

# Groundwater Transfer Review Summary Form

Transfer/PA # T- 13524 (J.R. Simplot: J.R.S. Properties III, LLP)

GW Reviewer Gerald H. Grondin

Date Review Completed: 24 November 2020

## 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).

See discussions in sections 4a and 5a.

## 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.

## Special Note:

Additional data collected under this temporary transfer would be useful for better defining the following:

1. What is the likely seasonal interference at the groundwater right wells nearest the proposed "To" wells, will it be 25 or more feet of seasonal decline (drawdown)?
2. What is the long-term (annual) groundwater level trend in the vicinity of the proposed "To" wells, does the trend vary with depth, does the trend risk triggering long-term decline conditions?
3. What is the likely change in seasonal groundwater interference with the Chewaucan River?
4. What is the annual groundwater level trend in the vicinity of the proposed "To" wells, what is the risk of the groundwater level dropping below the Chewaucan River bottom?

The applicant seeks approval of T-13524 (temporary) to allow sufficient time (multiple years) to obtain additional data to answer the above and other questions for a OWRD groundwater review of a subsequent permanent transfer application.

*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  
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(503) 986-0900  
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## Ground Water Review Form:

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

Application: T-13524

Applicant Name: J.R. Simplot: J.R.S. Properties III, LLP

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

Reviewer(s): Gerald H. Grondin

Date of Review: 24 November 2020

Date Reviewed by GW Mgr. and Returned to WRSD: JTI 1/8/21

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 \_\_\_\_\_

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

**This temporary transfer application (T-13524) relates to 2 certificates (certificate 93777 related to file G-15510 and certificate 93778 related to file G-14870) that together authorize using 4 existing POA wells at the north end of Upper Chewaucan Marsh (LAKE 4564, LAKE 51182, LAKE 51031, LAKE 50941) (see attached maps). T-13524 proposes 4 APOA wells south end of Upper Chewaucan Marsh (LAKE 52463, LAKE 52491, LAKE 52492, and LAKE 52770)(see attached maps) and moving 274.90 POU acres from the north end of Upper Chewaucan Marsh to the south end of Upper Chewaucan Marsh (see attached tables).**

**The authorized POAs and POU's and the proposed APOAs and POU's have variously been subject to the following transfers: T-11341 (temporary, 2012 to 2016), T- 11602 (temporary, 2013 to 2017), T-11654 (temporary, 2014 to 2018), T-12386 (regular, approved 2018), and T-12794 (regular, pending).**

**This temporary transfer application (T-13524) is essentially a duplicate of the amended application T-12794 (regular, pending). The purpose of T-13524 is:**

**(1) to be a "bridge" to allow continued groundwater use at the proposed APOAs and POU's formerly authorized by previous temporary transfers until a final Oregon Water Resources Department (OWRD) determination can be made related to T-12794 (regular, pending) or a subsequent application, and**

**(2) to allow sufficient time to obtain additional groundwater level data in the vicinity of the proposed APOAs and POU's. An OWRD groundwater review of T-12794 (regular, pending) dated 6 March 2020 relied upon groundwater level data for State Observation Well 375 (well LAKE 1719). That review noted, "relatively stable groundwater levels near 4302 feet elevation amsl from 1960 to the mid-1970s, a decline of about 5.5 feet from the mid-1970s to early 1980s to a new equilibrium of about 4297 feet elevation amsl that is close to the Chewaucan River stage near the Narrows (relatively steady from about 1980 to 2000), and an ongoing decline since 2000 of about 0.38 feet per year from 2000 to after 2010 and apparently steepening to about 0.95 feet per year from after 2010 to 2019, possibly taking the groundwater level below the river bottom. The groundwater level decline in the 1970s and after 2010 appears to correspond to increased groundwater development in the area." (see attached hydrographs) Subsequent to that review, the applicant informed OWRD that they maintain a shallow observation well (LAKE 52769, 60-foot total depth, open to basin fill) and a deep observation well (LAKE 52770, 1100-foot total depth, open to volcanic rocks and sediments) with transducer water level recorders at each recording data since 2017 (see attached hydrographs). The applicant reports no groundwater level decline at either well from 2017 to present. The applicant seeks approval of T-13524 (temporary) to allow sufficient time (multiple years) to obtain additional data to assess groundwater level trends for a subsequent OWRD groundwater review of T-12794 (regular, pending) or a subsequent permanent transfer application.**

2. Will the proposed POA develop the same aquifer (source) as the existing authorized POA?

Yes  No Comments: \_\_\_\_\_

**The answer is mostly yes: same groundwater system, different units.**

Available data indicates a predominantly volcanic rock and sediment unit (some identify unit as predominantly basalt) occurs beneath a predominantly basin fill sediment unit. Reports for the Goose and Summer Lakes Basin indicate groundwater occurs in both the predominantly basin fill sediment unit and predominantly volcanic rock and sediment unit. The groundwater is likely hydraulically connected, making a single groundwater system occurring in different geologic units with different permeability for each unit. A higher permeability and transmissivity generally occurs in the predominantly volcanic rock and sediment unit and a lower permeability and transmissivity generally occurs in the predominantly basin fill sediment unit.

Given the predominantly basin fill sediment unit and predominantly volcanic rock and sediment unit often have notably different hydraulic properties despite being hydraulically connected, it is preferable to have wells completed in one or the other unit, not both. Wells completed solely in the predominantly volcanic rock and sediment unit tend to be more seasonally protective of shallower wells and surface water.

The currently authorized POA wells: 1 well is constructed to obtain groundwater solely from the shallower and lower permeability predominantly basin fill sediment unit, 1 well is constructed to obtain groundwater from the shallower and lower permeability predominantly basin fill sediment unit via the well's annular space as well as the deeper and higher permeability predominantly volcanic rock and sediment unit via the well's open interval, and the remaining 2 wells are constructed to obtain groundwater solely from the deeper and higher permeability predominantly volcanic rock and sediment unit.

The proposed POA wells: 3 wells are constructed to obtain groundwater solely from the shallower and lower permeability predominantly basin fill sediment unit, and the remaining 1 well is constructed to obtain groundwater from the deeper and higher permeability predominantly volcanic rock and sediment unit.

**The proposed POA change is less protective of shallower wells and surface water.**

3. a) Is there more than one source developed under the right (e.g., basalt and alluvium)?

Yes  No \_\_\_\_\_

**The answer is mostly no. 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.): \_\_\_\_\_

**Single groundwater system, different units.** Changing the pumping from the current “From” authorized POA wells to the proposed “To” APOA wells will shift tapping groundwater from up to 75% from the deeper predominantly volcanic rock and sediment unit and 25% from the shallower predominantly basin fill sediment unit to about 25% from the deeper predominantly volcanic rock and sediment unit and 75% from the shallower predominantly basin fill sediment unit. However, it should be noted that the only proposed APOA “To” well tapping the deeper predominantly volcanic rock and sediment unit (LAKE 52770) is currently being used as a “deep” observation well maintained with a transducer water level recorder. The applicant noted in personal communication that the well will continue being used as an observation well, not pumping. If so, groundwater from the shallower predominantly basin fill sediment unit only will be pumped under T-13524 by the proposed APOA wells.

**This proposed POA change is less protective of shallower wells and surface water. To be similar to the “From” wells, the “To” wells should ideally obtain 75% or more groundwater from the deeper predominantly volcanic rock 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: \_\_\_\_\_

**Yes.** The proposed change will move groundwater pumping about 6.8 to 8.8 mile south from the north side of Upper Chewaucan Marsh to the south side of Upper Chewaucan Marsh (see attached maps). The proposed change will move groundwater pumping closer to a different set of groundwater right wells (see attached maps).

The calculated increase in seasonal drawdown at the nearest neighboring groundwater right well (south side of Upper Chewaucan Marsh) ranges from 8.75 feet (pro-rated pumping rate) to 17.75 feet (full pumping rate) at the end of 30 days to 15.05 feet (pro-rated pumping rate) to 30.45 feet (full pumping rate) at the irrigation season end (245 days) (see attached calculations). Interference at wells further away will be less. Seasonal interference with a neighboring groundwater right well adding 25 or more feet of seasonal decline is addressed by a decline condition within certificate 93777. While an increase in seasonal interference (drawdown) of 25 feet or more is possible (see attached hydrograph showing seasonal drawdown exceeding 30 feet total at well LAKE 52770), the maximum increase in seasonal interference at the nearest neighboring groundwater right well due solely to the proposed transfer is likely to be closer to the pro-rated pumping rate calculated 15.05 feet at the end of 245 days. The neighboring well should be able to accommodate 15 feet of additional seasonal drawdown.

Additionally, the proposed change moves groundwater pumping into a vicinity that may be experiencing a groundwater level decline since 2005 (see attached hydrographs for well LAKE 1719 [417-feet total depth]: data from all seasons and data from winter-spring only). The hydrograph for well LAKE 1719 showing data from winter-spring only shows relatively stable groundwater levels near 4302 feet elevation amsl from 1960 to the mid-1970s, a decline of about 5.5 feet from the mid-1970s to early 1980s to a new equilibrium of about 4297 feet elevation amsl that is close to the Chewaucan River stage near the Narrows (relatively steady from about 1980 to 2005), and an ongoing decline since 2005 of about 0.58 feet per year, possibly taking the groundwater level below the river bottom. The groundwater level decline in the 1970s and after 2010 appears to correspond to increased groundwater development in the area.

Conversely, the applicant has submitted 2017 to 2020 data (see hydrographs for wells LAKE 52769 [60 feet total depth] and LAKE 52770 [1,100 feet total depth]) showing no to little decline during that period. The data can be interpreted as showing 0.00 to 0.25 feet per year decline.

Additional data would very useful for better defining the following: (1) what is the likely seasonal interference at the groundwater right wells nearest the proposed "To" wells, will it be 25 or more feet of seasonal decline (drawdown)? (2) what is the groundwater level trend in the vicinity of the proposed "To" wells, does the trend vary with depth? The applicant seeks approval of T-13524 (temporary) to allow sufficient time (multiple years) to obtain additional data to answer those and other questions for a OWRD groundwater review of a subsequent permanent transfer application.

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: \_\_\_\_\_

**Current answer is No, particularly for a temporary transfer. See discussion in part 4a above. Part of the expressed intent for the proposed temporary transfer application is to allow collecting additional data to hopefully more clearly answer this question, particularly for a potential permanent transfer.**

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: \_\_\_\_\_

**Yes. Despite the proposed POA change moving the net groundwater pumping further away from Chewaucan River, which typically decreases the net seasonal groundwater level drawdown at the river and the net groundwater interference with the river, the proposed POA change will likely increase the net seasonal groundwater level drawdown at the river and the net groundwater interference with the river (see the attached seasonal drawdown calculation and seasonal interference calculation summary).**

**The proposed POA change will likely increase the net seasonal groundwater level drawdown at the river and the net groundwater interference with the river given the current "From" POA wells tap groundwater from mostly from the deeper predominantly volcanic rock and sediment unit (75%) and less from the shallower predominantly basin fill sediment unit (25%); whereas the proposed "To" POA wells tap groundwater less from the deeper predominantly volcanic rock and sediment unit (25%) and more from the shallower predominantly basin fill sediment unit (75%). This is less protective of shallower wells and surface water. Consequently, the seasonal groundwater interference with the river at the end of the irrigation season (240 days) is calculated to increase from about 11.5 percent of the pumping rate when pumping the "From" wells to about 26.2 percent of the pumping rate when pumping the "To" wells.**

**Additionally, if there is an annual groundwater level decline occurring in the vicinity of the "To" wells (see section 4a discussion), there is risk that the long-term groundwater level elevation will drop below the river bottom if it has not occurred already.**

**Additional data would very useful for better defining the following: (1) what is the likely change in seasonal groundwater interference with the Chewaucan River (2) what is the annual groundwater level trend in the vicinity of the proposed "To" wells, what is the risk of the groundwater level dropping below the river bottom? The applicant seeks approval of T-13524 (temporary) to allow sufficient time (multiple years) to obtain additional data to answer those and other questions for a OWRD groundwater review of a subsequent permanent transfer application.**

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: **Chewaucan River**                       Minimal                       Significant

Stream: \_\_\_\_\_                       Minimal                       Significant

Provide context for minimal/significant impact: \_\_\_\_\_

\_\_\_\_\_  
**See discussion 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**  
\_\_\_\_\_  
\_\_\_\_\_

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

**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.**

**The groundwater reference level at wells LAKE 1719, LAKE 52463, LAKE 52491, LAKE 52492, LAKE 52770, and any observation well shall be 4295 feet elevation above mean sea level (amsl).**

**“Large” flow meter condition for all the “From” POA and the proposed “To” POA wells to prevent enlargement. Require the flow meter for each well 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 both the proposed “To” wells: “Prior to use, the proposed “To” 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.”**

**Require continuous 1-hour groundwater level measurements via maintained recorder equipment and annual March hand measurements at wells LAKE 52769 and LAKE 52770. Recorder and hand measurement are to be submitted annually to OWRD within 30 days of the March hand measurement.**

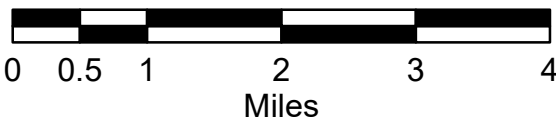
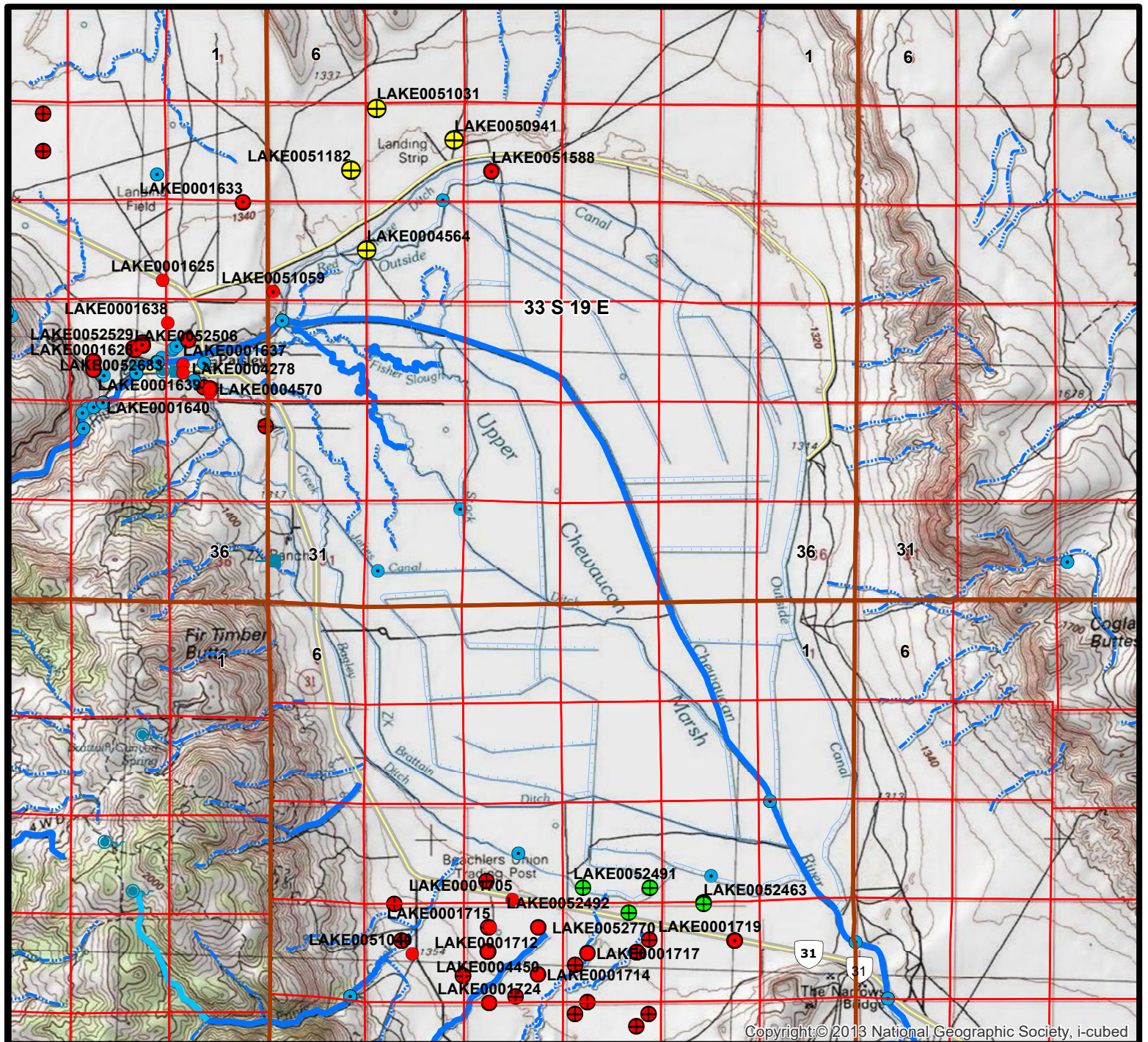
8. Any additional comments: \_\_\_\_\_

**See discussion in section 4a regarding assessment of potential seasonal interference with another groundwater right, long-term annual groundwater level trends, including the risk of triggering decline conditions. Additional data would very useful for better defining the following: (1) what is the likely seasonal interference at the groundwater right wells nearest the proposed "To" wells, will it be 25 or more feet of seasonal decline (drawdown)? (2) what is the groundwater level trend in the vicinity of the proposed "To" wells, does the trend vary with depth? The applicant seeks approval of T-13524 (temporary) to allow sufficient time (multiple years) to obtain additional data to answer those and other questions for a OWRD groundwater review of a subsequent permanent transfer application.**

**See discussion in section 5a regarding assessment of interference with the Chewaucan River. Additional data would very useful for better defining the following: (1) what is the likely change in seasonal groundwater interference with the Chewaucan River (2) what is the annual groundwater level trend in the vicinity of the proposed "To" wells, what is the risk of the groundwater level dropping below the river bottom? The applicant seeks approval of T-13524 (temporary) to allow sufficient time (multiple years) to obtain additional data to answer those and other questions for a OWRD groundwater review of a subsequent permanent transfer application.**



# Groundwater Transfer Application T-13524 (Temporary) JR Simplot Properties III, LLP (To Wells)

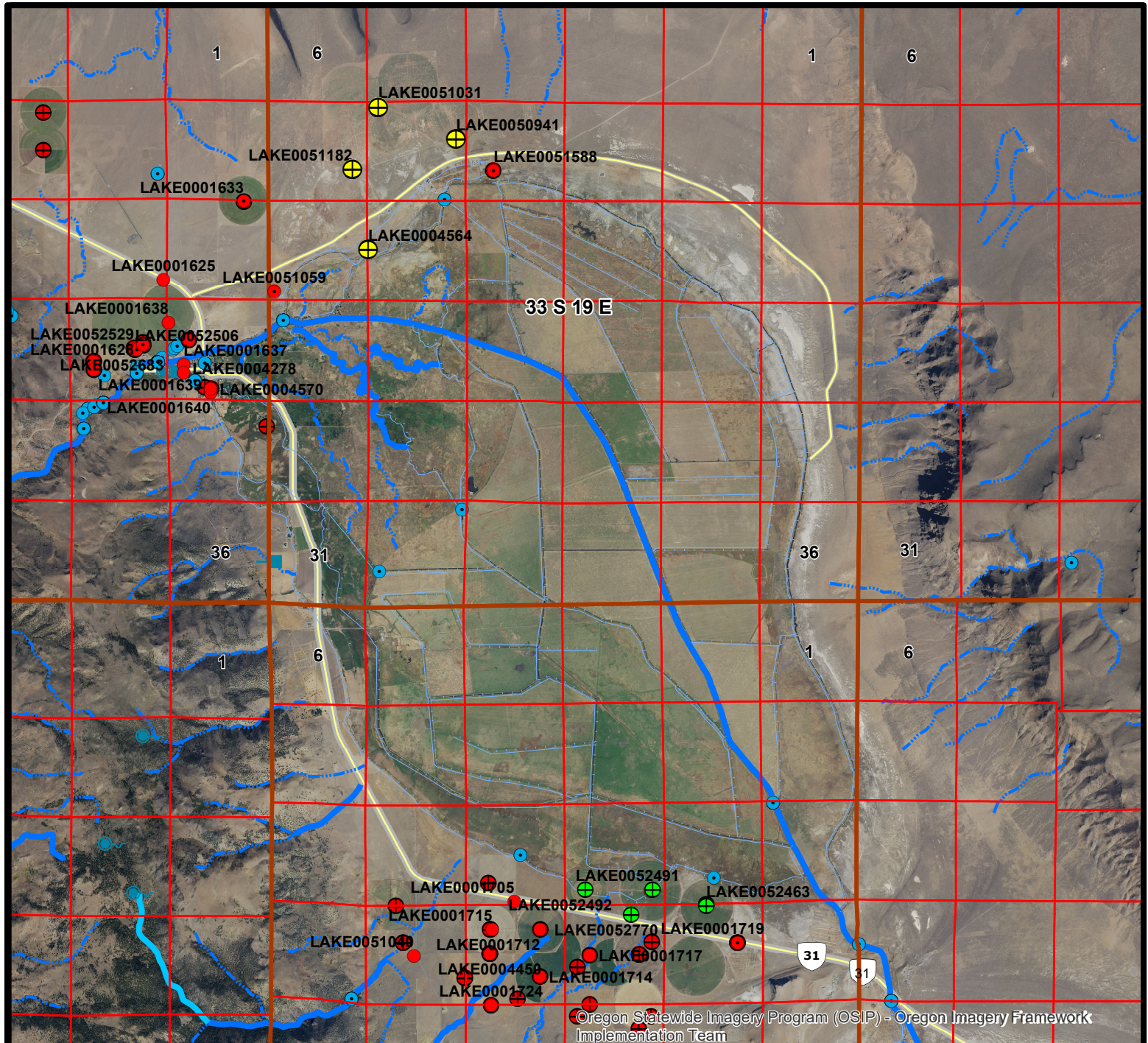


**Yellow = Authorized Wells**  
**Green = Proposed Well**  
**Red = Groundwater PODs & Obs Wells**  
**Blue = Surface Water PODs**





# Groundwater Transfer Application T-13524 (Temporary) JR Simplot Properties III, LLP (To Wells)

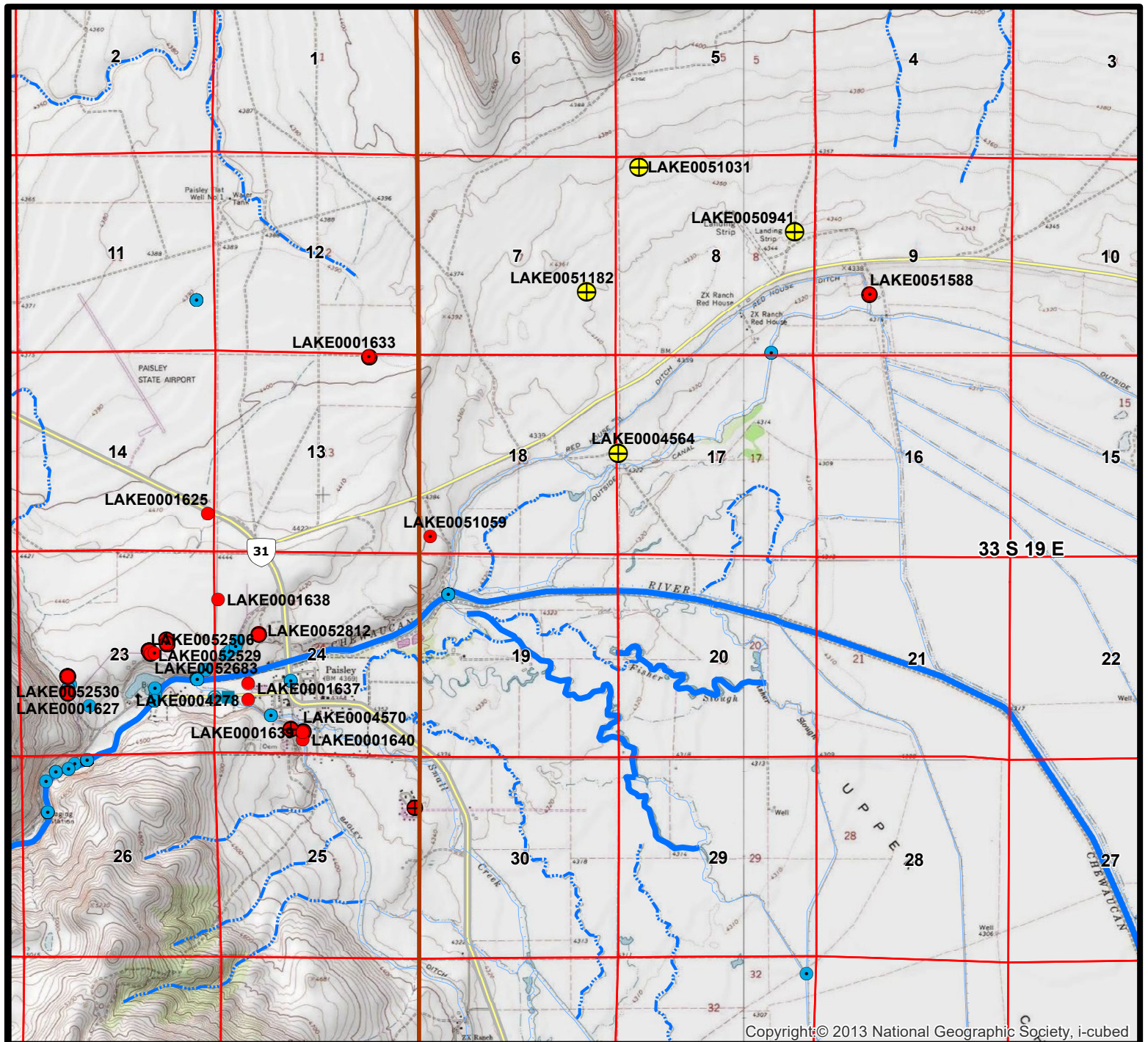


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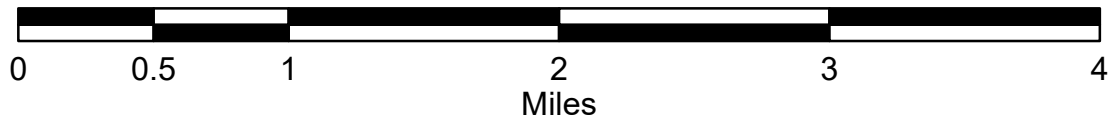
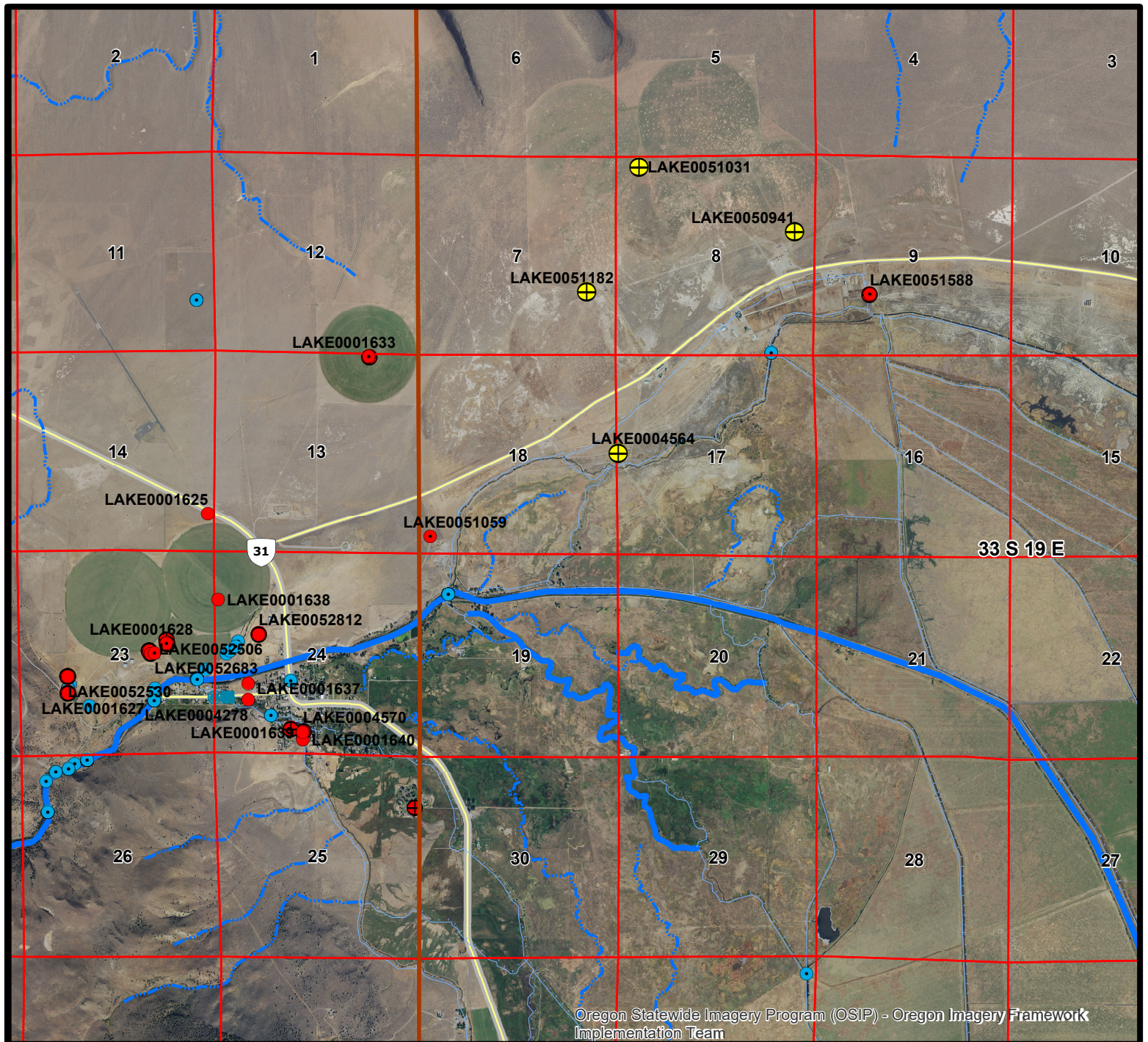
# Groundwater Transfer Application T-13524 (Temporary) JR Simplot Properties III, LLP (From Wells)



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# Groundwater Transfer Application T-13524 (Temporary) JR Simplot Properties III, LLP (From Wells)

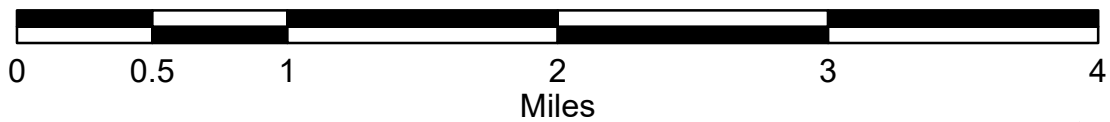
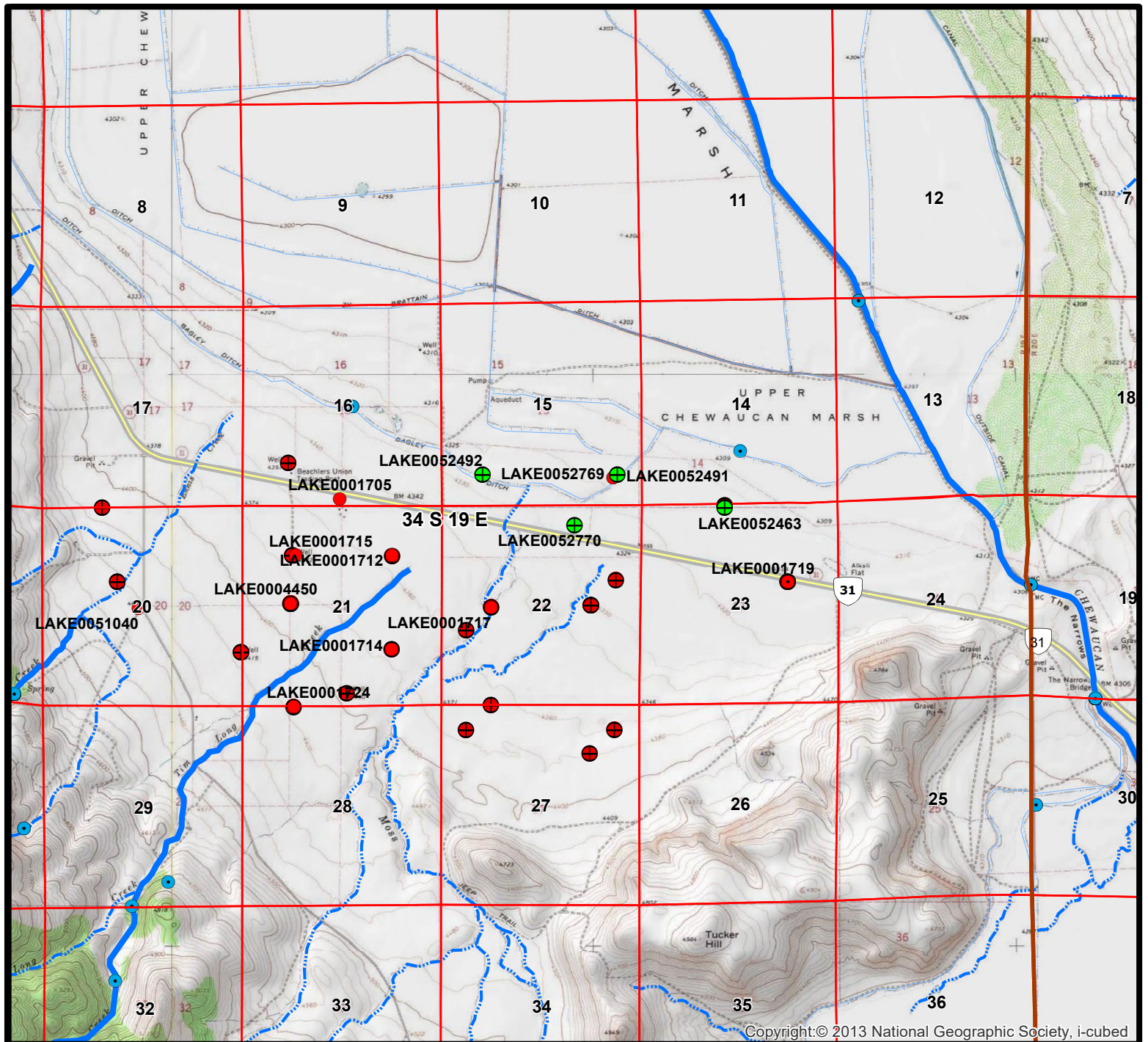


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# Groundwater Transfer Application T-13524 (Temporary) JR Simplot Properties III, LLP (To Wells)

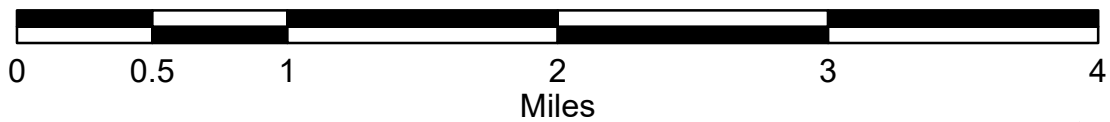
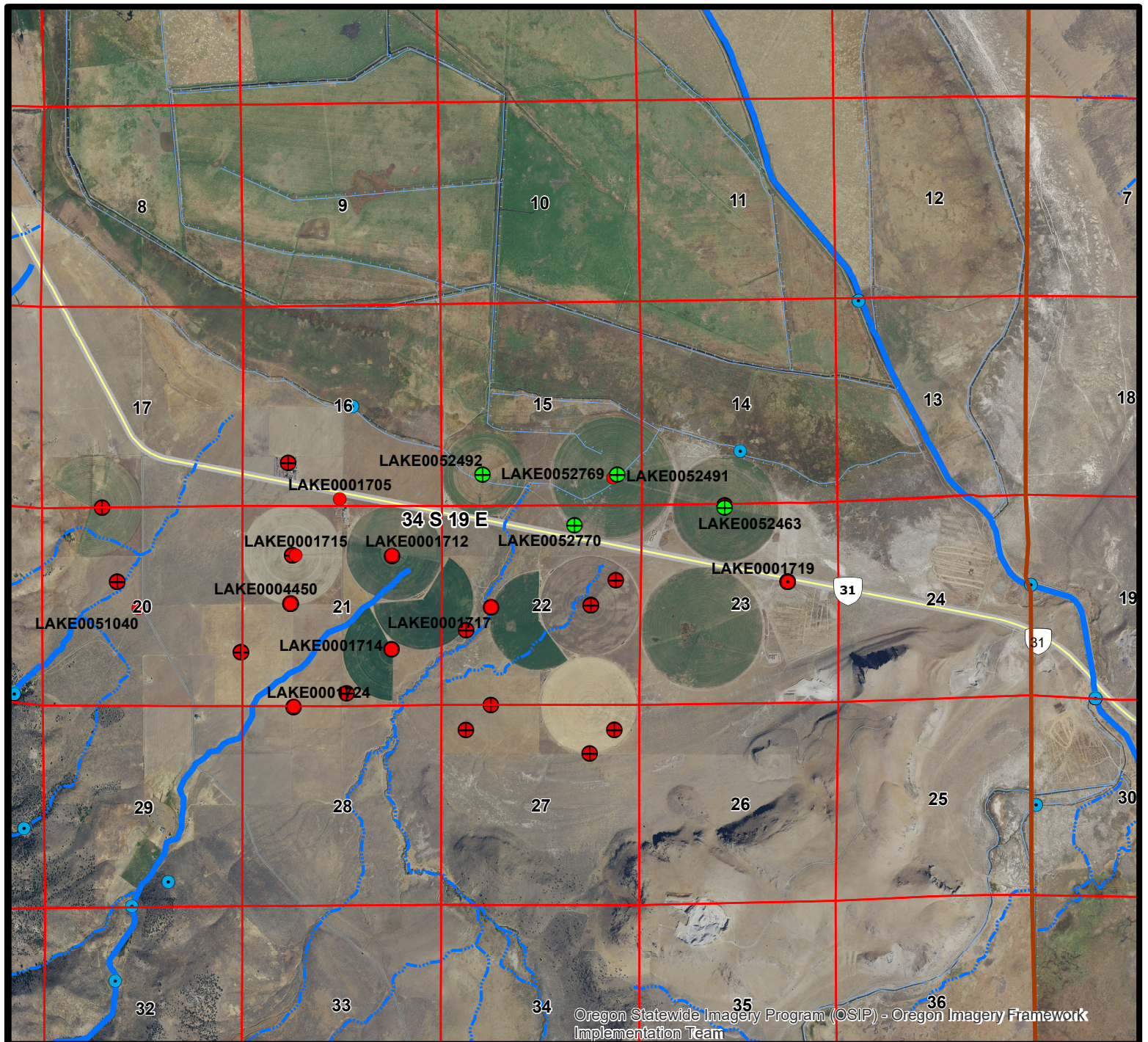


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# Groundwater Transfer Application T-13524 (Temporary) JR Simplot Properties III, LLP (To Wells)



**Yellow = Authorized Wells**  
**Green = Proposed Well**  
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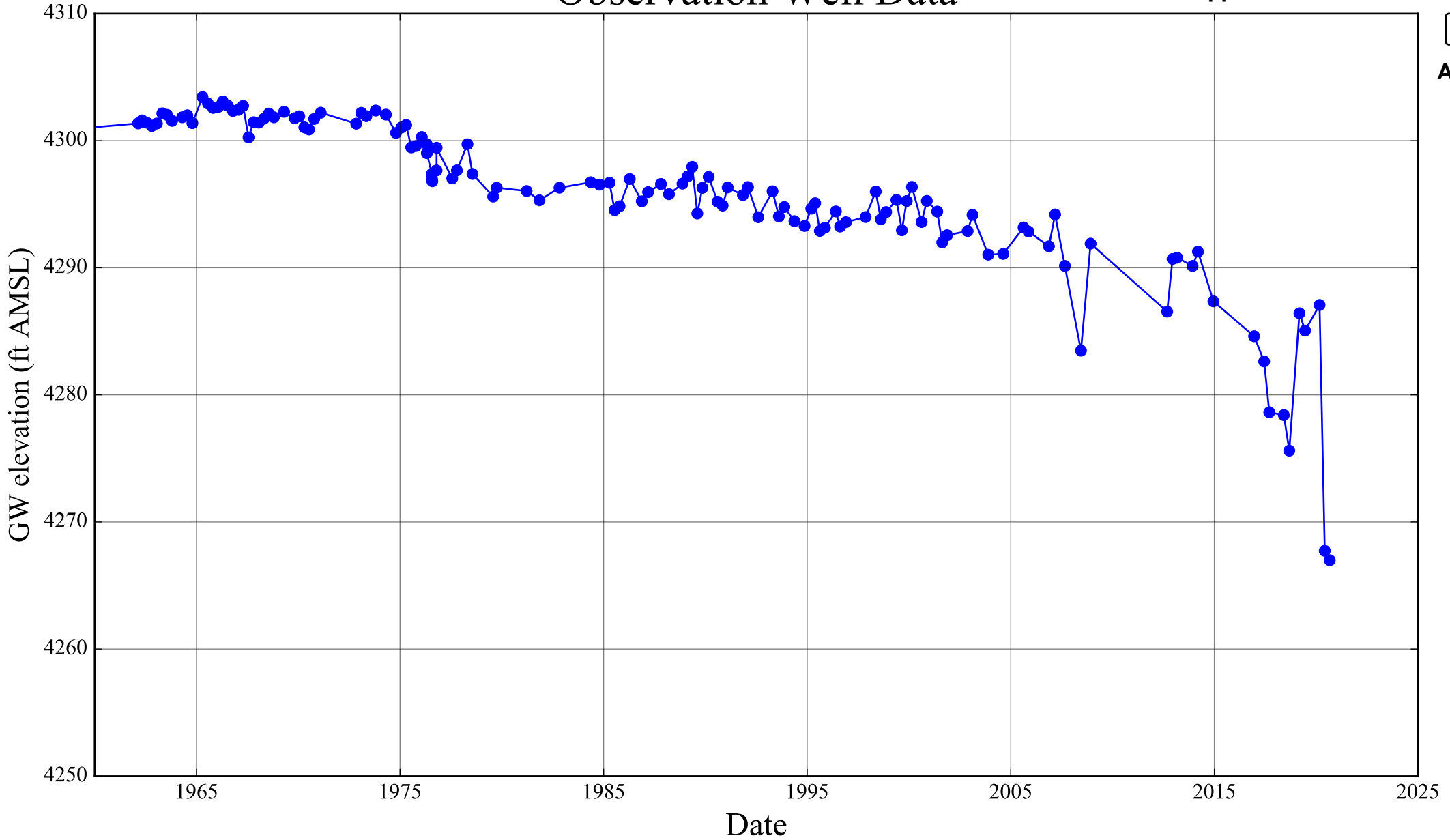


# Observation Well Data

Upper Chewaucan Marsh Wells (South)

LAKE 1719

All Season Data

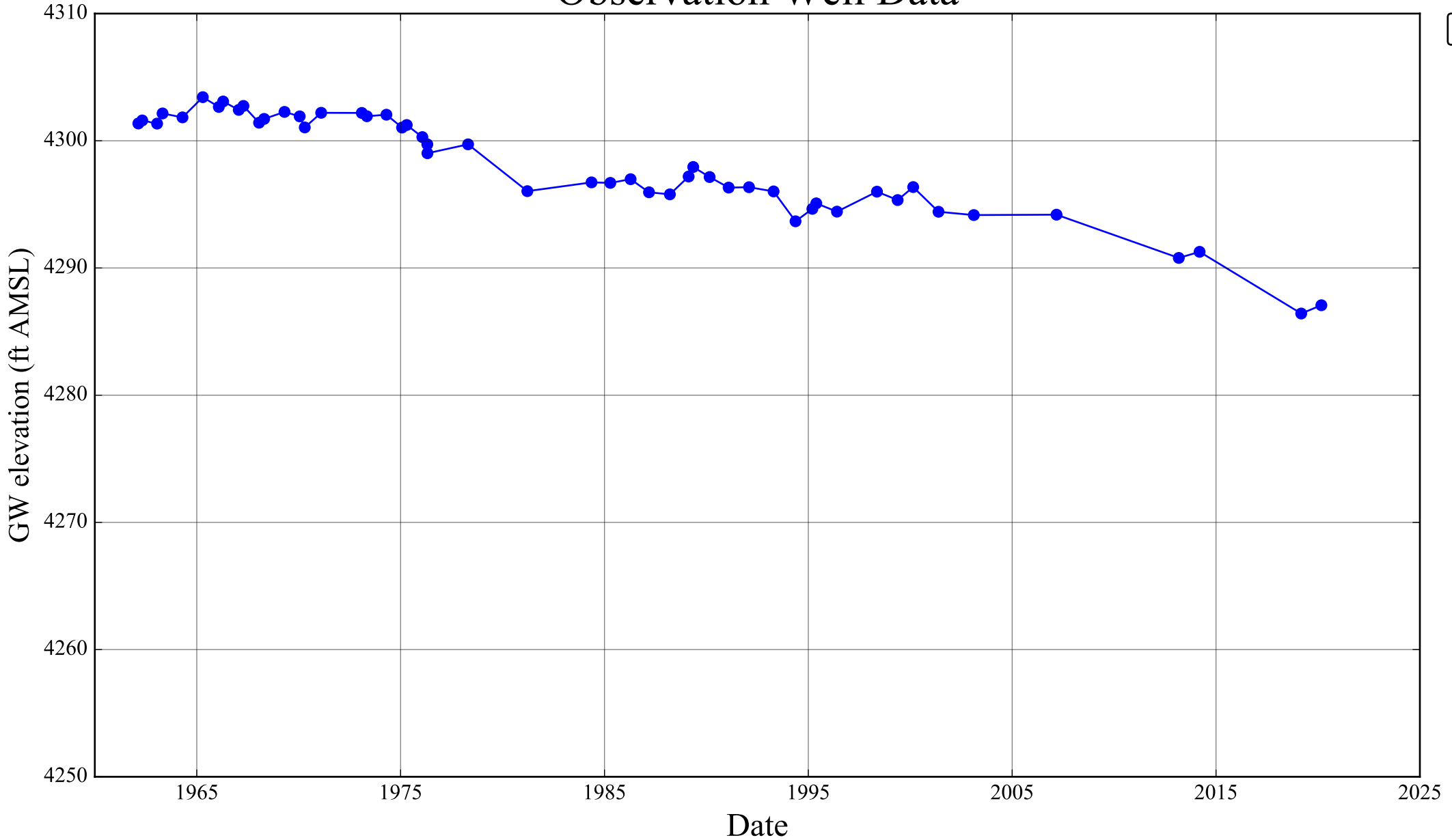


# Observation Well Data

Upper Chewaucan Marsh Wells (South)

● LAKE 1719

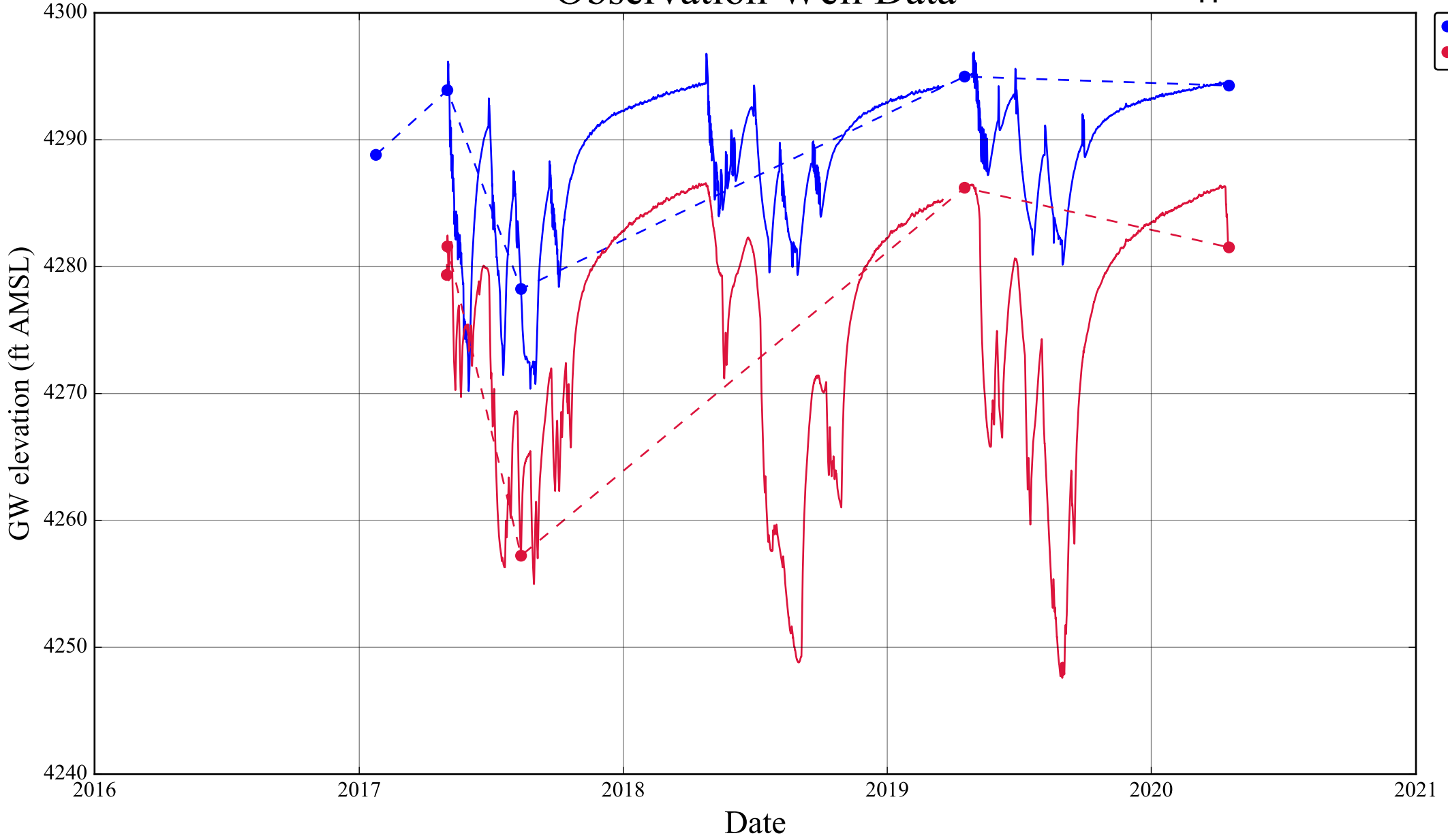
Winter-Spring  
Data Only



# Observation Well Data

Upper Chewaucan Marsh Wells (South)

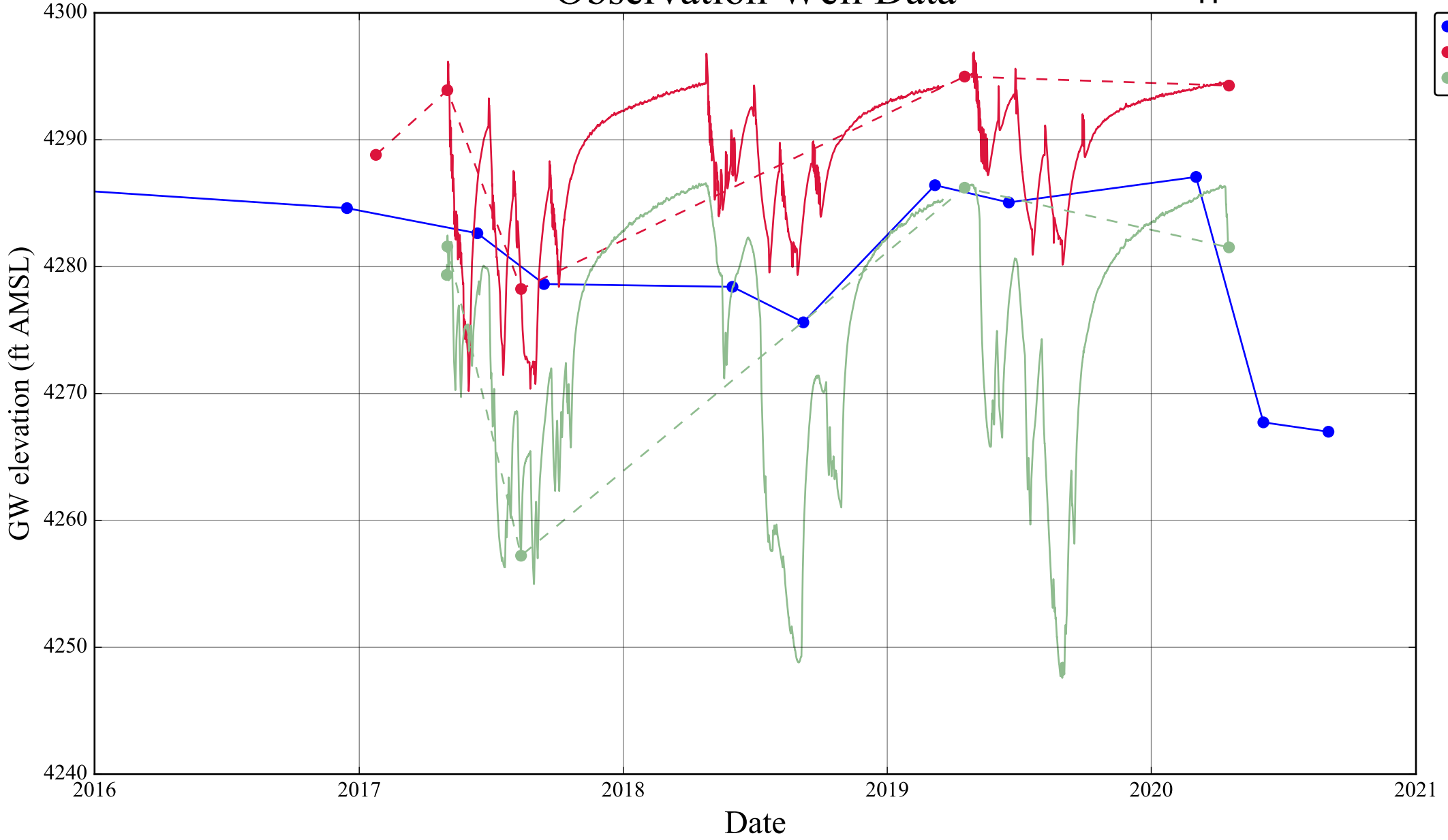
- LAKE 52769
- LAKE 52770



# Observation Well Data

Upper Chewaucan Marsh Wells (South)

- LAKE 1719
- LAKE 52769
- LAKE 52770



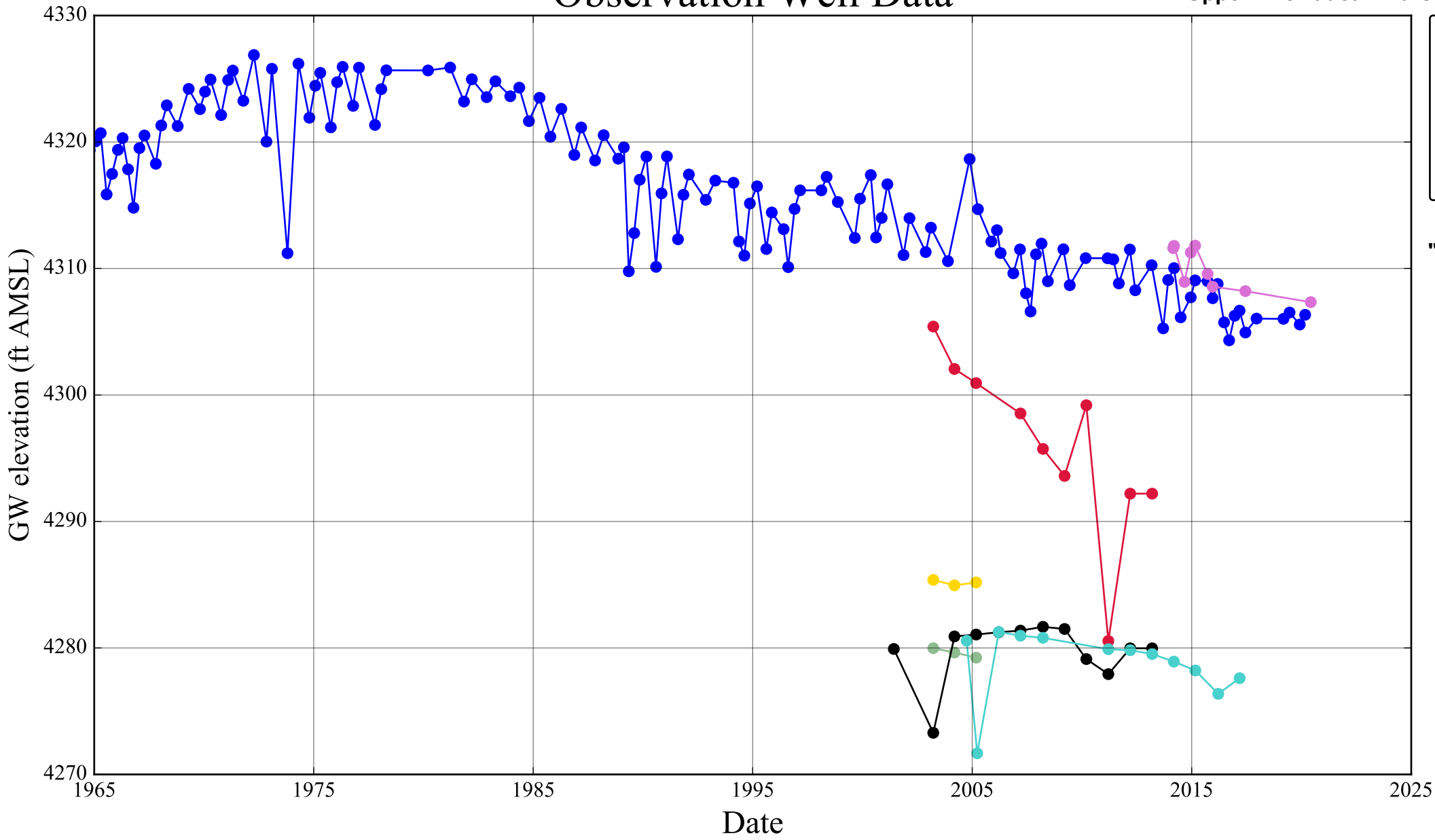


# Observation Well Data

Upper Chewaucan Marsh Wells (North)

- LAKE 1633
- LAKE 4564
- LAKE 50941
- LAKE 51031
- LAKE 51059
- LAKE 51182
- LAKE 51588

Authorized  
"From" & Other  
Wells



# Observation Well Data

Upper Chewaucan Marsh Wells (North)

- LAKE 4564
- LAKE 50941
- LAKE 51031
- LAKE 51182
- LAKE 51588

**Authorized  
"From" Wells**



T\_13524\_JRS\_Properties\_III\_LP\_application\_POA\_changes  
 Application submitted 09/08/2020

Certificate Number	Document	From Well					To Well					CFS	Total Transfer Acres	Observation
		POD/POA	Well ID	Well T/R-sec	Primary Acres	Supplemental Acres	POD/POA	Well ID	Well T/R-sec	Primary Acres	Supplemental Acres			
93777	Application Form	1	LAKE 4564	33S/19E-sec 17	81.30		7	LAKE 52463	34S/19E-sec 23	36.00	45.3	1.02	81.30	
93777	Application Form	2	LAKE 51182	33S/19E-sec 7			8	LAKE 52491	34S/19E-sec 15					LAKE 51182: Correct location = 1690' N & 770' W from SE cor sec 7
93777	Application Form	3	LAKE 50941	33S/19E-sec 8			9	LAKE 52492	34S/19E-sec 15					
93777	Application Form	4	LAKE 51031	33S/19E-sec 8			10	LAKE 52770	34S/19E-sec 22					LAKE 52770 = deep recorder well
93777	Application Map	1	LAKE 4564	33S/19E-sec 17			7	LAKE 52463	34S/19E-sec 23					
93777	Application Map	2	LAKE 51182	33S/19E-sec 7			8	LAKE 52491	34S/19E-sec 15					LAKE 51182: Correct location = 1690' N & 770' W from SE cor sec 7
93777	Application Map	3	LAKE 50941	33S/19E-sec 8			9	LAKE 52492	34S/19E-sec 15					
93777	Application Map	4	LAKE 51031	33S/19E-sec 8			10	LAKE 52770	34S/19E-sec 22					LAKE 52770 = deep recorder well
93778	Application Form	1	LAKE 4564	33S/19E-sec 17	193.60					118.80	74.8	2.42	193.60	
93778	Application Form	2	LAKE 51182	33S/19E-sec 7			8	LAKE 52491	34S/19E-sec 15					LAKE 51182: Correct location = 1690' N & 770' W from SE cor sec 7
93778	Application Form	3	LAKE 50941	33S/19E-sec 8			9	LAKE 52492	34S/19E-sec 15					
93778	Application Form	4	LAKE 51031	33S/19E-sec 8			10	LAKE 52770	34S/19E-sec 22					LAKE 52770 = deep recorder well
93778	Application Map	1	LAKE 4564	33S/19E-sec 17										
93778	Application Map	2	LAKE 51182	33S/19E-sec 7			8	LAKE 52491	34S/19E-sec 15					LAKE 51182: Correct location = 1690' N & 770' W from SE cor sec 7
93778	Application Map	3	LAKE 50941	33S/19E-sec 8			9	LAKE 52492	34S/19E-sec 15					
93778	Application Map	4	LAKE 51031	33S/19E-sec 8			10	LAKE 52770	34S/19E-sec 22					LAKE 52770 = deep recorder well
<b>Totals</b>												3.44	274.90	

Note: Yellow = CFS greater than typically allowed for acreage (1 cfs per 80 acres)  
 Note: Red = Discrepancies between application form and map

T\_13524\_JRS\_Properties\_III\_LP\_proposed\_pumping\_changes

From Wells		Certificate & POU Acres			Total Area	Total Volume	Max Rate	Pro-Rated	Open Interval Lithology	Total Depth	Static GW Level	Land Elevation	Static GW Level	Date
Original	Deepening	93777	93778		(acres)	(ac-ft/yr)	(cfs)	(cfs)		(feet)	(ft blsd)	(ft amsl)	(ft amsl)	
LAKE 4564		20.325	48.400		68.73	206.18	0.86	0.42	Basin fill seds	388	13.00	4,326.02	4,313.02	03/19/1995
LAKE 51182		20.325	48.400		68.73	206.18	0.86	0.42	Basalt	619	62.00	4,341.92	4,279.92	06/06/2001
LAKE 50941		20.325	48.400		68.73	206.18	0.86	0.42	Basin fill & Basalt	490	60.00	4,340.65	4,280.65	10/29/1999
LAKE 51031		20.325	48.400		68.73	206.18	0.86	0.42	Volcanic seds & rocks	551	70.00	4,356.55	4,286.55	07/27/2000
					0.00	0.00	0.00	0.00					0.00	
<b>Totals</b>		<b>81.300</b>	<b>193.600</b>	<b>0.000</b>	<b>274.90</b>	<b>824.70</b>	<b>3.44</b>	<b>1.70</b>						

To Wells		Certificate & POU Acres			Total Area	Total Volume	Max Rate	Pro-Rated	Open Interval Lithology	Total Depth	Static GW Level	Land Elevation	Static GW Level	Date
Original	Deepening	93777	93778		(acres)	(ac-ft/yr)	(cfs)	(cfs)		(feet)	(ft blsd)	(ft amsl)	(ft amsl)	
LAKE 52463		20.325			20.33	60.98	0.25	0.13	Basin fill seds	410	20.00	4,312.01	4,292.01	03/25/2013
LAKE 52491		20.325	64.533		84.86	254.57	1.06	0.52	Basin fill seds	450	38.00	4,314.66	4,276.66	09/21/2013
LAKE 52492		20.325	64.533		84.86	254.57	1.06	0.52	Basin fill seds	330	34.00	4,326.43	4,292.43	10/14/2013
LAKE 52770		20.325	64.533		84.86	254.57	1.06	0.52	Volcanic seds & rocks	1100	46.00	4,325.35	4,279.35	05/02/2017
					0.00	0.00	0.00	0.00					0.00	
<b>Totals</b>		<b>81.300</b>	<b>193.600</b>	<b>0.000</b>	<b>274.90</b>	<b>824.70</b>	<b>3.44</b>	<b>1.70</b>						

T\_13524\_JRS\_Properties\_III\_LP\_distance\_compare

From Wells		Distance to closest well LAKE 51588	Distance to Chewaucan River
Original	Deepening		
LAKE 4564		7,910	3,700
LAKE 51182		7,525	8,020
LAKE 51031		7,015	11,315
LAKE 50941		2,600	10,680
<b>Average</b>		6,263	8,429
<b>Net Total</b>		25,050	33,715

To Wells		Distance to closest well Solheim Well POD 1	Distance to Chewaucan River
Original	Deepening		
LAKE 52463		4,425	5,635
LAKE 52491		3,555	7,810
LAKE 52492		4,515	11,325
LAKE 52770		2,170	9,350
<b>Average</b>		3,666	8,530
<b>Net Total</b>		14,665	34,120

<b>Theis_Equation_specific_capacity_to_transmissivity</b>					
<b>From Driller Water Well Report Recorded Pump Test Data</b>					
<b>Basin_Fill</b>					
<b>Well County</b>	<b>Well Num</b>	<b>Transmissivity gpd/ft</b>	<b>Transmissivity ft<sup>2</sup>/day</b>	<b>Open Interval feet</b>	<b>Conductivity ft/day</b>
From Wells					
LAKE	4564	51,036.85	6,822.63	360.00	18.95
		<b>51,036.85</b>	<b>6,822.63</b>	<b>From Wells Average</b>	<b>18.95</b>
To Wells					
LAKE	1712	5,187.30	693.44	435.00	1.59
LAKE	1714	4,869.60	650.97	365.00	1.78
LAKE	1717	3,657.33	488.91	464.00	1.05
LAKE	1715	17,137.04	2,290.89	252.00	9.09
LAKE	1719	71,089.20	9,503.24	284.00	33.46
LAKE	1724	6,934.26	926.98	297.00	3.12
		<b>18,145.79</b>	<b>2,425.74</b>	<b>To Wells Average</b>	<b>8.35</b>
		<b>22,844.51</b>	<b>3,053.87</b>	<b>Overall Average</b>	<b>9.87</b>
<b>Basalt, Vocanic Rocks &amp; Sediments</b>					
<b>Well County</b>	<b>Well Num</b>		<b>Transmissivity ft<sup>2</sup>/day</b>	<b>Open Interval feet</b>	<b>Conductivity ft/day</b>
From Wells					
LAKE	51882	76,985.84	10,291.51	59.00	174.43
LAKE	50941	56,521.18	7,555.78	42.00	179.90
LAKE	51031	66,988.37	8,955.04	85.00	105.35
		<b>66,831.80</b>	<b>8,934.11</b>	<b>From Wells Average</b>	<b>153.23</b>
To Wells					
None	(all air tests, no pump test)				
		----	----	<b>To Wells Average</b>	----
		<b>66,831.80</b>	<b>8,934.11</b>	<b>Overall Average</b>	<b>153.23</b>

**Drawdown Calculations Using Theis Equation**

**Theis Equation:**  $s = [Q/(4 \cdot T \cdot \pi)]W(u)$

$u = (r^2 \cdot S)/(4 \cdot T \cdot t)$

$W(u) = (-\ln u) - (0.5772157) + (u/1 \cdot 1!) - (u^2/2 \cdot 2!) + (u^3/3 \cdot 3!) - (u^4/4 \cdot 4!) + \dots$

s = drawdown (L)

T = transmissivity (L<sup>2</sup>/T)

S = storage coefficient (dimensionless)

pi = 3.141592654

r = radial distance (L)

t = time (T)

u = dimensionless

W(u) = well function

Transmissivity T (gpd/ft)	Transmissivity T (ft <sup>2</sup> /day)	Storage Coefficient S	Pumping Rate Q (gal/min)	Pumping Rate Q (ft <sup>3</sup> /sec)	Time t (days)	Distance r (feet)	pi	u	W(u)	Drawdown s (feet)	Drawdown Change s (feet)	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			
<b>"From" POA wells to closest Water Right Well LAKE 51588 (Transmissivity from specific capacity data: Used S = 0.001)</b>													
22,852.99	3,055.00	0.00100	385.57	0.86	30.00	7,910.00	3.14	0.1707	1.3545	2.6187		LAKE 4564	Continuous Pumping at Full Rate (Basin Fill Portion)
66,838.45	8,935.00	0.00100	385.57	0.86	30.00	7,525.00	3.14	0.0528	2.4159	1.5970		LAKE 51182	Continuous Pumping at Full Rate (Volcanics Portion)
66,838.45	8,935.00	0.00100	385.57	0.86	30.00	2,600.00	3.14	0.0063	4.4955	2.9718		LAKE 50941	Continuous Pumping at Full Rate (Volcanics Portion)
66,838.45	8,935.00	0.00100	385.57	0.86	30.00	7,015.00	3.14	0.0459	2.5495	1.6854		LAKE 51031	Continuous Pumping at Full Rate (Volcanics Portion)
			<b>1,542.30</b>	<b>3.44</b>						<b>8.87</b>			
<b>"To" POA wells to closest Water Right Well Solheim Well POD #1 (Transmissivity from specific capacity data: Used S = 0.001)</b>													
22,852.99	3,055.00	0.00100	114.03	0.25	30.00	4,425.00	3.14	0.0534	2.4052	1.3753		LAKE 52463	Continuous Pumping at Full Rate (Basin Fill Portion)
22,852.99	3,055.00	0.00100	476.09	1.06	30.00	3,555.00	3.14	0.0345	2.8245	6.7428		LAKE 52491	Continuous Pumping at Full Rate (Basin Fill Portion)
22,852.99	3,055.00	0.00100	476.09	1.06	30.00	4,515.00	3.14	0.0556	2.3671	5.6508		LAKE 52492	Continuous Pumping at Full Rate (Basin Fill Portion)
66,838.45	8,935.00	0.00100	476.09	1.06	30.00	2,170.00	3.14	0.0044	4.8552	3.9629		LAKE 52770	Continuous Pumping at Full Rate (Volcanics Portion)
			<b>1,542.29</b>	<b>3.44</b>						<b>17.73</b>	<b>8.8590</b>		
<b>"From" POA wells to closest Water Right Well LAKE 51588 (Transmissivity from specific capacity data: Used S = 0.001)</b>													
22,852.99	3,055.00	0.00100	190.43	0.42	30.00	7,910.00	3.14	0.1707	1.3545	1.2933		LAKE 4564	Continuous Pro-Rated Pumping (Basin Fill Portion)
66,838.45	8,935.00	0.00100	190.43	0.42	30.00	7,525.00	3.14	0.0528	2.4159	0.7887		LAKE 51182	Continuous Pro-Rated Pumping (Volcanics Portion)
66,838.45	8,935.00	0.00100	190.43	0.42	30.00	2,600.00	3.14	0.0063	4.4955	1.4677		LAKE 50941	Continuous Pro-Rated Pumping (Volcanics Portion)
66,838.45	8,935.00	0.00100	190.43	0.42	30.00	7,015.00	3.14	0.0459	2.5495	0.8324		LAKE 51031	Continuous Pro-Rated Pumping (Volcanics Portion)
			<b>761.71</b>	<b>1.70</b>						<b>4.38</b>			
<b>"To" POA wells to closest Water Right Well Solheim Well POD #1 (Transmissivity from specific capacity data: Used S = 0.001)</b>													
22,852.99	3,055.00	0.00100	56.32	0.13	30.00	4,425.00	3.14	0.0534	2.4052	0.6792		LAKE 52463	Continuous Pro-Rated Pumping (Basin Fill Portion)
22,852.99	3,055.00	0.00100	235.13	0.52	30.00	3,555.00	3.14	0.0345	2.8245	3.3301		LAKE 52491	Continuous Pro-Rated Pumping (Basin Fill Portion)
22,852.99	3,055.00	0.00100	235.13	0.52	30.00	4,515.00	3.14	0.0556	2.3671	2.7908		LAKE 52492	Continuous Pro-Rated Pumping (Basin Fill Portion)
66,838.45	8,935.00	0.00100	235.13	0.52	30.00	2,170.00	3.14	0.0044	4.8552	1.9572		LAKE 52770	Continuous Pro-Rated Pumping (Volcanics Portion)
			<b>761.70</b>	<b>1.70</b>						<b>8.76</b>	<b>4.3752</b>		

**Drawdown Calculations Using Theis Equation**

**Theis Equation:**  $s = [Q/(4 \cdot T \cdot \pi)]W(u)$

$u = (r^2 \cdot S)/(4 \cdot T \cdot t)$

$W(u) = (-\ln u) - (0.5772157) + (u/1 \cdot 1!) - (u^2/2 \cdot 2!) + (u^3/3 \cdot 3!) - (u^4/4 \cdot 4!) + \dots$

s = drawdown (L)

T = transmissivity (L<sup>2</sup>/T)

S = storage coefficient (dimensionless)

pi = 3.141592654

r = radial distance (L)

t = time (T)

u = dimensionless

W(u) = well function

Transmissivity T (gpd/ft)	Transmissivity T (ft <sup>2</sup> /day)	Storage Coefficient S	Pumping Rate Q (gal/min)	Pumping Rate Q (ft <sup>3</sup> /sec)	Time t (days)	Distance r (feet)	pi	u	W(u)	Drawdown s (feet)	Drawdown Change s (feet)	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			
<b>"From" POA wells to closest Water Right Well LAKE 51588 (Transmissivity from specific capacity data: Used S = 0.001)</b>													
22,852.99	3,055.00	0.00100	385.57	0.86	245.00	7,910.00	3.14	0.0209	3.3117	6.4027		LAKE 4564	Continuous Pumping at Full Rate (Basin Fill Portion)
66,838.45	8,935.00	0.00100	385.57	0.86	245.00	7,525.00	3.14	0.0065	4.4703	2.9551		LAKE 51182	Continuous Pumping at Full Rate (Volcanics Portion)
66,838.45	8,935.00	0.00100	385.57	0.86	245.00	2,600.00	3.14	0.0008	6.5901	4.3564		LAKE 50941	Continuous Pumping at Full Rate (Volcanics Portion)
66,838.45	8,935.00	0.00100	385.57	0.86	245.00	7,015.00	3.14	0.0056	4.6098	3.0473		LAKE 51031	Continuous Pumping at Full Rate (Volcanics Portion)
			<b>1,542.30</b>	<b>3.44</b>						<b>16.76</b>			
<b>"To" POA wells to closest Water Right Well Solheim Well POD #1 (Transmissivity from specific capacity data: Used S = 0.001)</b>													
22,852.99	3,055.00	0.00100	114.03	0.25	245.00	4,425.00	3.14	0.0065	4.4591	2.5497		LAKE 52463	Continuous Pumping at Full Rate (Basin Fill Portion)
22,852.99	3,055.00	0.00100	476.09	1.06	245.00	3,555.00	3.14	0.0042	4.8946	11.6846		LAKE 52491	Continuous Pumping at Full Rate (Basin Fill Portion)
22,852.99	3,055.00	0.00100	476.09	1.06	245.00	4,515.00	3.14	0.0068	4.4191	10.5494		LAKE 52492	Continuous Pumping at Full Rate (Basin Fill Portion)
66,838.45	8,935.00	0.00100	476.09	1.06	245.00	2,170.00	3.14	0.0005	6.9514	5.6739		LAKE 52770	Continuous Pumping at Full Rate (Volcanics Portion)
			<b>1,542.29</b>	<b>3.44</b>						<b>30.46</b>	<b>13.6962</b>		
<b>"From" POA wells to closest Water Right Well LAKE 51588 (Transmissivity from specific capacity data: Used S = 0.001)</b>													
22,852.99	3,055.00	0.00100	190.43	0.42	245.00	7,910.00	3.14	0.0209	3.3117	3.1621		LAKE 4564	Continuous Pro-Rated Pumping (Basin Fill Portion)
66,838.45	8,935.00	0.00100	190.43	0.42	245.00	7,525.00	3.14	0.0065	4.4703	1.4595		LAKE 51182	Continuous Pro-Rated Pumping (Volcanics Portion)
66,838.45	8,935.00	0.00100	190.43	0.42	245.00	2,600.00	3.14	0.0008	6.5901	2.1515		LAKE 50941	Continuous Pro-Rated Pumping (Volcanics Portion)
66,838.45	8,935.00	0.00100	190.43	0.42	245.00	7,015.00	3.14	0.0056	4.6098	1.5050		LAKE 51031	Continuous Pro-Rated Pumping (Volcanics Portion)
			<b>761.71</b>	<b>1.70</b>						<b>8.28</b>			
<b>"To" POA wells to closest Water Right Well Solheim Well POD #1 (Transmissivity from specific capacity data: Used S = 0.001)</b>													
22,852.99	3,055.00	0.00100	56.32	0.13	245.00	4,425.00	3.14	0.0065	4.4591	1.2592		LAKE 52463	Continuous Pro-Rated Pumping (Basin Fill Portion)
22,852.99	3,055.00	0.00100	235.13	0.52	245.00	3,555.00	3.14	0.0042	4.8946	5.7708		LAKE 52491	Continuous Pro-Rated Pumping (Basin Fill Portion)
22,852.99	3,055.00	0.00100	235.13	0.52	245.00	4,515.00	3.14	0.0068	4.4191	5.2101		LAKE 52492	Continuous Pro-Rated Pumping (Basin Fill Portion)
66,838.45	8,935.00	0.00100	235.13	0.52	245.00	2,170.00	3.14	0.0005	6.9514	2.8022		LAKE 52770	Continuous Pro-Rated Pumping (Volcanics Portion)
			<b>761.70</b>	<b>1.70</b>						<b>15.04</b>	<b>6.7642</b>		



**Drawdown Calculations Using Theis Equation**

**Theis Equation:**  $s = [Q/(4 \cdot T \cdot \pi)]W(u)$

$u = (r^2 \cdot S)/(4 \cdot T \cdot t)$

$W(u) = (-\ln u) - (0.5772157) + (u/1 \cdot 1!) - (u^2/2 \cdot 2!) + (u^3/3 \cdot 3!) - (u^4/4 \cdot 4!) + \dots$

s = drawdown (L)

T = transmissivity (L<sup>2</sup>/T)

S = storage coefficient (dimensionless)

pi = 3.141592654

r = radial distance (L)

t = time (T)

u = dimensionless

W(u) = well function

Transmissivity T (gpd/ft)	Transmissivity T (ft <sup>2</sup> /day)	Storage Coefficient S	Pumping Rate Q (gal/min)	Pumping Rate Q (ft <sup>3</sup> /sec)	Time t (days)	Distance r (feet)	pi	u	W(u)	Drawdown s (feet)	Drawdown Change s (feet)	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			
<b>"From" POA wells to closest reach of Chewaucan River (Transmissivity from specific capacity data: Used S = 0.001)</b>													
22,852.99	3,055.00	0.00100	385.57	0.86	30.00	3,700.00	3.14	0.0373	2.7474	5.3117		LAKE 4564	Continuous Pumping at Full Rate (Basin Fill Portion)
66,838.45	8,935.00	0.00100	385.57	0.86	30.00	8,020.00	3.14	0.0600	2.2955	1.5174		LAKE 51182	Continuous Pumping at Full Rate (Volcanics Portion)
66,838.45	8,935.00	0.00100	385.57	0.86	30.00	10,680.00	3.14	0.1064	1.7671	1.1682		LAKE 50941	Continuous Pumping at Full Rate (Volcanics Portion)
66,838.45	8,935.00	0.00100	385.57	0.86	30.00	11,315.00	3.14	0.1194	1.6639	1.0999		LAKE 51031	Continuous Pumping at Full Rate (Volcanics Portion)
			<b>1,542.30</b>	<b>3.44</b>						<b>9.10</b>			
<b>"To" POA wells to closest reach of Chewaucan River (Transmissivity from specific capacity data: Used S = 0.001)</b>													
22,852.99	3,055.00	0.00100	114.03	0.25	30.00	5,635.00	3.14	0.0866	1.9538	1.1172		LAKE 52463	Continuous Pumping at Full Rate (Basin Fill Portion)
22,852.99	3,055.00	0.00100	476.09	1.06	30.00	7,810.00	3.14	0.1664	1.3760	3.2847		LAKE 52491	Continuous Pumping at Full Rate (Basin Fill Portion)
22,852.99	3,055.00	0.00100	476.09	1.06	30.00	11,325.00	3.14	0.3499	0.7945	1.8967		LAKE 52492	Continuous Pumping at Full Rate (Basin Fill Portion)
66,838.45	8,935.00	0.00100	476.09	1.06	30.00	9,350.00	3.14	0.0815	2.0094	1.6401		LAKE 52770	Continuous Pumping at Full Rate (Volcanics Portion)
			<b>1,542.29</b>	<b>3.44</b>						<b>7.94</b>	<b>-1.1585</b>		
<b>"From" POA wells to closest reach of Chewaucan River (Transmissivity from specific capacity data: Used S = 0.001)</b>													
22,852.99	3,055.00	0.00100	190.43	0.42	30.00	3,700.00	3.14	0.0373	2.7474	2.6234		LAKE 4564	Continuous Pro-Rated Pumping (Basin Fill Portion)
66,838.45	8,935.00	0.00100	190.43	0.42	30.00	8,020.00	3.14	0.0600	2.2955	0.7494		LAKE 51182	Continuous Pro-Rated Pumping (Volcanics Portion)
66,838.45	8,935.00	0.00100	190.43	0.42	30.00	10,680.00	3.14	0.1064	1.7671	0.5769		LAKE 50941	Continuous Pro-Rated Pumping (Volcanics Portion)
66,838.45	8,935.00	0.00100	190.43	0.42	30.00	11,315.00	3.14	0.1194	1.6639	0.5432		LAKE 51031	Continuous Pro-Rated Pumping (Volcanics Portion)
			<b>761.71</b>	<b>1.70</b>						<b>4.49</b>			
<b>"To" POA wells to closest reach of Chewaucan River (Transmissivity from specific capacity data: Used S = 0.001)</b>													
22,852.99	3,055.00	0.00100	56.32	0.13	30.00	5,635.00	3.14	0.0866	1.9538	0.5517		LAKE 52463	Continuous Pro-Rated Pumping (Basin Fill Portion)
22,852.99	3,055.00	0.00100	235.13	0.52	30.00	7,810.00	3.14	0.1664	1.3760	1.6223		LAKE 52491	Continuous Pro-Rated Pumping (Basin Fill Portion)
22,852.99	3,055.00	0.00100	235.13	0.52	30.00	11,325.00	3.14	0.3499	0.7945	0.9367		LAKE 52492	Continuous Pro-Rated Pumping (Basin Fill Portion)
66,838.45	8,935.00	0.00100	235.13	0.52	30.00	9,350.00	3.14	0.0815	2.0094	0.8100		LAKE 52770	Continuous Pro-Rated Pumping (Volcanics Portion)
			<b>761.70</b>	<b>1.70</b>						<b>3.92</b>	<b>-0.5722</b>		

**Drawdown Calculations Using Theis Equation**

**Theis Equation:**  $s = [Q/(4 \cdot T \cdot \pi)]W(u)$

$u = (r^2 \cdot S)/(4 \cdot T \cdot t)$

$W(u) = (-\ln u) - (0.5772157) + (u/1 \cdot 1!) - (u^2/2 \cdot 2!) + (u^3/3 \cdot 3!) - (u^4/4 \cdot 4!) + \dots$

s = drawdown (L)

T = transmissivity (L<sup>2</sup>/T)

S = storage coefficient (dimensionless)

pi = 3.141592654

r = radial distance (L)

t = time (T)

u = dimensionless

W(u) = well function

Transmissivity T (gpd/ft)	Transmissivity T (ft <sup>2</sup> /day)	Storage Coefficient S	Pumping Rate Q (gal/min)	Pumping Rate Q (ft <sup>3</sup> /sec)	Time t (days)	Distance r (feet)	pi	u	W(u)	Drawdown s (feet)	Drawdown Change s (feet)	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			
<b>"From" POA wells to closest reach of Chewaucan River (Transmissivity from specific capacity data: Used S = 0.001)</b>													
22,852.99	3,055.00	0.00100	385.57	0.86	245.00	3,700.00	3.14	0.0046	4.8150	9.3093		LAKE 4564	Continuous Pumping at Full Rate (Basin Fill Portion)
66,838.45	8,935.00	0.00100	385.57	0.86	245.00	8,020.00	3.14	0.0073	4.3438	2.8714		LAKE 51182	Continuous Pumping at Full Rate (Volcanics Portion)
66,838.45	8,935.00	0.00100	385.57	0.86	245.00	10,680.00	3.14	0.0130	3.7766	2.4965		LAKE 50941	Continuous Pumping at Full Rate (Volcanics Portion)
66,838.45	8,935.00	0.00100	385.57	0.86	245.00	11,315.00	3.14	0.0146	3.6626	2.4212		LAKE 51031	Continuous Pumping at Full Rate (Volcanics Portion)
			<b>1,542.30</b>	<b>3.44</b>						<b>17.10</b>			
<b>"To" POA wells to closest reach of Chewaucan River (Transmissivity from specific capacity data: Used S = 0.001)</b>													
22,852.99	3,055.00	0.00100	114.03	0.25	245.00	5,635.00	3.14	0.0106	3.9797	2.2755		LAKE 52463	Continuous Pumping at Full Rate (Basin Fill Portion)
22,852.99	3,055.00	0.00100	476.09	1.06	245.00	7,810.00	3.14	0.0204	3.3366	7.9652		LAKE 52491	Continuous Pumping at Full Rate (Basin Fill Portion)
22,852.99	3,055.00	0.00100	476.09	1.06	245.00	11,325.00	3.14	0.0428	2.6155	6.2438		LAKE 52492	Continuous Pumping at Full Rate (Basin Fill Portion)
66,838.45	8,935.00	0.00100	476.09	1.06	245.00	9,350.00	3.14	0.0100	4.0395	3.2972		LAKE 52770	Continuous Pumping at Full Rate (Volcanics Portion)
			<b>1,542.29</b>	<b>3.44</b>						<b>19.78</b>	<b>2.6833</b>		
<b>"From" POA wells to closest reach of Chewaucan River (Transmissivity from specific capacity data: Used S = 0.001)</b>													
22,852.99	3,055.00	0.00100	190.43	0.42	245.00	3,700.00	3.14	0.0046	4.8150	4.5976		LAKE 4564	Continuous Pro-Rated Pumping (Basin Fill Portion)
66,838.45	8,935.00	0.00100	190.43	0.42	245.00	8,020.00	3.14	0.0073	4.3438	1.4181		LAKE 51182	Continuous Pro-Rated Pumping (Volcanics Portion)
66,838.45	8,935.00	0.00100	190.43	0.42	245.00	10,680.00	3.14	0.0130	3.7766	1.2330		LAKE 50941	Continuous Pro-Rated Pumping (Volcanics Portion)
66,838.45	8,935.00	0.00100	190.43	0.42	245.00	11,315.00	3.14	0.0146	3.6626	1.1958		LAKE 51031	Continuous Pro-Rated Pumping (Volcanics Portion)
			<b>761.71</b>	<b>1.70</b>						<b>8.44</b>			
<b>"To" POA wells to closest reach of Chewaucan River (Transmissivity from specific capacity data: Used S = 0.001)</b>													
22,852.99	3,055.00	0.00100	56.32	0.13	245.00	5,635.00	3.14	0.0106	3.9797	1.1238		LAKE 52463	Continuous Pro-Rated Pumping (Basin Fill Portion)
22,852.99	3,055.00	0.00100	235.13	0.52	245.00	7,810.00	3.14	0.0204	3.3366	3.9338		LAKE 52491	Continuous Pro-Rated Pumping (Basin Fill Portion)
22,852.99	3,055.00	0.00100	235.13	0.52	245.00	11,325.00	3.14	0.0428	2.6155	3.0837		LAKE 52492	Continuous Pro-Rated Pumping (Basin Fill Portion)
66,838.45	8,935.00	0.00100	235.13	0.52	245.00	9,350.00	3.14	0.0100	4.0395	1.6284		LAKE 52770	Continuous Pro-Rated Pumping (Volcanics Portion)
			<b>761.70</b>	<b>1.70</b>						<b>9.77</b>	<b>1.3252</b>		

T\_13524\_JRS\_Properties\_III\_LP\_river\_interference\_compare

Well	From Wells GW Source	Distance to Chewaucan River (feet)	Pumping Rate		River Interference (cfs)		River Interference (cfs)		River Interference (cfs)	
			Full Rate (cfs)	Pro-Rated (cfs)	Full Rate 30 Days	Pro-Rated 30 days	Full Rate 120 Days	Pro-Rated 120 days	Full Rate 240 Days	Pro-Rated 240 days
LAKE 4564	Basin fill seds	3,700	0.8591	0.4243	0.1480	0.0730	0.2950	0.1460	0.3820	0.1890
LAKE 51182	Basalt	8,020	0.8591	0.4243	0.0000	0.0000	0.0020	0.0010	0.0080	0.0040
LAKE 51031	Volcanic seds & rocks	11,315	0.8591	0.4243	0.0000	0.0000	0.0000	0.0000	0.0020	0.0010
LAKE 50941	Basin fill & Basalt	10,680	0.8591	0.4243	0.0000	0.0000	0.0000	0.0000	0.0020	0.0010
<b>Average</b>		8,429	0.8591	0.4243	0.0370	0.0183	0.0743	0.0368	0.0985	0.0488
<b>Net Total</b>		33,715	3.4364	1.6972	0.1480	0.0730	0.2970	0.1470	0.3940	0.1950
<b>Total River Interference as Percent of Total Pumping Rate</b>					4.31	4.30	8.64	8.66	11.47	11.49

Well	To Wells GW Source	Distance to Chewaucan River (feet)	Pumping Rate		River Interference		River Interference		River Interference	
			Full Rate (cfs)	Pro-Rated (cfs)	Full Rate 30 Days	Pro-Rated 30 days	Full Rate 120 Days	Pro-Rated 120 days	Full Rate 240 Days	Pro-Rated 240 days
LAKE 52463	Basin fill seds	5,635	0.2541	0.1255	0.0360	0.0180	0.0800	0.0390	0.1070	0.0530
LAKE 52491	Basin fill seds	7,810	1.0607	0.5239	0.1170	0.0580	0.3000	0.1480	0.4160	0.2050
LAKE 52492	Basin fill seds	11,325	1.0607	0.5239	0.0770	0.0380	0.2520	0.1240	0.3710	0.1830
LAKE 52770	Volcanic seds & rocks	9,350	1.0607	0.5239	0.0000	0.0000	0.0010	0.0000	0.0050	0.0030
<b>Average</b>		8,530	0.8591	0.4243	0.0575	0.0285	0.1583	0.0778	0.2248	0.1110
<b>Net Total</b>		34,120	3.4362	1.6972	0.2300	0.1140	0.6330	0.3110	0.8990	0.4440
<b>Total River Interference as Percent of Total Pumping Rate</b>					6.69	6.72	18.42	18.32	26.16	26.16

STATE OF OREGON  
WATER WELL REPORT  
(as required by ORS 537.765)

12  
LAKE  
4564

355/19E/186  
74282

(START CARD) #

Instructions for completing this report are on the last page of this form.

(1) OWNER: Well Number 2  
Name ZX RANCH  
Address PO Box 7 Paisley  
City PAISLEY State OR Zip 972636

(2) TYPE OF WORK  
 New Well  Deepening  Alteration (repair/recondition)  Abandonment

(3) DRILL METHOD:  
 Rotary Air  Rotary Mud  Cable  Auger  
 Other

(4) PROPOSED USE:  
 Domestic  Community  Industrial  Irrigation  
 Thermal  Injection  Livestock  Other

(5) BORE HOLE CONSTRUCTION:  
Special Construction approval  Yes  No Depth of Completed Well 388 ft.  
Explosives used  Yes  No Type \_\_\_\_\_ Amount \_\_\_\_\_

HOLE			SEAL			
Diameter	From	To	Material	From	To	Sacks or pounds
8 1/2"	0	388	CEMENT	0	20	30 SACKS

How was seal placed: Method  A  B  C  D  E  
 Other \_\_\_\_\_  
Backfill placed from 20 ft. to 388 ft. Material \_\_\_\_\_  
Gravel placed from 20 ft. to 388 ft. Size of gravel 3/8"

(6) CASING/LINER:

Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing: 16"	+1	20'	26	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Liner: 14"	0	388'	188	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

(7) PERFORATIONS/SCREENS:

Perforations Method FACTORY  
 Screens Type \_\_\_\_\_ Material \_\_\_\_\_

From	To	Slot size	Number	Diameter	Tele/pipe size	Casing	Liner
28	328	1/8"	8,120	4x6"	14"	<input type="checkbox"/>	<input checked="" type="checkbox"/>
368	388	1/8"	1,000	1/8x6"	14"	<input type="checkbox"/>	<input checked="" type="checkbox"/>

(8) WELL TESTS: Minimum testing time is 1 hour

Pump  Bailor  Air  Flowing Artesian

Yield gal/min	Drawdown	Drill stem at	Time
1850	60'	120'	1 hr.

Temperature of water 62° Depth Artesian Flow Found \_\_\_\_\_  
Was a water analysis done?  NO  Yes By whom \_\_\_\_\_  
Did any strata contain water not suitable for intended use?  Too little  
 Salty  Muddy  Odor  Colored  Other \_\_\_\_\_  
Depth of strata: \_\_\_\_\_

(9) LOCATION OF WELL by legal description:  
County LAKE Latitude \_\_\_\_\_ Longitude \_\_\_\_\_  
Township 33.5 N or  Range 19  or W. WM.  
Section 18 SE 1/4 NW 1/4  
Tax Lot 500 Lot \_\_\_\_\_ Block \_\_\_\_\_ Subdivision \_\_\_\_\_  
Street Address of Well (or nearest address) FREED YARD  
ACCA

(10) STATIC WATER LEVEL:  
13 ft. below land surface. Date 3/19/95  
Artesian pressure 0 lb. per square inch. Date 3/19/95

(11) WATER BEARING ZONES:

Depth at which water was first found 26'

From	To	Estimated Flow Rate	SWL
26'	95	500+	13
135	211	1,000+	13
365	388	500+	13

(12) WELL LOG:  
Ground Elevation \_\_\_\_\_ APR - 3 1995

Material	WATER FROM	TO	SWL
SAND + GRAVEL	SALEM, OREGON		
BROWN CLAY	6	26	13"
SAND + 3/4" GRAVELS	23	48	
DARK BROWN SAND (CASE)	48	98	
BROWN CLAY	98	103	
3/4" GRAVEL w/SAND	103	131	
BROWN CLAY	131	141	
SAND + GRAVEL	141	176	
BROWN CLAY	176	206	
SAND + GRAVEL 1/4"	206	239	
GRAY CLAY w/ 1/4" GRAVEL	239	251	
FINE SAND + GRAVEL 1/4"	251	271	
GRAY CLAY w/FINE SAND	271	365	
GRAVEL + SAND	365	388	

Date started 3/13/95 Completed 3/19/95  
(unbonded) Water Well Constructor Certification:  
I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon water supply well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.  
Signed \_\_\_\_\_ WWC Number \_\_\_\_\_ Date \_\_\_\_\_

(bonded) Water Well Constructor Certification:  
I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon water supply well construction standards. This report is true to the best of my knowledge and belief.  
Signed Bill C WWC Number 1555 Date 3/3/95

NOV 12 1999

LAKE 50941

STATE OF OREGON WATER SUPPLY WELL REPORT WATER RESOURCES DEPT. SALEM, OREGON

WELL I.D. # L 29456 START CARD # 107249

Instructions for completing this report are on the last page of this form.

(1) OWNER: Well Number Name J.R. SIMPLOT CO. / ZX RANCH Address PO BOX 7 City PAISLEY State ORE Zip 97636

(2) TYPE OF WORK: [X] New Well [ ] Deepening [ ] Alteration (repair/recondition) [ ] Abandonment

(3) DRILL METHOD: [ ] Rotary Air [X] Rotary Mud [ ] Cable [ ] Auger [ ] Other

(4) PROPOSED USE: [ ] Domestic [ ] Community [ ] Industrial [X] Irrigation [ ] Thermal [ ] Injection [ ] Livestock [ ] Other

(5) BORE HOLE CONSTRUCTION: Special Construction approval [ ] Yes [X] No Depth of Completed Well 490 ft. Explosives used [ ] Yes [X] No Type Amount

Table with columns: HOLE Diameter, From, To, SEAL Material, From, To, Sacks or pounds. Includes entries for 24" 0-448" Cement and 12 1/4" 448-490" seal.

How was seal placed: Method [ ] A [ ] B [X] C [ ] D [ ] E [ ] Other Backfill placed from \_\_\_ ft. to \_\_\_ ft. Material Gravel placed from \_\_\_ ft. to \_\_\_ ft. Size of gravel

(6) CASING/LINER: Table with columns: Diameter, From, To, Gauge, Steel, Plastic, Welded, Threaded. Includes casing entry for 16" +2 448 3/2".

Final location of shoe(s) 448 FT.

(7) PERFORATIONS/SCREENS: Table with columns: From, To, Slot size, Number, Diameter, Tele/pipe size, Casing, Liner.

(8) WELL TESTS: Minimum testing time is 1 hour. [X] Pump [ ] Bailer [ ] Air [ ] Flowing Artesian. Yield gal/min 3000, Drawdown @ 10.3, Drill stem at, Time 8 hr.

Temperature of water 65° Depth Artesian Flow Found Was a water analysis done? [ ] Yes By whom Did any strata contain water not suitable for intended use? [ ] Too little [ ] Salty [ ] Muddy [ ] Odor [ ] Colored [ ] Other Depth of strata:

(9) LOCATION OF WELL by legal description: County LAKE Latitude Longitude Township 35 S N or S Range 19 E E or W. WM. Section 8 SE 1/4 NE 1/4 Tax Lot Lot Block Subdivision Street Address of Well (or nearest address) RED HOUSE RD PAISLEY ORE

(10) STATIC WATER LEVEL: 60 ft. below land surface. Date 10/29/99 Artesian pressure lb. per square inch. Date

(11) WATER BEARING ZONES: Depth at which water was first found 48 FT

Table with columns: From, To, Estimated Flow Rate, SWL. Includes entry for 458 to 490 with 3000 GPM flow rate.

(12) WELL LOG: Ground Elevation

Table with columns: Material, From, To, SWL. Lists geological layers such as SANDY TOP SOIL WITH FINE GRAVEL, YELLOW CLAY/FINE GRAVEL, etc.

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DEC 20 1999

WATER RESOURCES DEPT. SALEM, OREGON

Date started OCT 8 99 Completed NOV 2 99

(unbonded) Water Well Constructor Certification: I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon water supply well construction standards.

Signed \_\_\_\_\_ Date \_\_\_\_\_ WWC Number \_\_\_\_\_

(bonded) Water Well Constructor Certification: I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above.

Signed \_\_\_\_\_ Date 11/19/99 WWC Number 6011

**STATE OF OREGON**  
**WATER SUPPLY WELL REPORT**  
(as required by ORS 537.765)

WELL I.D. # L 29455  
START CARD # 41015

Instructions for completing this report are on the last page of this form.

(1) OWNER: Well Number # 3  
Name Z X RANCH

Address PO BOX 7  
City PAISLEY State OLE Zip 97636

(2) TYPE OF WORK  
 New Well  Deepening  Alteration (repair/recondition)  Abandonment

(3) DRILL METHOD:  
 Rotary Air  Rotary Mud  Cable  Auger  
 Other

(4) PROPOSED USE:  
 Domestic  Community  Industrial  Irrigation  
 Thermal  Injection  Livestock  Other

(5) BORE HOLE CONSTRUCTION:  
Special Construction approval  Yes  No Depth of Completed Well 551 ft.  
Explosives used  Yes  No Type \_\_\_\_\_ Amount \_\_\_\_\_

HOLE			SEAL			Sacks or pounds
Diameter	From	To	Material	From	To	
<u>22"</u>	<u>0</u>	<u>466</u>	<u>CEMENT</u>	<u>0</u>	<u>40</u>	<u>50 SKS</u>
<u>12 1/4"</u>	<u>466</u>	<u>551</u>		<u>430</u>	<u>466</u>	<u>30 SKS</u>

How was seal placed: Method  A  B  C  D  E  
 Other \_\_\_\_\_  
Backfill placed from \_\_\_\_\_ ft. to \_\_\_\_\_ ft. Material \_\_\_\_\_  
Gravel placed from \_\_\_\_\_ ft. to \_\_\_\_\_ ft. Size of gravel \_\_\_\_\_

(6) CASING/LINER:

Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing: <u>16"</u>	<u>+1</u>	<u>466</u>	<u>35</u>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Liner:				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Final location of shoe(s) 466 FT

(7) PERFORATIONS/SCREENS:

From	To	Slot size	Number	Diameter	Tele/pipe size	Casing	Liner
						<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>

(8) WELL TESTS: Minimum testing time is 1 hour

Pump  Bailer  Air  Flowing Artesian

Yield gal/min	Drawdown	Drill stem at	Time
<u>2700</u>	<u>79</u>		<u>8</u> hr.

Temperature of water 65°F Depth Artesian Flow Found \_\_\_\_\_

Was a water analysis done?  Yes By whom \_\_\_\_\_  
Did any strata contain water not suitable for intended use?  Too little  
 Salty  Muddy  Odor  Colored  Other \_\_\_\_\_  
Depth of strata: \_\_\_\_\_

(9) LOCATION OF WELL by legal description:  
County LAKE Latitude \_\_\_\_\_ Longitude \_\_\_\_\_  
Township 33 S N or S Range 19 E E or W. WM. \_\_\_\_\_  
Section 8 NW 1/4 NW 1/4 \_\_\_\_\_  
Tax Lot 500 Lot \_\_\_\_\_ Block \_\_\_\_\_ Subdivision \_\_\_\_\_  
Street Address of Well (or nearest address) RED HOUSE RD PAISLEY, OREGON

(10) STATIC WATER LEVEL:  
70 ft. below land surface. Date 7/27/00  
Artesian pressure \_\_\_\_\_ lb. per square inch. Date \_\_\_\_\_

(11) WATER BEARING ZONES:  
Depth at which water was first found 537 FT

From	To	Estimated Flow Rate	SWL
<u>537</u>	<u>551</u>	<u>2700</u>	<u>70</u>

(12) WELL LOG:  
Ground Elevation \_\_\_\_\_

Material	From	To	SWL
<u>SEE ATTACHED COPY OF LOG</u>			

Date started 7/12/00 Completed 7/27/00  
(unbonded) Water Well Constructor Certification:

I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon water supply well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.  
WWC Number \_\_\_\_\_  
Signed \_\_\_\_\_ Date \_\_\_\_\_

(bonded) Water Well Constructor Certification:  
I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon water supply well construction standards. This report is true to the best of my knowledge and belief.  
WWC Number 60/20/00  
Signed [Signature] Date 8/20/00

# STOREY DRILLING SERVICES

P.O. Box 98 • MIDLAND, OREGON 97634  
(541) 884-3990 • (800) 245-8122  
Fax #: (530) 528-2562

22560 ADOBE ROAD • RED BLUFF, CALIFORNIA 96080  
CONTRACTOR'S LICENSES:  
OR #601 • CA #583153 • NV #38199



ZX Ranch  
J. R. Simplot Company  
P. O. Box 7  
Paisley, Oregon 97636

START: July 12, 2000  
FINISH: July 27, 2000

WELL LOCATION: NW¼ NW¼ S8 T33S R19E Lake County, Oregon  
3/8 mile NW of ZX Ranch shop on Red House Road - Paisley, Oregon

### LOG

0 - 2	Sand
2 - 4	Sandy clay
4 - 18	Pea gravel
18 - 23	Sandstone & Pumice with cemented gray shale
23 - 45	Yellow clay
45 - 75	Gray shale rock with black sandstone
75 - 95	Brown shale
95 - 100	Yellow shale & clay
100 - 149	Green clay & shale
149 - 174	Sandy yellow clay with streaks of fine pea gravel & sand
174 - 187	Green shale with steaks of coarse sand
187 - 190	Gray clay
190 - 210	Gray shale & coarse sand
210 - 281	Sandy yellow clay & shale
281 - 431	Green clay
431 - 457	Sticky gray shale & clay
457 - 469	Brown ash rock
469 - 476	Green shale
476 - 481	Hard black basalt
481 - 486	Green shale
486 - 492	Hard black basalt
492 - 507	Decomposed black basalt
507 - 508	Brown basalt
508 - 537	Hard broken bubbly black basalt
537 - 540	Bubbly black basalt
540 - 551	Hard broken black basalt

**RECEIVED**

MAR 08 2001

WATER RESOURCES DEPT.  
SALEM, OREGON

467 feet 6 inches of 16 inch O.D. casing set @ 466 feet; casing cemented from 430 - 466 feet and from 0 - 30 feet.  
12¼ inch diameter hole from 466 - 551 feet  
Static water level 70 feet; Temperature 65° Fahrenheit

Test Pumped 2700 Gallons Per Minute at 79 feet for 8 hours.  
Specific Capacity 300 GPM per foot drawdown.

**RECEIVED**

AUG 23 2000

WATER RESOURCES DEPT.  
SALEM, OREGON

STATE OF OREGON  
**WATER SUPPLY WELL REPORT**  
 (as required by ORS 537.765)

WELL I.D. # L29453  
 START CARD # 107319

Instructions for completing this report are on the last page of this form.

(1) OWNER: Well Number \_\_\_\_\_  
 Name ZX RANCH / J.R. SIMPOT CO.  
 Address PO BOX 7  
 City PAISLEY State OLE Zip 97636

(2) TYPE OF WORK  
 New Well  Deepening  Alteration (repair/recondition)  Abandonment

(3) DRILL METHOD:  
 Rotary Air  Rotary Mud  Cable  Auger  
 Other \_\_\_\_\_

(4) PROPOSED USE:  
 Domestic  Community  Industrial  Irrigation  
 Thermal  Injection  Livestock  Other \_\_\_\_\_

(5) BORE HOLE CONSTRUCTION:  
 Special Construction approval  Yes  No Depth of Completed Well 619 ft.  
 Explosives used  Yes  No Type \_\_\_\_\_ Amount \_\_\_\_\_

HOLE			SEAL			Sacks or pounds
Diameter	From	To	Material	From	To	
24	0	489	CONCRETE	0	60	60 SK
22	489	560.5		540	560	40 SK
12 1/4	560	619				

How was seal placed: Method  A  B  C  D  E  
 Other \_\_\_\_\_  
 Backfill placed from \_\_\_\_\_ ft. to \_\_\_\_\_ ft. Material \_\_\_\_\_  
 Gravel placed from \_\_\_\_\_ ft. to \_\_\_\_\_ ft. Size of gravel \_\_\_\_\_

(6) CASING/LINER:

Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing: 16"	+1	560.5	7.8	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Liner:				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Final location of shoe(s) 560.5 FEET

(7) PERFORATIONS/SCREENS:

From	To	Slot size	Number	Diameter	Tele/pipe size	Casing	Liner
						<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>

(8) WELL TESTS: Minimum testing time is 1 hour

Yield gal/min	Drawdown	Drill stem at	Time 1 hr.
<u>3000</u>	<u>77</u>		<u>8</u>

Temperature of water 65°F Depth Artesian Flow Found \_\_\_\_\_  
 Was a water analysis done?  Yes By whom \_\_\_\_\_  
 Did any strata contain water not suitable for intended use?  Too little  
 Salty  Muddy  Odor  Colored  Other \_\_\_\_\_  
 Depth of strata: \_\_\_\_\_

(9) LOCATION OF WELL by legal description:  
 County LAKE Latitude \_\_\_\_\_ Longitude \_\_\_\_\_  
 Township 33S N or S Range 19E E or W. WM.  
 Section 7 NE 1/4 SE 1/4  
 Tax Lot #500 Lot \_\_\_\_\_ Block \_\_\_\_\_ Subdivision \_\_\_\_\_  
 Street Address of Well (or nearest address) RED HOUSE RD PAISLEY OREGON

(10) STATIC WATER LEVEL:  
62 ft. below land surface. Date 6/6/01  
 Artesian pressure \_\_\_\_\_ lb. per square inch. Date \_\_\_\_\_

(11) WATER BEARING ZONES:  
 Depth at which water was first found 607 FT.

From	To	Estimated Flow Rate	SWL
<u>607</u>	<u>619</u>	<u>3000</u>	<u>62</u>

(12) WELL LOG:  
 Ground Elevation \_\_\_\_\_

Material	From	To	SWL
<u>SEE ATTACHED SHEETS</u>			

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JUL 12 2001

WATER RESOURCES DEPT  
 SALEM, OREGON

Date started MAY 18, 01 Completed JUNE 6, 01

(unbonded) Water Well Constructor Certification:  
 I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon water supply well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.

Signed \_\_\_\_\_ WWC Number \_\_\_\_\_ Date \_\_\_\_\_

(bonded) Water Well Constructor Certification:  
 I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon water supply well construction standards. This report is true to the best of my knowledge and belief.

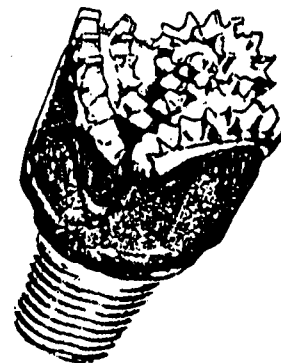
Signed \_\_\_\_\_ WWC Number 606 Date 7/4/01



# STOREY DRILLING SERVICES

P.O. Box 98 • MIDLAND, OREGON 97834  
 (541) 884-3990 • (800) 245-8122  
 Fax #: (530) 528-2562

22560 ADOBE ROAD • RED BLUFF, CALIFORNIA 96080  
 CONTRACTOR'S LICENSES:  
 OR #601 • CA #583153 • NV #38199



Z X Ranch  
 J R Simplot Company, Inc.  
 P. O. Box 7  
 Paisley, Oregon 97636

START: May 18, 2001  
 FINISH: June 6, 2001

**WELL LOCATION:** Red House Road, Paisley, Oregon - north of Z X bunkhouse approximately 3/8ths mile  
 NE¼ SE¼ S7 T33S R19E

## LOG

0 - 3	Brown clay topsoil
3 - 19	Coarse sand & pea gravel
19 - 20	Medium pea gravel & brown clay
20 - 40	Medium pea gravel
40 - 83	Brown clay & shale with streaks medium pea gravel
83 - 160	Sandy brown clay
160 - 254	Green clay
254 - 274	Gray clay, sand & fine gravel
274 - 371	Gray clay
371 - 399	Sticky gray clay
399 - 560	Gray clay & shale
560 - 565	Black basalt
565 - 568	Green clay
568 - 576	Decomposed basalt
576 - 598	Hard black basalt
598 - 607	Hard gray basalt
607 - 612	Black lava
612 - 619	Black basalt

561 feet 4 inches of 16 inch O. D. casing set at 560½ feet  
 24 inch diameter hole from 0 - 489 feet; 22 inch diameter hole 489 - 560½ feet; 12¼ inch diameter hole 560½ - 619 feet.  
 Casing cemented from 0 - 55 feet and 530 - 560 feet  
 Static water level 62 feet; Temperature 65° Fahrenheit  
 Airlifted approximately 2000 GPM at 370 feet.  
 Test pumped 3000 GPM at 77 feet.

**RECEIVED**

JUL 12 2001

WATER RESOURCES DEPT.  
 SALEM, OREGON

STATE OF OREGON
WATER SUPPLY WELL REPORT
(as required by ORS 537.765 & OAR 690-205-0210)

LAKE 52463

WELL I.D. LABEL# L

108774
START CARD # 1019485
ORIGINAL LOG #

4/26/2013

(1) LAND OWNER

Owner Well I.D.
First Name Last Name
Company SIMPLOT ZX RANCH
Address PO BOX 7
City PAISLEY State OR Zip 97636

(2) TYPE OF WORK

[X] New Well [ ] Deepening [ ] Conversion
[ ] Alteration (complete 2a & 10) [ ] Abandonment (complete 5a)

(2a) PRE-ALTERATION

Casing: Dia + From To Gauge Stl Plstc Wld Thrld
Material From To Amt sacks/lbs
Seal:

(3) DRILL METHOD

[X] Rotary Air [ ] Rotary Mud [ ] Cable [ ] Auger [ ] Cable Mud
[ ] Reverse Rotary [ ] Other

(4) PROPOSED USE

[ ] Domestic [X] Irrigation [ ] Community
[ ] Industrial/ Commercial [ ] Livestock [ ] Dewatering
[ ] Thermal [ ] Injection [ ] Other

(5) BORE HOLE CONSTRUCTION

Depth of Completed Well 410.00 ft. Special Standard [ ] (Attach copy)

Table with columns: Dia, From, To, Material, SEAL, Amt, sacks/lbs. Row 1: 20, 0, 50, Bentonite Chips, 0, 50, 62, S

How was seal placed: Method [ ] A [ ] B [ ] C [ ] D [ ] E

[X] Other POURED DRY

Backfill placed from \_\_\_ ft. to \_\_\_ ft. Material

Filter pack from \_\_\_ ft. to \_\_\_ ft. Material Size

Explosives used: [ ] Yes Type Amount

(5a) ABANDONMENT USING UNHYDRATED BENTONITE

Proposed Amount Actual Amount

(6) CASING/LINER

Table with columns: Casing, Liner, Dia, +, From, To, Gauge, Stl, Plstc, Wld, Thrld. Row 1: 16, 1, 120, .250, [X], [ ], [X]

Shoe [ ] Inside [ ] Outside [ ] Other Location of shoe(s)

Temp casing [ ] Yes Dia From To

(7) PERFORATIONS/SCREENS

Perforations Method machined

Screens Type Material

Table with columns: Perf/ Screen, Casing/ Liner, Dia, From, To, Scrn/slot width, Slot length, # of slots, Tele/ pipe size. Row 1: 12, 130, 190, .125, 3, 798

(8) WELL TESTS: Minimum testing time is 1 hour

[ ] Pump [ ] Bailer [X] Air [ ] Flowing Artesian

Table with columns: Yield gal/min, Drawdown, Drill stem/Pump depth, Duration (hr). Row 1: 1500, 405

Temperature 54 °F Lab analysis [ ] Yes By

Water quality concerns? [ ] Yes (describe below) TDS amount

Table with columns: From, To, Description, Amount, Units

(9) LOCATION OF WELL (legal description)

County LAKE Twp 34.00 S N/S Range 19.00 E E/W WM
Sec 14 NW 1/4 of the NW 1/4 Tax Lot 200
Tax Map Number Lot
Lat ' " or DMS or DD
Long ' " or DMS or DD
[ ] Street address of well [ ] Nearest address

NA HWY 31 8 MILES SOUTH OF PAISLEY, 107.5 MILE MARKER ON NORTH SIDE

(10) STATIC WATER LEVEL

Table with columns: Existing Well / Pre-Alteration, Date, SWL(psi), +, SWL(ft). Row 1: 3/25/2013, 20

Flowing Artesian? [ ] Dry Hole? [ ]

WATER BEARING ZONES

Depth water was first found 30.00

Table with columns: SWL Date, From, To, Est Flow, SWL(psi), +, SWL(ft). Row 1: 3/25/2013, 30, 410, 1500, 20

(11) WELL LOG

Ground Elevation

Table with columns: Material, From, To. Row 1: sandy top soil, 0, 20; brown sand and gravel, 20, 35; brown clay cong., 35, 75; brown sand and gravel, 75, 190; brown sandstone, 190, 410

Date Started 3/18/2013 Complete 3/25/2013

(unbonded) Water Well Constructor Certification

I certify that the work I performed on the construction, deepening, alteration, or abandonment of this well is in compliance with Oregon water supply well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.

License Number Date

Signed

(bonded) Water Well Constructor Certification

I accept responsibility for the construction, deepening, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon water supply well construction standards. This report is true to the best of my knowledge and belief.

License Number 1568 Date 4/26/2013

Signed DAVID KUHN (E-filed)

Contact Info (optional)

STATE OF OREGON
WATER SUPPLY WELL REPORT
(as required by ORS 537.765 & OAR 690-205-0210)

LAKE 52491
10/13/2013

WELL I.D. LABEL# L 108760
START CARD # 1020968
ORIGINAL LOG #

(1) LAND OWNER

Owner Well I.D.
First Name Last Name
Company SIMPLOT ZX RANCH
Address PO BOX 7
City PAISLEY State OR Zip 97636

(2) TYPE OF WORK

[X] New Well [ ] Deepening [ ] Conversion
[ ] Alteration (complete 2a & 10) [ ] Abandonment (complete 5a)

(2a) PRE-ALTERATION

Casing: Dia + From To Gauge Stl Plstc Wld Thrd
Seal: Material From To Amt sacks/lbs

(3) DRILL METHOD

[X] Rotary Air [ ] Rotary Mud [ ] Cable [ ] Auger [ ] Cable Mud
[ ] Reverse Rotary [ ] Other

(4) PROPOSED USE

[ ] Domestic [X] Irrigation [ ] Community
[ ] Industrial/ Commercial [ ] Livestock [ ] Dewatering
[ ] Thermal [ ] Injection [ ] Other

(5) BORE HOLE CONSTRUCTION

Depth of Completed Well 450.00 ft. Special Standard [ ] (Attach copy)

Table with columns: Dia, From, To, Material, SEAL, Amt, lbs. Row 1: 20, 0, 50, Bentonite Chips, 0, 50, 121, S

How was seal placed: Method [ ] A [ ] B [ ] C [ ] D [ ] E

[X] Other POURED DRY

Backfill placed from ft. to ft. Material

Filter pack from ft. to ft. Material Size

Explosives used: [ ] Yes Type Amount

(5a) ABANDONMENT USING UNHYDRATED BENTONITE

Proposed Amount Actual Amount

(6) CASING/LINER

Table with columns: Casing, Liner, Dia, From, To, Gauge, Stl, Plstc, Wld, Thrd. Row 1: 16, 2, 180, .250, [X]

Shoe [ ] Inside [ ] Outside [ ] Other Location of shoe(s)

Temp casing [ ] Yes Dia From To

(7) PERFORATIONS/SCREENS

Perforations Method mech

Screens Type Material

Table with columns: Perf/Screen, Casing/Liner, Dia, From, To, Scrn/slot width, Slot length, # of slots, Tele/pipe size. Row 1: 12, 200, 300, .125, 3, 980

(8) WELL TESTS: Minimum testing time is 1 hour

[ ] Pump [ ] Bailer [X] Air [ ] Flowing Artesian

Yield gal/min Drawdown Drill stem/Pump depth Duration (hr)

Table with columns: Yield gal/min, Drawdown, Drill stem/Pump depth, Duration (hr). Row 1: 1500, 448, 1

Temperature 51 °F Lab analysis [ ] Yes By

Water quality concerns? [ ] Yes (describe below) TDS amount

Table with columns: From, To, Description, Amount, Units

(9) LOCATION OF WELL (legal description)

County LAKE Twp 34.00 S N/S Range 19.00 E E/W WM
Sec 15 SE 1/4 of the SE 1/4 Tax Lot 200
Tax Map Number Lot
Lat " or DMS or DD
Long " or DMS or DD

[ ] Street address of well [X] Nearest address

NA 8 MILES SOUTH OF PAISLEY ON HWY 31 ON LEFT

(10) STATIC WATER LEVEL

Table with columns: Date, SWL(psi), SWL(ft). Row 1: 9/21/2013, 38

Flowing Artesian? [ ] Dry Hole? [ ]

WATER BEARING ZONES Depth water was first found 40.00

Table with columns: SWL Date, From, To, Est Flow, SWL(psi), SWL(ft). Row 1: 9/21/2013, 40, 450, 1500, 38

(11) WELL LOG

Ground Elevation

Table with columns: Material, From, To. Rows: sandy top soil (0-6), brn congl, brn clay (6-28), sand & gravel (28-41), brn congl, brn clay (41-112), brn sand & gravel (112-180), brn ss (180-320), brn sand & gravel (320-450)

Date Started 9/6/2013 Complete 9/21/2013

(unbonded) Water Well Constructor Certification

I certify that the work I performed on the construction, deepening, alteration, or abandonment of this well is in compliance with Oregon water supply well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.

License Number Date

Signed

(bonded) Water Well Constructor Certification

I accept responsibility for the construction, deepening, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon water supply well construction standards. This report is true to the best of my knowledge and belief.

License Number 1568 Date 10/13/2013

Signed DAVID KUHN (E-filed)

Contact Info (optional)

STATE OF OREGON
WATER SUPPLY WELL REPORT
(as required by ORS 537.765 & OAR 690-205-0210)

LAKE 52492

WELL I.D. LABEL# L 108763
START CARD # 1020969
ORIGINAL LOG #

10/20/2013

(1) LAND OWNER
Owner Well I.D.
First Name Last Name
Company SIMPLOT ZX RANCH
Address PO BOX 7
City PAISLEY State OR Zip 97636

(2) TYPE OF WORK
[X] New Well [ ] Deepening [ ] Conversion
[ ] Alteration (complete 2a & 10) [ ] Abandonment (complete 5a)

(2a) PRE-ALTERATION
Dia + From To Gauge Stl Plstc Wld Thrld
Casing:
Material From To Amt sacks/lbs
Seal:

(3) DRILL METHOD
[X] Rotary Air [ ] Rotary Mud [ ] Cable [ ] Auger [ ] Cable Mud
[ ] Reverse Rotary [ ] Other

(4) PROPOSED USE
[ ] Domestic [X] Irrigation [ ] Community
[ ] Industrial/ Commercial [ ] Livestock [ ] Dewatering
[ ] Thermal [ ] Injection [ ] Other

(5) BORE HOLE CONSTRUCTION
Special Standard [ ] (Attach copy)
Depth of Completed Well 330.00 ft.
BORE HOLE
Dia From To Material From To Amt sacks/lbs

How was seal placed: Method [ ] A [ ] B [ ] C [ ] D [ ] E

[X] Other POURED DRY

Backfill placed from ft. to ft. Material

Filter pack from ft. to ft. Material Size

Explosives used: [ ] Yes Type Amount

(5a) ABANDONMENT USING UNHYDRATED BENTONITE
Proposed Amount Actual Amount

(6) CASING/LINER
Casing Liner Dia + From To Gauge Stl Plstc Wld Thrld

Shoe [ ] Inside [ ] Outside [ ] Other Location of shoe(s)

Temp casing [ ] Yes Dia From To

(7) PERFORATIONS/SCREENS
Perforations Method mech

Table with columns: Perf/ Screen, Casing/ Liner, Dia, From, To, Scrm/slot width, Slot length, # of slots, Tele/ pipe size

(8) WELL TESTS: Minimum testing time is 1 hour

[ ] Pump [ ] Bailer [X] Air [ ] Flowing Artesian

Table with columns: Yield gal/min, Drawdown, Drill stem/Pump depth, Duration (hr)

Temperature 53 °F Lab analysis [ ] Yes By

Water quality concerns? [ ] Yes (describe below) TDS amount

Table with columns: From, To, Description, Amount, Units

(9) LOCATION OF WELL (legal description)

County LAKE Twp 34.00 S N/S Range 19.00 E E/W WM

Sec 15 SW 1/4 of the SW 1/4 Tax Lot 200

Tax Map Number Lot

Lat " or DMS or DD

Long " or DMS or DD

[ ] Street address of well [X] Nearest address

NA 8 MILES SOUTH ON HWY 31 ON LEFT

(10) STATIC WATER LEVEL

Table with columns: Date, SWL(psi), SWL(ft)

Flowing Artesian? [ ] Dry Hole? [ ]

WATER BEARING ZONES Depth water was first found 36.00

Table with columns: SWL Date, From, To, Est Flow, SWL(psi), SWL(ft)

(11) WELL LOG Ground Elevation

Table with columns: Material, From, To

Date Started 9/21/2013 Complete 10/14/2013

(unbonded) Water Well Constructor Certification

I certify that the work I performed on the construction, deepening, alteration, or abandonment of this well is in compliance with Oregon water supply well construction standards.

License Number Date

Signed

(bonded) Water Well Constructor Certification

I accept responsibility for the construction, deepening, alteration, or abandonment work performed on this well during the construction dates reported above.

License Number 1568 Date 10/20/2013

Signed DAVID KUHN (E-filed)

Contact Info (optional)

STATE OF OREGON
WATER SUPPLY WELL REPORT
(as required by ORS 537.765 & OAR 690-205-0210)

LAKE 52770

WELL I.D. LABEL# L 124489
START CARD # 1033721
ORIGINAL LOG #

5/3/2017

(1) LAND OWNER
Owner Well I.D.
First Name Last Name
Company ZX RANCH
Address P.O BOX 7
City PAISLEY State OR Zip 97636

(2) TYPE OF WORK
New Well Deepening Conversion
Alteration (complete 2a & 10) Abandonment (complete 5a)

(2a) PRE-ALTERATION
Casing: Dia + From To Gauge Stl Plstc Wld Thrd
Seal: Material From To Amt sacks/lbs

(3) DRILL METHOD
Rotary Air Rotary Mud Cable Auger Cable Mud
Reverse Rotary Other

(4) PROPOSED USE
Domestic Irrigation Community
Industrial/ Commercial Livestock Dewatering
Thermal Injection Other

(5) BORE HOLE CONSTRUCTION
Depth of Completed Well 1110.00 ft.
Special Standard (Attach copy)
BORE HOLE SEAL
Dia From To Material From To Amt sacks/lbs

How was seal placed: Method A B C D E
Backfill placed from ft. to ft. Material
Filter pack from ft. to ft. Material Size
Explosives used: Yes Type Amount

(5a) ABANDONMENT USING UNHYDRATED BENTONITE
Proposed Amount Actual Amount

(6) CASING/LINER
Casing Liner Dia + From To Gauge Stl Plstc Wld Thrd
Shoe Inside Outside Other Location of shoe(s) 613
Temp casing Yes Dia From + To

(7) PERFORATIONS/SCREENS
Perforations Method
Screens Type Material
Perf/ Casing/ Screen Scrn/slot Slot # of Tele/
Screen Liner Dia From To width length slots pipe size

(8) WELL TESTS: Minimum testing time is 1 hour
Pump Bailer Air Flowing Artesian
Yield gal/min Drawdown Drill stem/Pump depth Duration (hr)
Temperature 76 °F Lab analysis Yes By
Water quality concerns? Yes (describe below) TDS amount 196 ppm
From To Description Amount Units

(9) LOCATION OF WELL (legal description)
County LAKE Twp 34.00 S N/S Range 19.00 E E/W WM
Sec 22 NW 1/4 of the NE 1/4 Tax Lot 200
Tax Map Number Lot
Lat ' " or DMS or DD
Long ' " or DMS or DD
Street address of well Nearest address
8 MILES SOUTH OF PAISLEY ON HWY 31 ON LEFT

(10) STATIC WATER LEVEL
Date SWL(psi) + SWL(ft)
Existing Well / Pre-Alteration
Completed Well 5/2/2017 46
Flowing Artesian? Dry Hole?

WATER BEARING ZONES
Depth water was first found 45.00
SWL Date From To Est Flow SWL(psi) + SWL(ft)
4/17/2017 45 551 200 31
5/2/2017 617 1079 300 46

(11) WELL LOG
Ground Elevation
Material From To
gravel- sand 0 34
brown clay 34 45
medium gravel 45 49
layers of gravel - clay 49 68
brown clay -gravel 68 137
gravel-clay-sand 137 320
brown clay-medium gravel 320 412
brown clay-fine gravel 412 463
brown sandstone 463 551
hard grey sandstone 551 617
grey rhyolite 617 622
reddish brown rhyolite-grey layers 622 664
brown sandstone 664 813
grey rhyolite- some clay 813 980
brown sandstone 980 1008
brown sand-medium gravel 1008 1045
brown sandstone 1045 1050
sand- gravel, fine to medium 1050 1064
perlite 1064 1066

Date Started 4/13/2017 Completed 5/2/2017

(unbonded) Water Well Constructor Certification
I certify that the work I performed on the construction, deepening, alteration, or abandonment of this well is in compliance with Oregon water supply well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.
License Number Date
Signed

(bonded) Water Well Constructor Certification
I accept responsibility for the construction, deepening, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon water supply well construction standards. This report is true to the best of my knowledge and belief.
License Number 1355 Date 5/3/2017
Signed ARTHUR L FRY (E-filed)
Contact Info (optional)

**WATER SUPPLY WELL REPORT - continuation page**

**LAKE 52770**

**WELL I.D. LABEL# L**

124489




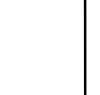
**START CARD #**

1033721

**5/3/2017**

**ORIGINAL LOG #**

**(2a) PRE-ALTERATION**

Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd
								
Material		From	To	Amt	sacks/lbs			

**Water Quality Concerns**

From	To	Description	Amount	Units

**(5) BORE HOLE CONSTRUCTION**

BORE HOLE				SEAL			
Dia	From	To	Material	From	To	Amt	sacks/lbs
						Calculated	
						Calculated	
						Calculated	
						Calculated	

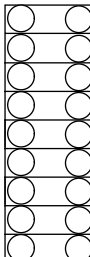
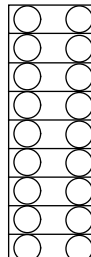
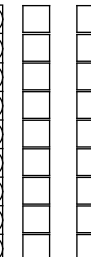
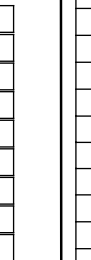
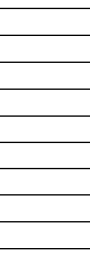
**(10) STATIC WATER LEVEL**

SWL Date	From	To	Est Flow	SWL(psi)	+	SWL(ft)

**FILTER PACK**

From	To	Material	Size

**(6) CASING/LINER**

Casing Liner	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd
									

**(11) WELL LOG**

Material	From	To
sand- silty clay	1066	1079
basalt - clay layers	1079	1110

**(7) PERFORATIONS/SCREENS**

Perf/ Screen	Casing/ Liner Dia	Screen Dia	From	To	Scrn/slot width	Slot length	# of slots	Tele/ pipe size

**(8) WELL TESTS: Minimum testing time is 1 hour**

Yield gal/min	Drawdown	Drill stem/Pump depth	Duration (hr)

**Comments/Remarks**

OBSERVATION WELL

WATER WELL REPORT

STATE OF OREGON

The Original and First Copy from the State of Oregon

State Well No. 1 State Permit No. Q1036

(1) OWNER: ALAN E VAN WITHEAS
Name Floyd Manford HERRIE
Address RFD 10 A-1
Pailonath Oregon

(3) LOCATION OF WELL:
County Lake Owner's number, if any 1
NE 1/4 NE 1/4 Section 13 T. 33 R. 184 W.M.

Posting and distance from section or subdivision corner
Included you will see
An additional survey was made
with a different location
of well

(4) TYPE OF WORK (check):
Deepening [ ] Reconditioning [ ] Abandon [ ]
Improvement, describe material and procedure in Item 11.

PROPOSED USE (check):
Domestic [ ] Industrial [ ] Municipal [ ]
Irrigation [ ] Test Well [ ] Other [ ]
(5) TYPE OF WELL:
Rotary [ ] Driven [ ]
Cable [ ] Jetted [ ]
Dug [ ] Bored [ ]

(6) CASING INSTALLED:
Threaded [ ] Welded [ ]
18" Diam. from TOP ft. to 102 ft. Gage 4"

(7) PERFORATIONS:
Perforated? [ ] Yes [ ] No
Type of perforator used
SIZE of perforations 5/8 in. by 12 in. SLOTS
perforations from 30 ft. to 102 ft.

(8) SCREENS:
Well screen installed [ ] Yes [ ] No
Manufacturer's Name
Type Model No.
Slot size Set from ft. to ft.

(9) CONSTRUCTION:
Was well gravel packed? [ ] Yes [ ] No Size of gravel:
Gravel placed from ft. to ft.
Was a surface seal provided? [ ] Yes [ ] No To what depth? ft.
Material used in seal-
Did any strata contain unusable water? [ ] Yes [ ] No
Type of water? Soft Depth of strata 105 ft.
Method of sealing strata off

(10) WATER LEVELS:
Static level 69 ft. below land surface Date March 1
Artesian pressure lbs. per square inch Date
Log Accepted by:
(Signed) Floyd Manford HERRIE Date March 11 1960

Lake 1633

(11) WELL TESTS:
Drawdown is amount water level is lowered below static level
Was a pump test made? [ ] Yes [ ] No If yes, by whom?
Yield: 1600 gal./min. with 3 ft. drawdown after 8 hrs.

(12) WELL LOG:
Diameter of well 18 inches.
Depth drilled 605 ft. Depth of completed well 505 ft.

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

Table with 3 columns: MATERIAL, FROM, TO. Rows include: Pea gravel and sand (0-90), gravel water bearing (90-105), coarse sand and gravel (105-171), sandy clay (171-308), blue clay (308-354), sandy blue clay (354-605).

BACK FILLED TO 230'

RECEIVED
BUREAU OF LAND MANAGEMENT
10:00 a.m.
OCT 19 1960
LAND OFFICE
PORTLAND, OREGON

RECEIVED
BUREAU OF LAND MANAGEMENT
10:00 a.m.
JAN 25 1961
LAND OFFICE
PORTLAND, OREGON

Work started Nov. 4 1959 Completed March 11 1960

(13) PUMP:
Manufacturer's Name
Type: H.P.

Well Driller's Statement:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME Frank Skillings
Address Rt. 1 Box 243 Corvallis Oregon
Driller's well number
(Signed) Frank Skillings (Well Driller)
License No. 214 Date March 11 1960



STATE OF OREGON  
 WATER SUPPLY WELL REPORT  
 (as required by ORS 537.765)

Instructions for completing this report are on the last page of this form.

WELL I.D. # L 29447  
 START CARD # 107253

(1) OWNER: Well Number # 4

Name J.R. SIMPLOT COMPANY  
 Address PO Box 7  
 City Paisley State OREGON Zip 97636

(2) TYPE OF WORK

New Well  Deepening  Alteration (repair/recondition)  Abandonment

(3) DRILL METHOD:

Rotary Air  Rotary Mud  Cable  Auger  
 Other

(4) PROPOSED USE:

Domestic  Community  Industrial  Irrigation  
 Thermal  Injection  Livestock  Other

(5) BORE HOLE CONSTRUCTION:

Special Construction approval  Yes  No Depth of Completed Well 141/2 ft.  
 Explosives used  Yes  No Type Amount

HOLE			SEAL			Sacks or pounds		
Diameter	From	To	Material	From	To	Sacks or pounds		
24	0	215	CONCRETE	0	50	60 SKS		
24	215	141/2		175	215	59 SKS		

How was seal placed: Method  A  B  C  D  E  
 Other  
 Backfill placed from \_\_\_\_\_ ft. to \_\_\_\_\_ ft. Material \_\_\_\_\_  
 Gravel placed from \_\_\_\_\_ ft. to \_\_\_\_\_ ft. Size of gravel \_\_\_\_\_

(6) CASING/LINER:

Casing:	Diameter	From	To	Gauge	SEAL			
					Steel	Plastic	Welded	Threaded
	16	+1.5	215	.250	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Final location of shoe(s) 215 FEET

(7) PERFORATIONS/SCREENS:

Perforations  Screens Method \_\_\_\_\_ Type \_\_\_\_\_ Material \_\_\_\_\_

From	To	SLOT size	Number	Diameter	Tube/pipe size	Casing	Liner
						<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>

(8) WELL TESTS: Minimum testing time is 1 hour

Pump  Bailor  Air  Flowing  
 Artesian  
 Yield gal/min \_\_\_\_\_ Drawdown \_\_\_\_\_ Drill stem at \_\_\_\_\_ Time \_\_\_\_\_ 1 hr.  
 N/A  
 Temperature of water N/A Depth Artesian Flow Found \_\_\_\_\_  
 Was a water analysis done?  Yes By whom \_\_\_\_\_  
 Did any strata contain water not suitable for intended use?  Too little  
 Salty  Muddy  Odor  Colored  Other \_\_\_\_\_  
 Depth of strata: \_\_\_\_\_

(9) LOCATION OF WELL BY legal description:

County LAKE Latitude \_\_\_\_\_ Longitude \_\_\_\_\_  
 Township 33S N or S Range 19E E or W. WM.  
 Section 18 SE 1/4 NE 1/4  
 Tax Lot \_\_\_\_\_ Lot \_\_\_\_\_ Block \_\_\_\_\_ Subdivision \_\_\_\_\_  
 Street Address of Well (or nearest address) RED HOUSE RD  
 PAISLEY, OREGON

(10) STATIC WATER LEVEL:

\_\_\_\_\_ ft. below land surface. Date 10/25/00  
 Artesian pressure \_\_\_\_\_ lb. per square inch. Date \_\_\_\_\_

(11) WATER BEARING ZONES:

Depth at which water was first found 216 FEET

From	To	Estimated Flow Rate	SWL
216	680	UNKNOWN	

(12) WELL LOG:

Ground Elevation \_\_\_\_\_

Material	From	To	SWL
WELL TEMPORARILY ABANDONED WITH STEEL LID. HOLE LEFT FULL OF DRILL MUD. NO PERFORATING / TEST PUMPING COMPLETED.			
SEE ATTACHED LOG			
<b>RECEIVED</b>			
NOV 09 2000			
WATER RESOURCES DEPT. SALEM, OREGON			

Date started 10/16/00 Completed 10/25/00  
 (unbonded) Water Well Constructor Certification:  
 I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon water supply well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.  
 Signed \_\_\_\_\_ WWC Number \_\_\_\_\_ Date \_\_\_\_\_  
 (bonded) Water Well Constructor Certification:  
 I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon water supply well construction standards. This report is true to the best of my knowledge and belief.  
 Signed \_\_\_\_\_ WWC Number \_\_\_\_\_ Date 11/14/00



## STOREY DRILLING SERVICES

RECEIVED

P.O. Box 98 • MIDLAND, OREGON 97634  
 (541) 884-3990 • (800) 245-8122  
 Fax #: (530) 528-2562

NOV 09 2000



22560 ADOBE ROAD • RED BLUFF, CALIFORNIA 96080  
 CONTRACTOR'S LICENSES:  
 OR #601 • CA #583153 • NV #38199

WATER RESOURCES DEPT  
 SALFM, OREGON

Z X Ranch  
 J R Simplot Company  
 P. O. Box 7  
 Paisley, Oregon 97636

START: August 2, 2000  
 Work temporarily stopped: August 10, 2000  
 Work recommenced: October 16, 2000  
 FINISH: October 25, 2000

WELL LOCATION: SE¼ NE¼ S18 T33S R19E Lake County, Oregon  
 Geothermal Test Well

½ mi. east of intersection Hwy 31 & Red House Rd, 1/8 mi. south of Red House Rd @ cattle guard

LOG

0 - 2	Sandy topsoil with fine gravel
2 - 17	Brown coarse sand with brown clay & fine pea gravel
17 - 25	Coarse pea gravel & sandy brown clay
25 - 60	Sandy brown clay
60 - 81	Green clay
81 - 87	Coarse cemented pea gravel
87 - 115	White ash rock with streaks sandy yellow clay
115 - 148	Coarse cemented gravel with streaks sandy yellow clay
148 - 160	Decomposed brown ash rock
160 - 215	Hard brown ash rock
215 - 270	Hard brown ash rock with streaks gray clay
270 - 346	Brown shale & clay
346 - 366	Chalk rock & clay
366 - 391	Small pea gravel & brown chalk rock
391 - 430	Brown ash with streaks brown clay
430 - 483	Sandy green clay with streaks ash rock
483 - 505	Brown ash with brown clay
505 - 512	Brown ash rock
512 - 679	Brown clay with streaks coarse sand
679 - 682	Sticky brown clay
682 - 685	Brown ash rock
685 - 708	Brown clay
708 - 757	Gray clay with streaks sand
757 - 919	Green clay & shale
919 - 954	Sticky gray clay
954 - 995	Gray clay
995 - 1065	Sticky gray clay
1065 - 1067	Black sandstone & gray shale
1067 - 1401	Gray shale
1401 - 1410	Hard gray shale
1410 - 1412	Hard black basalt

28 inch diameter hole drilled from 0 - 83 feet; 24 inch diameter hole from 83 - 215 feet

215 feet 9 inches of 16 inch O. D. casing set at 215 feet; casing cemented from 160 - 215 feet & from 0 - 40 feet.

Construction temporarily halted on August 11, 2000 as agreed between Dave Storey and Gary Nolan.

8¾ inch diameter hole from 215 - 1412 feet; Static water level at 22 feet; Temperature 78° Fahrenheit at 1412 feet

Well electric logged for approximate water volume and water bearing zones and temperature from end casing to 1412 feet.

Well left full of bentonite drilling mud and temporarily abandoned.

#375

STATE ENGINEER  
SALEM, OREGON

OBSERVATION WELL

WATER WELL REPORT  
STATE OF OREGON

34/19-23G

LAKE  
MIRA

File Original and  
First Copy with the  
STATE ENGINEER,  
LEM, OREGON

State Well No. \_\_\_\_\_  
State Permit No. LAKE

(1) OWNER:  
Name Z Ranch  
Address Paisley, Oregon

(2) LOCATION OF WELL:  
County LAKE Owner's number, if any - #2  
SW 1/4 NE 1/4 Section 23 T. 34S R. 17E, W.M.  
Bearing and distance from section or subdivision corner  
- See Attached map -

(3) TYPE OF WORK (check):  
New Well  Deepening  Reconditioning  Abandon   
If abandonment, describe material and procedure in Item 11.

(4) PROPOSED USE (check):  
Domestic  Industrial  Municipal   
Irrigation  Test Well  Other

(5) TYPE OF WELL:  
Rotary  Driven   
Cable  Jetted   
Dug  Bored

(6) CASING INSTALLED: Threaded  Welded   
16" Diam. from 0 ft. to 345 ft. Gage 3/16"  
" Diam. from \_\_\_\_\_ ft. to \_\_\_\_\_ ft. Gage Wall  
" Diam. from \_\_\_\_\_ ft. to \_\_\_\_\_ ft. Gage \_\_\_\_\_

(7) PERFORATIONS: Perforated?  Yes  No  
Type of perforator used machine in shop  
SIZE of perforations 3/16 in. by 3 in.  
20 per foot perforations from 133 ft. to 352 ft.  
perforations from \_\_\_\_\_ ft. to \_\_\_\_\_ ft.  
perforations from \_\_\_\_\_ ft. to \_\_\_\_\_ ft.  
perforations from \_\_\_\_\_ ft. to \_\_\_\_\_ ft.  
perforations from \_\_\_\_\_ ft. to \_\_\_\_\_ ft.

(8) SCREENS: Well screen installed  Yes  No  
Manufacturer's Name \_\_\_\_\_  
Type \_\_\_\_\_ Model No. \_\_\_\_\_  
Diam. \_\_\_\_\_ Slot size \_\_\_\_\_ Set from \_\_\_\_\_ ft. to \_\_\_\_\_ ft.  
Slot size \_\_\_\_\_ Set from \_\_\_\_\_ ft. to \_\_\_\_\_ ft.

(9) CONSTRUCTION:  
Was well gravel packed?  Yes  No Size of gravel: \_\_\_\_\_  
Gravel placed from \_\_\_\_\_ ft. to \_\_\_\_\_ ft.  
Was a surface seal provided?  Yes  No To what depth? \_\_\_\_\_ ft.  
Material used in seal: \_\_\_\_\_  
Did any strata contain unusable water?  Yes  No  
Type of water? \_\_\_\_\_ Depth of strata \_\_\_\_\_  
Method of sealing strata off \_\_\_\_\_

(10) WATER LEVELS:  
Static level 13 ft. below land surface Date 7-21-59  
Artesian pressure \_\_\_\_\_ lbs. per square inch Date \_\_\_\_\_

Log Accepted by:  
[Signed] Silas D. Smith Date Sept 12, 1959  
(Owner)

(11) WELL TESTS: Drawdown is amount water level is lowered below static level Interstate  
Was a pump test made?  Yes  No If yes, by whom? Pump - K. Fall  
Yield: 2350 gal./min. with 67 ft. drawdown after 24 hrs.  
" " " " " "  
" " " " " "  
" " " " " "  
Ballor test gal./min. with \_\_\_\_\_ ft. drawdown after \_\_\_\_\_ hrs.  
Artesian flow \_\_\_\_\_ g.p.m. Date \_\_\_\_\_  
Temperature of water \_\_\_\_\_ Was a chemical analysis made?  Yes  No

(12) WELL LOG: Diameter of well 16 inches.  
Depth drilled 417 ft. Depth of completed well 417 ft.  
Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

MATERIAL	FROM	TO
clay	0	8
rock & gravel	8	27
clay & bedded gravel	27	32
clay	32	48
very course gravel w/cobblestones	48	85
heavy yellow clay /streaks	85	104
brown sandy clay w/thin gravel	104	125
sand & gravel w/clay streaks	125	155
clay w/course thin gravel streaks	155	170
sand & gravel mixed with clay	170	177
loose sand & gravel	177	181
clay & gravel streaks	181	186
clay w/bedded gravel	186	213
sand & gravel w/cobblestones	213	306
red sandrock & clay w/gravel layers	306	345
hard lime or gyp rock/very small /sand streaks	345	363
broken or fractured rock w/small /gravel	363	375
white gyp rock	375	384
sand stone	384	412
clay & gyp	412	415
rock	415	417

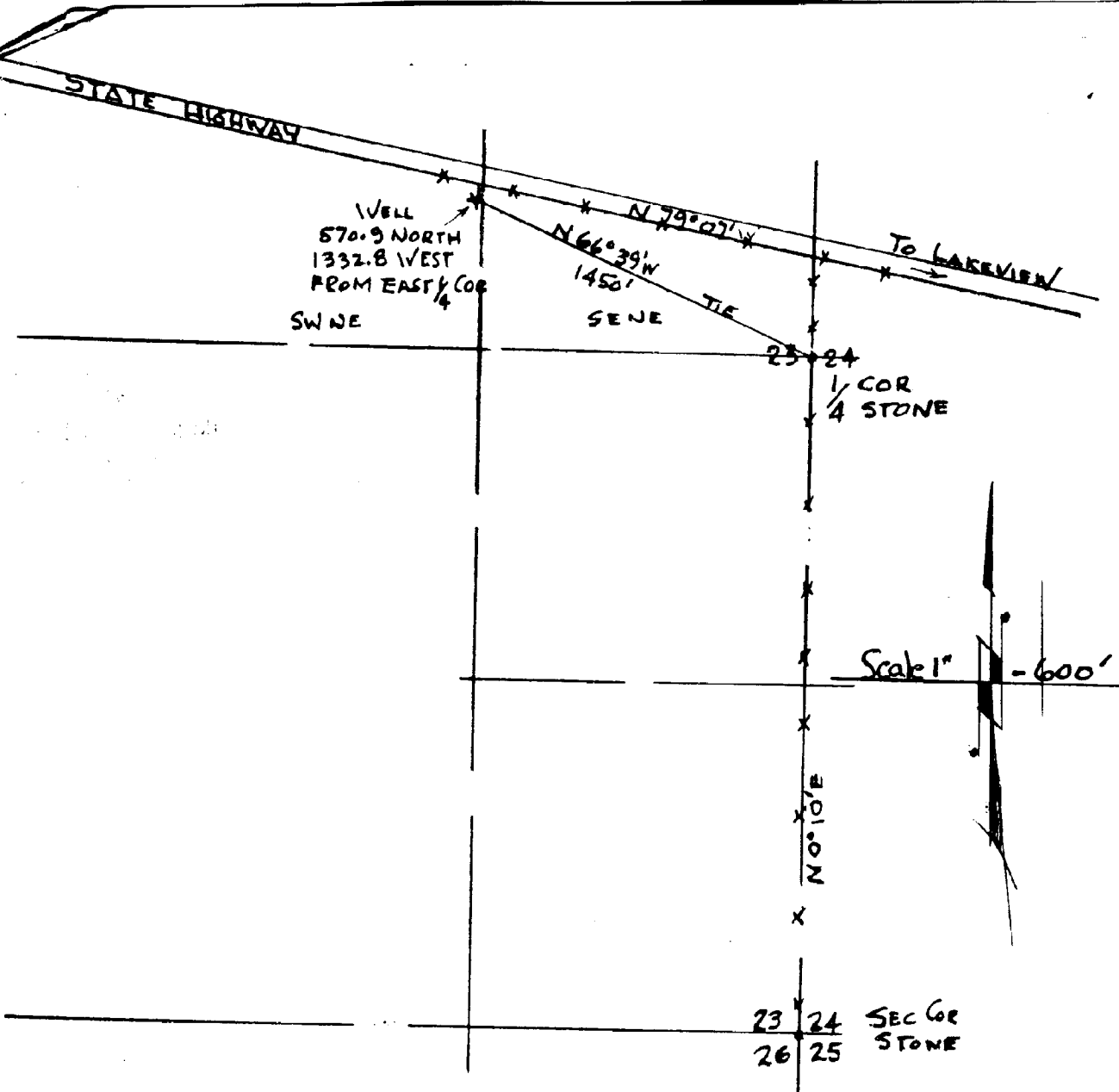
Work started 7-9-59 19 \_\_\_\_\_ Completed 7-24-59 19 \_\_\_\_\_

(13) PUMP:  
Manufacturer's Name \_\_\_\_\_  
Type: \_\_\_\_\_ H.P. \_\_\_\_\_

Well Driller's Statement:  
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME A. M. Janssen Drilling Company  
(Person, firm, or corporation) (Type or print)  
Address 21075 S. W. Tualatin Highway - Aloha, Oregon

Driller's well number \_\_\_\_\_  
[Signed] Edward M. Janssen  
Edward M. Janssen, Partner  
License No. 79 Date 9-4-59, 19 \_\_\_\_\_



MAP OF WELL LOCATION # 2  
 SINTON & BROWN <sup>for</sup> - ZX RANCH - PAISLEY ORE.  
 SURVEYED SEPT. 15, 1959  
 GLENN E. TYLER

TWP 34S R7E 19E WM  
 SW4NE4 Dec. 73

CREATION  
 LAND SURVEYOR

*Glenn E. Tyler*

NOV 5 1959  
 GLENN E. TYLER  
 250

2/8/2017

**(1) LAND OWNER** Owner Well I.D. \_\_\_\_\_  
 First Name \_\_\_\_\_ Last Name \_\_\_\_\_  
 Company ZX RANCH  
 Address PO BOX 7  
 City PAISLEY State OR Zip 97636

**(2) TYPE OF WORK**  New Well  Deepening  Conversion  
 Alteration (complete 2a & 10)  Abandonment (complete 5a)

**(2a) PRE-ALTERATION**  
 Dia + From To Gauge Stl Plstc Wld Thrld  
 Casing:          
 Material From To Amt sacks/lbs  
 Seal:

**(3) DRILL METHOD**  
 Rotary Air  Rotary Mud  Cable  Auger  Cable Mud  
 Reverse Rotary  Other \_\_\_\_\_

**(4) PROPOSED USE**  Domestic  Irrigation  Community  
 Industrial/ Commercial  Livestock  Dewatering  
 Thermal  Injection  Other \_\_\_\_\_

**(5) BORE HOLE CONSTRUCTION** Special Standard  (Attach copy)  
 Depth of Completed Well 60.00 ft.  
**BORE HOLE**  
 Dia From To Material From To Amt lbs  

12	0	18.5	Bentonite Chips	0	18.5	21	S
6	18.5	60				Calculated	19
						Calculated	

How was seal placed: Method  A  B  C  D  E  
 Other POURED DRY  
 Backfill placed from \_\_\_\_\_ ft. to \_\_\_\_\_ ft. Material \_\_\_\_\_  
 Filter pack from \_\_\_\_\_ ft. to \_\_\_\_\_ ft. Material \_\_\_\_\_ Size \_\_\_\_\_  
 Explosives used:  Yes Type \_\_\_\_\_ Amount \_\_\_\_\_

**(5a) ABANDONMENT USING UNHYDRATED BENTONITE**  
 Proposed Amount \_\_\_\_\_ Actual Amount \_\_\_\_\_

**(6) CASING/LINER**  
 Casing Liner Dia + From To Gauge Stl Plstc Wld Thrld  

<input checked="" type="checkbox"/>	<input type="checkbox"/>	6	<input checked="" type="checkbox"/>	2	38	.250	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

  
 Shoe  Inside  Outside  Other Location of shoe(s) 38  
 Temp casing  Yes Dia \_\_\_\_\_ From \_\_\_\_\_ To \_\_\_\_\_

**(7) PERFORATIONS/SCREENS**  
 Perforations Method \_\_\_\_\_  
 Screens Type \_\_\_\_\_ Material \_\_\_\_\_  

Perf/ Screen	Casing/ Liner	Screen Dia	From	To	Scrn/slot width	Slot length	# of slots	Tele/ pipe size

**(8) WELL TESTS: Minimum testing time is 1 hour**  
 Pump  Bailer  Air  Flowing Artesian  

Yield gal/min	Drawdown	Drill stem/Pump depth	Duration (hr)
4		35	1

  
 Temperature 62 °F Lab analysis  Yes By \_\_\_\_\_  
 Water quality concerns?  Yes (describe below) TDS amount 325 ppm  

From	To	Description	Amount	Units

**(9) LOCATION OF WELL (legal description)**  
 County LAKE Twp 34.00 S N/S Range 19.00 E E/W WM  
 Sec 15 SE 1/4 of the SE 1/4 Tax Lot 200  
 Tax Map Number \_\_\_\_\_ Lot \_\_\_\_\_  
 Lat \_\_\_\_\_ " or \_\_\_\_\_ DMS or DD  
 Long \_\_\_\_\_ " or \_\_\_\_\_ DMS or DD  
 Street address of well  Nearest address  
8 MILES SOUTH OF PAISLEY ON HWY 31 ON LEFT

**(10) STATIC WATER LEVEL**

Existing Well / Pre-Alteration	Date	SWL(psi)	+ SWL(ft)
Completed Well	1/24/2017		26.5

Flowing Artesian?  Dry Hole?   
 WATER BEARING ZONES Depth water was first found 54.00

SWL Date	From	To	Est Flow	SWL(psi)	+ SWL(ft)
1/24/2017	54	60	4		26.5

**(11) WELL LOG** Ground Elevation \_\_\_\_\_

Material	From	To
top soil	0	2
sandy brown clay	2	6
sand and gravel	6	13
brown clay with imbedded gravel	13	24
brown clay	24	28
sticky brown clay with imbedded gravel	28	41
brown clay	41	54
brown clay with gravel layers	54	60

Date Started 1/23/2017 Completed 1/24/2017  
**(unbonded) Water Well Constructor Certification**  
 I certify that the work I performed on the construction, deepening, alteration, or abandonment of this well is in compliance with Oregon water supply well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.  
 License Number 1739 Date 2/8/2017  
 Signed CHARLES M FRY (E-filed)

**(bonded) Water Well Constructor Certification**  
 I accept responsibility for the construction, deepening, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon water supply well construction standards. This report is true to the best of my knowledge and belief.  
 License Number 1355 Date 2/8/2017  
 Signed ARTHUR L FRY (E-filed)  
 Contact Info (optional) \_\_\_\_\_