EMERGENCY DROUGHT APPLICATION: GROUNDWATER REVIEW

TO: Water Rights Section Date **3 August 2021**

FROM: Groundwater Section **Gerald H. Grondin**
Reviewer's Name

SUBJECT: Application G- **19182**

DROUGHT MITIGATION; GROUNDWATER

This review is based on authorities laid out in OAR 690-019 Drought Mitigation rules. This is an expedited review to evaluate an emergency request for groundwater use for one season under a Governor's drought declaration. Notwithstanding groundwater availability, stability of the groundwater resource, and surface water and Scenic Waterway considerations, the Department may issue a drought permit for short-term emergency use provided that there is no injury and that the use is within the public interest as per OAR 690-019-0040(3). **This review is based upon available information and agency policies in place at the time of evaluation**.

A. GENERAL INFORMATION: Applicant's Name: **LX Ranch Inc.** County:

A1. Applicant(s) seek(s) **(1,750 gpm) 3.90** cfs from 1 well(s) in the **Goose & Summer Lakes** Basin, **Warner Lakes** subbasin

A2. Proposed use **Supplemental Irrigation** Seasonality: **15 August – 15 October (62 days)**

A3. Well and aquifer data **(attach and number logs for existing wells; mark proposed wells as such under logid)**:

Well	Logid	Applicant's Well #	Proposed Aquifer*	Proposed Rate(cfs)	Location (T/R-S QQ-Q)	Location, metes and bounds, e.g. 2250' N, 1200' E fr NW cor S 36
1	**LAKE 2697**	**Well #1**	**Basin Fill**	**3.90**	**39S/24E-sec 32 BAC**	**695' S, 1463' E fr NW cor S 32**
2						
3						
4						

* Alluvium, CRB, Bedrock

Well	Well Elev ft msl	First Water ft bls	SWL ft bls	SWL Date	Well Depth (ft)	Seal Interval (ft)	Casing Intervals (ft)	Liner Intervals (ft)	Perforations Or Screens (ft)	Well Yield (gpm)	Draw Down (ft)	Test Type
1	**4,489**	**13**	**0.00**	**1949**	**302**	**?**	**0 – 300**	**N.A.**	**?**	**1700**	**?**	**?**

Use data from application for proposed wells.

A4. **Comments:**

LX Ranch seeks to irrigate 530.1 acres about 2 miles southwest of Adel about 1.9 mile southwest of perennial Deep Creek with 530.1 ac-ft total groundwater (drought supplemental irrigation) duty from 15 August to 15 October (62 days) at a maximum allowable rate of 3.90 cfs (1,750 gpm).

The proposed use is supplemental to certificates 34503 and 80472 (primary surface water rights for Deep Creek and Twentymile Creek water).

The proposed 3.90 cfs (1,750 gpm) maximum pumping rate yields 479.60 ac-ft total at the end of 62 days, which is less than the proposed total volume.

OAR 690-513-0040 does not appear to apply to the proposed POA well.

Application notes the primary surface water source will soon be depleted and the drought supplemental groundwater is needed to finish the irrigation season for late summer grass for livestock. "Efficient" flood irrigation is assured.

B. GROUNDWATER/SURFACE WATER CONSIDERATIONS:

B1. Is there information that this drought groundwater use will **injure senior spring or surface water rights** during the duration of the drought declaration? (☐**Yes**) (☒**No**) If yes, explain:

Nearby springs are in escarpment above the valley floor and appear to be stratigraphically controlled.

The calculated groundwater level drawdown at the closest reach of Deep Creek is from 9 to 13 feet. Under average annual conditions, this would increase seasonal interference with the creek. However, the proposed one-time drought groundwater use is proposed to occur when the creek is depleted implying no interference to flow this 2021 season. Consequently, no interference calculation. Any future proposed annual use would require an interference calculation.

B2. Is there information that this drought groundwater use will **injure senior groundwater rights** during the duration of the drought declaration? (☐**Yes**) (☒**No**) If yes, explain:

Calculated seasonal drawdown at closest POA/POD well is 8 to 12 feet. The closest POA/POD should be able to accommodate the additional seasonal drawdown.

Calculated seasonal drawdown at closest domestic well is 38 to 44 feet. The seasonal decline should likely remain above the domestic well bottom but may drop below the depth of the pump and may require lowering the pump. The seasonal drawdown at other domestic wells should be similar or less and may require lowering of their pumps.

B3. Groundwater (☒ **is**) (☐ **is not**) available within the **capacity of the resource.** Comments:

Limited groundwater level data available is pre-2015. Available data shows no evidence of decline. Data related to LAKE 2671 indicates a possible surface water influence.

B4. There (☐ **is**) (☒ **is not**) a preponderance of evidence that the proposed short-term emergency groundwater use will measurably reduce the surface water flows necessary to maintain the free-flowing character of a scenic waterway. Comments:

Not applicable. No scenic waterway.

B5. **Proposed Permit Conditions:** *If a permit is issued, include:*

Condition 7B (Interference Condition): Drought permits are junior to existing water rights and are subject to regulation

Condition 7P (Well Tag)

Water-use Reporting Condition – Large Water Use Condition: totalizing flowmeter and reporting required including condition that "the readings must be reported to the Department by 15 November 2021."

Special Condition – Water-Level Measurement Access: "Prior to use, the well shall be configured to allow a strictly clean water (no oil) static water level measurements with an electric-tape. This can include measurement access via an unobstructed vertical discharge pipe that allows the groundwater level to fluctuate freely within the discharge pipe (no valves), or unobstructed access within the casing to the water level. Otherwise, a dedicated measuring tube must be installed prior to use that has a diameter of ¾ inch (0.75 inch) or greater, and pursuant to figure 200-5 in OAR 690-200."

Special Condition - Regulation: "Groundwater pumping under this permit shall discontinue or be reduced if area wells with permanent primary and/or supplemental groundwater rights are being regulated off due to groundwater level decline or interference with senior water rights unless the Department determines no action is necessary (pumping under this permit can continue) because the groundwater resource can sustain continued groundwater pumping without causing substantial interference with senior water rights."

B6. **References Used:**

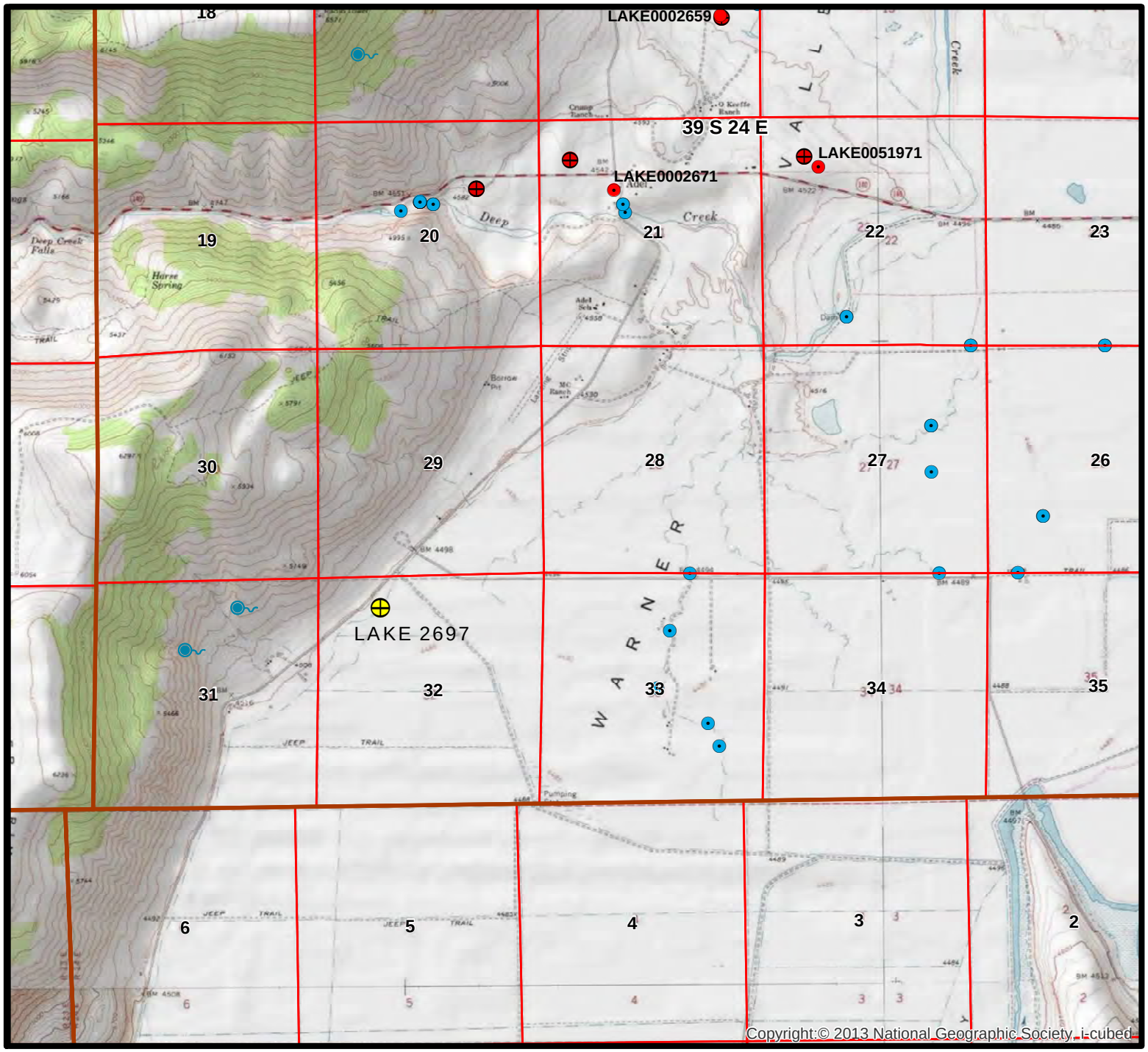
Well Location Map

Water Well Report (well log)

Water-Level Measurements in Nearby Wells

Calculated Drawdown

Groundwater Drought Permit Application G-19182
LX Ranch Inc.



0 0.5 1 2 3 4
Miles

Yellow = Proposed Well
Red = Groundwater PODs & Other Wells
Blue = Surface Water PODs

N

Groundwater Drought Permit Application G-19182
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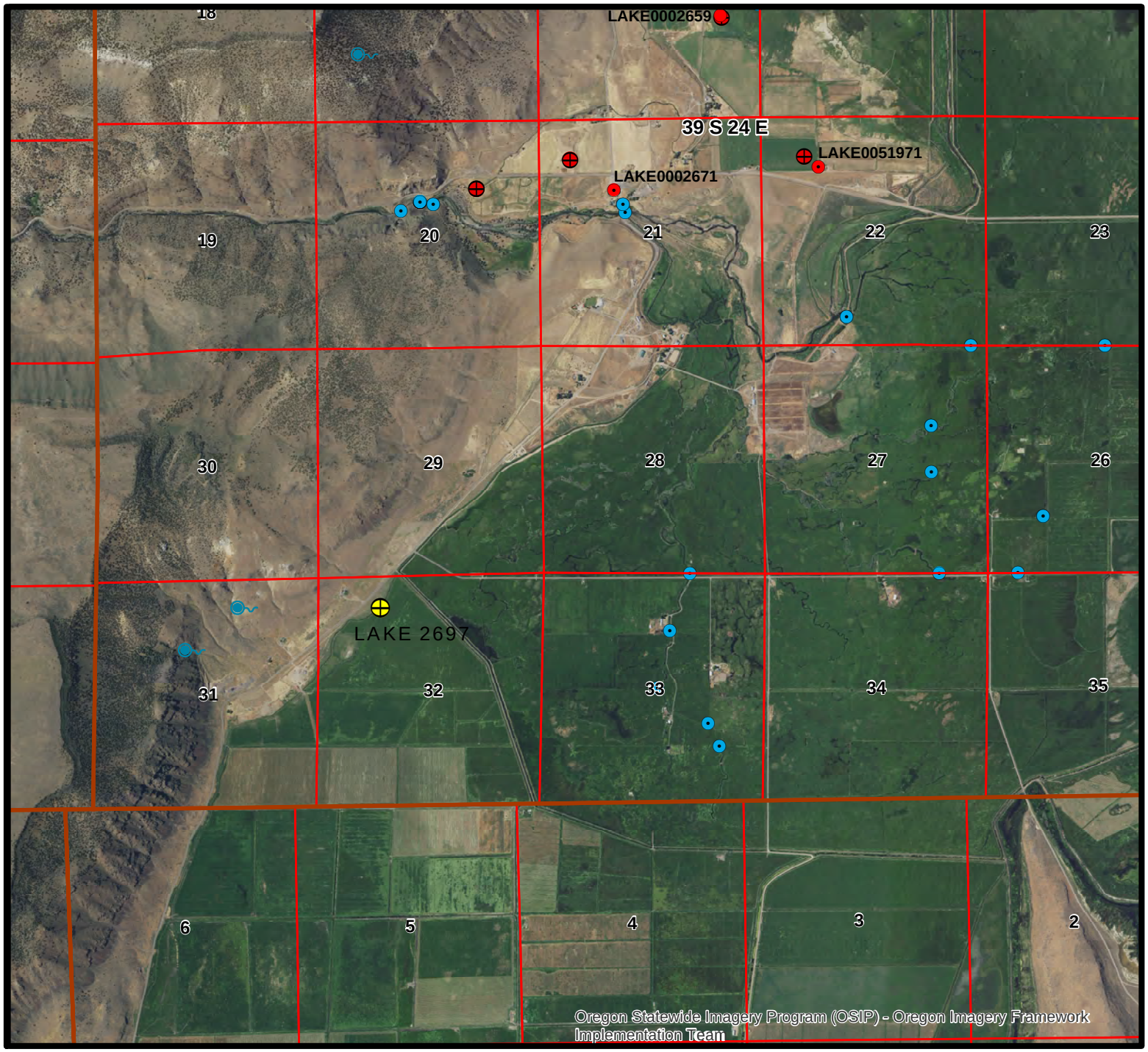

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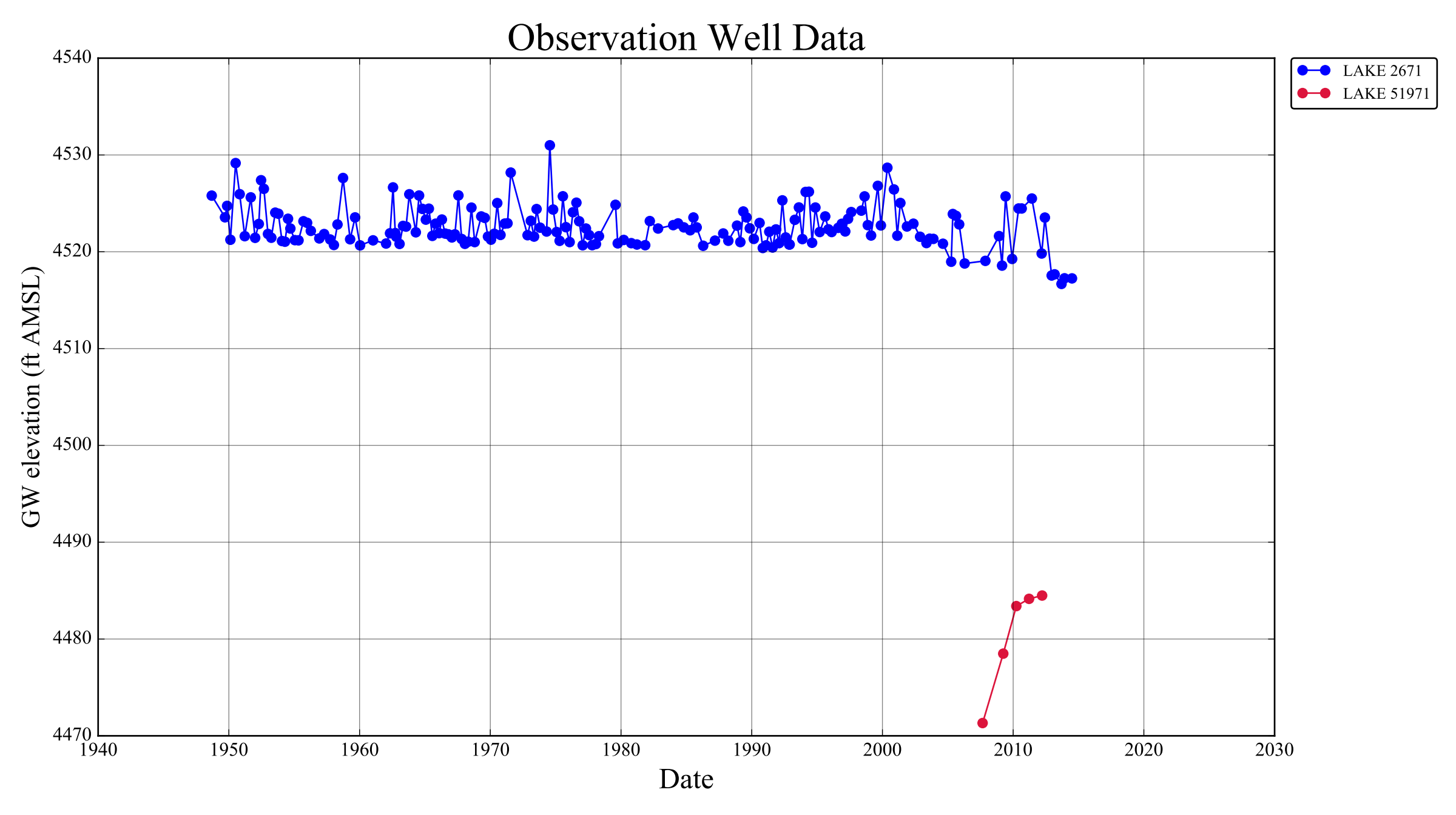

Observation Well Data
LAKE 2671
LAKE 51971
GW elevation (ft AMSL)
4540
4530
4520
4510
4500
4490
4480
4470
1940
1950
1960
1970
1980
1990
2000
2010
2020
2030
Date

Drawdown Calculations Using Theis Equation

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

s = drawdown (L)
T = transmissivity (L*L/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 (ft2/day)	Storage Coefficient S	Pumping Rate Q (gal/min)	Pumping Rate Q (ft3/sec)	Time t (days)	Distance r (feet)	pi	u	W(u)	Drawdown s (feet)	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**
Proposed POA Well to Deep Creek (Transmissivity from specific capacity data)											
29,922.08	4,000.00	0.00100	1,750.00	3.90	30.00	9,215.00	3.14	0.1769	1.3243	8.8753	Continuous Pumping at Full Rate
29,922.08	4,000.00	0.00100	1,750.00	3.90	62.00	9,215.00	3.14	0.0856	1.9646	13.1669	Continuous Pumping at Full Rate
Proposed POA Well to Closest POA Well (Transmissivity from specific capacity data)											
29,922.08	4,000.00	0.00100	1,750.00	3.90	30.00	10,135.00	3.14	0.2140	1.1677	7.8255	Continuous Pumping at Full Rate
29,922.08	4,000.00	0.00100	1,750.00	3.90	62.00	10,135.00	3.14	0.1035	1.7914	12.0061	Continuous Pumping at Full Rate
Proposed POA Well to Closest Domestic Well (Transmissivity from specific capacity data)											
29,922.08	4,000.00	0.00100	1,750.00	3.90	30.00	910.00	3.14	0.0017	5.7869	38.7834	Continuous Pumping at Full Rate
29,922.08	4,000.00	0.00100	1,750.00	3.90	62.00	910.00	3.14	0.0008	6.5120	43.6426	Continuous Pumping at Full Rate

Theis_Equation_specific_capacity_to_transmissivity					
Basin-Fill					
Well County	**Well Num**	**Transmissivity**	**Transmissivity**	**Open Interval**	**Conductivity**
		ft2/day	**gpd/ft**	**feet**	**ft/day**
LAKE	2707	302.61	2,263.68	28.00	10.81
LAKE	2694	849.67	6,355.97	40.00	21.24
LAKE	2713	1,373.33	10,273.22	35.00	39.24
LAKE	2692	17,377.70	129,994.23	56.00	310.32
LAKE	2693	165.31	1,236.60	10.00	16.53
All		**4,013.72**	**30,024.74**	**Average**	**79.63**
LAKE 2692 excluded		**672.73**	**5,032.37**	**Average**	**21.95**

STATE ENGINEER
Salem, Oregon

Lake 3697

Well Record

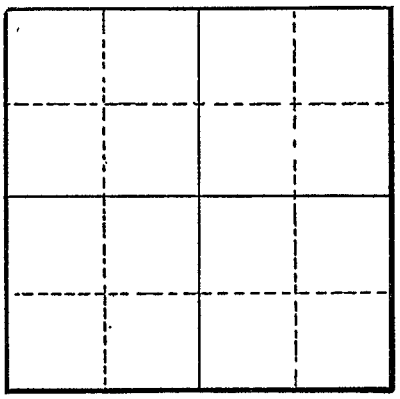
STATE WELL NO. 39/24-32B(1)
COUNTY Lake
APPLICATION NO. .....

OWNER: Warner Valley Stock Co.
MAILING ADDRESS: .....
CITY AND STATE: .....

LOCATION OF WELL: Owner's No. .....

NW ¼ NE ¼ Sec. 32 T. 39 N. S., R. 24 E. W., W.M.

Bearing and distance from section or subdivision corner .....



Altitude at well 4495

TYPE OF WELL: Drilled Date Constructed .....

Depth drilled 302 Depth cased 300

Section .....

CASING RECORD:

14 inch

FINISH:

AQUIFERS:

Gravel

WATER LEVEL:

Flowing

PUMPING EQUIPMENT: Type Turbine H.P. .....
Capacity 1700 G.P.M.

WELL TESTS:
Drawdown ..... ft. after ..... hours ..... G.P.M.
Drawdown ..... ft. after ..... hours ..... G.P.M.

USE OF WATER Irrigation Temp. 56 °F. ....., 19.....
SOURCE OF INFORMATION .....
DRILLER or DIGGER .....
ADDITIONAL DATA:
Log x Water Level Measurements ..... Chemical Analysis ..... Aquifer Test .....

REMARKS:

Hardness 45 ppm, chloride 12 ppm. Casing perforated; water has slight odor of hydrogen sulfide; measured flow 105 gpm.

State Printing 89316

STATE ENGINEER
Salem, Oregon

State Well No. 39/24-32B(1)
County Lake
Application No.

Well Log

Owner: Warner Valley Stock Co. Owner's No.

Driller: J. Pierce Date Drilled 1949

CHARACTER OF MATERIAL	(Feet below land surface) From	To	Thickness (feet)
Younger valley fill:			
Soil and peaty silt	0	13	13
Older valley fill:			
Quicksand	13	15	2
Clay, brown	15	64	49
Sand	64	68	4
Clay, blue	68	84	16
Sand, fine	84	88	4
Clay	88	143	55
Sand	143	145	2
Clay	145	164	19
Gravel	164	175	11
Clay	175	180	5
Gravel	180	186	6
Clay	186	190	4
Gravel	190	194	4
Clay	194	226	32
Gravel	226	230	4
Clay	230	238	8
Gravel	238	248	10
Clay	248	265	17
Gravel	265	269	4
Clay	269	288	19
Gravel	288	298	10
Clay	298	302	4