

To: Snohomish (WRIA 7) Watershed Restoration and Enhancement Committee

From: Ingria Jones, Committee Chair

Date: February 18, 2020

Re: Proposal for Formal Decision on WRIA 7 Consumptive Water Use Estimates by Subbasin

At the March 12 Committee meeting, the Committee's Chair will seek a formal decision on the 20-year consumptive water use estimate to be included in the WRE Plan. The consumptive water use estimate for WRIA 7 is 797.4 acre-feet per year.

This document provides an overview of the Committee's subbasin delineation, the estimation of the number of new domestic permit-exempt wells in the 20-year period beginning on January 19, 2018 and ending on January 18, 2038, and the estimations of the consumptive portion of water use from new domestic permit-exempt wells.

Background

The Snohomish (WRIA 7) Watershed Restoration and Enhancement Committee (Committee) is tasked with preparing a Watershed Restoration and Enhancement Plan (WRE Plan) in order to implement the Streamflow Restoration Law (RCW 90.94). Prior to adopting the WRE Plan, Ecology "must determine that actions identified in the plan, after accounting for new projected uses of water over the subsequent twenty years, will result in a net ecological benefit to instream resources within the water resource inventory area."

Ecology issued its Final Guidance for Determining Net Ecological Benefit (Final NEB Guidance) to direct Committees preparing watershed restoration and enhancement plans required by RCW 90.94.030. The NEB Guidance states that, "watershed plans must include a new consumptive water use estimate for each subbasin, and the technical basis for such estimate."¹ Technical consultants, in coordination with the Committee, have developed a consumptive water use estimate for the Snohomish Water Resource Inventory Area (WRIA 7) and consumptive water use estimates for each of the proposed subbasins. The technical basis for this work followed recommendations in the Final NEB Guidance, and is documented in three technical memos provided to the Committee².

Proposal for Formal Decision on Consumptive Water Use Estimates by Subbasin

At the March 12 Committee meeting, the Committee's Chair will seek a formal decision on the 20-year consumptive water use estimate to be included in the WRE Plan. The consumptive water use estimate for WRIA 7 is 797.4 acre-feet per year. Consumptive water use estimates by subbasin are shown in Table 2³ and Attachment 1⁴.

¹ RCW 90.94.030(3)(e) states, "The watershed restoration and enhancement plan must include estimates of the cumulative consumptive water use impacts over the subsequent twenty years, including withdrawals exempt from permitting under RCW 90.44.050."

² GeoEngineers and NHC developed three technical memos for the Committee, including the WRIA 7 Subbasin Delineation Memo, WRIA 7 Growth Projections Memo, and WRIA 7 Consumptive Use Estimates Memo.

³ This corresponds to Table 4 in the WRIA 7 Consumptive Use Memo.

⁴ This corresponds to Figure 3 in the WRIA 7 Consumptive Use Memo.

The formal decision on consumptive use estimates establishes the Committee's support for the sixteen subbasins proposed by the technical workgroup, the 20-year growth projection of 3,389 new PE wells⁵, and the estimate of 797.4 acre-feet per year of consumptive water use associated with the projected growth. The formal decision also establishes the Committee's support for the growth projection and consumptive water use estimates developed by subbasin. The WRE Plan must offset consumptive water use and meet NEB at the WRIA-scale. The Committee will continue to develop a list of projects and actions to offset consumptive water use, and may consider offsetting more than the 20-year consumptive water use estimate.

The Committee's Technical Workgroup discussed the consumptive use estimates and recommended approval by the Committee. The Committee discussed the consumptive water use estimates at the February 13, 2020 meeting and all members present supported holding a formal decision at the March 12 Committee meeting. As of February 18, no dissenting opinions to the proposal have been shared with the Chair by either members of the Technical Workgroup or the Committee.

Committee Process for Voting on Items Leading Up to the Final Plan Approval

The Committee agreed to operating principles that outlined a process for making interim decisions⁶. A quorum of the Committee members – 2/3 of Committee members – must be in attendance for a formal decision. The Committee will strive toward consensus. The levels of consensus include:

- I can say an unqualified "yes"!
- I can accept the decision.
- I can live with the decision.
- I do not fully agree with the decision; however, I will not block it.

If consensus cannot be reached, facilitator or chair may call for a vote. Decisions leading up to the plan may be approved by 2/3 majority of the Committee members in attendance.

Subbasin Delineation

In October of 2019, the WRIA 7 Committee made a determination of subbasins to be used for the WRE planning process. **The Committee delineated sixteen subbasins for WRE planning purposes.** WRIA 7 subbasins are shown in Attachment 2.⁷ The WRIA 7 subbasin boundaries are based on HUC-12 subwatersheds in the Snohomish County portion of the watershed and King County stream basin boundaries in the King County portion of the watershed, with slight adjustments. The Committee agreed to use the subbasin delineation for developing PE well growth projection and consumptive-water use estimates by subbasin.

Recommendation/Agreement

At the October 2019 meeting, the Committee reached agreement on a recommendation from the Technical Workgroup to use the subbasin delineations to develop PE well growth projections and consumptive water use estimates by subbasin.

⁵ "PE wells" is used to refer to new homes associated with new permit-exempt wells and also new homes added to existing wells, including homes on group systems relying on permit-exempt wells.

⁶ [WRIA 7 Operating Principles - Executed](#)

⁷ This corresponds to Figure 1 in the WRIA 7 Subbasin Delineation Memo.

Permit-exempt Well 20-year Growth Projections

GeoEngineers worked with the Committee to define growth projection methods and growth projections for WRIA 7. The WRIA 7 PE well growth projection methods included using King and Snohomish County historical building permit and year-built data to predict potential PE well growth over the 20-year planning horizon. This methodology assumes that the rate and general location of past growth will continue over the 20-year planning horizon. GeoEngineers also completed an analysis of potential PE well growth within the incorporated and unincorporated Urban Growth Areas (UGAs) using Ecology's well log database. See growth projections technical memo for more information on the methods and results.

GeoEngineers estimates 3,389 new permit-exempt domestic well connections in WRIA 7 over the 20-year planning horizon. Growth projections by subbasin are shown in Table 1⁸ and Attachment 3⁹.

Recommendation/Agreement

At the September 2019 meeting, the Committee reached agreement on a recommendation from the technical workgroup to use the 20-year growth projection to develop consumptive water use estimates.

Table 1. Growth Projections for new PE wells in WRIA 7 – Snohomish 2018 to 2038

Subbasins	King County Past Trends ¹	Snohomish County Past Trends ²	UGA Well Log Spot Check ³	Total PE Wells ⁴ per Subbasin ⁵
1 - Tulalip	--	468	0	468
2 - Quilceda-Allen	--	330	8	338
3 - Estuary/Snohomish Mainstem	--	322	9	331
4 - Little Pilchuck	--	289	5	294
5 - Pilchuck	--	278	2	280
6 - Woods	--	224	0	224
7 - Sultan	--	53	2	55
8 - Lower Mid-Skykomish	--	60	0	60
9 - Skykomish Mainstem	0	183	2	185
10 - Upper Skykomish	48	53	2	103
11 - Cherry-Harris	200	11	3	214
12 - Snoqualmie North	240	98	0	338
13 - Snoqualmie South	147	0	0	147
14 - Patterson	104	--	0	104
15 - Raging	73	--	2	75
16 - Upper Snoqualmie	168	--	5	173
Totals	980	2,369	40	3,389

Table 1 Footnotes:

1 = Based on 20-year estimate of potential new PE wells in unincorporated King County, plus 6% error.

2 = Based on 20-year estimate of potential new PE wells in unincorporated Snohomish County using the "past trends"

⁸ This corresponds to Table 1 in the WRIA 7 Growth Projections Memo.

⁹ This corresponds to Figure 1 in the WRIA 7 Growth Projections Memo.

scenario." Assumes half of the projected growth for water service areas in the Quilceda-Allen subbasin (26) will use PE wells (part of the Quilceda area has water provided by Marysville/City of Everett.) Assumes all of the growth forecast for water service areas in the Tulalip subbasin (249) will use PE wells to account for the inability of the Seven Lakes water system to expand service at this time. The total exceeds the PE well areas, since it includes the potential for PE wells in the water service area. Includes estimate of 20 potential new PE wells on Tulalip Tribal owned lands in the Quilceda-Allen subbasin and 15 potential new PE wells on Tulalip Tribal owned lands in the Tulalip subbasin.

3 = Based on spot-check of Ecology Well Report Viewer database. Accounts for potential wells within the incorporated and unincorporated Urban Growth Areas (UGAs) over the 20-year planning period.

4 = "PE Wells" is used to refer to new homes associated with new permit-exempt wells and also new homes added to existing wells on group systems relying on permit-exempt wells.

5 = Includes redistribution of 22 wells from Upper Snoqualmie subbasin to Snoqualmie South subbasin in the King County portion of WRIA 7.

Consumptive Water Use Estimates

At the October 2019 Snohomish (WRIA 7) WREC meeting, NHC presented a consumptive water use work plan. The work plan outlined the approach to develop consumptive water use estimates using an irrigated footprint analysis to determine average irrigated area per household using estimates based on recommendations in Appendix A of the Ecology's Final NEB Guidance. The committee agreed that technical consultants should begin the irrigated footprint analysis and develop consumptive water use estimates.

The consumptive water use estimate for WRIA 7 is 797.4 acre-feet per year (see Table 2). See the draft technical memo for more information on methods and results.

Table 2. Annual Consumptive Water Use for One Home with Subbasin Average Yard

Subbasin ID	# PE Wells Anticipated in Subbasin	Irrigated Area per Well (ac)	Per Well Consumptive Use (gpd)			Total Consumptive Use (af/yr)
			Indoor	Outdoor	Total	
Tulalip	468	0.09	16.5	94.4	110.9	58.1
Quilceda-Allen	338	0.15	16.5	147.6	164.1	62.1
Estuary/Snohomish Mainstem	331	0.29	16.5	295.7	312.2	115.8
Little Pilchuck	294	0.20	16.5	194.4	210.9	69.5
Pilchuck	280	0.37	16.5	337.3	353.8	111.0
Woods	224	0.12	16.5	109.1	125.6	31.5
Sultan	55	0.11	16.5	89.2	105.7	6.5
Lower Mid-Skykomish	60	0.14	16.5	114.1	130.6	8.8
Skykomish Mainstem	185	0.16	16.5	138.4	154.9	32.1
Skykomish	103	0.05	16.4	35.3	51.7	6.0
Cherry-Harris	214	0.16	16.4	152.2	168.6	40.4
Snoqualmie North	338	0.21	16.4	214.3	230.7	87.4
Snoqualmie South	169	0.21	16.4	196.3	212.7	40.3
Patterson	104	0.41	16.4	456.1	472.5	55.0
Raging	75	0.43	16.4	444.9	461.3	38.8
Upper Snoqualmie	151	0.23	16.4	185.8	202.2	34.2
WRIA 7 Aggregated	3,389	0.20	16.5	193.6	210.0	797.4

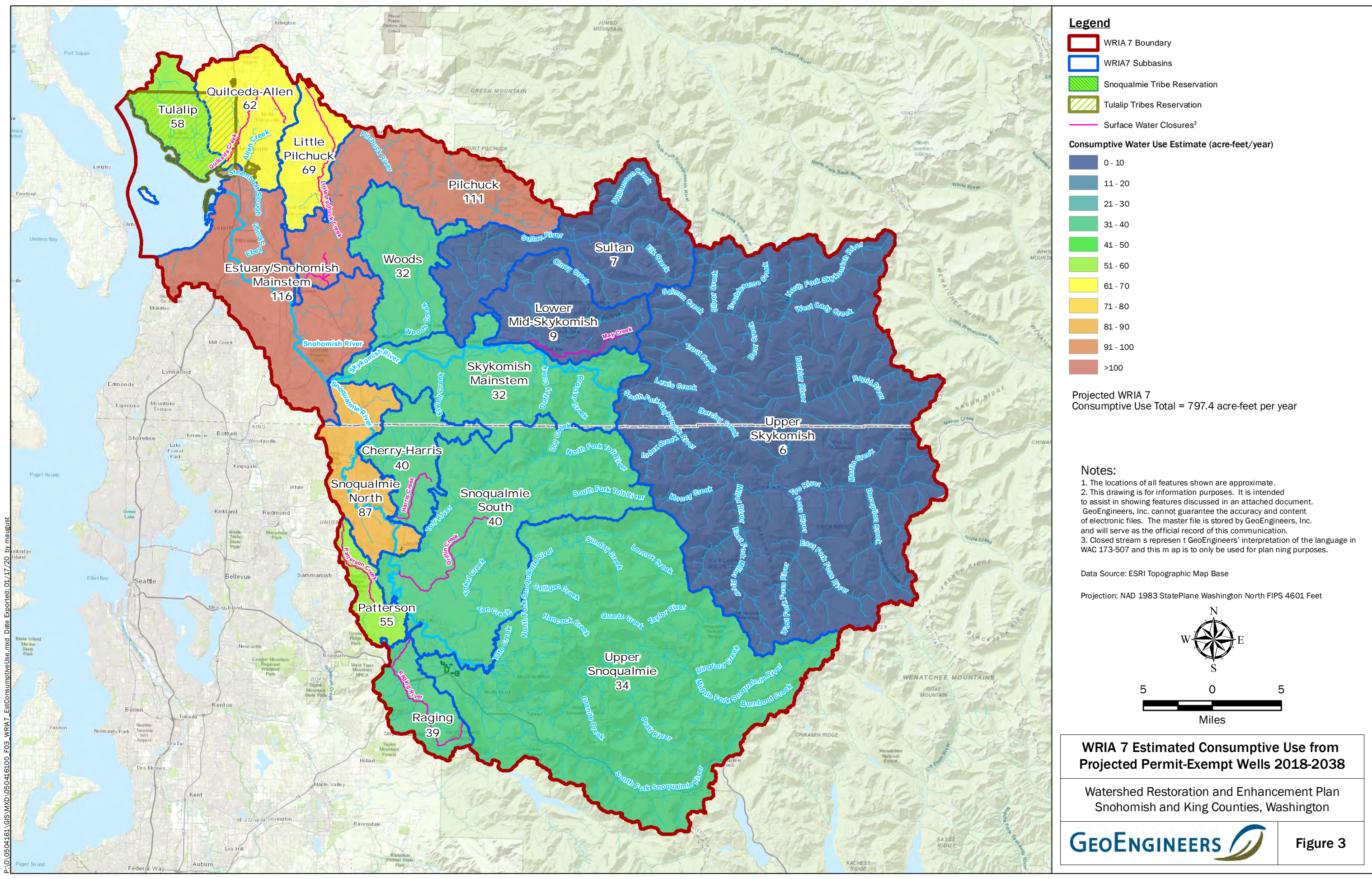
Recommendation/Agreement

The chair proposes a formal decision on consumptive water use estimates by subbasin at the March 12 Committee meeting. As noted above, the Committee discussed the consumptive water use estimates at the February 13, 2020 meeting and all members present supported holding a formal decision at the March 12 Committee meeting.

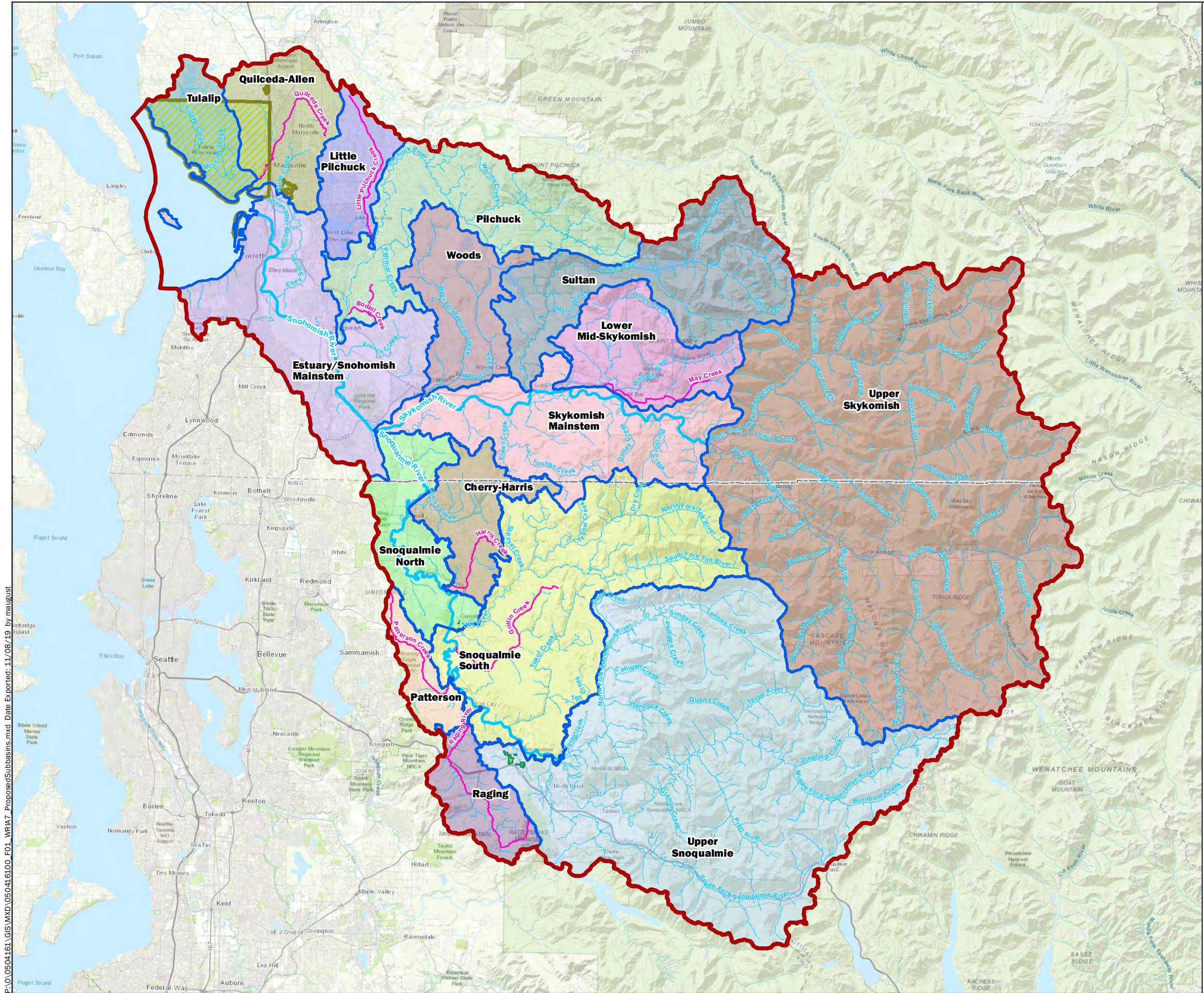
Next Steps

The Committee will continue to develop a list of projects and actions to offset consumptive water use, and may consider offsetting more than the 20-year consumptive water use estimate.

Attachment 1: WRIA 7 Consumptive Water Use Estimates by Subbasin



Attachment 2: WRIA 7 Subbasin Delineation



Legend

WRIA 7 Boundary

Surface Water Closures³

WRIA7 Proposed Subbasins

Snoqualmie Tribe Reservation

Tulalip Tribes Reservation

Cherry-Harris

Estuary/Snohomish Mainstem

Little Pilchuck

Lower Mid-Skykomish

Patterson

Pilchuck

Quilceda-AlLEN

Raging

Skykomish Mainstem

Snoqualmie North

Snoqualmie South

Sultan

Tulalip

Upper Skykomish

Upper Snoqualmie

Woods

Notes:

1. The locations of all features shown are approximate.

2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

3. Closed streams represent GeoEngineers' interpretation of the language in WAC 173-507 and this map is to only be used for planning purposes.

Data Source: ESRI Topographic Map Base

Projection: NAD 1983 StatePlane Washington North FIPS 4601 Feet

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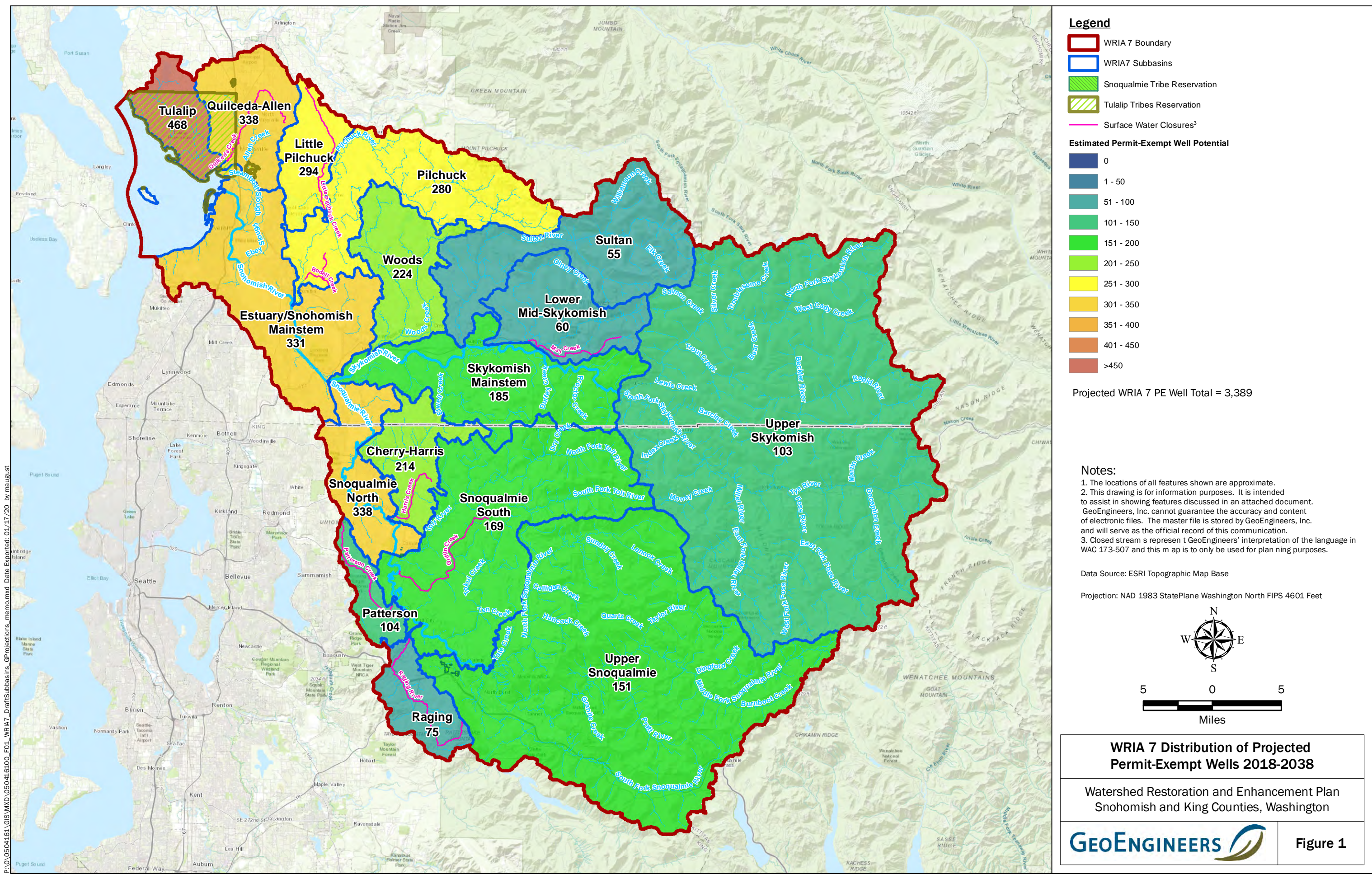
WRIA 7 - Snohomish Subbasin Delineation

Watershed Restoration and Enhancement Plan WRIA 7
Snohomish County, Washington

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Figure 1

Attachment 3: WRIA 7 PE Well Growth Projections by Subbasin



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