PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date **4/29/2015**

FROM: Groundwater Section **Michael J. Thoma**
Reviewer's Name

SUBJECT: Application G- **18050** 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: **Jason Cole, Elizabeth Cleary-Cole**
County: **Josephine**

A1. Applicant(s) seek(s) **0.13** cfs from **2** well(s) in the **Rogue** Basin, **Williams Cr.** subbasin

A2. Proposed use **Irrigation (15 acres Primary)** Seasonality: **April 1 – October 31 (214 d)**

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	JOSE 59341	1	Bedrock	0.13	38S/05W-15 NESW	265' S, 235' W of center of S 15
2	Proposed	2	Bedrock	0.13	38S/05W-15 NESW	645' S, 470' W of center of S 15
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	1460	76	+1.2	4/18/2014	200	0-45	+2-58	0-200	180-200	13		A
2	1480	96[a]			200[b]							

Use data from application for proposed wells.

A4. **Comments:** The applicants' proposed POAs are located at the junction of Quaternary alluvial-filled valley floor deposits and Mesozoic bedrock of the Applegate Grp (Ramp and Peterson 2004) that flank the valley. The existing well produces from the fractured rock aquifer which, according to driller's log, is under artesian pressure. These fractured-rock aquifers are generally low-yielding and 13 gpm is typical.
[a] The applicants' proposed Well #2 will be located ~450 ft from the existing Well #1 (JOSE 59341) and should encounter similar geologic units (fractured bedrock) and hydrogeologic conditions (i.e., similar 'First Water', confined conditions, and yield)
[b] depth proposed by applicants

A5. ☐ **Provisions of the** Rogue (OAR 690-515) 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: _____

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) **'Medium' 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 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 applicants' proposed POAs sit at the flanks of the Williams Creek Valley and will be producing from fractured bedrock of the Applegate Grp. (Ramp and Peterson 1979) (**Figure 2**). Yields reported on driller's logs for nearby wells generally range from < 1 gpm (<0.01 cfs) to near 100 gpm (0.22 cfs) but the applicants' existing well reports 13 gpm (0.02 cfs) which is probably closer to the average yields for the fractured aquifer system. Regardless, it is possible that the applicants' proposed rate of 0.13 cfs can be obtained from a combination of two wells and their use is within the capacity of the resource.

There are no observation wells near the proposed POAs that produce from the same geologic units. The nearest observation well, JOSE 19264, produces from alluvial sediments within the valley but shows stable water levels over the past several decades (see **Figure 3**). Other wells in the Rogue Basin producing from fractured bedrock generally show strong seasonal fluctuations in water level but stable trends overall.

Regarding Injury:

There are some existing wells near the proposed POAs, mostly domestic, and most producing from the same fractured rock aquifer as the applicants' proposed wells. These low-yield, fractured-rock aquifers can pose problems with interference if use is heavy and distances between wells are small, but based on the size of tax lots in the area, well density is likely low and interference should be minimal. However, standard interference conditions should be applied.

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	**Fractured bedrock of Applegate Grp**	☒	☐
2	**Fractured bedrock of Applegate Grp**	☒	☐
		☐	☐
		☐	☐
		☐	☐

Basis for aquifer confinement evaluation: Well #1 (JOSE 59341) driller's log lists SWL much higher than first water-bearing zone (WBZ). The applicants' proposed Well #2 should encounter similar conditions.

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**	**Powell Cr.**	**1460**	**1328-1680[a]**	**550**	☒	☐	☐	☐	☐
2	**1**	**Powell Cr.**	**1480**	**1328-1680[a]**	**970**	☒	☐	☐	☐	☐
						☐	☐	☐	☐	☐

Basis for aquifer hydraulic connection evaluation: Although the existing well shows evidence of confined conditions, it is likely that groundwater within the fractured-rock aquifer discharges to the alluvium filling the valley floor which ultimately discharges to surface water downstream from the proposed POAs. Production from the applicants' proposed POAs will likely intercept water that would have discharged to Powell Cr. downstream from the proposed POAs.

[a] 'SW Elev' reported is elevation range within 0.5 mi upstream and downstream of the nearest point on the river to the proposed POAs

Water Availability Basin the well(s) are located within: Powell Cr > Williams Cr – At Mouth (ID# 71026)

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**	☒	☐	**IS71026A**	**2.28**	☒	**1.96**	☒		☒
2	**1**	☒	☐	**IS71026A**	**2.28**	☒	**1.96**	☒		☒
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐

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?
			☐			☐		☐		☐
			☐			☐		☐		☐
			☐			☐		☐		☐
			☐			☐		☐		☐

Comments: The proposed use of 0.13 cfs is > 1% of the minimum monthly 80% natural flow in Powell Cr. (**Figure 1A**) and > 1% of instream right IS71026A (**Figure 1B**). **Therefore PSI is assumed.**

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		%	%	%	%	%	%	%	%	%	%	%	%

(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 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 applicants' proposed POAs are within ¼ mi of Powell Cr. and water levels in the well are similar to surface water elevations. Despite evidence of confined conditions in the proposed aquifer (as indicated by driller's log for the applicants' Well #1), the Department has determined that there is likely to be hydraulic connection to surface water (Powell Cr.) as water produced from the applicants' proposed POAs would otherwise flow into the alluvial sediments and discharge to surface water downstream. The applicants' proposed production aquifer is also likely to be in hydraulic connection to Williams Cr. which is only a little over 1 mi away. However, as there is already PSI established with Powell Cr. and as Powell Cr. is tributary to Williams Cr., the determination and finding of PSI with Powell Cr. and appropriate handling of PSI (see next remark), is sufficient to protect both Powell Cr. and Williams Cr.

The application includes an affidavit for cancelation of surface water right Cert. 2108 which is for 0.13 cfs diversion from Powell Cr. The reviewer assumes this is to mitigate impacts to Powell Cr. from pumping caused by PSI and the issuance of this permit. The surface water POA for Cert. 2108 is upstream from the portion of Powell Cr. that groundwater pumping will likely impact and so cancelation of Cert. 2108 should provide adequate mitigation of pumping impacts as it applies to PSI.

References Used:

Ramp, L. and N. V. Peterson. 2004. Geologic Map of Josephine County, Oregon. OFR O-04-13

Ramp, L. and N. V. Peterson. 1979. Geology and Mineral Resources of Josephine County, Oregon. DOGMI Bulletin 1000

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.**

Figure 1A: Water Availability Table – Powell Cr.

POWELL CR > WILLIAMS CR - AT MOUTH
ROGUE BASIN

Water Availability as of 4/28/2015

Watershed ID #: 71026 (Map) Exceedance Level: 80%
Date: 4/28/2015 Time: 2:31 PM

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	9.12	0.18	8.94	0.00	24.60	-15.70
FEB	15.80	0.21	15.60	0.00	27.70	-12.10
MAR	13.70	0.17	13.50	0.00	22.90	-9.37
APR	9.96	0.37	9.59	0.00	17.20	-7.61
MAY	6.36	0.57	5.79	0.00	8.53	-2.74
JUN	3.98	0.79	3.19	0.00	5.86	-2.67
JUL	3.42	1.04	2.38	0.00	4.62	-2.24
AUG	2.73	0.86	1.87	0.00	3.66	-1.79
SEP	2.25	0.57	1.68	0.00	2.62	-0.94
OCT	1.96	0.19	1.77	0.00	2.28	-0.51
NOV	1.98	0.04	1.94	0.00	3.65	-1.71
DEC	3.52	0.13	3.40	0.00	15.20	-11.80
ANN	8,330.00	310.00	8,020.00	0.00	8,330.00	0.00

Figure 1B: Instream flow rights on Powel Cr.

POWELL CR > WILLIAMS CR - AT MOUTH
ROGUE BASIN

Water Availability as of 4/28/2015

Watershed ID #: 71026 (Map) Exceedance Level: 80%
Date: 4/28/2015 Time: 5:32 PM

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

Detailed Report of Instream Flow Requirements

Instream Flow Requirements in Cubic Feet per Second

Application #	Status	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
IS71026A	CERTIFICATE	24.60	27.70	22.90	17.20	8.53	5.86	4.62	3.66	2.62	2.28	3.65	15.20
Maximum		**24.60**	**27.70**	**22.90**	**17.20**	**8.53**	**5.86**	**4.62**	**3.66**	**2.62**	**2.28**	**3.65**	**15.20**

Figure 2: Application Overview Map

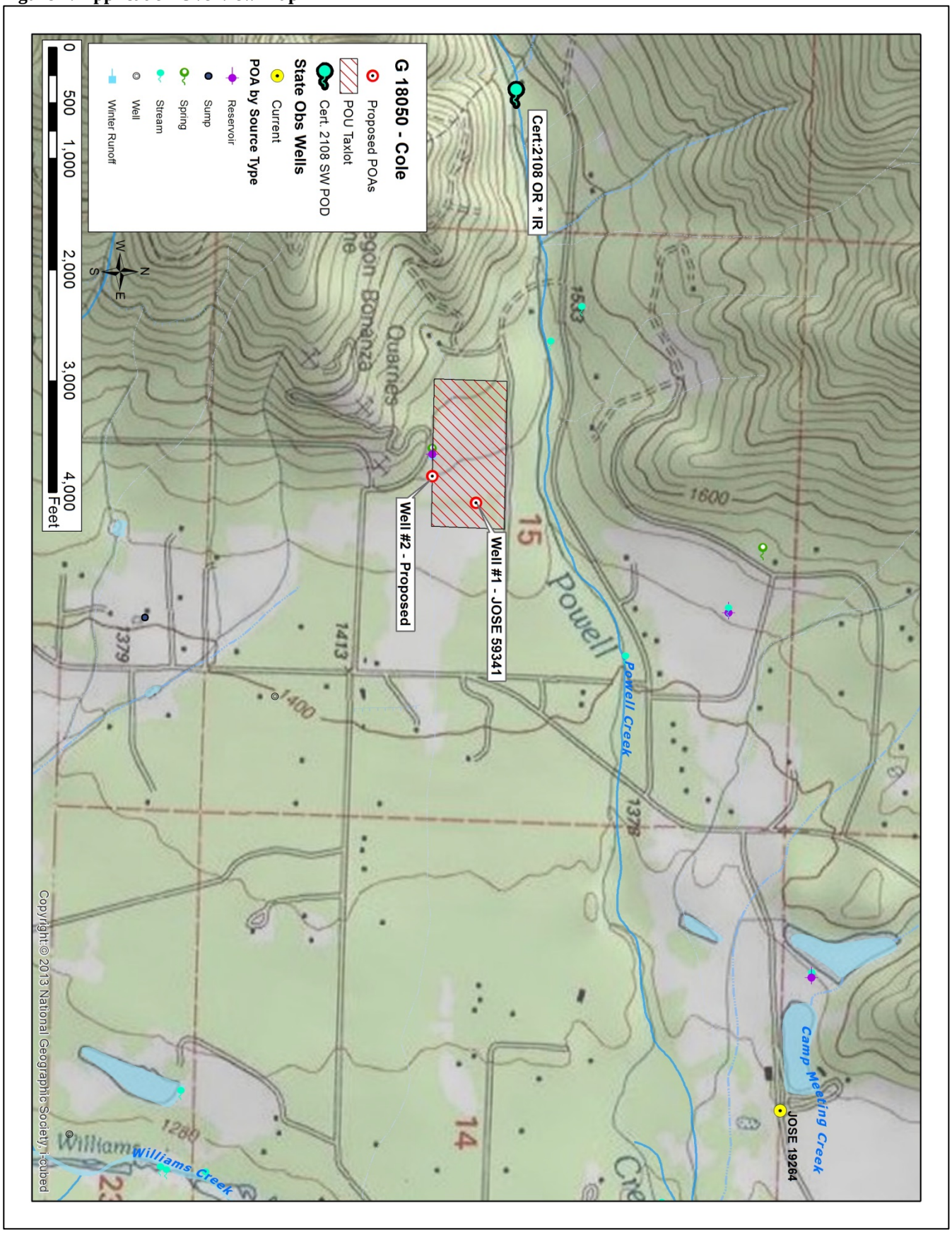

Figure 3: Water-Level Trends in Nearby Wells