Water Right Conditions Tracking Slip

Groundwater/Hydrology Section

FILE # # G-17775

ROUTED TO: Water Rights

TOWNSHIP/
RANGE-SECTION: 4S/1E-3

CONDITIONS ATTACHED?: [✓] yes [ ] no

REMARKS OR FURTHER INSTRUCTIONS:

Reviewer: M. Thoma / K. Wozniak

WATER RESOURCES DEPARTMENT

MEMO

Sept. 22, 2014

TO: Application G- 17775

FROM: GW: Karl Woznick
(Reviewer's Name)

SUBJECT: Scenic Waterway Interference Evaluation

_____YES
The source of appropriation is within or above a Scenic Waterway
__✓__NO

_____YES
Use the Scenic Waterway condition (Condition 7J)
__✓__NO

_____Per ORS 390.835, the Ground Water 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 Ground Water 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 GROUND WATER APPLICATIONS

TO: Water Rights Section Date September 22, 2014

FROM: Ground Water/Hydrology Section Michael Thoma / Karl Wozniak
Reviewer's Name

SUBJECT: Application G- 17775 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 ground water 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: Shirley Baldwin and Larry Faist County: Clackamas

A1. Applicant(s) seek(s) **0.56** cfs from **1** well(s) in the **Willamette** Basin, **Molalla River** subbasin Quad Map: **Canby / Yoder**

A2. Proposed use **Irrigation** 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	Proposed	1	Alluvium	0.56	04S/01E-03 NW-SE	20' S, 20' E from center of S 03
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*	180		50-80**		295	0-140	0-275			250*		

Use data from application for proposed wells.

A4. **Comments:** *Well is proposed with a total depth of 295', 275' of casing, and 145' of seal. The proposed rate is 250 gpm (0.557 cfs) but only 36 acres are listed so we would likely limit the rate to 0.450 cfs (202 gpm).
**SWL is estimated from a query of nearby well logs completed to depths > 250 ft BLS

A5. ☐ **Provisions of the Willamette** Basin rules relative to the development, classification and/or management of ground water hydraulically connected to surface water ☐ **are**, *or* ☒ **are not**, activated by this application. (Not all basin rules contain such provisions.)
Comments: The proposed well is > ¼ mile from the nearest surface water body so the pertinent rules (OAR 690-502-0240) do not apply.

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

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

B1. **Based upon available data**, I have determined that ground water* 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 ground water 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 ground water 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 ground water resource; or

d. ☒ **will, if properly conditioned**, avoid injury to existing ground water rights or to the ground water resource:
   i. ☒ The permit should contain condition #(s) **7c, Large Water Use Reporting**;
   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 ground water production from no deeper than _____ ft. below land surface;

b. ☐ **Condition** to allow ground water production from no shallower than _____ft. below land surface;

c. ☐ **Condition** to allow ground water production only from the _____ ground water 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 Ground Water 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. **Ground water availability remarks:** **Special Condition:** The well shall be continuously cased and continuously sealed to a minimum depth of 150 feet below land surface. If during well construction, it becomes apparent that the well can be constructed to eliminate interference with nearby shallow wells or hydraulically connected streams in a manner other than specified in this permit, the permittee can contact the Department Hydrogeologist for this permit or the Ground Water/Hydrology Section Manager to request approval of such construction. The request shall be in writing, and shall include a rough well log and a proposed construction design for approval by the Department. The request can be approved only if it is received and reviewed prior to placement of any permanent casing and sealing material. If the well is constructed first and then the request made, requested modification will not be approved. The new well depth and construction specifications will be incorporated into any certificate issued for this permit.

Regarding Interference: The area of the proposed well is underlain by over 500 ft of alluvial sediments. Sand and gravel beds associated with the Canby Fan (Gannett and Caldwell, 1998) are common in the upper 100 feet but clay beds become more common with depth. A recently drilled well in the area (CLAC 62807 located < ½ mile to the north at a similar elevation) was drilled in 2006 to a depth of 310'. This well log list interbedded layers of clay and sand and was completed with open intervals between 198 and 300 ft bls targeting layers of sandy material. The applicants' proposed well will likely encounter similar geology.

The upper part of the alluvial aquifer, where shallow Canby Fan sediments lie adjacent to coarse-grained alluvium in the Molalla River floodplain (surface south of the proposed well), is likely to be unconfined. Deeper sand and gravel beds become more confined as evident by SWL data from deeper wells in the area (e.g., CLAC 62807 and others), however there may not be a continuous (laterally-extensive), low-permeability confining layer to constrict vertical flow and reduce the efficiency of hydraulic connection to the Molalla River. Therefore the department makes a finding that the aquifer is hydraulically connected to the Molalla River. The condition listed in B2b is designed to minimize the efficiency of the hydraulic connection to the Molalla River in order to minimize short-term interference. The intent of the condition is to restrict production to semi-confined or confined water-bearing zones below about 150 feet.

Regarding over-appropriation: Groundwater level data is sparse in the area but limited data show no obvious long-term trends of groundwater decline. Irrigation well density is sparse in the area and some nearby lands served by water rights have been converted to housing tracts in the city of Canby, which gets most of its water from surface water rights. Domestic well density is also sparse in the area. The thickness of the saturated sediments, the sparse domestic and irrigation well density, and the stability of limited groundwater level data all indicate that the aquifer is not likely to be over appropriated.

C. GROUND WATER/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***	☒	☐
		☐	☐
		☐	☐
		☐	☐
		☐	☐

Basis for aquifer confinement evaluation: *Well is proposed. A query of well logs for the area show shallow wells (completed depths < 100 ft) have a median SWL of ~23 ft bls when drilled while wells completed to depths > 200 ft have a median SWL of 65 ft. This difference implies increasingly confined conditions with depth. Well logs often report alternating layers of gravel, sand, and clay but these layers likely represent local confining layers which may not be laterally extensive (see C2).

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? YES	NO	ASSUMED	Potential for Subst. Interfer. Assumed? YES	NO
1	**1**	**Molalla River**	**100'**	**100-130'**	**2048'**	☒	☐	☐	☐	☒
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐

Basis for aquifer hydraulic connection evaluation: Published water table maps indicate that the Molalla River is a local discharge boundary for the alluvial aquifer (water table contours indicate that groundwater flows toward and discharges into the river). Confining clay layers above the productive sands will decrease, but not eliminate, short-term interference (i.e., hydraulic connection) with the river and even less so if these layers are not laterally extensive. Long term interference will be spread out over the year and may even impact other nearby streams.

Water Availability Basin the well(s) are located within: Molalla R > Willamette R – AB Gribble Cr

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?
1	**1**	☐	☐	**MF135A**	**60**	☐	**65.1**	☐	**?**	☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐

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?
			☐			☐		☐	**<< 25%**	☐
			☐			☐		☐		☐
			☐			☐		☐		☐
			☐			☐		☐		☐

Comments: Models run for similar scenarios under similar geologic conditions imply that surface water interference will be much less than 25% after 30 days.

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													

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
(A) = Total Interf.												
(B) = 80 % Nat. Q												
(C) = 1 % Nat. Q												
(D) = (A) > (C)												
(E) = (A / B) x 100	%	%	%	%	%	%	%	%	%	%	%	%

(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:

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 ground water use under this permit can be regulated if it is found to substantially interfere with surface water:

i. ☒ The permit should contain condition #(s) **See Section B2b.** ;

ii. ☐ The permit should contain special condition(s) as indicated in "Remarks" below;

C6. **SW / GW Remarks and Conditions** The regional aquifer in the area is hydraulically connected to the Molalla River. However the efficiency of the connection is reduced by the presence of confining layers which become more abundant with depth. The proposed well, if properly cased and sealed to greater than ~150 ft, will reduce the efficiency of the hydraulic connection and have low short-term impacts to nearby surface water and little interference to existing nearby groundwater users – see Section B3.

References Used:

Conlon, T. D., K. C. Wozniak, D. Woodcock, N. B. Herrera, B. J. Fisher, D. S. Morgan, K. K. Lee, and S. R. Hinkle. 2005. Ground-Water Hydrology of the Willamette Basin, OR. U.S. Geological Survey Scientific Investigations report 2005-5168.

O'Conner, J. E., A. Sarna-Wojcicki, K. C. Wozniak, D. J. Polette, and R. J. Fleck. 2001. Origin, Extent, and Thickness of Quarternary Geologic Units in the Willamette Valley, OR. U.S. Geological Survey Professional Paper 1620

D. WELL CONSTRUCTION, OAR 690-200

D1. **Well #:** _____ **Logid:** _____

D2. **THE WELL does not 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**:
- a. ☐ constitutes a health threat under Division 200 rules;
- b. ☐ commingles water from more than one ground water reservoir;
- c. ☐ permits the loss of artesian head;
- d. ☐ permits the de-watering of one or more ground water reservoirs;
- e. ☐ other: (specify) _____

D4. **THE WELL construction deficiency is described as follows:** _____

D5. **THE WELL**
- a. ☐ **was**, *or* ☐ **was not** constructed according to the standards in effect at the time of original construction or most recent modification.
- b. ☐ I don't know if it met standards at the time of construction.

D6. ☐ **Route to the Enforcement Section.** I recommend withholding issuance of the permit until evidence of well reconstruction is filed with the Department and approved by the Enforcement Section and the Ground Water Section.

THIS SECTION TO BE COMPLETED BY ENFORCEMENT PERSONNEL

D7. ☐ Well construction deficiency has been corrected by the following actions: _____

_____ _____, 200____.

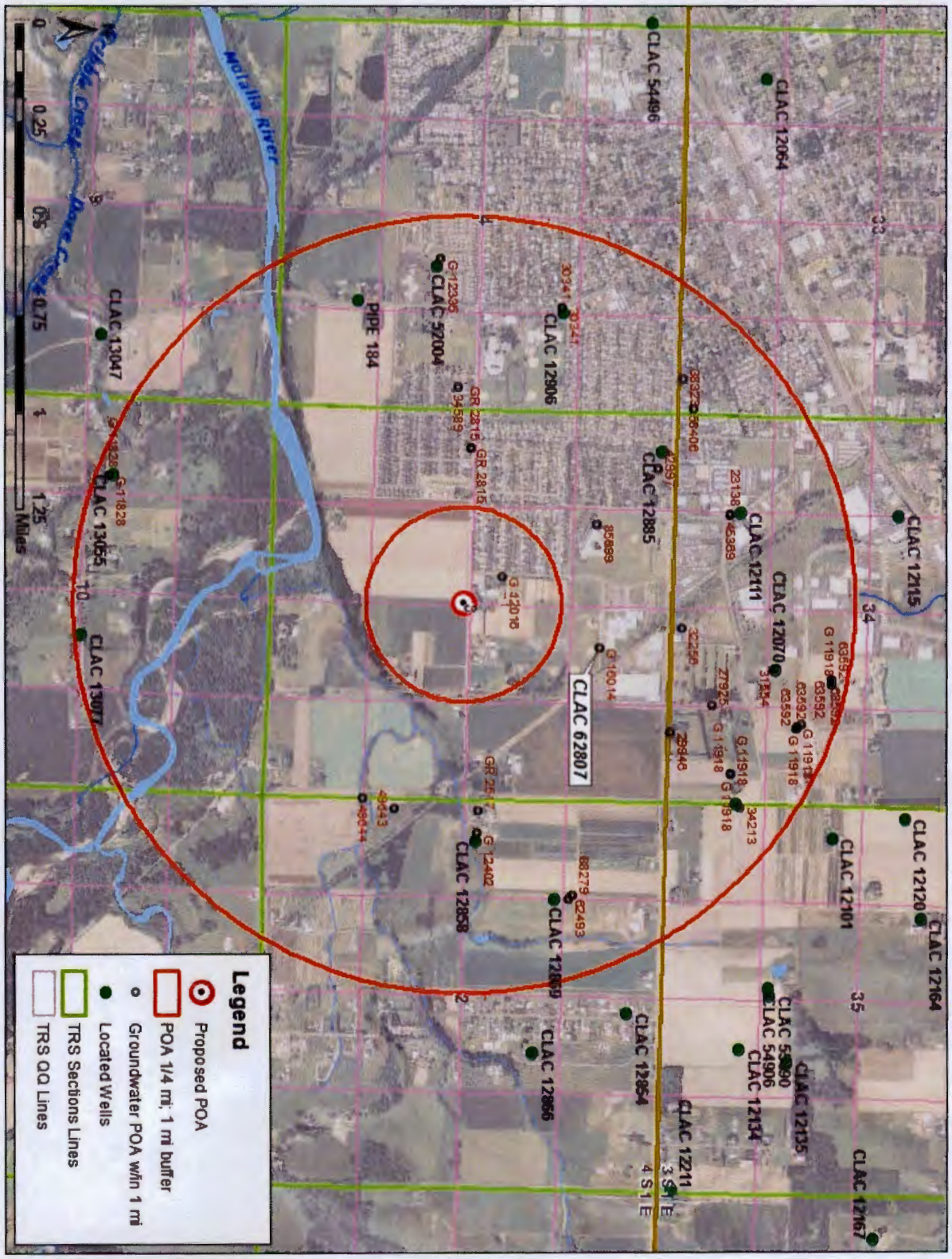
(Enforcement Section Signature)

D8. ☐ **Route to Water Rights Section (attach well reconstruction logs to this page).**

Water Availability Tables

DETAILED REPORT ON THE WATER AVAILABILITY CALCULATION								
MOLALLA R > WILLAMETTE R - AB GRIBBLE CR								
Watershed ID #: 135			Basin: WILLAMETTE			Exceedance Level: 80		
Time: 8:34 AM						Date: 09/10/2014		
Watershed ID	Exceedance Level	Month	Natural Stream Flow	Consumptive Use	Expected Stream Flow	Reserved Stream Flow	Instream Requirement	Net Water Avail
135	80	JAN	694	3.61	690	0	60	630
135	80	FEB	701	3.49	698	0	60	638
135	80	MAR	714	3.19	711	0	60	651
135	80	APR	685	3.7	681	0	60	621
135	80	MAY	495	10.1	485	0	60	425
135	80	JUN	221	14.4	207	0	60	147
135	80	JUL	97.6	24.7	72.9	0	60	12.9
135	80	AUG	67	20.2	46.8	0	60	-13.2
135	80	SEP	65.1	8.8	56.3	0	60	-3.7
135	80	OCT	103	3.31	99.7	0	60	39.7
135	80	NOV	306	3.14	303	0	60	243
135	80	DEC	669	3.72	665	0	60	605
135	80	ANN	560000	6220	554000	0	43500	511000

Area Map


Legend
Proposed POA
POA 1/4 mi; 1 mi buffer
Groundwater POA w/in 1 mi
Located Wells
TRS Sections Lines
TRS QQ Lines
Molalla River
Miles
CLAC 62807
CLAC 12115
CLAC 12064
CLAC 54496
CLAC 12164
CLAC 12120
CLAC 12101
CLAC 12135
CLAC 54906
CLAC 12134
CLAC 12167
CLAC 12211
CLAC 12111
CLAC 12070
CLAC 12885
CLAC 12906
CLAC 52004
CLAC 13047
CLAC 13065
CLAC 13077
CLAC 12858
CLAC 12869
CLAC 12856
CLAC 12854
PIPE 184
4 S 1 E
3 S 1 E