

Groundwater Application Review Summary Form

Application # G- 18932

GW Reviewer Phillip I. Marcy Date Review Completed: 5/6/2020

Summary of GW Availability and Injury Review:

☐ Groundwater for the proposed use is either over appropriated, will not likely be available in the amounts requested without injury to prior water rights, OR will not likely be available within the capacity of the groundwater resource per Section B of the attached review form.

Summary of Potential for Substantial Interference Review:

☐ There is the potential for substantial interference per Section C of the attached review form.

Summary of Well Construction Assessment:

☐ The well does not appear to meet current well construction standards per Section D of the attached review form. Route through Well Construction and Compliance Section.

This is only a summary. Documentation is attached and should be read thoroughly to understand the basis for determinations and for conditions that may be necessary for a permit (if one is issued).

WATER RESOURCES DEPARTMENT

MEMO

5/6/2020, 20

TO: Application G- 18932

FROM: GW: Phil Marcy
(Reviewer's Name)

SUBJECT: Scenic Waterway Interference Evaluation

☐ YES The source of appropriation is hydraulically connected to a State Scenic
☒ NO Waterway or its tributaries

☐ YES
☒ NO Use the Scenic Waterway Condition (Condition 7J)

☐ Per ORS 390.835, the Groundwater Section is **able** to calculate ground water interference with surface water that contributes to a Scenic Waterway. The calculated interference is distributed below

☐ Per ORS 390.835, the Groundwater Section is **unable** to calculate ground water interference with surface water that contributes to a scenic waterway; **therefore, the Department is unable to find that there is a preponderance of evidence that the proposed use will measurably reduce the surface water flows necessary to maintain the free-flowing character of a scenic waterway**

DISTRIBUTION OF INTERFERENCE

Calculate the percentage of consumptive use by month and fill in the table below. If interference cannot be calculated, per criteria in 390.835, do not fill in the table but check the "unable" option above, thus informing Water Rights that the Department is unable to make a Preponderance of Evidence finding.

Exercise of this permit is calculated to reduce monthly flows in _____ Scenic Waterway by the following amounts expressed as a proportion of the consumptive use by which surface water flow is reduced.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date _____
 FROM: Groundwater Section _____ Phillip I. Marcy
 Reviewer's Name
 SUBJECT: Application G- 18932 Supersedes review of _____
 Date of Review(s) _____

PUBLIC INTEREST PRESUMPTION; GROUNDWATER

OAR 690-310-130 (1) *The Department shall presume that a proposed groundwater use will ensure the preservation of the public welfare, safety and health as described in ORS 537.525. Department staff review groundwater applications under OAR 690-310-140 to determine whether the presumption is established. OAR 690-310-140 allows the proposed use be modified or conditioned to meet the presumption criteria. This review is based upon available information and agency policies in place at the time of evaluation.*

A. GENERAL INFORMATION: Applicant's Name: Tim and Jennifer Austen County: Clackamas

A1. Applicant(s) seek(s) 0.0625 cfs from 1 well(s) in the Willamette Basin,
 _____ subbasin

A2. Proposed use Irrigation (5.0 acres) Seasonality: March 1st – October 31st (245 days)

A3. Well and aquifer data (attach and number logs for existing wells; mark proposed wells as such under logid):

Well	Logid	Applicant's Well #	Proposed Aquifer*	Proposed Rate(cfs)	Location (T/R-S QQ-Q)	Location, metes and bounds, e.g. 2250' N, 1200' E fr NW cor S 36
1	Proposed	1	Alluvium	0.0625	3S/2E-32 SE-SW	175°N, 1797'E fr SW cor S 32
2						
3						
4						
5						

* Alluvium, CRB, Bedrock

Well	Well Elev ft msl	First Water ft bls	SWL ft bls	SWL Date	Well Depth (ft)	Seal Interval (ft)	Casing Intervals (ft)	Liner Intervals (ft)	Perforations Or Screens (ft)	Well Yield (gpm)	Draw Down (ft)	Test Type
1	559	NA	NA	NA	<400	Unknown	Unknown	Unknown	Unknown	NA	NA	NA

Use data from application for proposed wells.

A4. **Comments:** The applicant proposes to construct one well to appropriate 0.0625 cfs of groundwater from alluvium for primary irrigation of 5.0 acres. No construction details are given, except that the well will be less than 400 feet in total depth.

A5. ☒ **Provisions of the** Willamette Basin rules relative to the development, classification and/or management of groundwater hydraulically connected to surface water ☐ **are**, or ☒ **are not**, activated by this application. (Not all basin rules contain such provisions.)
 Comments: The proposed use is not subject to Willamette Basin rules 690-502-0240 regarding hydraulic connection with surface water, as the proposed POA well is greater than ¼ mile from the nearest surface water source.

A6. ☐ **Well(s) #** _____, _____, _____, _____, _____, tap(s) an aquifer limited by an administrative restriction.
 Name of administrative area: _____
 Comments: _____

B. GROUNDWATER AVAILABILITY CONSIDERATIONS, OAR 690-310-130, 400-010, 410-0070

B1. **Based upon available data**, I have determined that groundwater* for the proposed use:

- a. ☐ is over appropriated, ☒ is not over appropriated, or ☐ cannot be determined to be over appropriated during any period of the proposed use. * This finding is limited to the groundwater portion of the over-appropriation determination as prescribed in OAR 690-310-130;
- b. ☐ will not or ☒ will likely be available in the amounts requested without injury to prior water rights. * This finding is limited to the groundwater portion of the injury determination as prescribed in OAR 690-310-130;
- c. ☐ will not or ☒ will likely to be available within the capacity of the groundwater resource; or
- d. ☐ will, if properly conditioned, avoid injury to existing groundwater rights or to the groundwater resource:
 - i. ☐ The permit should contain condition #(s) _____;
 - ii. ☐ The permit should be conditioned as indicated in item 2 below.
 - iii. ☐ The permit should contain special condition(s) as indicated in item 3 below;

- B2.
- a. ☐ **Condition** to allow groundwater production from no deeper than _____ ft. below land surface;
 - b. ☐ **Condition** to allow groundwater production from no shallower than _____ ft. below land surface;
 - c. ☐ **Condition** to allow groundwater production only from the _____ groundwater reservoir between approximately _____ ft. and _____ ft. below land surface;
 - d. ☐ **Well reconstruction** is necessary to accomplish one or more of the above conditions. The problems that are likely to occur with this use and without reconstructing are cited below. Without reconstruction, I recommend withholding issuance of the permit until evidence of well reconstruction is filed with the Department and approved by the Groundwater Section.

Describe injury –as related to water availability– that is likely to occur without well reconstruction (interference w/ senior water rights, not within the capacity of the resource, etc): _____

- B3. **Groundwater availability remarks:** The proposed pumping rate is very small (~28 gpm), therefore neighboring users are unlikely to be impacted, especially given that the nearest neighboring right is greater than 1,900 away. Theis drawdown models were run to evaluate potential impacts to the nearest senior right using values derived from nearby pump tests on wells completed into the Troutdale Formation. Resulting drawdowns range from less than 4 feet to greater than 18 feet of expected drawdown at a distance of 1,900 feet from the proposed POA after 245 days of constant pumping at the proposed rate (see attached model run inputs and results).

The majority of wells displayed produce from a sedimentary sequence characterized by thick deposits of fine-grained material with interspersed thin horizons of sand accounting for most production. Trimble (1963) mapped the Tertiary (Neogene) sediments in this area as part of the Troutdale Formation (Fmn); however, Leonard and Collins (1983) mapped the area of interest as part of the undifferentiated Troutdale Fmn and Sandy River Mudstone. The Troutdale Formation in this area is greater than 1,000 feet in this area, based upon driller's logs from wells completed into underlying Columbia River Basalt (CRB).

Available water level data in the area do not display notable declines (see attached hydrograph), but a large disparity in groundwater elevations is apparent. The most likely cause of the wide range of groundwater elevations observed appears to be their respective position in a highly dissected landscape. In this scenario, confinement is generally limited to small geographic areas, as water-bearing lithologies accessed by nearby wells are regularly truncated by stream drainages. Therefore, the proximity to local drainages and their respective elevations appear to be the primary control on hydraulic gradients, and therefore groundwater elevations within each well.

C. GROUNDWATER/SURFACE WATER CONSIDERATIONS, OAR 690-09-040**C1. 690-09-040 (1):** Evaluation of aquifer confinement:

Well	Aquifer or Proposed Aquifer	Confined	Unconfined
1	Sand horizons in the Troutdale Formation	☒	☐
		☐	☐
		☐	☐
		☐	☐
		☐	☐

Basis for aquifer confinement evaluation: Some local well logs report static water levels which rise somewhat above the elevation of the productive water-bearing zone, however many local wells do not exhibit this behavior. These data, taken together from surrounding sections show a trend of mild confinement, the degree of which is likely limited by incision of local drainages.

C2. 690-09-040 (2) (3): Evaluation of distance to, and hydraulic connection with, surface water sources. All wells located a horizontal distance less than ¼ mile from a surface water source that produce water from an unconfined aquifer shall be assumed to be hydraulically connected to the surface water source. Include in this table any streams located beyond one mile that are evaluated for PSI.

Well	SW #	Surface Water Name	GW Elev ft msl	SW Elev ft msl	Distance (ft)	Hydraulically Connected?			Potential for Subst. Interfer. Assumed?	
						YES	NO	ASSUMED	YES	NO
1	1	Unnamed trib. to NE 1	~540	215-486	1850	☒	☐	☐	☐	☒
1	2	Unnamed trib. to NE 2	~540	153-443	3400	☒	☐	☐	☐	☒
1	3	Unnamed trib. to S	~540	220-443	4900	☒	☐	☐	☐	☒

Basis for aquifer hydraulic connection evaluation: Groundwater elevation in the proposed POA well is estimated to be similar to nearby CLAC 16260, though this is a fairly shallow well (110'), there are no construction details included in this application, except that the well will be less than 400' in total depth. Generally, water levels in local wells fall with increasing depth (see attached well statistics), so resulting water levels may be much lower than assumed here. This trend of falling head with depth illustrates that groundwater is discharging to nearby drainages, at elevations below those of water-bearing lithologies exposed in local boreholes. According to our conceptual understanding of this scenario, groundwater here discharges to the NW primarily by horizontal movement through permeable horizons which are truncated by these drainages. Stream valleys within one mile of the proposed POA vary greatly in elevation from 153 to 443 feet AMSL.

Water Availability Basin the well(s) are located within: Willamette R > Columbia R – At Mouth

C3a. 690-09-040 (4): Evaluation of stream impacts for each well that has been determined or assumed to be **hydraulically connected and less than 1 mile** from a surface water (SW) source. Limit evaluation to instream rights and minimum stream flows that are pertinent to that SW source, not lower SW sources to which the stream under evaluation is tributary. Compare the requested rate against the 1% of 80% *natural* flow for the pertinent Water Availability Basin (WAB). If Q is not distributed by well, use full rate for each well. Any checked ☒ box indicates the well is assumed to have the potential to cause PSI.

Well	SW #	Well < ¼ mile?	Qw > 5 cfs?	Instream Water Right ID	Instream Water Right Q (cfs)	Qw > 1% ISWR?	80% Natural Flow (cfs)	Qw > 1% of 80% Natural Flow?	Interference @ 30 days (%)	Potential for Subst. Interfer. Assumed?
1	1	☐	☐			☐	4890	☐	<25%	☐
1	2	☐	☐			☐	4890	☐	<25%	☐
1	3	☐	☐			☐	4890	☐	<25%	☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐

C3b. **690-09-040 (4):** Evaluation of stream impacts by total appropriation for all wells determined or assumed to be **hydraulically connected and less than 1 mile** from a surface water source. **Complete only if Q is distributed among wells.** Otherwise same evaluation and limitations apply as in C3a above.

	SW #		Q _w > 5 cfs?	Instream Water Right ID	Instream Water Right Q (cfs)	Q _w > 1% ISWR?	80% Natural Flow (cfs)	Q _w > 1% of 80% Natural Flow?	Interference @ 30 days (%)	Potential for Subst. Interfer. Assumed?
			☐			☐		☐		☐
			☐			☐		☐		☐
			☐			☐		☐		☐
			☐			☐		☐		☐

Comments: Due to the predominance of fine-grained material in the proposed aquifer, and the relatively low degree of confinement expected, the percentage of groundwater pumped resulting from stream depletion after 30 days is anticipated to be much less than 25%.

C4a. **690-09-040 (5):** Estimated impacts on **hydraulically connected surface water sources greater than one mile** as a percentage of the proposed pumping rate. Limit evaluation to the effects that will occur up to one year after pumping begins. This table encompasses the considerations required by 09-040 (5)(a), (b), (c) and (d), which are not included on this form. Use additional sheets if calculated flows from more than one WAB are required.

Non-Distributed Wells													
Well	SW#	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
Distributed Wells													
Well	SW#	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
(A) = Total Interf.													
(B) = 80 % Nat. Q													
(C) = 1 % Nat. Q													
(D) = (A) > (C)		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
(E) = (A / B) x 100		%	%	%	%	%	%	%	%	%	%	%	%

Basis for impact evaluation:

[illegible]

Version: 05/07/2018

D. WELL CONSTRUCTION, OAR 690-200

D1. Well #: _____ Logid: _____

D2. THE WELL does not appear to meet current well construction standards based upon:

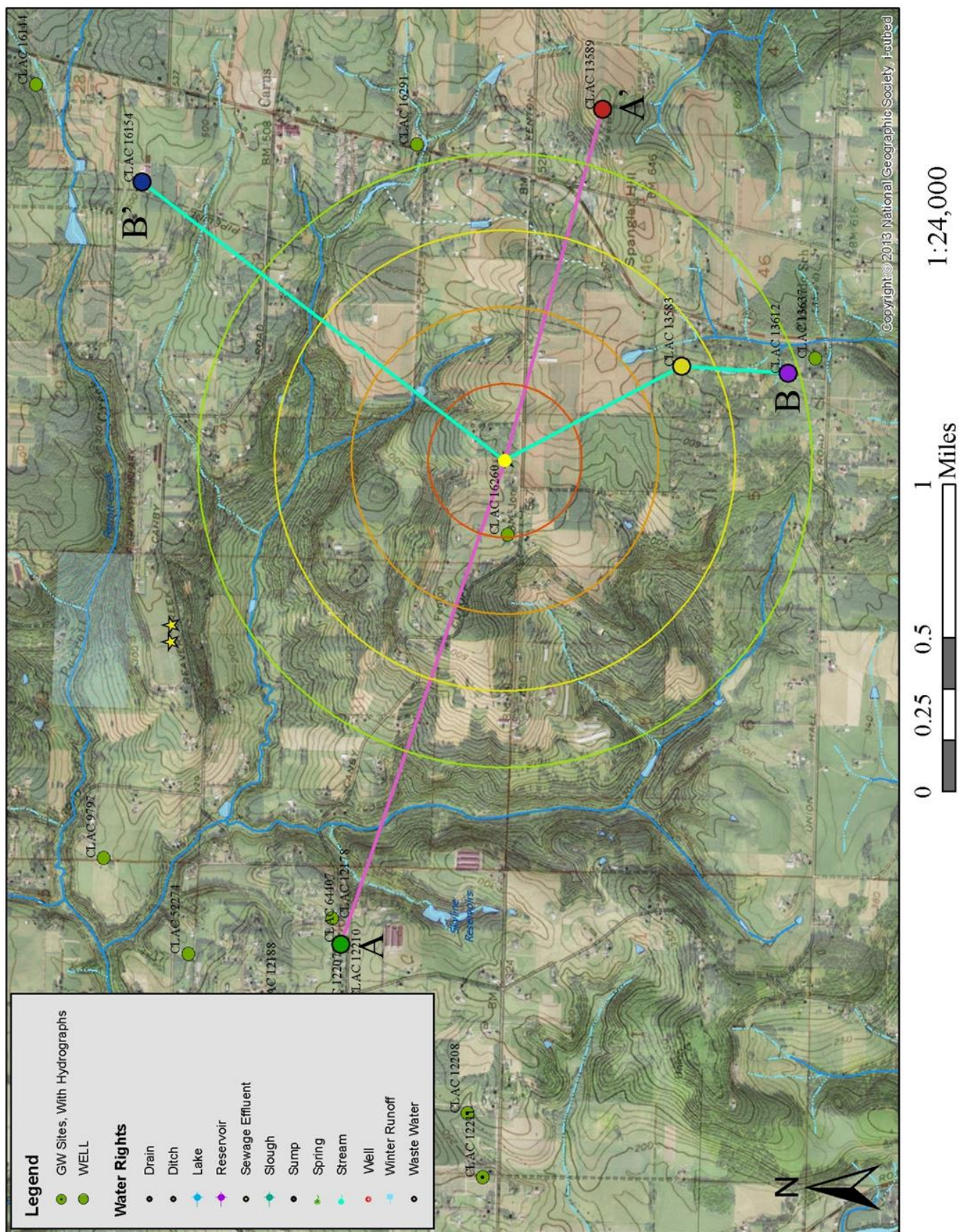
- a. ☐ review of the well log;
- b. ☐ field inspection by _____;
- c. ☐ report of CWRE _____;
- d. ☐ other: (specify) _____

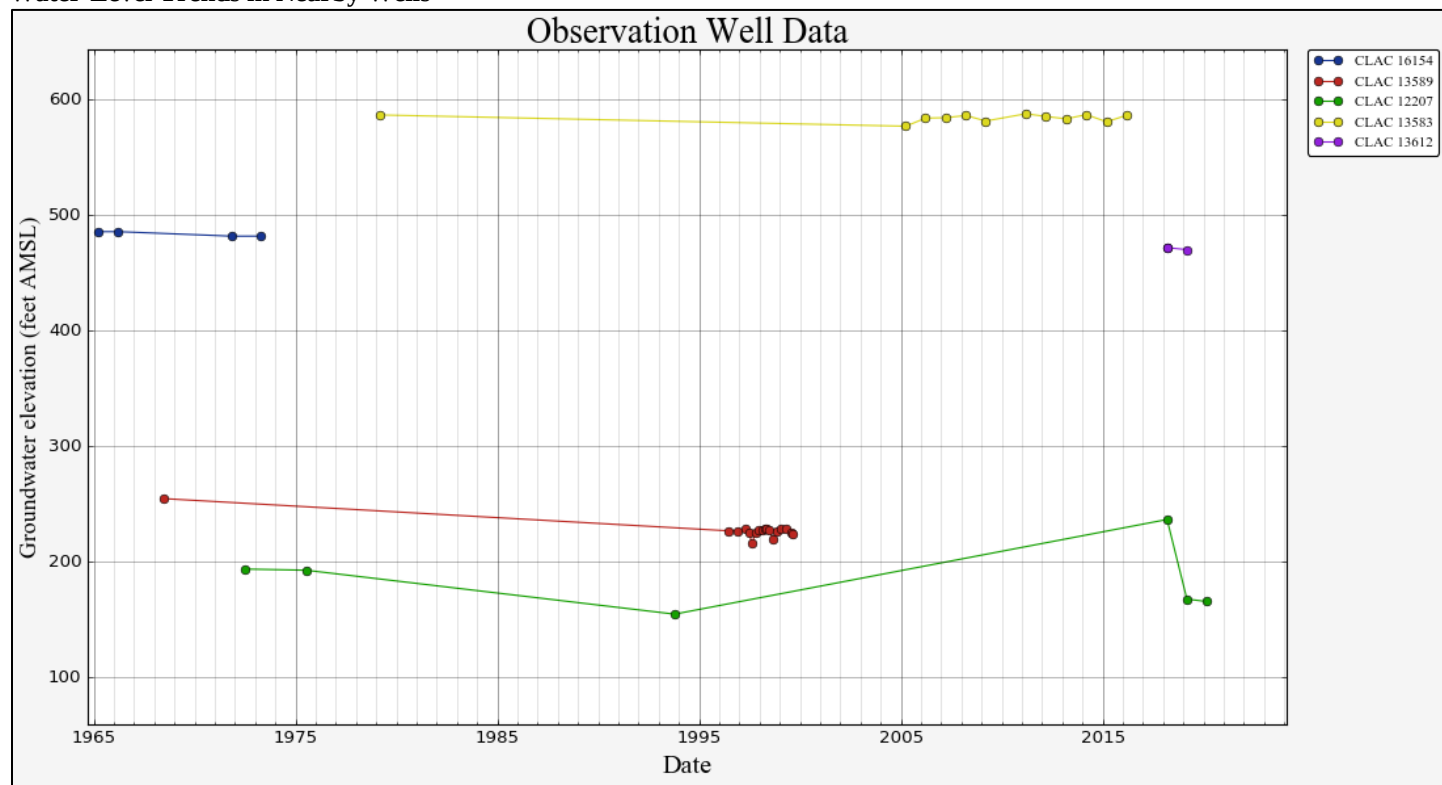
D3. THE WELL construction deficiency or other comment is described as follows: _____

D4. ☐ Route to the Well Construction and Compliance Section for a review of existing well construction.**Water Availability Tables**

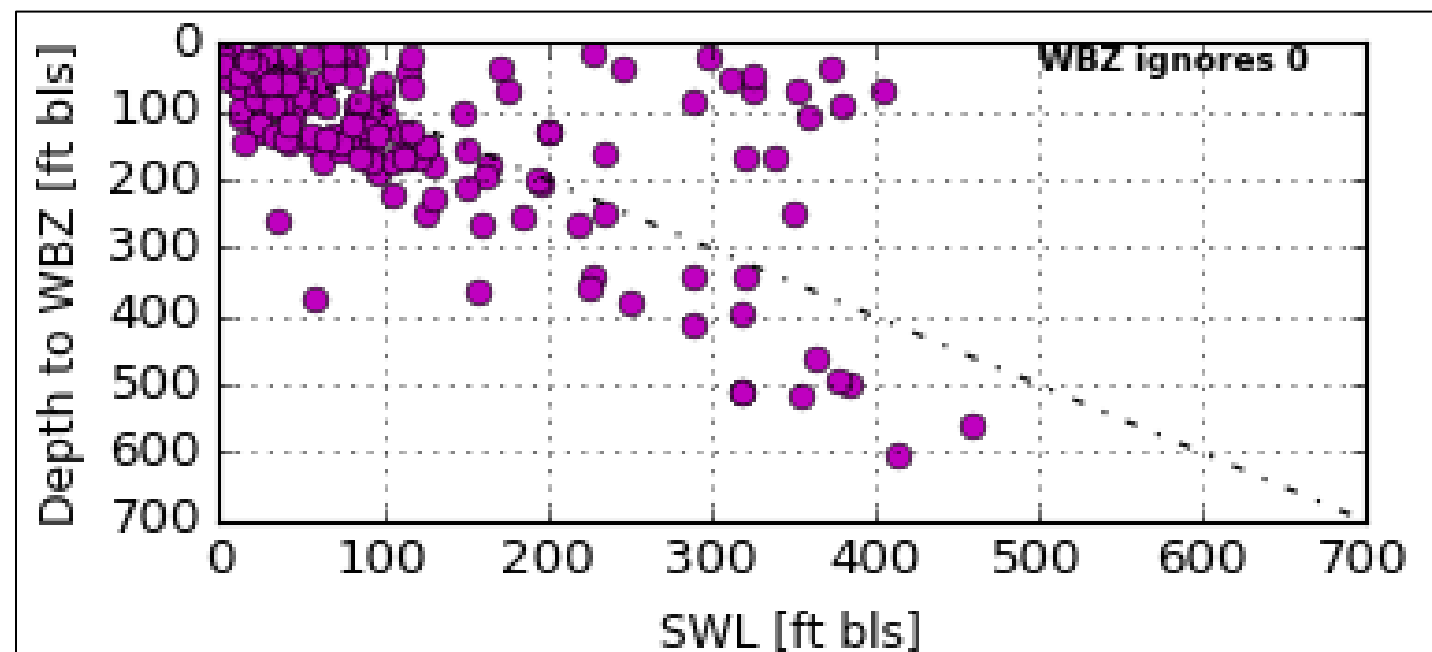
DETAILED REPORT ON THE WATER AVAILABILITY CALCULATION						
Watershed ID #: 181		WILLAMETTE R > COLUMBIA R - AT MOUTH			Exceedance Level: 80	
Time: 2:16 PM		Basin: WILLAMETTE			Date: 05/05/2020	
Month	Natural Stream Flow	Consumptive Use and Storage	Expected Stream Flow	Reserved Stream Flow	Instream Requirements	Net water Available
Monthly values are in cfs. Storage is the annual amount at 50% exceedance in ac-ft.						
JAN	27,500.00	2,700.00	24,800.00	0.00	1,500.00	23,300.00
FEB	30,000.00	7,970.00	22,000.00	0.00	1,500.00	20,500.00
MAR	28,500.00	7,550.00	21,000.00	0.00	1,500.00	19,500.00
APR	25,400.00	7,190.00	18,200.00	0.00	1,500.00	16,700.00
MAY	20,700.00	4,430.00	16,300.00	0.00	1,500.00	14,800.00
JUN	11,000.00	2,360.00	8,640.00	0.00	1,500.00	7,140.00
JUL	6,280.00	2,310.00	3,970.00	0.00	1,500.00	2,470.00
AUG	4,890.00	2,070.00	2,820.00	0.00	1,500.00	1,320.00
SEP	4,930.00	1,690.00	3,240.00	0.00	1,500.00	1,740.00
OCT	5,990.00	733.00	5,260.00	0.00	1,500.00	3,760.00
NOV	12,700.00	1,040.00	11,700.00	0.00	1,500.00	10,200.00
DEC	24,800.00	1,360.00	23,400.00	0.00	1,500.00	21,900.00
ANN	19,700,000	2,480,000	17,300,000	0	1,090,000	16,200,000

Well Location Map

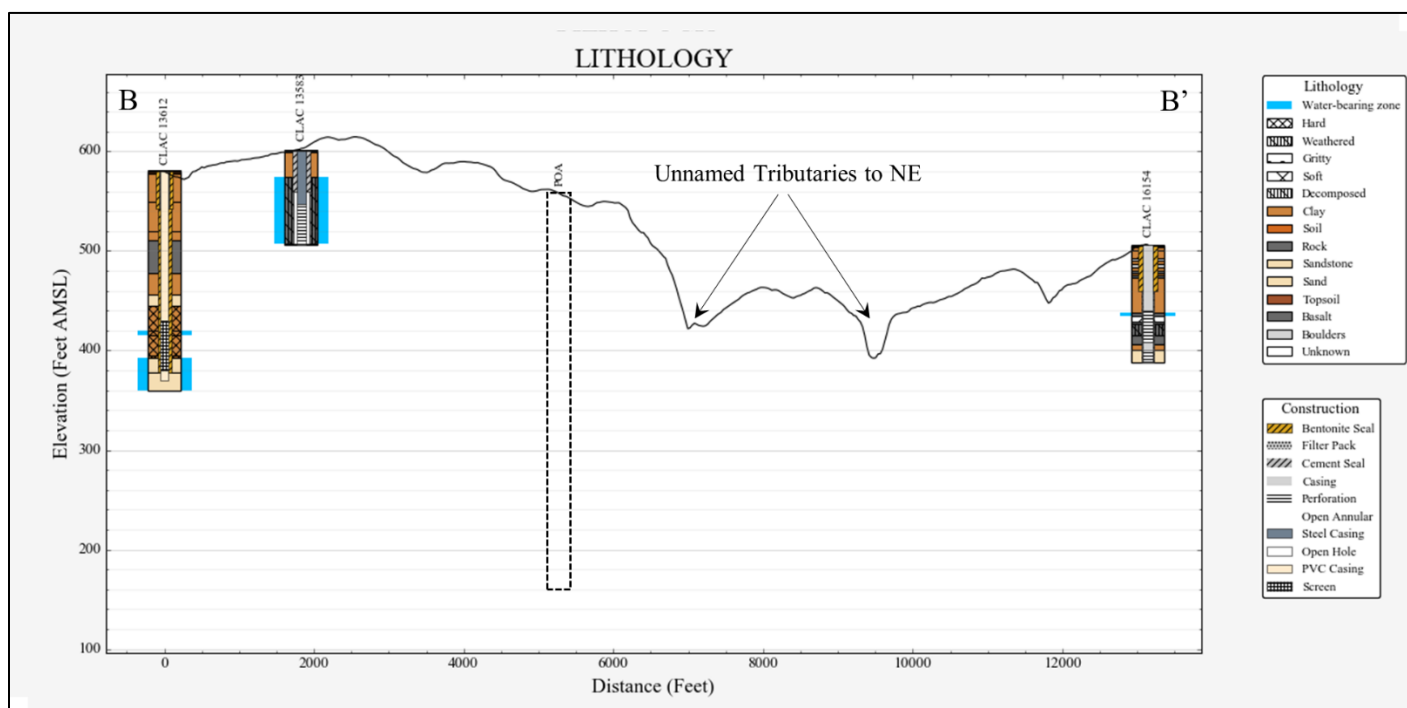
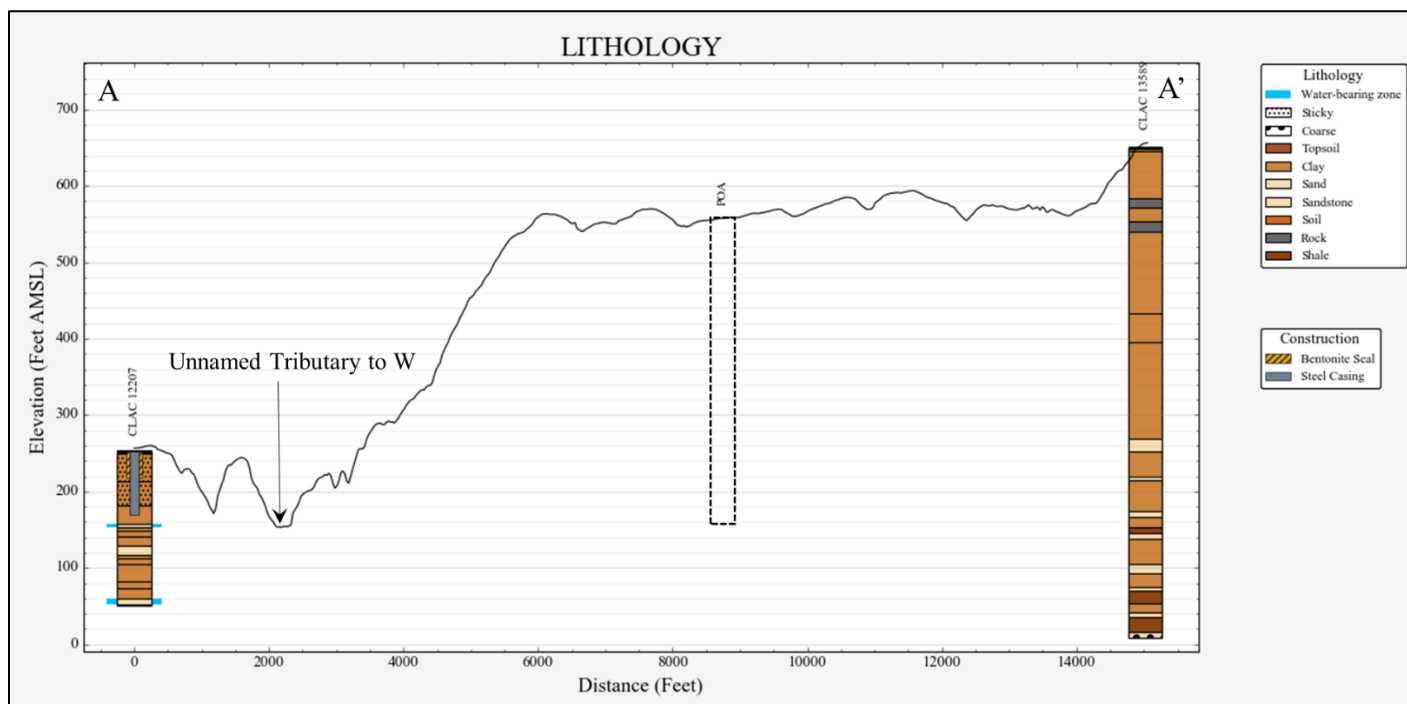


Water-Level Trends in Nearby Wells

Groundwater elevations vary widely in the area near the proposed POA, largely controlled by the elevation from which groundwater is produced. One exception is CLAC 13589 (red), which is cased to 75' AMSL at a depth of 575' BLS, with resulting groundwater elevations from 220' to 230' AMSL.



Statistics from the section of the proposed POA, in addition to surrounding sections suggest that while some degree of confinement exists in water-bearing zones accessed by local wells, head generally declines with increasing depth. There also exist a significant minority of wells where head is below the zone from which water is produced.



Input Data:	Var Name	Scenario 1	Scenario 2	Scenario 3	Units	
Total pumping time	t		245		d	
Radial distance from pumped well:	r		1900		ft	Q conversions
Pumping rate	Q		0.0625		cfs	28.05 gpm
Hydraulic conductivity	K	50	100	150	ft/day	0.06 cfs
Aquifer thickness	b		1		ft	3.75 cfm
Storativity	S_1		0.001			5,400.00 cfd
	S_2		0.01			0.12 a/d
Transmissivity Conversions	T_ft2pd	50	100	150	ft2/day	Recalculate
	T_ft2pm	0.034722	0.069444	0.104167	ft2/min	
	T_gpdpt	374	748	1122	gpd/ft	

