



PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date 08/06/2015  
 FROM: Groundwater Section Michael J. Thoma  
Reviewer's Name  
 SUBJECT: Application G- 18090 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: Valley Falls Farms LLC County: Linn

A1. Applicant(s) seek(s) 3.17 cfs from 5 well(s) in the Willamette Basin,  
Upper Willamette subbasin

A2. Proposed use Irrigation (253.8 ac – Primary) Seasonality: March 1 – October 31

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	LINN 4869	1	Alluvium	3.17 <sup>a</sup>	10S/03W-18 SWNE	2550' S, 1440' W of NE cor S18
2	Proposed	2	Alluvium		10S/03W-18 NWSE	2960' S, 1450' W of NE cor S18
3	Proposed	3	Alluvium		10S/03W-18 SWNE	1270' S, 1930' W of NE cor S18
4	Proposed	4	Alluvium		10S/03W-18 NENE	1270' S, 1180' W of NE cor S18
5	Proposed	5	Alluvium		10S/03W-17 NWNW	1270' S, 20' W of NE cor S18

\* 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	200		19	9/12/1965	60	0-18	0-54		44-54	150	10	
2	200		19 <sup>b</sup>		75	0-18	0-75		40-75			
3	200		19 <sup>b</sup>		75	0-18	0-75		40-75			
4	200		19 <sup>b</sup>		75	0-18	0-75		40-75			
5	200		19 <sup>b</sup>		75	0-18	0-75		40-75			

Use data from application for proposed wells.

A4. **Comments:** <sup>a</sup>The applicant requests the full rate from any combination of the five proposed wells.  
<sup>b</sup>The applicant's wells 2-5 are proposed but should encounter similar hydrology (SWL, yield, etc.) as the existing well LINN 4869.

A5.  Provisions of the Willamette (OAR 690-502-0240) 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 applicant's proposed POAs are > 1/4 mile from surface water sources so the above referenced rules of the Willamette Basin do not apply.

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:
- The permit should contain condition #(s) 7C (7-year); "Large" water use reporting;
  - The permit should be conditioned as indicated in item 2 below.
  - 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 alluvial 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 applicant's proposed POAs are located in the low-relief valley floor near the confluence of the Willamette and Santiam Rivers. The existing well (LINN 4869) and proposed wells (Wells 2-5) will be completed within shallow alluvial deposits adjacent to elevated hills of older marine sediments (Spencer or Eugene Formations). The alluvium underlying the area is generally < 100 ft thick and composed of productive sand and gravel zones, mostly in the upper 50 ft, and fine-grained clay/silt in the deeper portions of the aquifer. There is also a layer of Willamette Silt (Gannett and Caldwell 1998) that directly underlies the area under consideration and forms a terrace with ~ 10 ft of relief between the Willamette River floodplain and the location of the applicant's proposed POAs. The Willamette Silt is generally considered a semi-confining layer but the proximity of the proposed POAs to the margin of the terrace creates a complicated hydrogeologic scenario of mixed confined and unconfined conditions (see Section C).

Most existing wells in the area produce from the coarse-grained zones in the aquifer and yield from 50 to several-hundred gpm. There are no water level observation wells in the immediate area but what records exist in similar environments within the central Willamette Valley floodplain sediments (i.e., similar aquifers and proximity to the river) show seasonal fluctuations in water level that strongly coincide with river stage and precipitation cycles and long-term water levels do not show declines (see Figure 3).

**Regarding Injury:**

There are certificated water rights and numerous groundwater claims that have not yet been certificated near the applicant's proposed POU (including claims GR 1036 and GR 1732 which underlie part of the proposed POU) (Figure 2). Most POAs for these claims are shallow wells (< 50 ft total depth) that produce from the same coarse-grained sediments as the applicant proposes. The coarse-grained material is likely highly transmissive with relatively high specific yields. This type of

hydrogeologic setting implies that there will likely **not** be substantial interference between users, but standard interference conditions should still be applied if the permit is issued.

**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	Alluvium	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2	Alluvium	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3	Alluvium	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4	Alluvium	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5	Alluvium	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**Basis for aquifer confinement evaluation:** Driller's logs from nearby wells show static water levels (SWL) at or above the water bearing zones (WBZ) suggesting unconfined to semi-confined conditions. Helm and Leonard (1977) describe seasonal confinement in some areas of the Central Willamette Valley alluvium but generally an unconfined aquifer system hydraulically connected to major surface water bodies (e.g., Willamette River).

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	Willamette River	180	165	7100	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2	1	Willamette River	180	165	7000	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3	1	Willamette River	180	165	7300	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4	1	Willamette River	180	165	7900	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5	1	Willamette River	180	165	9000	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Basis for aquifer hydraulic connection evaluation:** The reported static water level in the existing well (and assumed SWL in proposed wells) is higher than the river elevation – suggesting groundwater flows to, and discharges to, the Willamette River. Additionally, wells in the area generally respond to seasonal and sub-seasonal changes in river stage suggesting an efficient hydraulic connection between surface water and the aquifer (Helm and Leonard 1977)

**Water Availability Basin the well(s) are located within:** Willamette R > Columbia R – AB Mill Cr (ID# 183)

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 source. Limit evaluation to instream rights and minimum stream flows that are pertinent to that surface water source, and 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?
<p>There are no surface water sources within 1 mi of the proposed POAs. Wilson Lake is approximately 4000-5000 ft from the proposed POAs but as its elevation is ~10 ft higher than the Willamette River, it is likely a manifestation of shallow groundwater and thus is not treated as a surface water source but rather considered a sump/large-diameter well for the purpose of this application</p>										

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 #	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?
<i>Q is not distributed among wells so table C3b does not apply</i>									

Comments: \_\_\_\_\_

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		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Well	SW#												
<b>1</b>	<b>1</b>	<b>See comments below</b>											
Well Q as CFS													
Interference CFS													
<b>2</b>	<b>1</b>												
Well Q as CFS													
Interference CFS													
<b>3</b>	<b>1</b>												
Well Q as CFS													
Interference CFS													
<b>4</b>	<b>1</b>												
Well Q as CFS													
Interference CFS													
<b>5</b>	<b>1</b>												
Well Q as CFS													
Interference CFS													
(A) = Total Interf.		<< 3.17	<< 3.17	<< 3.17	<< 3.17	<< 3.17	<< 3.17	<< 3.17	<< 3.17	<< 3.17	<< 3.17	<< 3.17	<< 3.17
(B) = 80 % Nat. Q		18400	20100	19600	18600	15500	8310	4710	3620	3680	4650	9400	16700
(C) = 1 % Nat. Q		184	201	196	186	155	83.1	47.1	36.2	36.8	46.5	94.0	167
(D) = (A) > (C)		X	X	X	X	X	X	X	X	X	X	X	X
(E) = (A / B) x 100		<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%

(A) = total interference as CFS; (B) = WAB calculated natural flow at 80% exceed. as CFS; (C) = 1% of calculated natural flow at 80% exceed. as CFS; (D) = highlight the checkmark for each month where (A) is greater than (C); (E) = total interference divided by 80% flow as percentage.

**Basis for impact evaluation:** Impact of pumping to the Willamette River was not modeled because the applicant's full proposed rate of 3.17 cfs is well below the 1% of the natural flow of the Willamette River WAB for any months. Cumulative impacts therefore will not exceed 1% of the minimum flow and per OAR 690-09-040 will not have the potential for substantial interference.

C4b. **690-09-040 (5) (b)** The potential to impair or detrimentally affect the public interest is to be determined by the Water Rights Section.

- C5.  **If properly conditioned**, the surface water source(s) can be adequately protected from interference, and/or groundwater use under this permit can be regulated if it is found to substantially interfere with surface water:
- i.  The permit should contain condition #(s) \_\_\_\_\_;
  - ii.  The permit should contain special condition(s) as indicated in "Remarks" below;

**C6. SW / GW Remarks and Conditions:** The alluvial aquifer in the area of the applicant's proposed POAs is shallow and generally unconfined and nearby wells that have long records of SWL show clear correlation to river stage – implying very efficient hydraulic connection to surface water. However, the applicant's proposed total use is far below the 1% of the natural flow in the Willamette River WAB and so there is no chance of PSI under ORS 690-009 conditions from any of the proposed POAs.

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**References Used:** Helm, D. C. and A. R. Leonard. 1977. Ground-water Resources of the Lower Santiam River Basin, Middle Willamette Valley, Oregon. Water Resources Department Ground-water Report No. 25

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Gannett, Marshall W., and Caldwell, Rodney R., 1998, Geologic Framework of the Willamette Lowland Aquifer System, Oregon and Washington: U. S. Geological Survey Professional Paper 1424-A, 32p, 8 plates

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Woodward and others, 1998, Hydrogeologic Framework of the Willamette Lowland Aquifer System, Oregon and Washington: U.S. Geological Survey Professional Paper 1424-B

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**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) \_\_\_\_\_
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D3. **THE WELL construction deficiency or other comment is described as follows:** \_\_\_\_\_

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

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Figure 1: Water Availability Tables

# Water Availability Analysis Detailed Reports

WILLAMETTE R > COLUMBIA R - AB MILL CR AT GAGE 14191000  
WILLAMETTE BASIN

Water Availability as of 8/7/2015

Watershed ID #: 183 ([Map](#))

Exceedance Level:

Date: 8/7/2015

Time: 7:56 AM

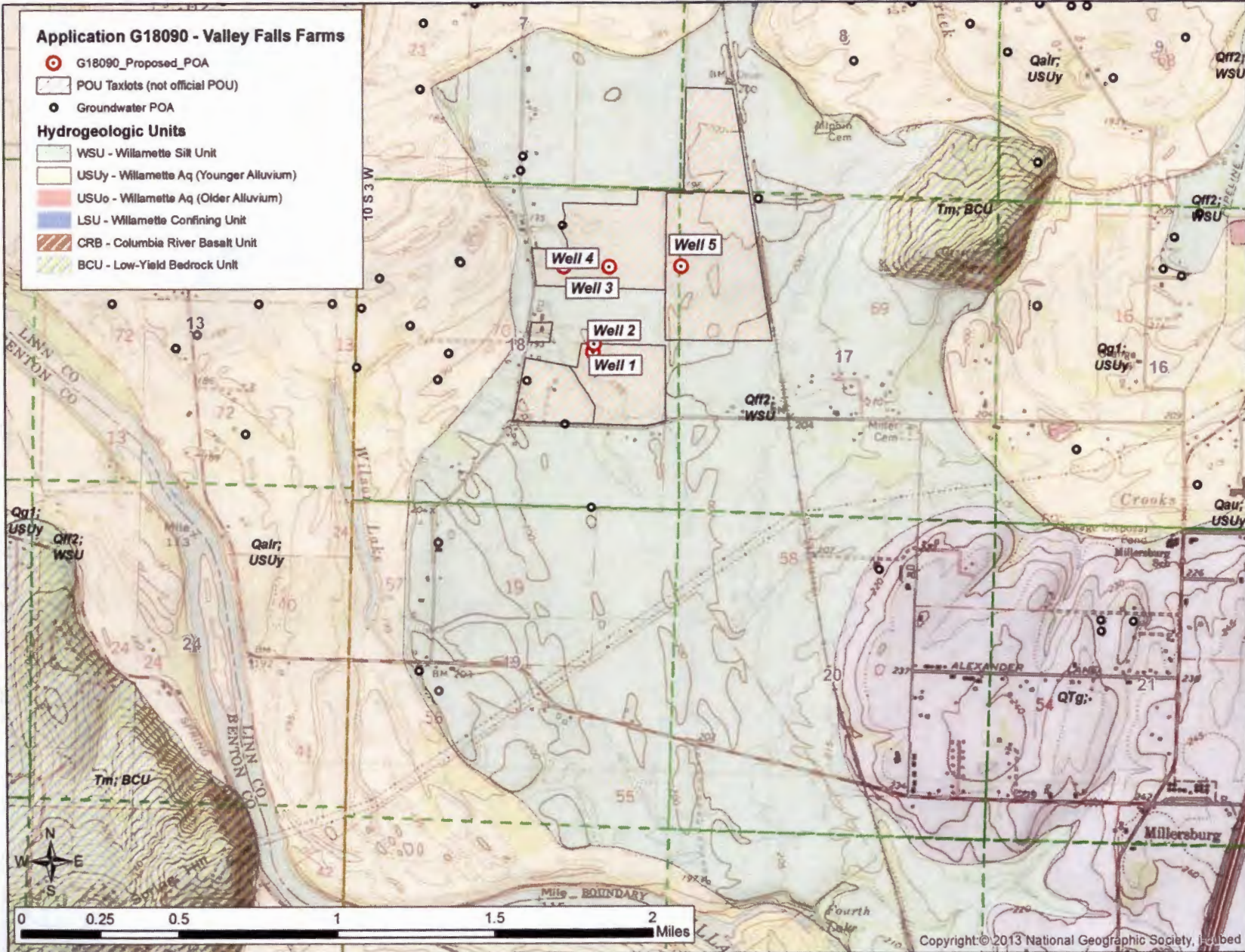
Water Availability Calculation	Consumptive Uses and Storages	Instream Flow Requirements	Reservations
Water Rights	Watershed Characteristics		

## Water Availability Calculation

Monthly Streamflow in Cubic Feet per Second  
Annual Volume at 50% Exceedance in Acre-Feet

Month	Natural Stream Flow	Consumptive Uses and Storages	Expected Stream Flow	Reserved Stream Flow	Instream Flow Requirement	Net Water Available
JAN	18,400.00	2,240.00	16,200.00	0.00	1,300.00	14,900.00
FEB	20,100.00	7,420.00	12,700.00	0.00	1,300.00	11,400.00
MAR	19,600.00	7,210.00	12,400.00	0.00	1,300.00	11,100.00
APR	18,000.00	6,870.00	11,100.00	0.00	1,300.00	9,830.00
MAY	15,500.00	4,170.00	11,300.00	0.00	1,300.00	10,000.00
JUN	8,310.00	1,690.00	6,620.00	0.00	1,300.00	5,320.00
JUL	4,710.00	1,450.00	3,260.00	0.00	1,300.00	1,960.00
AUG	3,620.00	1,330.00	2,290.00	0.00	1,300.00	987.00
SEP	3,680.00	1,160.00	2,520.00	0.00	1,300.00	1,220.00
OCT	4,650.00	747.00	3,900.00	0.00	1,300.00	2,600.00
NOV	9,400.00	853.00	8,550.00	0.00	1,300.00	7,250.00
DEC	16,700.00	910.00	15,800.00	0.00	1,300.00	14,500.00
ANN	13,500,000.00	2,160,000.00	11,300,000.00	0.00	942,000.00	10,400,000.00

Figure 2: Application Map





**Figure 3: Water level hydrograph from BENT 1558; located approximately 3 miles south of the applicant's proposed POA and completed in alluvial sediments adjacent to the Willamette Valley**

