sound islands were considered separately (but not Fox Island)? After working on the analysis for these areas, I'm inclined to combine the three islands into South Sound. Combining is easier than splitting, but I'd like to know who the advocates were for the proposed 2 separate regions. I suspect that only Pierce County would care – I can check with them.

Commented [VMSJ(3R2]:

Commented [VMSJ(4R2]: resolved

2.0 Subbasin Delineation

This section explains the initial and final delineations for WRIA 15. The term "subbasin" is used by the WRIA 15 WRE committee for planning purposes only and to meet the requirements of RCW 90.94.030 (3)(b).

2.1 Initial Delineation

The WRIA 15 workgroup (a subcommittee of the WRE committee) was tasked to delineate subbasin boundaries for discussion at WRE committee meetings. An initial discussion was held at the April 4, 2019, workgroup meeting and Pierce County, the Kitsap Public Utility District (PUD), and the Squaxin Tribe subsequently developed maps of proposed subbasin boundaries and provided those to Ecology and the WRE committee.

The initial, general considerations included the following:

- Subbasins should be neither too big nor too small.
- Surface water flows and rain flow patterns should be included.
- Anticipated rural growth and where there is little growth will likely drive projects and impacts.
- Priority areas for salmon recovery should be included.

- Isolated areas like islands without streamflow connectivity to the mainland should be included as their own subbasin (for example, the South Sound Islands are grouped based on relatively low projected growth and proximity to Pierce County mainland).
- There should be recognition that the WRE committee can revise subbasins throughout the process.

The maps were further discussed at the May 2, 2019, WRE committee meeting and the workgroup meeting that immediately followed that meeting.

The result of the discussion on May 2, 2019, was a proposal that divides WRIA 15 into "regions" that are an initial delineation of subbasins that will be revisited as the watershed planning process continues. The key points discussed are as follows:

- Considerations for subbasins include starting large, using a nesting approach, and ensuring that there is justification for offset projects outside of a subbasin.
- The workgroup is committed to finding projects closest to the impact and revisiting subbasin delineations throughout the process.
- The regions map will be used for generating growth projections and consumptive use. The counties shared that they can project growth at any level but recognize that the smaller the subbasins are, the less reliable the data are. It is helpful for the counties to have the proposed size of regions for providing their growth projections.
- Some workgroup members are interested in using smaller assessment areas as well, such as Hydrologic Unit Code 12 (HUC12) boundaries, to look at particular stream impacts.
    - Workgroup members also suggesting using Assessment Units[1] (from Ecology's Puget Sound Watershed Characterization Project) as a starting point for mitigation.
- The Squaxin Tribe would like to see a road map of how the subbasin delineations will be revisited throughout the process.

Further discussion of the regions approach occurred in the June 4, 2019, workgroup meeting and the June 6, 2019, WRE committee meeting. Agreement was reached on proceeding with use of the regions with the following caveats:

- The regions approach is a nested approach where regions are essentially a "do not cross" line for finding projects to offset impacts.
- Projects should be closest to the anticipated impact and provide benefit to streams. Using a nested approach, the potential for offsets will be evaluated first at the assessment unit scale, then at the HUC 14 scale, and finally at the subbasin scale. In other words, the committee will look for projects at the finest scale possible first. If the offsets are not achievable at the small or

Commented [VMSJ(5]: new language; recommendation by Mike and Paul

Commented [VMSJ(6]: New language with footnoted definition, recommended by Sam.

Commented [VMSJ(7]: Define AU. Or refine to say we work from finer scale and work up to broader scale. Add footnote for AU.

[1] Assessments Units are described in the Puget Sound Watershed Characterization Project (Department of Ecology, 2013). Each WRIA is made up of subwatersheds, called watershed management units, which are further divided into Assessment Units. A variety of watershed assessment results are presented for each assessment unit, including: water flow (for delivery, surface storage, recharge, and discharge processes); water quality processes (for five parameters: sediment, phosphorus, nutrients, pathogens, and metals); and fish and wildlife habitats (for terrestrial, freshwater and marine habitats).

intermediate unit scale, justification will be provided (for example, there is greater relative benefit in a larger project in a stream of importance).

- ~~Projects will be found that are closest to the impact and beneficial.~~
- The WRE committee will continue to revisit delineation of subbasins once growth projections and projects are developed.

The June proposal included three main regions: South Sound, West Sound, and Hood Canal. The boundary between the West Sound region and the Hood Canal region in the northern Kitsap Peninsula was left flexible with the recognition that projects in one region could benefit streams in the other region. The other regions are Bainbridge Island, Vashon-Maury Island, and the three south Puget Sound islands (McNeil, Anderson, and Ketron).

2.2 Revision to Hood Canal Region

The Skokomish Tribe proposed to revise the region delineation by dividing the Hood Canal region into North Hood Canal and South Hood Canal regions. The reason is differing precipitation amounts, development and status of fish species. The proposal was first presented to the WRIA 15 Committee in October who passed it to the workgroup for discussion. A subset of workgroup members reviewed the proposal and recommended the proposal be accepted. The proposal was further discussed at the November 7, 2019 WRIA 15 Committee meeting. There was agreement amongst all Committee members present to accept the revision to the Hood Canal region.

2.3 Final Delineation

Agreement was reached at the March 5, 2020 WRIA 15 committee meeting to accept the region delineations as the subbasin boundaries. Figure 1 presents the subbasins as agreed to at that meeting.

3.0 Conclusion

The WRIA 15 WRE committee delineation of subbasins will be used as an organizational framework for growth projection and consumptive-use scenarios. References

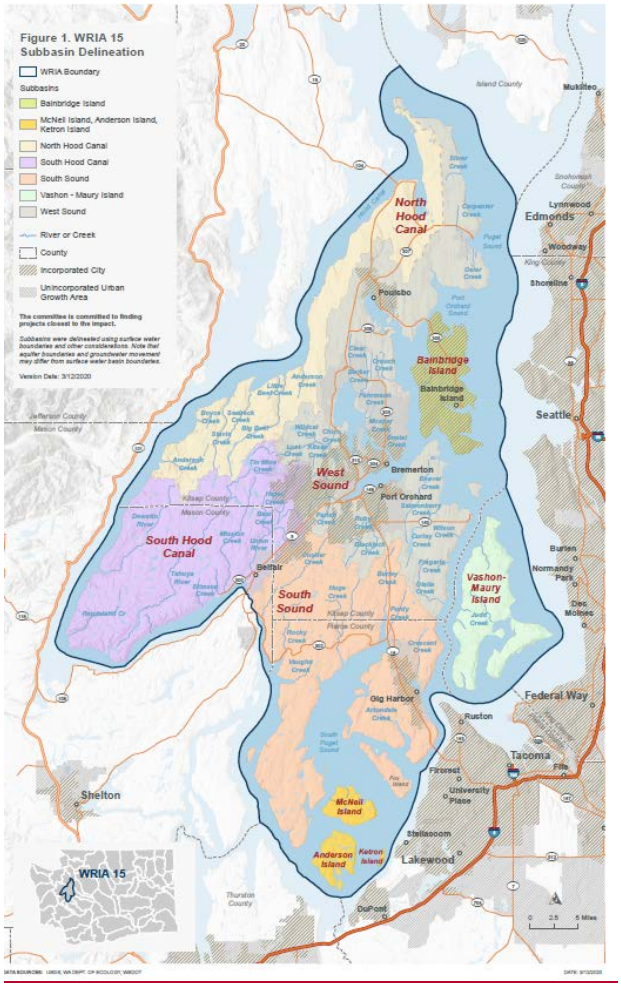
Revised Code of Washington (RCW). 2019. Watershed Planning, Chapter 90.82 RCW. Accessed on June 23, 2019, at https://app.leg.wa.gov/rcw/default.aspx?cite=90.82.

RCW. 2019. Streamflow Restoration, Chapter 90.94 RCW. Accessed on June 23, 2019, at https://app.leg.wa.gov/RCW/default.aspx?cite=90.94.

U.S. Geological Survey and U.S. Department of Agriculture, Natural Resources Conservation Service (USGS). 2013. Federal Standards and Procedures for the National Watershed Boundary Dataset (WBD) (4 ed.): Techniques and Methods 11–A3, 63 p., https://pubs.usgs.gov/tm/11/a3/.

Commented [VMSJ(8]: From Sam. Can the committee commit to this approach for the projects?

Figure 1. WRIA 15 subbasin delineation



Commented [VMSJ(9]: Note that better quality image will be included in final version.

Technical Memorandum DRAFT

To:	~~Angela Johnson~~Stacy Vynne McKinstry, Washington State Department of Ecology
From:	Chad Wiseman, HDR and Bob Montgomery, Anchor QEA
Copy:	
Date:	February 13, 2020 (original); May 27, 2020 (revised)
Subject:	WRIA 15 PE Growth and Consumptive Use Summary (Work Assignment 2, Tasks 2 and 3)

1.0 Introduction

HDR is providing technical support to the Washington State Department of Ecology (Ecology) and the Watershed Restoration and Enhancement (WRE) committees for Water Resource Inventory Areas (WRIAs) 10, 12, 13, 14, and 15.

Under RCW 90.94, consumptive water use ~~(CU)~~ by permit-exempt ~~(PE)~~ domestic wells and connections ~~(PE~~ wells) occurring over the ~~next~~ 20 year period of 2018-2038 (planning horizon)~~s~~ must be estimated to establish the water use that watershed restoration plans and plan updates are required to address and offset. This memorandum summarizes PE ~~domestic~~ wells ~~and connections~~ and related ~~CU~~ consumptive use of groundwater that is projected to impact WRIA 15 over the ~~20 year~~ planning horizon.

This memorandum includes:

- A summary of WRIA 15 baseline, low, and high PE growth scenarios.
- A summary of WRIA 15 baseline, low, and high scenario consumptive use using three different methods.

2.0 WRIA 15 PE Growth Projection Methods

Portions of ~~Kitsap,~~ Mason, Pierce, and King Counties and all of Kitsap County are located within WRIA 15. The WRIA 15 WRE committee agreed to develop high and low growth projection scenarios based on varying the Kitsap and Pierce County projections. At this time, Mason County and King County growth projections remained the same for the baseline high and low scenario projections; however the Squaxin Island Tribe has expressed interest in possibly seeing a higher growth scenario or safety factor for Mason County. Mason County wants to ensure that the adaptive management component of the plan considers the results of the census for changes in population growth (available in 2022).

2.1 Kitsap County

Two methods were used to project growth over the planning horizon for Kitsap County. Both the Kitsap County Land Capacity Analysis, completed by County staff, and the Historical Wells Method, completed by Kitsap Public Utility District (Kitsap PUD), result in similar numbers:

Kitsap County Land Capacity Analysis

Commented [A1]: Edits by Joel to spell out CU and use Kitsap PUD
Edits by Stacy to define 20 years as the planning horizon.
Edits by Austin to replace Pierce Co buildable lands.

From Paul: Growth and Consumptive Use memo
- The basis for low, medium, and high PE growth projections for each county should be described.
- The values used in the calculations of consumptive use should be provided in addition to the formulas.
- The methods used in the USGS study should be summarized.
- The USGS study used for consumptive use (5.0) should be cited in references

See comments from DFW on the methodology for calculating the average acreage for outdoor irrigation.

Commented [A2R1]: Review Joel's 2nd round of edits as well as comments from DFW. Incorporate more on uncertainty / assumptions with method.

Commented [A3]: Added Bob

Commented [A4]: Change date?

Commented [A5]: Added revised date

Commented [A6]: New: changing to short hand that we'll likely use for the plan

1) Identify 20-year growth projections from the Kitsap Regional Coordinating Council growth projections (conversion to single-family residences based on assumed people per household and rural growth target).
2) Allocate growth by subbasin based on proportion of historical building permits by subbasin from 2002 to 2019.
3) Conduct a land capacity analysis. Determine vacant parcels within each subbasin that is within and outside of the waterline or sewerline 200-foot buffer. Assume that all parcels greater than 0.15 acre are buildable if they are within the 200-foot buffer. Buildout capacity for parcels greater than 0.75 acre outside of a 200-foot waterline buffer is assumed to be served by PE wells ~~connections~~. Assume that that growth occurs along the waterline areas first, and that the forecasted number of ~~permit exempt wells~~PE wells is less than the forecasted number of single family residences as some wells may have multiple connections.
4) Multiply the growth for each subbasin (step 2) by the proportion of growth expected to be served by PE wells ~~connections~~ (step 3).
5) The application of this method to City of Bainbridge Island results in no new ~~well connections~~PE wells. An alternative method for City of Bainbridge Island was performed which assumes one PE well connection per parcel, regardless of parcel size. It was also assumed that growth occurs along the waterline areas first with the remaining growth occurring on parcels needing PE wells.

Kitsap County developed three iterations of growth projections in rural areas based on varying the minimum parcel size to be suitable for a PE well in the land capacity analysis (Step 3). The versions included 0.25 acre, 0.75 acre, and 1.0 acre. The final version recommended by the county assumed a minimum acreage for PE wells of 0.15 acre in their land capacity analysis and also used additional data on water lines and sewer lines (as a proxy for water lines). This version was provided to HDR on November 22, 2019. Kitsap County provided a flow chart of the land capacity analysis and heat map (HDR 2019a).

Historical Wells Method:

1) Calculate historical growth rates of PE wells using County records of wells drilled (2003-2018). Note this is all wells drilled, not just PE wells.
2) Forecast growth of future PE well connections for the 20-year planning horizon, based on the historical growth rate.
3) Allocate growth of PE wells within each subbasin spatially, based upon land capacity analysis (i.e., parcel must be outside of UGA, not in a water and wastewater system boundary, not already built upon, or must have zoning category that allows for domestic use).

2.2 King County

The following methods were used to project growth over the planning horizon:

1) Use historical building permit data (2000–2017) to project future growth.
2) Define if each historical building permit used for growth projections is public or private (aka PE well) water service.

3) Multiply the annual (projected) number of building permits per year by the percentage of permits using private water to determine a projected number of PE well connections per year to yield the annual rate of PE well connections.

4) Multiply the rate of annual PE well connections by 20 for the estimated total of PE well connections over a 20-year period.

5) Overlay subbasins to determine number of new PE well connections in each subbasin.

6) Remove the portion of the wells that are projected to be inside of the water district service boundaries.

The King County method is described in more detail in a technical memo provided by the county dated December 16, 2019 (HDR 2019a). King County growth projections did not change from the initial projections on July 31, 2019.

2.3 Mason County

The following methods were used to project growth during the planning horizon:

1) Develop 20-year growth projections based on the Mason County Comprehensive Plan (the Comprehensive Plan is based on ~~OFM~~ Office of Financial Management medium population growth estimates, and conversion to dwelling units based on assumed people per dwelling unit).

2) Determine available land for single-family domestic units and determine proportion of buildout capacity by county urban growth areas (UGAs) and rural lands.

3) Apply growth projections to buildable lands.

4) Remove projected development unlikely to connect to a PE well (i.e., parcel is located within a water system service area; parcel is smaller than 1 acre).

5) Overlay subbasins to determine new PE connections in each subbasin.

Initial growth projections for Mason County were updated because of 1) updates to county parcel attributes and 2) a request from the WRIA 14 and WRIA 15 WRE committees to ~~allow~~ account for PE ~~growth~~ wells within water system service areas. Parcel data were updated to correct for circumstances where the zoning and land use attributes identified a parcel as buildable but were also associated with a feature that was incompatible with building (e.g., on top of a waterbody). The initial methods assumed zero PE well growth within water system service areas in both the urban growth areas (UGAs) and rural areas. HDR developed a method that allocates PE well growth in rural water systems proportional to the number of parcels in each water system not currently served by the water system.

The method is comprised of the following steps:

1) Assume future growth is proportional to buildable parcels with available water system hookup and parcels that would require a PE well or connection for development.

2) Define total buildable parcels per county buildable lands analysis that are contained within each respective water system service area. The water system service areas are defined by the Washington State Department of Health (DOH) as polygons in the Geographic Information Service (GIS) platform.

3) Define active and total approved (active + available) water system connections from the DOH Sentry database.

4) Calculate buildable parcels with an available water system hookup (total approved minus active water system connections)

5) Calculate buildable parcels that would require a PE well or connection for development (total buildable parcels minus total approved connections).

6) Calculate ratio of buildable parcels that would require a PE well or connection (step 5) to the parcels with an available water system hookup (step 4) and multiply by the number of dwellings predicted to occur in that water system service area.

2.4 Pierce County

The following methods were used to project growth over the planning horizon:

4) Calculate historical growth rates of PE wells for each subbasin using the Tacoma-Pierce County Health District (TPCHD) well database (1999–2018).

5) Forecast growth of future PE well connections for the ~~20-year~~ planning horizon, based on the subbasin-specific historical growth rate.

6) Allocate growth of PE wells within each subbasin spatially, based upon a ~~buildable-lands~~parcel assessment for PE well potential ~~analysis~~ (i.e., parcel must be outside of UGA, not in a water and wastewater system boundary, not already built upon, or must have zoning category that allows for domestic use).

No changes were made to the growth projection methods or results occurred since the initial growth projection on July 31, 2019.

2.5 High and Low Growth Scenarios

Because of the uncertainty in the projections, the WRIA 15 Committee evaluated additional permit-exempt well scenarios using different periods in the historical TPCHD well database. The high growth scenario uses the 1999–2008 data, which was a time of relatively healthy economic growth resulting in more rapid rural development. The low growth scenario uses the 2009–2018 data, which was a time of a relatively slower rate of rural development and corresponds with the recession and housing downturn. For Kitsap County, a plus or minus five percent was used to calculate the high and low growth scenario. The five percent is based on the approximate typical deviation from the County's rural growth projections and actual growths. High and low growth scenarios were not calculated for Mason or King Counties at the Counties' request.

Commented [A7]: New language at request of multiple comm members

Commented [A8]: Check this language.with Dave Ward

3.0 WRIA 15 Consumptive Use Methods

Consumptive use of water from projected PE ~~connection~~ well growth was estimated using three different methods; 1) the Irrigated Area Method; 2) the Water System ~~(Kitsap PUD) d~~Data Method and; 3) the ~~Kitsap Peninsula Survey Data~~USGS Groundwater Model Method

3.1 Irrigated Area Method

Consumptive use was calculated using Ecology's recommended assumptions for indoor and outdoor consumptive use (Ecology 2018; 2019).

3.1.1 Indoor Consumptive Use – Irrigated Area Method

Ecology (2018; 2019) recommends the following assumptions for estimating indoor consumptive water use:

- 60 gallons per day per person within a household
- 2.5 persons per household (or as otherwise defined by the Counties)
- 10 percent of indoor use is consumptively used
  - Most homes served by a PE well use septic systems for wastewater. This method assumes 10 percent of water entering the septic system will evaporate out of the septic drain field and the rest will be returned to the groundwater system.

The above assumptions were used to estimate indoor consumptive water use by occupants of a single dwelling unit. Assuming that there is one PE well connection per dwelling unit, a "per PE well connection" consumptive use factor was applied to the growth projections forecast in each subbasin to determine total indoor consumptive use per subbasin. This method is summarized by the following equation:

$$HCIWU\ (gpd) = 60\frac{gal}{day * person} * 2.5\frac{people}{household} * CUF$$

Where:

HCIWU = Household Consumptive Indoor Water Use (gpd)

CUF= Consumptive use factor; assumed to be 10% (factor expressed as 0.10)

This estimate of indoor per household per day can be annualized and converted to acre-feet per year or~~f~~ cubic feet per second.

3.1.2 Outdoor Consumptive Use – Irrigated Area Method

Ecology (2018; 2019) recommends estimating future outdoor water use based on an estimate of the average outdoor irrigated area for existing homes served by PE ~~domestic~~ wells. To calculate the consumptive portion of total outdoor water required per parcel/connection over a single growing season, Ecology recommends:

- Estimating the average irrigated lawn area (pasture/turf grass) per parcel in each WRIA,
- Applying crop irrigation requirements,
- Correcting for application efficiency (75 percent efficiency recommended by Ecology guidance) to determine the total outdoor water required over a single growing season, and
- Applying a percentage of outdoor water that is assumed to be consumptive (80 percent outdoor consumptive use recommended).

WRE Committees were given the opportunity to adjust variables used in the analysis when applicable to the specific WRIA. WRIA 15 opted not to adjust variables.

The average irrigated area in WRIA 15 was estimated by measuring areas of visible irrigation (i.e. green lawns relative the surrounding, gardens, managed landscaping) in using aerial imagery in 80 random parcels with existing dwellings that have a PE well or connection (Figure 1). The average irrigated area was 0.08 acres (Table 1). Most parcels evaluated did not have visible signs of irrigation in the aerial imagery (Figure 2). Detailed methods and results are defined in the consumptive use methods technical memorandum and report (HDR 2019b).

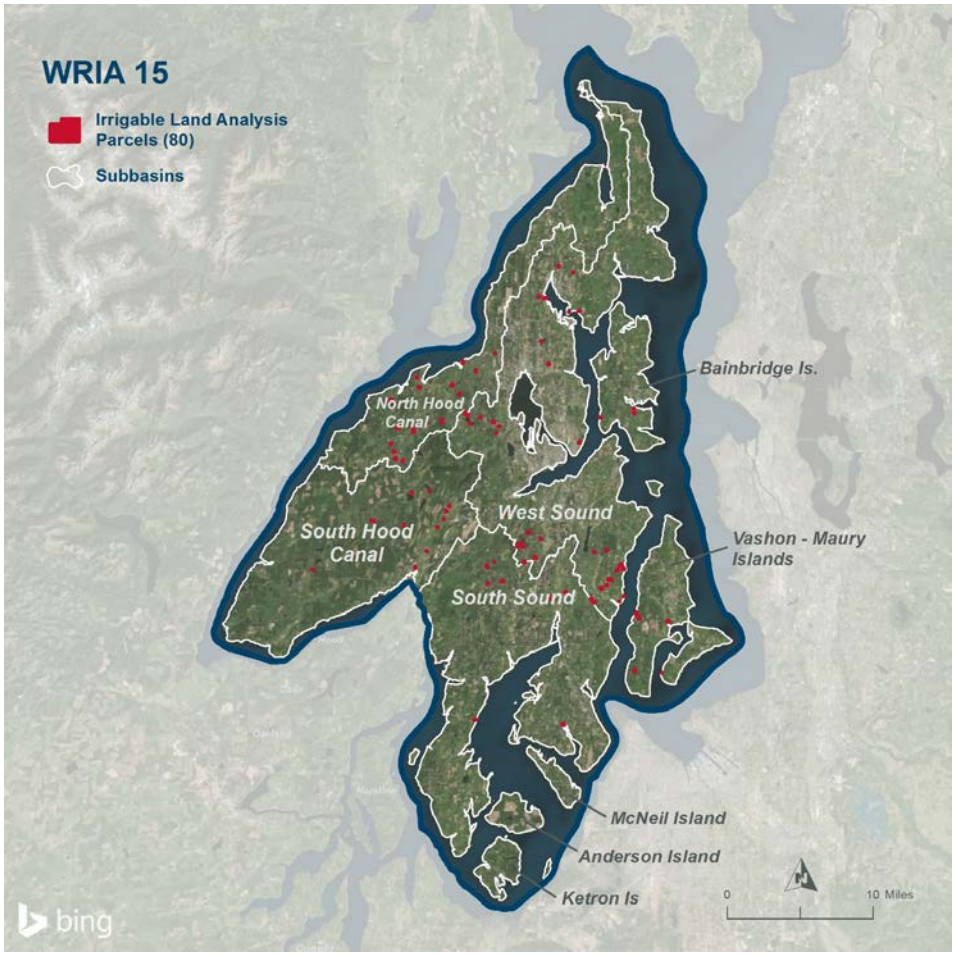


Figure 1. Parcels selected in WRIA 15 with existing PE ~~connections~~ well that were delineated for apparent irrigated areas.

Table 1. Irrigated acreage delineation results.

Statistic	WRIA 15
PE Parcel Sample Pool	8,987
Sample Size	80
Mean (acres)	0.08
Standard Deviation (acres)	0.13
95% UCL (acres)	0.14

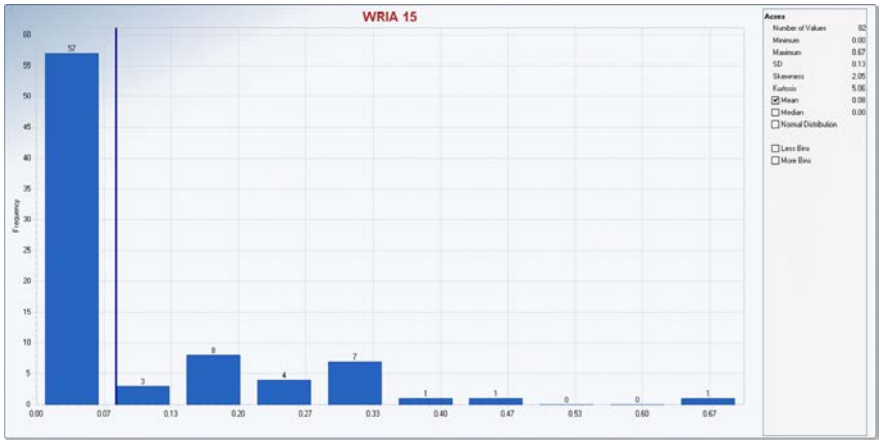


Figure 2. Histogram of WRIA 15 irrigated acreage delineation results.

Once average irrigable acreage per connection was determined for a WRIA, water use was calculated based on irrigation requirements and application efficiency. Crop irrigation requirements were estimated for pasture/turf grass from nearby stations as provided in the Washington Irrigation Guide (NRCS-USDA, 1997). An irrigation application efficiency was applied to account for water that does not reach the turf. Ecology (2018; 2019) recommends using a 75 percent application efficiency factor. The consumptive portion of total amount of water used for outdoor use was assumed to be 80 percent of the total. This method is summarized in the following equation:

$$HCOWU\ (gpd) = A\ (acres) * IR(feet) * AE * CUF * CF$$

Where:

HCOWU = Household Consumptive Outdoor Water Use (gpd)

A = Irrigated Area (acres)

IR = Irrigation Requirement over one irrigation season (feet)

AE = Application efficiency; assumed to be 75% (factor expressed as 1/0.75)

CUF= Consumptive use factor; assumed to be 80% (factor expressed as 0.80)

CF = Conversion Factor to convert afy to gpd; 1 afy = 892.742 gpd

Uncertainty in Irrigated Area Calculations

Commented [A9]: New section; requested by DFW to describe assumptions, uncertainty, bias. Also to include more information about the irrigated area analysis.

The irrigated area measurements were performed using a set of 80 parcels distributed throughout WRIA 15. The number of parcels selected was based on the budget for this task as agreed to by HDR and Ecology. Concern was expressed by some members of the Committee that a repeatable, spatially distributed, and statistically valid subset of parcels was not used. While this concern was recognized and acknowledged, ultimately the Committee determined that the results were representative of the WRIA.

The parcels analyzed were selected using the following procedure:

- Define the available pool of parcels with existing PE wells using Tacoma-Pierce County Health Department data for Pierce County and in Mason, Kitsap and King counties using assessor's data and water system boundary data to locate existing residences not served by water systems
- Classify parcels by value (less than $350,000, $350-600,000, greater than $600,000)
- From the available pool of parcels, randomly select a subset of parcels throughout WRIA 15, while ensuring the distribution of parcel values is like that of the entire WRIA 15

The parcel selection procedure provided a spatially distributed and representative sample of parcels with PE wells.

After measuring irrigated area for the subset of 80 parcels, the results were presented to a WRIA 15 workgroup. Kitsap PUD and the Suquamish Tribe performed analyses to independently verify the results. The two independent analyses confirmed the findings of the irrigated area analysis. This indicates the procedure was repeatable. The Committee, with their knowledge of the WRIA, stated that the results were in line with water use in the WRIA. In addition, the technique used to delineate irrigated area was subject to a quality assurance check by another consultant, GeoEngineers, at the request of Ecology (GeoEngineers and HDR, 2020).

The average irrigated area measured for the 80 parcels is 0.08 acres. The area is low due to a high number of non-irrigated parcels. HDR performed statistical analyses of the irrigated acreage to estimate the upper confidence limits and to determine the sample size of parcels required to estimate a mean value of irrigated acreage for error margins ranging from 0.01 acre to 0.06 acre. It was found the set of 80 parcels allows the mean to be calculated within a 0.03-acre error margin.

The Committee reviewed the irrigated area calculations and chose not to adjust the calculations by assuming a base amount of irrigation instead of zero for non-irrigated parcels. The Committee believes that 0.08 acres is representative of the irrigated areas for PE wells in WRIA 15 and adopted that value for consumptive use calculations. Factors in that decision are the conservative nature of the consumptive use calculation when applied to the irrigated area and the independent analyses performed to confirm the measurements of irrigated acreage.

At the request of Committee members, the consultant team considered other approaches to measuring and calculating average irrigated area. Measurement techniques using remote sensing data were considered but it was determined that it would be more costly and time-consuming than the method employed by HDR. Additional parcels for analysis were delineated and provided to Ceommittee members for additional analysis for further verification of average irrigated area. No additional analysis was received from Committee members.

3.2 Water System ~~(Kitsap PUD)~~ Data Method

Consumptive use by PE wells and connections may also be estimated using metered connections from water systems. HDR requested data from WRE Committee members for water systems that use (or have used) a flat rate billing structure and were similar in character to the rural environments in which households may connect to PE wells. In WRIA 15, ~~the~~ Kitsap PUD provided consumption data for all Kitsap PUD water systems for years 2017 and 2018.

3.2.1 Indoor Use

Average daily use in December, January, and February is representative of year-round daily indoor use. Average daily system-wide use is divided by the number of connections (assuming all connections are residential), to determine average daily indoor use per connection. A 10 percent consumptive use factor was applied to the average daily use in the winter months to determine the consumptive portion of indoor water use per connection.

3.2.2 Outdoor Water Use

Average daily indoor use was multiplied by the number of days in a year to estimate total annual indoor use. Total annual indoor use was subtracted from total annual use by a water system to estimate total annual outdoor use. An 80 percent consumptive factor was applied to determine the consumptive portion of outdoor use.

3.2.3 Seasonal Outdoor Water Use

Outdoor consumptive use was also estimated on a seasonal basis. The Washington Irrigation Guide reports irrigation requirements between the months of April and September for representative weather stations in WRIA 15. Therefore, seasonal outdoor water use was assumed to occur over a period of six months. Average daily indoor use was multiplied by the number of days in the irrigation season to calculate total indoor use for the irrigation season. Total irrigation season indoor use was then subtracted from total season use to determine total outdoor use for the irrigation season. The value was proportionally allocated to each month in the irrigation season using the requirements from the Washington Irrigation Guide. An 80 percent consumptive factor was applied to determine the consumptive portion of outdoor use.

3.3 ~~3.3~~ USGS Groundwater Model Method ~~Additional Kitsap Peninsula Survey Data~~

A groundwater-flow model was developed by the USGS to improve understanding of water resources on the Kitsap Peninsula. The study area did not include WRIA 15 areas of Key Peninsula, and Vashon, Fox, Anderson, McNeil and Ketron Islands. The first step in the modeling process was to characterize the groundwater-flow system on the Kitsap Peninsula and to prepare a water budget for the study area, ~~,~~ which are ~~including descriptions of the geology and hydrogeologic framework, groundwater recharge and discharge, groundwater levels and flow directions, seasonal groundwater-level fluctuations, interactions between aquifers and the surface-water system, and to prepare a water Abudget. The characterization is~~ contained in the report ~~2014 USGS study by Welch, Frans, and Olsen~~ titled *Hydrogeologic Framework, Groundwater Movement and Water Budget of the Kitsap Peninsula, West-Central Washington* (Welch, Frans, and Olsen, 2014). The report provides a survey of consumption from select water utilities serving more than 221,700 people

Commented [A10]: Joel proposed using "Kitsap PUD" but I'd recommend leaving generic to follow NEB guidance and then explain that data was used from KPUD.
Need to confirm with Joel on whether he's recommending we switch from 80-90% for outdoor CU. The CU calculator uses 80%.

Commented [A11]: Edits from Joel
Was this just Kitsap PUD or did we pull in data from other water systems?

Commented [A12R11]: Some members prefer to keep generic name to stay consistent with other plans

Commented [A13]: Revisions based on feedback from Joel and request from Paul to add more info on the USGS GW Model

with more than 88,500 residential connections ~~within the study area of~~on the Kitsap Peninsula. ~~The study area did not include WRIA 15 areas of Key Peninsula, and Vashon, Fox, Anderson, McNeil and Ketron Islands.~~ The USGS study differentiated between the indoor and outdoor portions of use. Estimated indoor use (based on November–April pumping values) was 66 gallons per person per day. Outdoor use was estimated for the outdoor growing season and varied by month from 4 gallons per person per day in May to 97 gallons per person per day in September. For the purposes of groundwater modeling USGS set the consumptive use rate for indoor domestic use at 10 percent in nonsewered areas, and the consumptive use rate for outdoor use at 90 percent. Th~~ose~~ water use values and consumptive use rates for the USGS study area ~~were~~are used in this report to develop an additional estimate of consumptive use per permit-exempt connection for the entire WRIA 15. To differentiate this method from the water system data method that uses Kitsap PUD managed water system data, it is termed the USGS groundwater model method.

~~A 2014 USGS study by Welch, Frans, and Olsen titled *Hydrogeologic Framework, Groundwater Movement and Water Budget of the Kitsap Peninsula, West-Central Washington* provides a survey of consumption from select water utilities serving more than 221,700 people with more than 88,500 residential connections. The study area was the Kitsap Peninsula, not including WRIA 15 areas of Key Peninsula, and Vashon, Fox, Anderson, McNeil and Ketron Islands. The USGS study differentiated between the indoor and outdoor portions of use. Kitsap PUD used these estimates of indoor and outdoor use to develop an additional estimate of consumptive use per PE well connection in WRIA 15. Kitsap PUD applied a 10 percent indoor consumptive use factor and 90 percent outdoor consumptive use factor to the USGS survey data, and differentiated between the indoor and outdoor portions of use. Kitsap PUD used these estimates of indoor and outdoor use to develop an additional estimate of consumptive use per PE well connection in WRIA 15.~~

Commented [A14]: Bullet out the assumptions/calculation for this method
Add a paragraph on the USGS report

Commented [A15]: These edits provided by KPUD. Need to confirm accuracy and approval by comm
Bob- did KPUD do this work? I thought the numbers were just pulled from the USGS study. Was there any additional analysis done by KPUD?

4.0 Results

4.1 PE Connection Growth

Baseline PE connection growth is projected to be 5,568 connections (Table 2). The high PE growth scenario is projected to have 584 additional connections, for a total of 6,152 PE connections. The low PE growth scenario is projected to have 707 fewer connections than the baseline scenario, for a total of 4,861 PE connections. PE connection growth is expected to be greatest in the “South Sound” subbasin.

4.2 Consumptive Use

~~The USGS data yielded a total consumptive use per PE connection of 74.2 gpd.~~
The irrigated area method yielded a total consumptive use per PE connection of 122.9 gpd.

The water system data method yielded a total consumptive use per PE connection of 64.3 gpd. The USGS ~~data~~model method yielded a total consumptive use per PE connection of 75~~4.2~~ gpd.
~~The irrigated area method yielded a total consumptive use per PE connection of 122.9 gpd.~~

The estimates of consumptive use in WRIA 15 over the 20 year planning horizon using the irrigation area method was 1.06 (baseline), 0.93 (low growth), and 1.17 cfs (high growth).

The estimates of consumptive use in WRIA 15 over the ~~20 year~~ planning horizon using the water system data method were 0.55 cfs (baseline), 0.48 cfs (low growth), and 0.61 cfs (high growth).

The estimates of consumptive use in WRIA ~~of~~15 over the planning horizon using the USGS ~~survey data~~model method were 0.65 cfs (baseline), 0.57 (low growth), and 0.72 (high growth).
~~The estimates of consumptive use in WRIA 15 over the 20 year planning horizon using the irrigation area method was 1.06 (baseline), 0.93 (low growth), and 1.17 cfs (high growth).~~

For WRIA 15 scenarios, the estimates of consumptive use using the irrigation area method estimates are approximately 1.9 times higher than the water system data method. Consumptive use is 1.1 times higher in the high growth scenario than the baseline scenario, and approximately 1.7 times higher than the USGS ~~data~~model method.~~.~~ Consumptive use is approximately 1.14 times higher in the baseline scenario than the low growth scenario.

Commented [A16]: Reorganized a bit to follow flow of sections above.

Table 2. Annualized Average Consumptive Use Estimates for WRIA 15 – Baseline Growth

Annualized Consumptive Use Estimates for WRIA 15 (2020–2040) – Baseline Growth Projection; 0.75 acre minimum threshold										
Subbasin	Projected PE Well Connections	Annual Consumptive Use: Water System Estimate			Annual Consumptive Use: USGS Estimates			Annual Consumptive Use: Irrigated Area Estimate (per Ecology Guidance)		
		AFY	GPM	CFS	AFY	GPM	CFS	AFY	GPM	CFS
West Sound	1,336	96.2	59.6	0.1331	112.2	69.6	0.1553	183.9	114.0	0.2545
Hood Canal	656	47.2	29.3	0.0653	55.1	34.2	0.0763	90.3	56.0	0.1249
South Hood Canal	1,126	81.0	50.2	0.1121	94.6	58.6	0.1309	155.0	96.1	0.2145
Bainbridge Island	491	35.3	21.9	0.0489	41.3	25.6	0.0571	67.6	41.9	0.0935
South Sound	1,553	111.8	69.3	0.1547	130.5	80.9	0.1805	213.8	132.5	0.2958
Vashon – Maury Island	368	26.5	16.4	0.0367	30.9	19.2	0.0428	50.7	31.4	0.0701
McNeil Island, Anderson Island, Ketron Island	38	2.7	1.7	0.0038	3.2	2.0	0.0044	5.2	3.2	0.0072
Totals	**5,568**	**400.8**	**248.4**	**0.5545**	**467.8**	**290.0**	**0.6473**	**766.4**	**475.1**	**1.0605**

Table 3. Annualized Average Consumptive Use Estimates for WRIA 15 – Low Growth

Annualized Consumptive Use Estimates for WRIA 15 (2020–2040) - Low Growth Projection; 0.75 acre minimum threshold										
Subbasin	Projected PE Well Connections	Annual Consumptive Use: Water System Estimate			Annual Consumptive Use: USGS Estimates			Annual Consumptive Use: Irrigated Area Estimate (per Ecology Guidance)		
		AFY	GPM	CFS	AFY	GPM	CFS	AFY	GPM	CFS
West Sound	1,142	82.2	51.0	0.1137	95.9	59.5	0.1328	157.2	97.4	0.2175
Hood Canal	561	40.4	25.0	0.0559	47.1	29.2	0.0652	77.2	47.9	0.1068
South Hood Canal	1,119	80.5	49.9	0.1114	94.0	58.3	0.1301	154.0	95.5	0.2131
Bainbridge Island	491	35.3	21.9	0.0489	41.3	25.6	0.0571	67.6	41.9	0.0935
South Sound	1,158	83.3	51.7	0.1153	97.3	60.3	0.1346	159.4	98.8	0.2206
Vashon – Maury Island	368	26.5	16.4	0.0367	30.9	19.2	0.0428	50.7	31.4	0.0701
McNeil Island, Anderson Island, Ketron Island	22	1.6	1.0	0.0022	1.8	1.1	0.0026	3.0	1.9	0.0042
Totals	**4,861**	**349.9**	**216.9**	**0.4841**	**408.4**	**253.2**	**0.5651**	**669.1**	**414.8**	**0.9258**

Table 4. Annualized Average Consumptive Use Estimates for WRIA 15 – High Growth

Annualized Consumptive Use Estimates for WRIA 15 (2020–2040) - High Growth Projection; 0.75 acre minimum threshold										
Subbasin	Projected PE Well Connections	Annual Consumptive Use: Water System Estimate			Annual Consumptive Use: USGS Estimates			Annual Consumptive Use: Irrigated Area Estimate (per Ecology Guidance)		
		AFY	GPM	CFS	AFY	GPM	CFS	AFY	GPM	CFS
West Sound	1,403	101.0	62.6	0.1397	117.9	73.1	0.1631	193.1	119.7	0.2672
Hood Canal	689	49.6	30.7	0.0686	57.9	35.9	0.0801	94.8	58.8	0.1312
South Hood Canal	1,128	81.2	50.3	0.1123	94.8	58.8	0.1311	155.3	96.2	0.2148
Bainbridge Island	516	37.1	23.0	0.0514	43.4	26.9	0.0600	71.0	44.0	0.0983
South Sound	1,992	143.4	88.9	0.1984	167.4	103.8	0.2316	274.2	170.0	0.3794
Vashon – Maury Island	368	26.5	16.4	0.0367	30.9	19.2	0.0428	50.7	31.4	0.0701
McNeil Island, Anderson Island, Ketron Island	56	4.0	2.5	0.0056	4.7	2.9	0.0065	7.7	4.8	0.0107
Totals	**6,152**	**442.8**	**274.5**	**0.6127**	**516.9**	**320.4**	**0.7152**	**846.8**	**524.9**	**1.1717**

Commented [A17]: Mike submitted a comment: For this seasonal analysis, it seems that using the average monthly indoor CU, gives us a false high in the middle of winter and a similar low in July since the CU for indoor use is assumed to come primarily from evaporation/transpiration of the drainfield, which should be much less in December and much more in July...

The literature on indoor consumptive use that Ecology cites doesn't distinguish between seasons. The potential difference in seasonal CU would be small anyway, especially in comparison to outdoor irrigation CU. Since we are looking at annual quantities for offset numbers estimating the seasonal difference in indoor CU is not required.

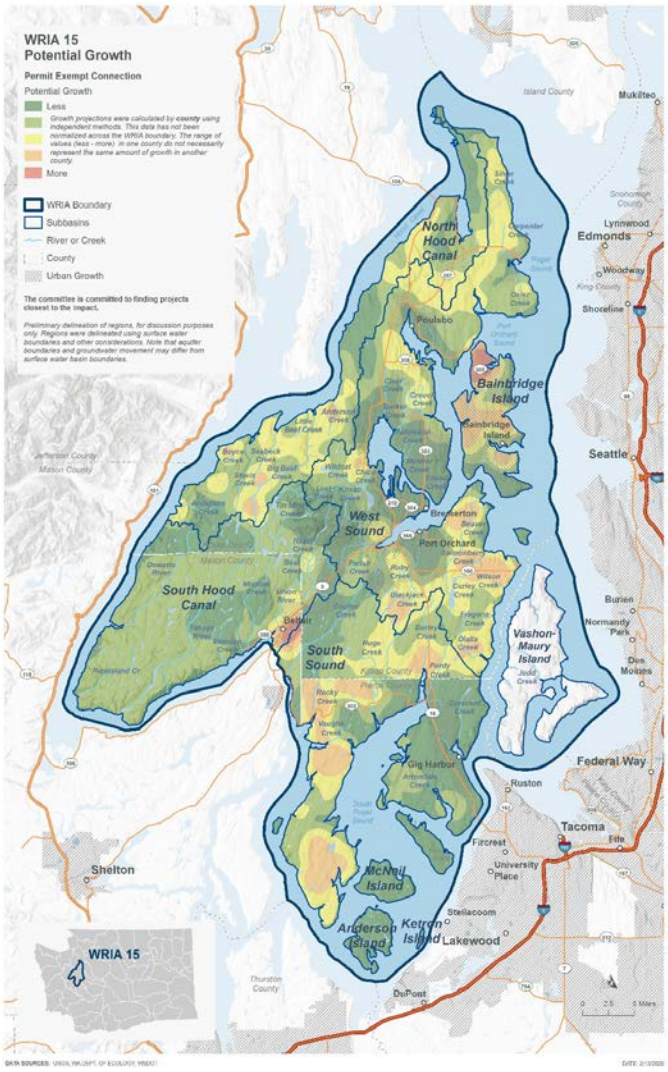


Figure 3. WRIA 15 projected PE connection growth.

5.0 Seasonal Use

Monthly outdoor water use was calculated as part of the consumptive use analysis for the Irrigated Area method. Seasonal water use by month is reported by subbasin and scenario (Table 4). The month of July has the highest irrigation requirement, resulting in the highest monthly consumptive use impact. This information may be used when evaluating projects designed to offset subbasin- and season-specific impacts.

~~Uncertainty in Calculations~~

Commented [A18]: Note this section is incorporated above

~~[insert section 6.0 on uncertainty, bias, assumptions]~~

~~Discuss some of the DFW concerns about the methods~~

~~Discuss statistical analysis~~

~~Discuss analysis of parcels done by committee members~~

~~Discuss generation of other set of parcels~~

~~Discuss consideration for other methods (Pierce Co, remote sensing)~~

Table 4: WRIA 15 Monthly Consumptive Water Use

Subbasin	Projected No. PE Wells (Baseline)	Consumptive Use by Month (cfs)											
		Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
West Sound	1,336	0.0311	0.0311	0.0311	0.0311	0.3316	0.7239	0.9879	0.7585	0.3726	0.0311	0.0311	0.0311
Hood Canal	656	0.0153	0.0153	0.0153	0.0153	0.1628	0.3555	0.4851	0.3724	0.1829	0.0153	0.0153	0.0153
South Hood Canal	1,126	0.0262	0.0262	0.0262	0.0262	0.2795	0.6101	0.8327	0.6393	0.3140	0.0262	0.0262	0.0262
Bainbridge Island	491	0.0114	0.0114	0.0114	0.0114	0.1219	0.2661	0.3631	0.2788	0.1369	0.0114	0.0114	0.0114
South Sound	1,553	0.0361	0.0361	0.0361	0.0361	0.3855	0.8415	1.1484	0.8817	0.4331	0.0361	0.0361	0.0361
Vashon – Maury Island	368	0.0086	0.0086	0.0086	0.0086	0.0914	0.1994	0.2721	0.2089	0.1026	0.0086	0.0086	0.0086
McNeil Anderson, Ketron	38	0.0009	0.0009	0.0009	0.0009	0.0094	0.0206	0.0281	0.0216	0.0106	0.0009	0.0009	0.0009
Totals	**5,568**	**0.1295**	**0.1295**	**0.1295**	**0.1295**	**1.3822**	**3.0171**	**4.1174**	**3.1612**	**1.5527**	**0.1295**	**0.1295**	**0.1295**
Subbasin	**Projected No. PE Wells (Low Growth)**	**Consumptive Use by Month (cfs)**											
		Jan	**Feb**	**March**	**April**	**May**	**June**	**July**	**Aug**	**Sept**	**Oct**	**Nov**	**Dec**
West Sound	1,142	0.0266	0.0266	0.0266	0.0266	0.2835	0.6188	0.8445	0.6484	0.3185	0.0266	0.0266	0.0266
Hood Canal	561	0.0130	0.0130	0.0130	0.0130	0.1393	0.3040	0.4148	0.3185	0.1564	0.0130	0.0130	0.0130
South Hood Canal	1,119	0.0260	0.0260	0.0260	0.0260	0.2778	0.6064	0.8275	0.6353	0.3120	0.0260	0.0260	0.0260
Bainbridge Island	491	0.0114	0.0114	0.0114	0.0114	0.1219	0.2661	0.3631	0.2788	0.1369	0.0114	0.0114	0.0114
South Sound	1,158	0.0269	0.0269	0.0269	0.0269	0.2875	0.6275	0.8563	0.6574	0.3229	0.0269	0.0269	0.0269
Vashon – Maury Island	368	0.0086	0.0086	0.0086	0.0086	0.0914	0.1994	0.2721	0.2089	0.1026	0.0086	0.0086	0.0086
McNeil Anderson, Ketron	22	0.0005	0.0005	0.0005	0.0005	0.0055	0.0119	0.0163	0.0125	0.0061	0.0005	0.0005	0.0005
Totals	**4,861**	**0.1130**	**0.1130**	**0.1130**	**0.1130**	**1.2067**	**2.6340**	**3.5946**	**2.7598**	**1.3555**	**0.1130**	**0.1130**	**0.1130**
Subbasin	**Projected No. PE Wells (High Growth)**	**Consumptive Use by Month (cfs)**											
		Jan	**Feb**	**March**	**April**	**May**	**June**	**July**	**Aug**	**Sept**	**Oct**	**Nov**	**Dec**
West Sound	1,403	0.0326	0.0326	0.0326	0.0326	0.3483	0.7602	1.0375	0.7965	0.3912	0.0326	0.0326	0.0326
Hood Canal	689	0.0160	0.0160	0.0160	0.0160	0.1710	0.3733	0.5095	0.3912	0.1921	0.0160	0.0160	0.0160
South Hood Canal	1,128	0.0262	0.0262	0.0262	0.0262	0.2800	0.6112	0.8341	0.6404	0.3145	0.0262	0.0262	0.0262
Bainbridge Island	516	0.0120	0.0120	0.0120	0.0120	0.1281	0.2796	0.3816	0.2930	0.1439	0.0120	0.0120	0.0120
South Sound	1,992	0.0463	0.0463	0.0463	0.0463	0.4945	1.0794	1.4730	1.1309	0.5555	0.0463	0.0463	0.0463
Vashon – Maury Island	368	0.0086	0.0086	0.0086	0.0086	0.0914	0.1994	0.2721	0.2089	0.1026	0.0086	0.0086	0.0086
McNeil Anderson, Ketron	56	0.0013	0.0013	0.0013	0.0013	0.0139	0.0303	0.0414	0.0318	0.0156	0.0013	0.0013	0.0013
Totals	**6,152**	**0.1430**	**0.1430**	**0.1430**	**0.1430**	**1.5272**	**3.3336**	**4.5493**	**3.4928**	**1.7155**	**0.1430**	**0.1430**	**0.1430**

6.0 References

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Commented [A19]: Add USGS Studies

Commented [A20]: added

Commented [A21]: date revised

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Policy proposal – WRIA 15 WREC

Name: **County Policies to Promote Connections to Group A systems**

Entity: Squaxin Island Tribe

Type of policy idea (see list below): Regulation

Description of policy idea (a short abstract)**:**

1. *Identify the potential implementers and other key players.*
    a. Counties
2. *Describe proposed actions (including current policies or codes, existing programs and their limitations, problems to be corrected, etc.).*
    a. Tighten standards to increase connections to Group A systems rather than PE wells
    b. Actions could include:
        i. Require all developments or parcels to hook up to a Group A system if they are within a fixed distance of a service line, say 600 feet.
        ii. Provide other standards for "timely and reasonable" to provide consistency across all purveyors in each County and increase the likelihood of connection to Group A service instead of to a PE well
        iii. Make hookup to Group A service mandatory for all parcels under 1 acre.
3. *Identify who the action impacts (if different than primary implementer).*
    a. Developers and landowners requiring water service for new construction.
4. *Describe benefits and challenges/obstacles.*
    a. Benefits: Reduces the potential number of PE wells, which reduces groundwater consumptive use and provides a safety factor for the overall Plan goal of streamflow restoration.
    b. May increase construction costs for affected parcels. This may result in political resistance to necessary ordinance changes. Ordinances could be rolled back in the future.

Description of purpose:

1. *How would this recommendation enhance the WRIA 15 plan? Describe the desired result and its purpose in this plan (we want to be clear how this relates to offsetting impacts from PEW OR be explicit that this is a benefit to the watershed even if not directly related to PEW impacts).*
    a. These requirements would be consistent with the Plans' goal of streamflow restoration.
    b. Implementation of these rules would provide a safety factor for the goal of providing offsets to exceed new PE well consumptive use.

Description of concerns:

1. *What, if any, concerns with this policy idea have WRIA 15 members expressed or that you anticipate?*
    a. There will likely be resistance to increased costs for new construction, even if limited.
    b. There may be political resistance to tightening development rules.
2. *If you have discussed this with concerned members, what was the result of those discussions?*

    a. No direct discussions, but concerns have been inferred from comments at committee meetings.
3. *Are there other potential downsides or objections to the proposal that you anticipate?*
    a. Concerns noted above
    b. Lack of certainty the these recommendations will be implemented
4. *In what ways does your proposal address those concerns?*
    a. Proposed changes are targeted and narrow.
    b. Ordinance development to implement these recommendations will likely result in changes to address concerns.

Cost and funding sources:

1. *What elements of the proposal are likely to require funding?*
    a. Some staff time will be necessary to develop the ordinances.
    b. Grants could be obtained to compensate for increased costs (this could be a possible project for the Plan).
2. *Provide a rough cost estimate (if known) and discuss potential funding sources and whether funding is one time or ongoing.*
    a. Unknown at this time.
3. *Explain costs to other affected parties besides implementing regulators (for example: costs will increase for well drilling or new requirements on homeowners/home builders).*
    a. Hookup to a Group A system will likely increase construction costs and require homeowners to pay utility rates.

Policy proposal – WRIA 15 WREC

Name: South Sound Water Master

Entity: Squaxin Island Tribe

Type of policy idea (see list below): Regulation; Education; Compliance

Description of policy idea (a short abstract)**:**

1. *Identify the potential implementers and other key players.*
    a. Ecology, with support from local governments
2. *Describe proposed actions (including current policies or codes, existing programs and their limitations, problems to be corrected, etc.).*
    a. Ecology creates a new position of "South Sound Water Master", which would include both water master and ground water supervisor authorities. The duties of the position would include:
        i. Monitor instream flows, wells, and other relevant water bodies for compliance with state rules and regulations
        ii. Support implementation of watershed plans developed under RCW 90.94 by carrying out tasks designated for the water master in the plans.
        iii. Conduct education, outreach, and technical support for permit-exempt wells owners and water rights holders
        iv. Provide technical support to Ecology water rights decisions in the South Sound
        v. Develop and implement compliance guidelines, including
            1. Criteria for determining noncompliance
            2. Procedures for addressing noncompliance through a stepwise escalation of actions: education and voluntary compliance at first; if egregious or ineffective, then notice of violation, order, or penalties.
            3. Immediate action if causing substantial harm to other water rights, public or tribal resources.
        vi. Investigate and enforce against illegal water use
        vii. Enforce the PE well water use limitations, including special conditions for drought, though a complaint response system.
    b. The proposed water master district would be, at a minimum all of the south sound watersheds inside (west of) the Tacoma Narrows, encompassing WRIAs 11, 12, 13, 14, and the southern part of WRIA 15 that drains to the South Sound. Alternatively, the water master district could include all of WRIA 15.
    c. Duties would be consistent with legal authorization for both a Water Master and a Ground Water Supervisor
    d. RCW 90.03.060; 90.03.070; RCW 90.44.200; WAC Chapter 508-12
3. *Identify who the action impacts (if different than primary implementer).*
    a. Potentially any water user
    b. Supports tribal treaty rights and rights of senior water rights holders
4. *Describe benefits and challenges/obstacles.*
    a. Benefits:

i. Provides consistency and effectiveness in implementing the watershed plan and the legal requirements of water use. This benefits all stakeholders and water users.
ii. Gives Ecology a visible and clear role for compliance

b. Challenges:
i. Requires dedicated funding
ii. Requires clarity of purpose and job duties
iii. Local unfamiliarity with Water Masters and ground water supervisors
iv. Occasional controversy in a particular situation
v. Severe resistance might result in legal challenges

Description of purpose:

1. *How would this recommendation enhance the WRIA 15 plan? Describe the desired result and its purpose in this plan (we want to be clear how this relates to offsetting impacts from PEW OR be explicit that this is a benefit to the watershed even if not directly related to PEW impacts).*
    a. Supports implementation of the Plan
    b. Provides dedicated staff to provide education, outreach, and technical assistance
    c. Supports compliance with water resources laws and regulations and supports Tribal Treaty rights.

Description of concerns:

1. *What, if any, concerns with this policy idea have WRIA 15 members expressed or that you anticipate?*
    a. Discomfort with a visible Ecology presence for water enforcement
    b. Uncertainty with the duties of the position
    c. Uncertainty with funding
2. *If you have discussed this with concerned members, what was the result of those discussions?*
    a. Support in some cases, concern and opposition in others
3. *Are there other potential downsides or objections to the proposal that you anticipate?*
    a. Position depends on state funding and commitment, which is uncertain
    b. Local government support may shift with political changes
4. *In what ways does your proposal address those concerns?*
    a. It attempts to be very clear about proposed purpose and duties

Cost and funding sources:

1. *What elements of the proposal are likely to require funding?*
    a. Position will need funding and there are costs for position creation and hiring
2. *Provide a rough cost estimate (if known) and discuss potential funding sources and whether funding is one time or ongoing.*
    a. Based on the 2019-21 biennial state budget, one water master position would require about $132,000 per year. This would require reassignment of existing staff, or an additional legislative appropriation.
    b. Local governments may wish to consider a contribution to support the water master position, to demonstrate their support and improve chances for Ecology adoption and legislative funding.

c. All funding would be ongoing.

3. *Explain costs to other affected parties besides implementing regulators (for example: costs will increase for well drilling or new requirements on homeowners/home builders).*
    a. Enforcement could lead to costs for water users who are in violation of state law
    b. Costs are ultimately borne by taxpayers

Policy proposal – WRIA 15 WREC

Name: Study of County Planning Streamflow Restoration Effectiveness

Entity: Squaxin Island Tribe

Type of policy idea (see list below): Special Study

Description of policy idea (a short abstract)**:**

1. *Identify the potential implementers and other key players.*
    a. Consultant will conduct the study. Ecology or other entity would be lead for contracting.
2. *Describe proposed actions (including current policies or codes, existing programs and their limitations, problems to be corrected, etc.).*
    a. Conduct a study of how planning and permitting in the four south sound counties supports protection and enhancement of streamflow restoration, through protection and enhancement of groundwater recharge and other mechanisms.
    b. The study would evaluate how and why county programs have been effective; gaps or areas where planning has been less effective in promoting streamflow restoration; and propose ways to improve rules to promote recharge enhancement and streamflow restoration.
    c. The study report would be distributed to the study counties and relevant branches of state government to inform decision-making.
3. *Identify who the action impacts (if different than primary implementer).*
    a. The study would have no direct impact.
    b. The findings of the study could influence future state or local decision-making regarding state and county planning and streamflow restoration.
4. *Describe benefits and challenges/obstacles.*
    a. Benefits: develops information to support improvements in planning to promote streamflow restoration
    b. Challenges/obstacles: needs funding and staff resources for scope and grant development. There may be resistance to a review of county planning.

Description of purpose:

1. *How would this recommendation enhance the WRIA 15 plan? Describe the desired result and its purpose in this plan (we want to be clear how this relates to offsetting impacts from PEW OR be explicit that this is a benefit to the watershed even if not directly related to PEW impacts*).
    a. Better information on how county planning and permitting affects streamflows could lead to improvements that support the Plan's goals for streamflow restoration. Such improvements would be one way to add safety factor to the goals of the Plan.

Description of concerns:

1. *What, if any, concerns with this policy idea have WRIA 15 members expressed or that you anticipate?*

    a. This is a new proposal and has yet to be discussed. Counties may be reluctant to have their programs reviewed, or may be concerned with staff workload to provide information to the study.
2. *If you have discussed this with concerned members, what was the result of those discussions?*
    a. No discussions yet.
3. *Are there other potential downsides or objections to the proposal that you anticipate?*
    a. The study may end up "on a shelf" and not result in any improvements.
4. *In what ways does your proposal address those concerns?*
    a. It tries to define its content in a way that is relevant and actionable.

Cost and funding sources:

1. *What elements of the proposal are likely to require funding?*
    a. The study will require funding. Developing the study proposal, providing information for the study, and disseminating results will require funding for staff resources.
2. *Provide a rough cost estimate (if known) and discuss potential funding sources and whether funding is one time or ongoing.*
    a. Unknown at this time. Could be estimated by an experienced consultant.
3. *Explain costs to other affected parties besides implementing regulators (for example: costs will increase for well drilling or new requirements on homeowners/home builders).*
    a. There would be no costs to others from the Study itself.

Policy proposal – WRIA 15 WREC

Name: Drought response program

Entity: Squaxin Island Tribe

Type of policy idea (see list below): Regulation, education

Description of policy idea (a short abstract)**:**

1. *Identify the potential implementers and other key players.*
    a. Counties, Ecology
2. *Describe proposed actions (including current policies or codes, existing programs and their limitations, problems to be corrected, etc.).*
    a. Consistent with RCW 90.94.030(4)(b), upon the issuance of a drought emergency order under RCW 43.83B.405, withdrawal of groundwater exempt from permitting under RCW 90.44.050 will be limited to no more than three hundred fifty gallons per day per connection for indoor use only.
    b. A limited exemption is allowed for growing food and for maintaining a fire control buffer. Use of water under this exemption would be subject to an odd-even watering day program.
    c. Counties will develop a water conservation plan for PE wells, similar to Group A conservation plans. The plan will include an education and outreach program to educate and notify the public about water conservation and drought water use limitations and practices.
    d. Ecology will develop and implement a compliance and enforcement program for these limitations, implemented potentially through a Water Master
    e. Ecology will include these requirements in a package for rule-making.
    f. Propose legislation to apply this program to all PE wells statewide.
3. *Identify who the action impacts (if different than primary implementer).*
    a. New Permit exempt wells
    b. Supports tribal treaty rights and rights of senior water rights holders
4. *Describe benefits and challenges/obstacles.*
    a. Benefits:
        i. Addresses increased impacts in dry years compared to average conditions.
        ii. Operates in parallel to ISF rules and closures to protect Tribal Treaty rights and senior water rights.
        iii. Addresses climate change impacts.
    b. Challenges: poor understanding or resistance from home-owners. Requires dedicated resources. Without an education and compliance programs, compliance with the limits will be poor.

Description of purpose:

1. *How would this recommendation enhance the WRIA 15 plan? Describe the desired result and its purpose in this plan (we want to be clear how this relates to offsetting impacts from PEW OR be explicit that this is a benefit to the watershed even if not directly related to PEW impacts).*

a. Build resilience into the plan to address extreme events of heat, dryness, and low flow
b. Provide protections for senior water rights holders
c. Support NEB goals for streamflow restoration.

Description of concerns:

1. *What, if any, concerns with this policy idea have WRIA 15 members expressed or that you anticipate?*
    a. Prefer education first, and a compliance approach over enforcement
    b. Some counties want Ecology to enforce, some want their County to have the lead
    c. Funding is a challenge – state funding better than local
    d. Ecology and Counties will make no commitments
2. *If you have discussed this with concerned members, what was the result of those discussions?*
    a. Agree with compliance-first approach
    b. Agree on need for funding but not on preferred approach
    c. No agreement yet on who takes the lead for compliance
3. *Are there other potential downsides or objections to the proposal that you anticipate?*
    a. Addressing only new PE wells may not be fair if existing wells are exempt
    b. Lack of this program could result in a loophole that opens the plan to a legal challenge
4. *In what ways does your proposal address those concerns?*
    a. Proposal has been revised over time to approach the issue in ways that might reach consensus

Cost and funding sources:

1. *What elements of the proposal are likely to require funding?*
    a. The conservation plan development
    b. Compliance program development and implementation
    c. Rule-making
    d. Legislative advocacy
2. *Provide a rough cost estimate (if known) and discuss potential funding sources and whether funding is one time or ongoing.*
    a. Cost uncertain – need analysis
    b. Increase PE well fees
    c. Include in Ecology budget
    d. One-time: initial program development, rule making, legislative advocacy
    e. Ongoing: implantation of programs
3. *Explain costs to other affected parties besides implementing regulators (for example: costs will increase for well drilling or new requirements on homeowners/home builders).*
    a. Impacts on those providing funding – new home buyers or taxpayers
    b. Costs to homeowners out of compliance and subject to enforcement
    c. Possible costs to impacts on landscaping from outdoor watering ban

Policy proposal – WRIA 15 WREC

Name: Adaptive Management responses

Entity: Squaxin Island Tribe

Type of policy idea (see list below): Adaptive Management

Description of policy idea (a short abstract)**:**

1. *Identify the potential implementers and other key players.*
    a. Ecology, Counties
2. *Describe proposed actions (including current policies or codes, existing programs and their limitations, problems to be corrected, etc.).*
    a. Counties will track and document permit exempt well construction
    b. Counties (or other entities possibly) would track offset projects
        i. Monitor project status
        ii. Document project completion
        iii. Assess project success and quantify final offset amounts
    c. Counties (or other entities possibly) would provide an annual report to Ecology on PE well construction and offset status
    d. Beginning at the fifth year of implementation, Ecology would assess the County reports and compare PE well installation and consumptive use amounts (using the methodology designated in the plan) to completed offset project amounts.
        i. If the annual report indicates that offset amounts are more than 10% behind the "moderate" PE well consumptive use amounts, Ecology would declare drought water use restrictions to be into effect for the following year, regardless of whether a drought emergency has been declared or not
        ii. If the annual report indicates that offset amounts are more than 25% behind the "moderate" PE well consumptive use amounts, Ecology will declare a moratorium on new PE wells until offset projects are completed to bring the deficit back to less than 25%
        iii. If offset project amounts are exceeding the "high growth" targets (on an annual prorated basis) then the Counties may go to biannual reporting (i.e reporting waived for the following year)
    e. Ecology rule-making as necessary to implement
3. *Identify who the action impacts (if different than primary implementer).*
    a. Water use restrictions could impact homeowners
    b. Could impact developers and home buyers if the deficit passes the 25% threshold
4. *Describe benefits and challenges/obstacles.*
    a. Benefits:
        i. Provides clear and substantive responses to PE well use exceeding offset amounts
        ii. Protects against legal challenges to the Plan's effectiveness as a "Hirst fix"
        iii. Provides incentives to complete projects in excess of PE well requirements
        iv. Support streamflow restoration and the rights of Tribes and senior water rights holders

b. Challenges:
    i. County resistance to substantive requirements if offsets are falling short
    ii. Workload requirements for County and Ecology
    iii. Need for timeliness in reporting and Ecology action
    iv. Complexity of proposal and need for an approach that is efficient, effective, and practical

Description of purpose:

1. *How would this recommendation enhance the WRIA 15 plan? Describe the desired result and its purpose in this plan (we want to be clear how this relates to offsetting impacts from PEW OR be explicit that this is a benefit to the watershed even if not directly related to PEW impacts).*
    a. This would ensure that the Plan is being fully implemented and provide incentives to fund and complete projects

Description of concerns:

1. *What, if any, concerns with this policy idea have WRIA 15 members expressed or that you anticipate?*
    a. Counties have expressed support in general terms for adaptive management, but specific details have not been discussed
2. *If you have discussed this with concerned members, what was the result of those discussions?*
    a. No discussions yet
3. *Are there other potential downsides or objections to the proposal that you anticipate?*
    a. As described in challenges above
    b. Details of adaptive management create complexity, which may result in confusion, resistance, loopholes, and unintended consequences
4. *In what ways does your proposal address those concerns?*
    a. Trying to be simple and clear, but more discussion and negotiation is needed

Cost and funding sources:

1. *What elements of the proposal are likely to require funding?*
    a. Workload for Counties and Ecology
2. *Provide a rough cost estimate (if known) and discuss potential funding sources and whether funding is one time or ongoing.*
    a. Amounts need to be estimated
    b. PE well fees
    c. State funding
3. *Explain costs to other affected parties besides implementing regulators (for example: costs will increase for well drilling or new requirements on homeowners/home builders).*
    a. Delays in home construction due to moratoriums on wells
    b. Impacts of water use restrictions