

Groundwater Transfer Review Summary Form

Transfer/PA # T- 13246

GW Reviewer Gerald H. Grondin

Date Review Completed: 23 March 2021

Summary of Same Source Review:

The proposed change in point of appropriation is not within the same aquifer as per OAR 690-380-2110(2).

Summary of Injury Review:

The proposed transfer will result in another, existing water right not receiving previously available water to which it is legally entitled or result in significant interference with a surface water source as per 690-380-0100(3).

Summary of GW-SW Transfer Similarity Review:

The proposed SW-GW transfer doesn't meet the definition of "similarly" as per OAR 690-380-2130.

None of the Above

This is only a summary. Documentation is attached and should be read thoroughly to understand the basis for determinations.



Oregon Water Resources Department
 725 Summer Street NE, Suite A
 Salem, Oregon 97301-1271
 (503) 986-0900
 www.wrd.state.or.us

Ground Water Review Form:

- Water Right Transfer**
- Permit Amendment**
- GR Modification**
- Other**

Application: **T-13246**

Applicant Name: **Scott & Jose Tobiasson**

Proposed Changes: POA APOA SW→GW RA
 USE POU OTHER

Reviewer(s): **Gerald H. Grondin**

Date of Review: **23 March 2021**

Date Reviewed by GW Mgr. and Returned to WRSD: JTI 3/24/21

The information provided in the application is insufficient to evaluate whether the proposed transfer may be approved because:

- The water well reports provided with the application do not correspond to the water rights affected by the transfer.
- The application does not include water well reports or a description of the well construction details sufficient to establish the ground water body developed or proposed to be developed.
- Other _____

1. Basic description of the changes proposed in this transfer: _____

This transfer application relates to water right certificates 83439 and 88683.

Certificate 83439 authorizes irrigation of 226.4 acres from two POA wells (Well 1 = LAKE 776, and well 2 = LAKE 775) located in T27S/R15E-sec 3. The certificate apportions use as follows: a maximum rate of 1.070 cfs from Well 1 to irrigate 85.20 acres and 1.765 cfs from Well 2 to irrigate 141.20 acres with a maximum duty of 3 ac-ft per acre per year for all acreage (679.20 ac-ft / yr).

Certificate 88683 authorizes irrigation of 9 acres from the same two POA wells (Well 1 = LAKE 776, and well 2 = LAKE 775) located in T27S/R15E-sec 3. The certificate allows use as follows: a maximum rate of 0.12 cfs to irrigate 9 acres with a maximum duty of 3 ac-ft per acre per year for all acreage (27.00 ac-ft / yr).

The transfer proposes the following changes. For certificate 83439, move 0.288 cfs to irrigate 23.04 POU acres from authorized POA well LAKE 775 (authorized POU & POA in T27S/R15E-sec 3) to proposed POU acreage and proposed POA well LAKE 188 in T25S/R15E-sec 33. For certificate 88683, move 0.087 cfs to irrigate 6.96 POU acres from authorized POA well LAKE 775 (authorized POU & POA in T27S/R15E-sec) 3 to proposed POU acreage and proposed POA well LAKE 188 in T25S/R15E-sec 33.

2. Will the proposed POA develop the same aquifer (source) as the existing authorized POA?
 Yes No Comments: _____

Yes, the same aquifer is likely given the same groundwater system will likely be tapped despite the proposed POA well (Lake 188) is 200 feet deeper than the authorized POA well LAKE 775 (280 ft. blsd vs. 75 ft. blsd). Long term groundwater level data indicates groundwater levels at wells surrounding the currently authorized and proposed POA locations have similar elevations, seasonally fluctuate similarly, and show the same long-term trends (see attached hydrograph).

Additionally, groundwater in the Fort Rock Valley-Christmas Valley area (Fort Rock Classified Area) is a single groundwater system. Groundwater is found in both a shallower predominantly basin-fill sediment unit and a deeper predominantly volcanic rocks and sediments unit below. The predominantly basin fill sediment unit and the predominantly volcanic rocks and sediment unit both readily yield groundwater and the two units are hydraulically connected. The geologic unit yielding groundwater to the authorized POA (LAKE 775) is likely from the predominantly volcanic rocks and sediment unit based on nearby water well reports. The proposed POA well (LAKE 188) appears to obtain groundwater from the predominantly volcanic rocks and sediment unit.

Miller (1984 and 1986) describes the groundwater source as the main groundwater reservoir. That reservoir includes groundwater in different geologic units. The reservoir has three characteristics. First, the “natural” groundwater level changes less than 1.5 feet annually, indicating the system is highly modulated. Second, the 1980s potentiometric surface was approximately 4292 feet elevation amsl basin-wide with Silver Lake an exception. Third, the reservoir consists of numerous water producing zones in several formations, all having an essentially common potentiometric level, and all being very transmissive in general.

3. a) Is there more than one source developed under the right (e.g., basalt and alluvium)?
 Yes No _____

No. Single hydraulically connected groundwater system. Both the “To” and “From” wells appear to obtain groundwater from the predominantly volcanic rocks and sediment unit. See discussion in part 2 above.

- b) If yes, estimate the portion of the right supplied by each of the sources and describe any limitations that will need to be placed on the proposed change (rate, duty, etc.): _____

No estimate made and no limitation recommended. Single groundwater system. Both the “To” and “From” wells appear to obtain groundwater from the predominantly volcanic rocks and sediment unit.

- 4. a) Will this proposed change, at its maximum allowed rate of use, likely result in an increase in interference with **another ground water right**?

Yes No Comments: _____

The proposed POA well change will move groundwater pumping under this certificate closer to other water right wells. The calculated maximum additional seasonal groundwater level drawdown at the water right well (LAKE 187) closest to the proposed POA well (LAKE 188) is less than 1.25 feet. The change in seasonal groundwater level drawdown will be less at wells further away. All these water right wells should be able to accommodate the seasonal drawdown change.

The long-term impact on the groundwater system should be the same. That impact is to continue contributing its ongoing share to the annual Fort Rock Classified Area groundwater level decline (see the attached hydrograph...it shows an annual decline rate of about 0.25 feet per year).

- b) If yes, would this proposed change, at its maximum allowed rate of use, likely result in another groundwater right not receiving the water to which it is legally entitled?

Yes No If yes, explain: _____

See discussion in part 4a above.

- 5. a) Will this proposed change, at its maximum allowed rate of use, likely result in an increase in interference with **another surface water source**?

Yes No Comments: _____

No. The POA changes moves pumping further away from surface water particularly Paulina Marsh and Silver Lake. The seasonal interference should be less, and the long-term interference should be the same.

- b) If yes, at its maximum allowed rate of use, what is the expected change in degree of interference with any **surface water sources** resulting from the proposed change?

Stream: Paulina Marsh Minimal Significant

Stream: Silver Lake Minimal Significant

Provide context for minimal/significant impact: _____

See comment in part 5a above.

- 6. For SW-GW transfers, will the proposed change in point of diversion affect the surface water source similarly (as per OAR 690-380-2130) to the authorized point of diversion specified in the water use subject to transfer?

Yes No Comments: _____

Not Applicable. No SW-GW transfer.

- 7. What conditions or other changes in the application are necessary to address any potential issues identified above: _____

Note: the proposed transfer is within the Fort Rock groundwater limited area.

The following are technical groundwater review recommendations. It is recognized that one or more technically recommended conditions may or may not be allowed under the transfer process rules and statutes. This technical groundwater review relies on other appropriate and authorized Department staff to make that determination.

“Large” flow meter condition for any proposed “To” POA well. Require the flow meter for any POA well to be properly installed and maintained. Each meter shall be either within 50 feet of the well head with a clearly visible monument adjacent to the meter or a surveyed location shall be provided and a clearly visible monument adjacent to the meter shall be installed for each meter more than 50 feet from the well head.

Condition 7P (well tag condition) for all the “To” and “From” POA wells.

Condition 7T (modified) for all “To” POA wells: “Prior to use, all POA wells shall be configured to allow a strictly clean water (no oil) static water level measurements with an electric-tape. That can include measurement access via an unobstructed vertical discharge pipe that allows the groundwater level to fluctuate freely within the discharge pipe (no valves, etc.). Otherwise, a dedicated measuring tube must be installed prior to use. The tube must be unobstructed, have a diameter of ¾ inch (0.75 inch) or greater, and pursuant to figure 200-5 in OAR 690-200.”

- 8. Any additional comments: _____

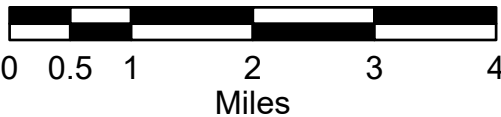
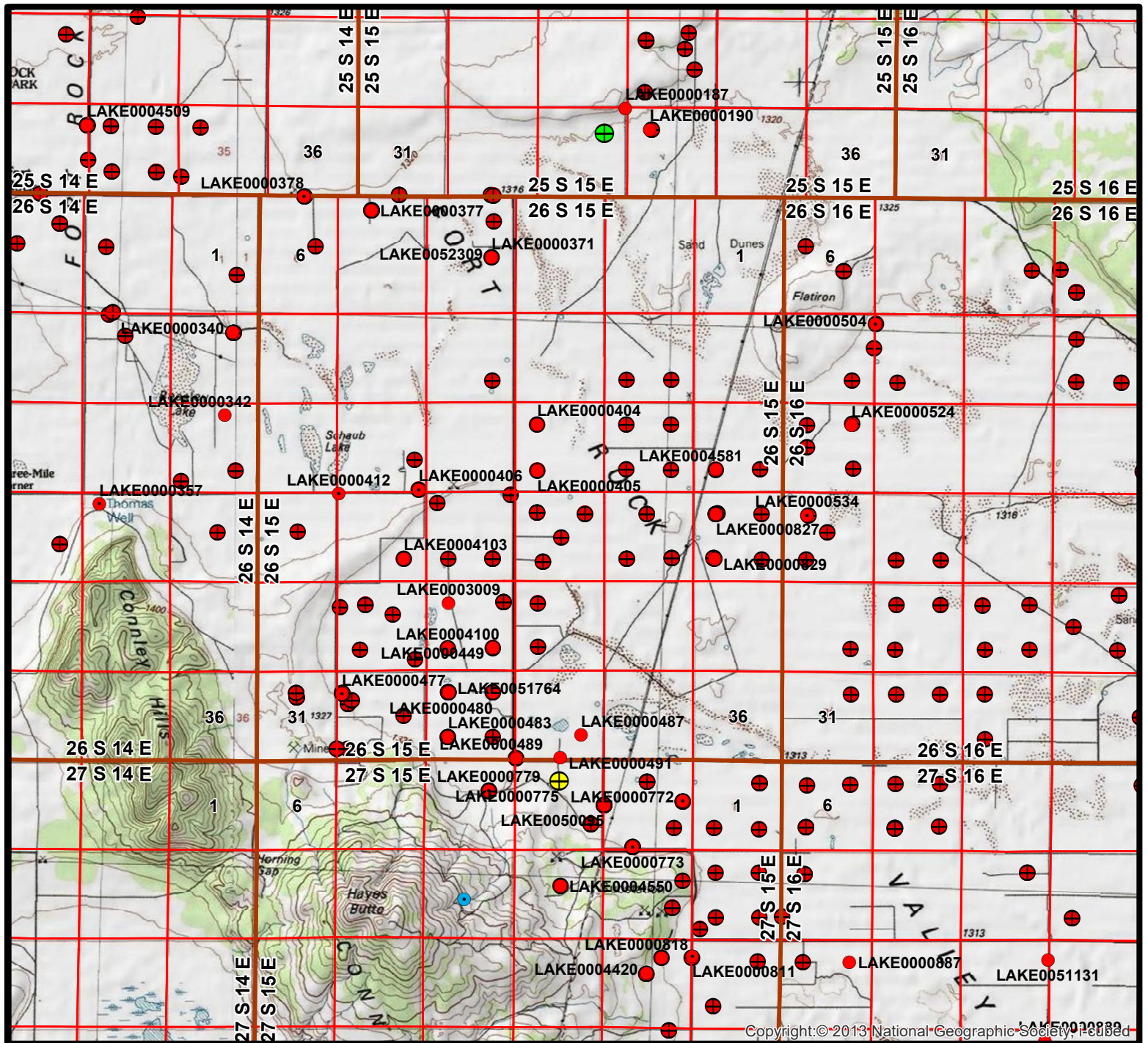
No additional comments.

References:

Miller, D.W., 1986, Appraisal of ground-water conditions in the Fort Rock Basin, Lake County, Oregon: Oregon Water Resources Department, Ground Water Report No. 31, 196 p and plates.

Groundwater Transfer Application T-13246

Scott & Jose Tobiasson

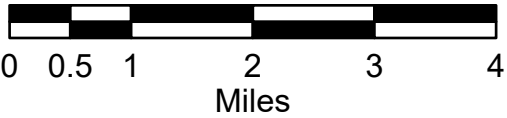
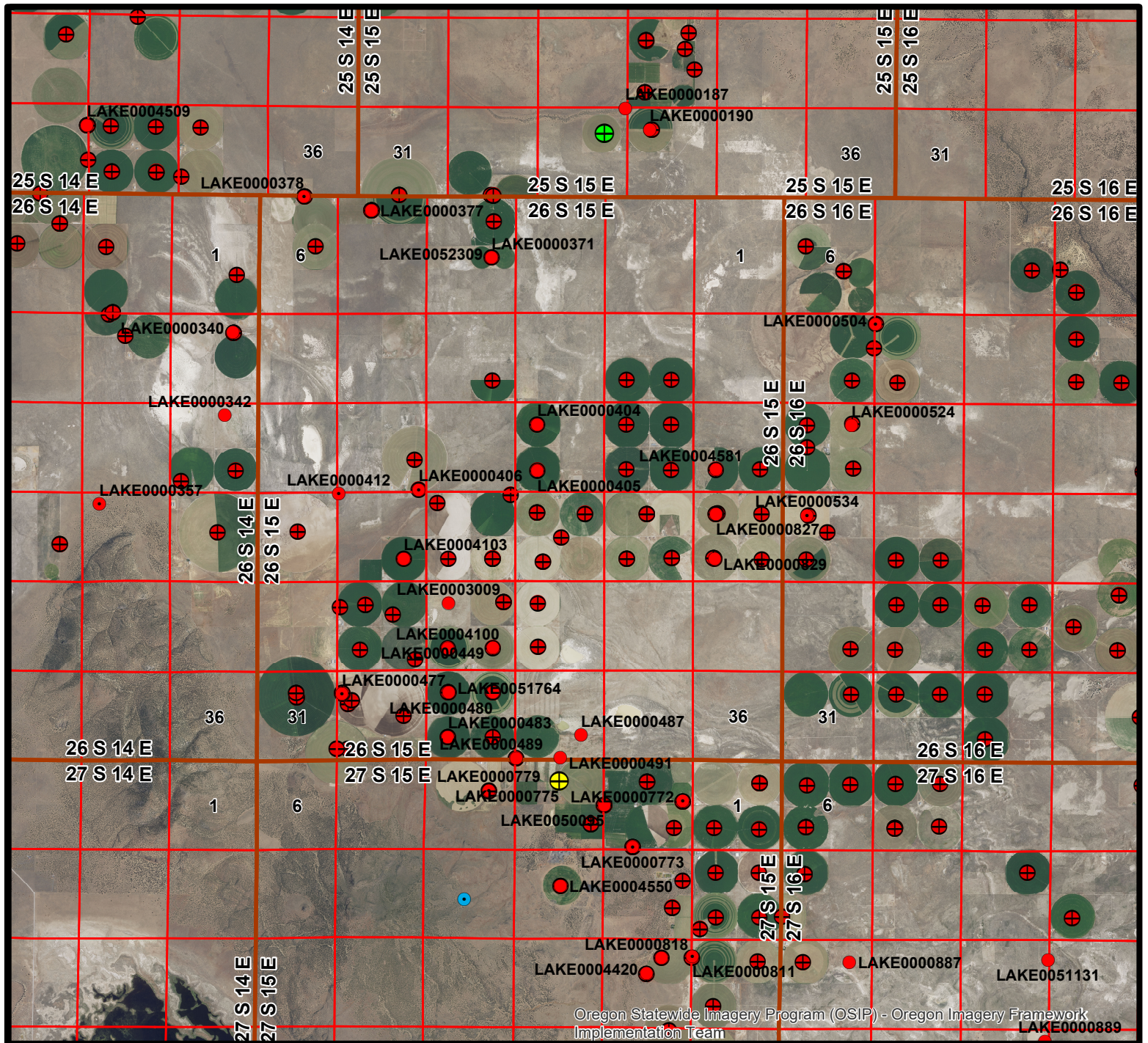


Yellow = Authorized Well (LAKE 775)
Green = Proposed Well (LAKE 188)
Red = Groundwater PODs or Other Wells
Blue = Surface Water PODs



Groundwater Transfer Application T-13246

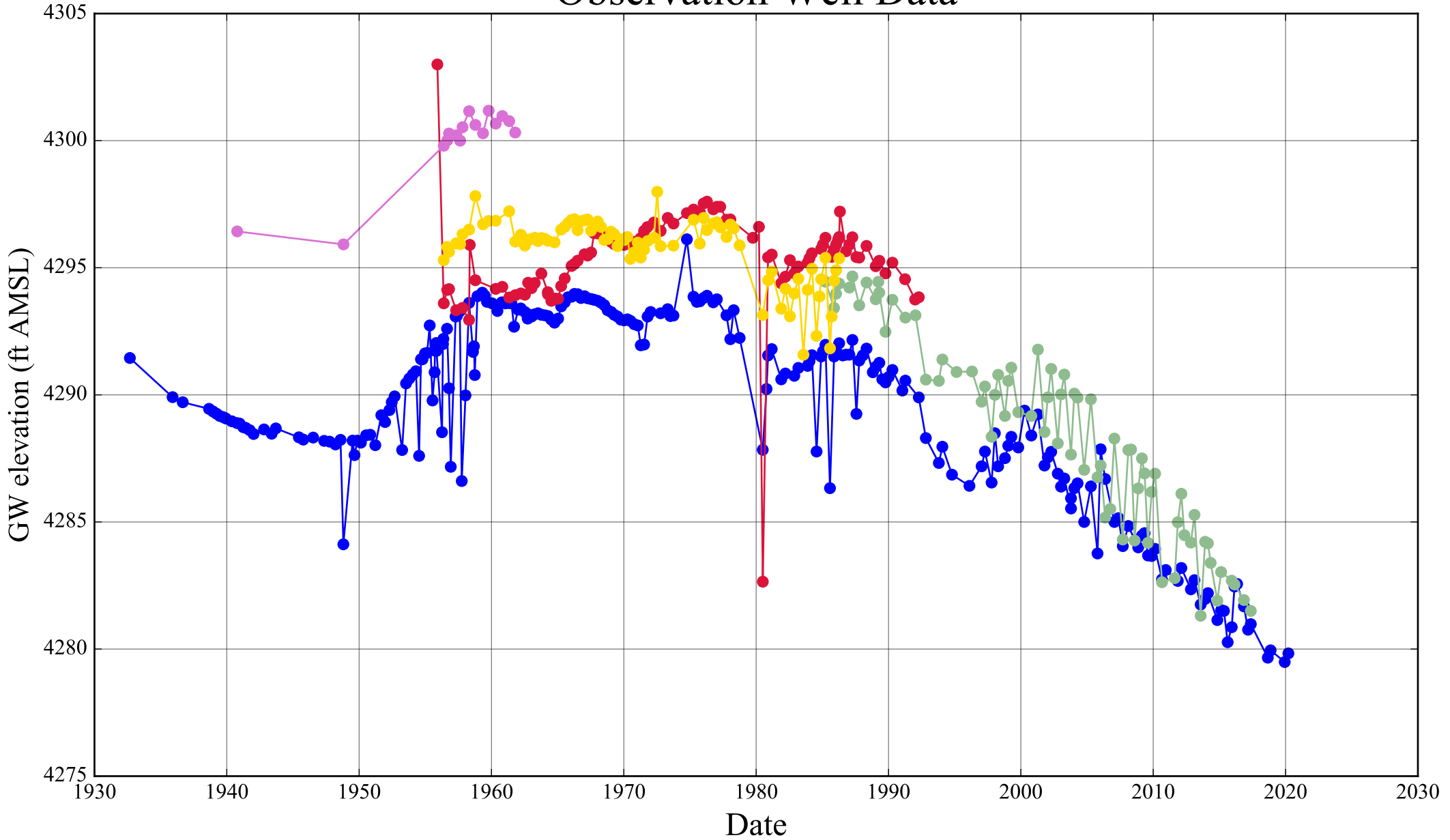
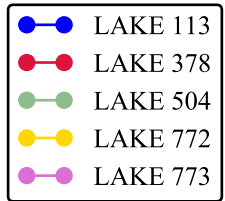
Scott & Jose Tobiasson



Yellow = Authorized Well (LAKE 775)
Green = Proposed Well (LAKE 188)
Red = Groundwater PODs or Other Wells
Blue = Surface Water PODs



Observation Well Data



Drawdown Calculations Using Theis Equation

Theis Equation: $s = [Q/(4*T*\pi)]*W(u)$
 $u = (r^2*S)/(4*T*t)$
 $W(u) = (-\ln u) - (0.5772157) + (u/1^2) - (u^2/2^2) + (u^3/3^2) - (u^4/4^2) + \dots$

s = drawdown (L) r = radial distance (L)
 T = transmissivity (L*L/T) t = time (T)
 S = storage coefficient (dimensionless) u = dimensionless
 pi = 3.141592654 W(u) = well function

Transmissivity T (gpd/ft)	Transmissivity T (ft ² /day)	Storage Coefficient S	Pumping Rate Q (gal/min)	Pumping Rate Q (ft ³ /sec)	Time t (days)	Distance r (feet)	pi	u	W(u)	Drawdown s (feet)	Drawdown Change s (feet)	Pumping Well	Comments	
								Note : W(u) calculation valid when u < 7.1						
Note: yellow grid areas are where values are calculated								7.0000	1.1545E-04					W(u) calculation test
"From" POA wells to Water Right Well LAKE 187 closest to Proposed "To" Well (Transmissivity from Morgan (1988) and McFarland and Ryals (1991)): Used S = 0.001														
112,207.80	15,000.00	0.00100	168.31	0.38	30.00	39,925.00	3.14	0.8856	0.2668	0.0459		LAKE 775	Continuous Pumping at Full Rate	
			168.31	0.38						0.05				
"To" POA wells to Water Right Well LAKE 187 closest to Proposed "To" Well (Transmissivity from Morgan (1988) and McFarland and Ryals (1991)): Used S = 0.001														
112,207.80	15,000.00	0.00100	168.31	0.38	30.00	1,915.00	3.14	0.0020	5.6209	0.9662		LAKE 188	Continuous Pumping at Full Rate	
			168.31	0.38						0.97	0.9203			
"From" POA wells to Water Right Well LAKE 187 closest to Proposed "To" Well (Transmissivity from Morgan (1988) and McFarland and Ryals (1991)): Used S = 0.001														
112,207.80	15,000.00	0.00100	83.13	0.19	30.00	39,925.00	3.14	0.8856	0.2668	0.0226		LAKE 775	Continuous Pro-Rated Pumping	
			83.13	0.19						0.02				
"To" POA wells to Water Right Well LAKE 187 closest to Proposed "To" Well (Transmissivity from Morgan (1988) and McFarland and Ryals (1991)): Used S = 0.001														
112,207.80	15,000.00	0.00100	83.13	0.19	30.00	1,915.00	3.14	0.0020	5.6209	0.4772		LAKE 188	Continuous Pro-Rated Pumping	
			83.13	0.19						0.48	0.4545			

Drawdown Calculations Using Theis Equation

Theis Equation: $s = [Q/(4*T*\pi)]*W(u)$
 $u = (r^2*S)/(4*T*t)$
 $W(u) = (-\ln u) - (0.5772157) + (u/1^2) - (u^2/2^2) + (u^3/3^2) - (u^4/4^2) + \dots$

s = drawdown (L) r = radial distance (L)
 T = transmissivity (L*L/T) t = time (T)
 S = storage coefficient (dimensionless) u = dimensionless
 pi = 3.141592654 W(u) = well function

Transmissivity T (gpd/ft)	Transmissivity T (ft ² /day)	Storage Coefficient S	Pumping Rate Q (gal/min)	Pumping Rate Q (ft ³ /sec)	Time t (days)	Distance r (feet)	pi	u	W(u)	Drawdown s (feet)	Drawdown Change s (feet)	Pumping Well	Comments	
Note : W(u) calculation valid when u < 7.1														
Note: yellow grid areas are where values are calculated								7.0000	1.1545E-04					W(u) calculation test
"From" POA wells to Water Right Well LAKE 187 closest to Proposed "To" Well (Transmissivity from Morgan (1988) and McFarland and Ryals (1991)): Used S = 0.001														
112,207.80	15,000.00	0.00100	168.31	0.38	245.00	39,925.00	3.14	0.1084	1.7499	0.3008		LAKE 775	Continuous Pumping at Full Rate	
			168.31	0.38						0.30				
"To" POA wells to Water Right Well LAKE 187 closest to Proposed "To" Well (Transmissivity from Morgan (1988) and McFarland and Ryals (1991)): Used S = 0.001														
112,207.80	15,000.00	0.00100	168.31	0.38	245.00	1,915.00	3.14	0.0002	7.7192	1.3268		LAKE 188	Continuous Pumping at Full Rate	
			168.31	0.38						1.33	1.0260			
"From" POA wells to Water Right Well LAKE 187 closest to Proposed "To" Well (Transmissivity from Morgan (1988) and McFarland and Ryals (1991)): Used S = 0.001														
112,207.80	15,000.00	0.00100	83.13	0.19	245.00	39,925.00	3.14	0.1084	1.7499	0.1486		LAKE 775	Continuous Pro-Rated Pumping	
			83.13	0.19						0.15				
"To" POA wells to Water Right Well LAKE 187 closest to Proposed "To" Well (Transmissivity from Morgan (1988) and McFarland and Ryals (1991)): Used S = 0.001														
112,207.80	15,000.00	0.00100	83.13	0.19	245.00	1,915.00	3.14	0.0002	7.7192	0.6553		LAKE 188	Continuous Pro-Rated Pumping	
			83.13	0.19						0.66	0.5067			

STATE ENGINEER
Salem, Oregon

Lake
175

Well Record

STATE WELL NO. 27/15-3B(1)
COUNTY Lake
APPLICATION NO. U-784

OWNER: Clayton Mann

MAILING
ADDRESS:

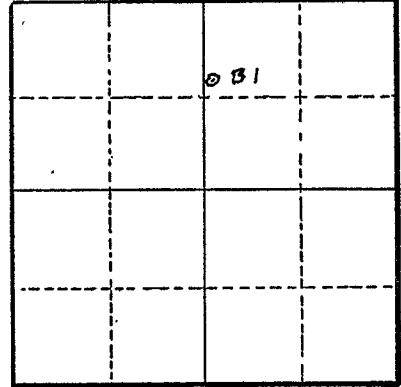
LOCATION OF WELL: Owner's No. 2

CITY AND
STATE:

Fort. Rock, Oregon

NW 1/4 NE 1/4 Sec. 3 T. 27 N. S, R. 15 E. W., W.M.

Bearing and distance from section or subdivision
corner



Section 3

Altitude at well

TYPE OF WELL: drilled Date Constructed Apr. 1955

Depth drilled 75 Depth cased

CASING RECORD: 18 inch

FINISH:

AQUIFERS:

WATER LEVEL: 23 ft. below land surface

PUMPING EQUIPMENT: Type turbine H.P.
Capacity 1200 G.P.M.

WELL TESTS:
Drawdown 11 ft. after hours pumping 1200 G.P.M.
Drawdown ft. after hours G.P.M.

USE OF WATER Irrigation Temp. °F., 19

SOURCE OF INFORMATION

DRILLER or DIGGER

ADDITIONAL DATA:

Log Water Level Measurements Chemical Analysis Aquifer Test

REMARKS: Permit U-710