Groundwater Transfer Review Summary Form

Transfer/PA # T- _13502 (Evans Ranch Land, LLC [Bobby R. & Billie L. Evans])_

GW Reviewer _Gerald H. Grondin_ **Date Review Completed: _30 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).

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.

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

☒ **None of the Above**

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

Ground Water Review Form:

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

Application: T-**13502**

Applicant Name: **Evans Ranch Land, LLC (Bobby R. & Billie L. Evans)**

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

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

Date of Review: **30 November 2020**

Date Reviewed by GW Mgr. and Returned to WRSD: JTI 12/10/2020

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

☐ The water well reports provided with the application do not correspond to the water rights affected by the transfer.

☐ The application does not include water well reports or a description of the well construction details sufficient to establish the ground water body developed or proposed to be developed.

☐ Other _____

- -

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

This transfer application (T-13502) relates to 3 certificates (87093, 95027 and 63146), 2 authorized existing "From" POA wells (LAKE 2751 related to certificates 87093 and 95027 and LAKE 2820 (LAKE 4478 deepening) related to certificate 53146), 1 proposed "To" POA well (LAKE 2753) for all certificates, and moving 60.60, 14.76, and 24.80 POU acres respectively. Note: the fee portion of the application indicates 1.25 cfs total will be transferred, but the water right information portion of the application indicates 4.25 cfs of certificate 87093, 4.25 cfs of certificate 95027, and 1.40 cfs of certificate 53146 will be transferred. It should be 0.76 cfs, 0.18 cfs, and 0.31 cfs to be transferred respectively.

Note: the application identifies authorized POA well #1 and authorized POA well #2 as LAKE 2820. Authorized POA well #1 should be identified as LAKE 2751 and authorized POA well #2 is correctly identified as LAKE 2820.

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

Yes, the same source. The authorized POA wells and the proposed POA well obtain groundwater from a predominantly volcanic rock and sediment unit that locally has variable lithology and permeability (rocks, sediments, tuff, identified as Tb and Ttf by Walker and others, 1963) below a predominantly low permeability basin fill sediment unit identified as QTs by Walker and others.

Local water well reports (well logds) and published 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.

The predominantly basin fill sediment unit and predominantly volcanic rock and sediment unit often have notably different hydraulic properties despite being hydraulically connected. Consequently. they should be considered different regarding this portion of the review.

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

The same source is developed. See item 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.): _____

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 POA well will increase groundwater pumping closer to a groundwater right well related to certificate 58073 (LAKE 2914?) located in T41S/R19E-sec 06 increasing the seasonal groundwater level drawdown at that well from 11.4 to 23.0 feet by the end of the irrigation season (245 days)(see attached). The seasonal drawdown should be less at wells further away. The impacted wells should be able to accommodate the additional seasonal drawdown. The long-term (annual) impact should remain the same. The long term (annual) groundwater level trend appears to be significantly climate influenced. The attached hydrograph shows a greater than 10-foot decline during the late 1980s-early 1990s drought and a greater than 20-foot decline during the post 2000 dry cycle.

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

☐ Yes ☒ No If yes, explain:

See part 4a above.

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

☐ Yes ☒ No Comments:

No, despite the proposed change increasing the seasonal drawdown at Mill Creek or its perennial tributary, the net seasonal groundwater interference with the creek appears to decrease (see attached calculations).

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: **Mill Creek** ☒ Minimal ☐ Significant

Stream: _____ ☐ Minimal ☐ Significant

Provide context for minimal/significant impact:

See part 5a.

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.

"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.

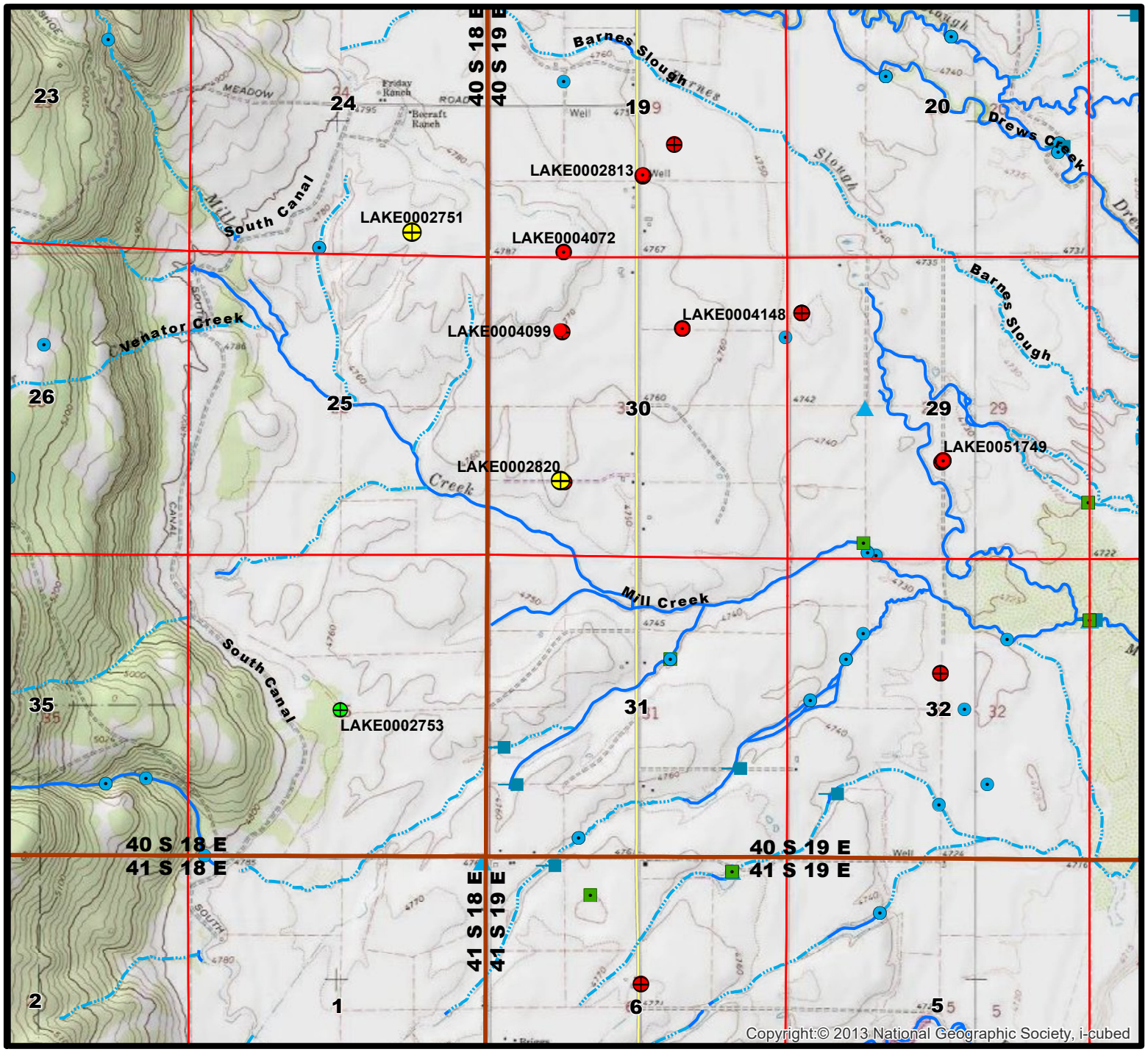
Condition 7P (well tag condition) for all the "To" and "From" POA wells.

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

8. Any additional comments:

No additional comment.

Groundwater Transfer Application T-13502
Evans Ranch Land, LLC (Bobby R. & Billie L. Evans)



0 0.5 1 2 3

Miles

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

N

Groundwater Transfer Application T-13502
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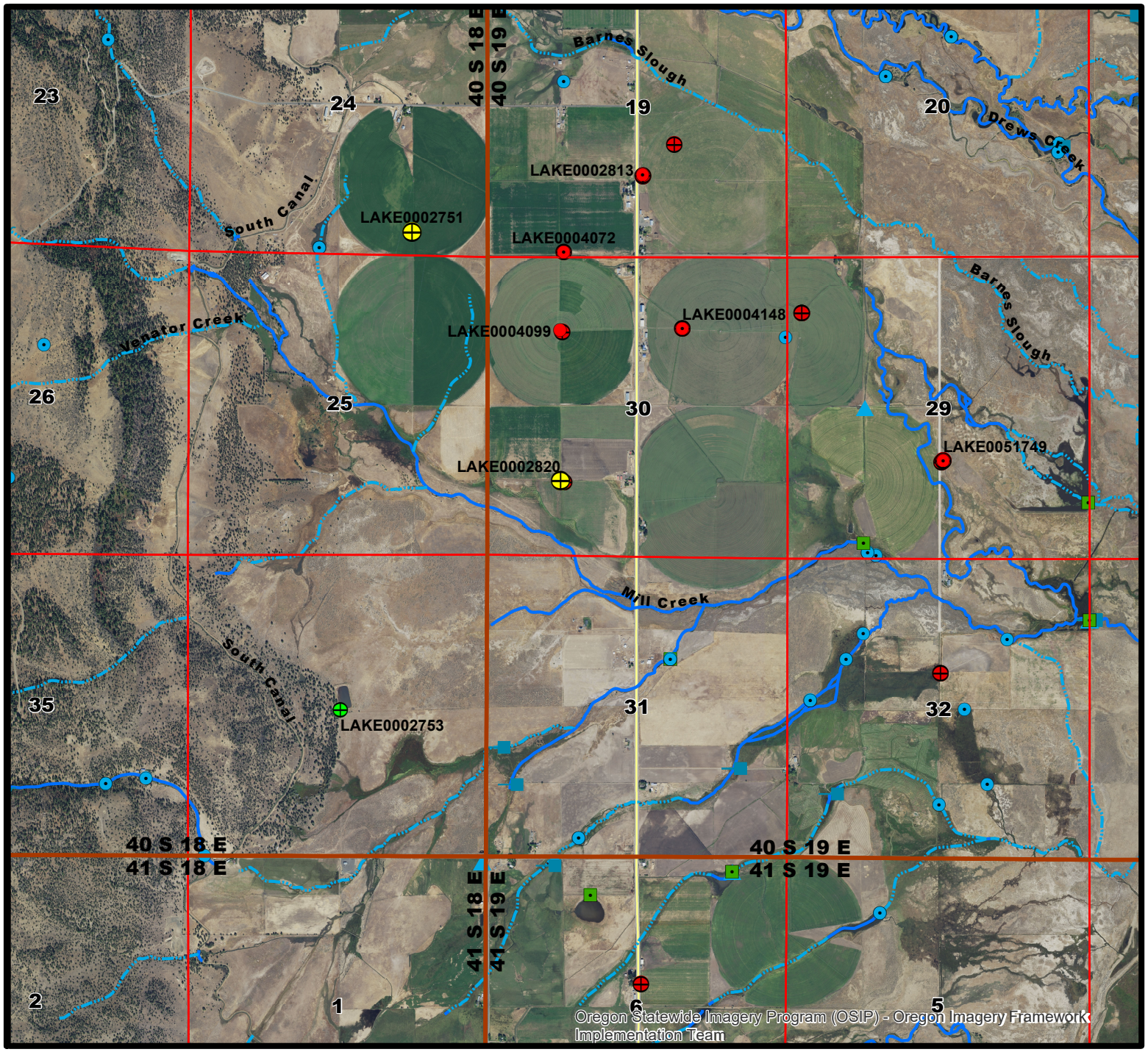

0 0.5 1 2 3

Miles

Yellow = Authorized Wells
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N

T_13502_Evans_Ranch_application_POA_changes
Application submitted 07/27/2020

Certificate Number	Document	From Well POD/POA	From Well Well ID	From Well Well T/R-sec	From Well Primary Acres	From Well Supplemental Acres	To Well POD/POA	To Well Well ID	To Well Well T/R-sec	To Well Primary Acres	To Well Supplemental Acres	CFS	Total Transfer Acres	Observation
87093	Application Form	1	LAKE 2820	40S/18E-sec 24	60.60	0.00	3	LAKE 2753	40S/18E-sec 36	60.60	0.00	4.25	60.60	**Note:** Well ID error, POA 1 = LAKE 2751, not LAKE 2820 (POA 2) **Note:** CFS error, it should be 0.76 CFS or less for 60.60 acres, Cert. 87093 approves 3.09 CFS for 295.44 acres
87093	Application Map	1	LAKE 2820	40S/18E-sec 24	same	same	3	LAKE 2753	40S/18E-sec 36	same	same		same	
95027	Application Form	1	LAKE 2820	40S/18E-sec 24	14.76	0.00	3	LAKE 2753	40S/18E-sec 36	14.76	0.00	4.25	14.76	**Note:** Well ID error, POA 1 = LAKE 2751, not LAKE 2820 (POA 2) **Note:** CFS error, it should be 0.18 CFS or less for 14.76 acres, Cert. 95027 approves 0.47 CFS for 44.76 acres
95027	Application Map	1	LAKE 2820	40S/18E-sec 24	same	same	3	LAKE 2753	40S/18E-sec 36	same	same		same	
53146	Application Form	2	LAKE 2820	40S/19E-sec 30	24.80	0.00	3	LAKE 2753	40S/18E-sec 36	24.80	0.00	1.40	24.80	**Note:** CFS error, it should be 0.31 CFS or less for 24.80 acres, Cert. 53146 approves 1.40 CFS for 112.10 acres
53146	Application Map	2	LAKE 2820	40S/19E-sec 30	same	same	3	LAKE 2753	40S/18E-sec 36	same	same		same	
											Totals	9.90	100.16	**Note:** CFS error, it should be 1.25 CFS or less for 100.16 acres

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

T_13502_Evans_Ranch_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	87093	95027	53146	(acres)	(ac-ft/yr)	(cfs)	(cfs)		(feet)	(ft blsd)	(ft amsl)	(ft amsl)	
					0.00	**0.00**	**0.00**	**0.00**					0.00	
					0.00	**0.00**	**0.00**	**0.00**					0.00	
LAKE 2751		60.600	14.760		**75.36**	**226.08**	**0.94**	**0.47**	Volcanic Rock & Seds	334	30.00	4,784.15	4,754.15	05/25/1967
LAKE 2820	LAKE 4478			24.800	**24.80**	**74.40**	**0.31**	**0.15**	Basin-Fill & Volcanic Seds (bottom 100 ft.)	892	16.00	4,760.38	4,744.38	05/15/1978
					0.00	**0.00**	**0.00**	**0.00**					0.00	
	Totals	**60.600**	**14.760**	**24.800**	**100.16**	**300.48**	**1.25**	**0.62**						

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	87093	95027	53146	(acres)	(ac-ft/yr)	(cfs)	(cfs)		(feet)	(ft blsd)	(ft amsl)	(ft amsl)	
					0.00	**0.00**	**0.00**	**0.00**					0.00	
					0.00	**0.00**	**0.00**	**0.00**					0.00	
LAKE 2753		60.600	14.760	24.800	**100.16**	**300.48**	**1.25**	**0.62**	Volcanic Tuff & Seds	1,150	30.00	4,770.95	4,740.95	06/04/1981
					0.00	**0.00**	**0.00**	**0.00**					0.00	
					0.00	**0.00**	**0.00**	**0.00**					0.00	
	Totals	**60.600**	**14.760**	**24.800**	**100.16**	**300.48**	**1.25**	**0.62**						

T_13502_Evans_Ranch_distance_compare

From Wells Original	Deepening	Distance to well LAKE 4099	Distance to Cert. 58073 well LAKE 2914?	Distance to Mill Creek or Tributary
LAKE 2751		3,165	13,925	3,055
LAKE 2820	LAKE 4478	2,645	9,000	950
	Average	2,905	11,463	2,003
	Net Total	5,810	22,925	4,005

To Wells Original	Deepening	Distance to well LAKE 4099	Distance to Cert. 58073 well LAKE 2914?	Distance to Mill Creek or Tributary
LAKE 2753		7,780	7,190	3,285
	Average	7,780	7,190	3,285
	Net Total	7,780	7,190	3,285

Theis_Equation_specific_capacity_to_transmissivity					
From Driller Water Well Report Recorded Pump Test Data					
Basin_Fill					
Well County	**Well Num**	**Transmissivity**	**Transmissivity**	**Open Interval**	**Conductivity**
		gpd/ft	**ft2/day**	**feet**	**ft/day**
From Wells					
None: Only volcanic rock & sediments or air tests			---	---	---
		---	**---**	**From Wells Average**	**---**
To Wells					
None: Only volcanic rock & sediments			---	---	---
		---	**---**	**To Wells Average**	**---**
Obs Wells					
LAKE	2813	25,148.03	3,361.80	378.00	8.89
LAKE	4072	10,932.72	1,461.49	309.00	4.73
LAKE	4148	11,799.07	1,577.31	720.00	2.19
		15,959.94	**2,133.53**	**Obs Wells Average**	**5.27**
		15,959.94	**2,133.53**	**Overall Average**	**5.27**
Basalt, Vocanic Rocks & Sediments					
Well County	**Well Num**		**Transmissivity**	**Open Interval**	**Conductivity**
			ft2/day	**feet**	**ft/day**
From Wells					
LAKE	2751	150,079.95	20,062.77	220.00	91.19
		150,079.95	**20,062.77**	**From Wells Average**	**91.19**
To Wells					
LAKE	2753	4,737.52	633.31	986.00	0.64
		4,737.52	**633.31**	**To Wells Average**	**0.64**
Obs Wells					
None: only basin-fill			---	---	---
		---	**---**	**Obs Wells Average**	**---**
		77,408.74	**10,348.04**	**Overall Average**	**45.92**

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)	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**
"From" POA wells to Certificate 58073 Well (LAKE 2914?) (Transmissivity from specific capacity data: Used S = 0.001)													
149,984.43	20,050.00	0.00100	422.80	0.94	30.00	13,925.00	3.14	0.0806	2.0201	0.6526		LAKE 2751	Continuous Pumping at Full Rate
15,970.91	2,135.00	0.00100	139.14	0.31	30.00	9,000.00	3.14	0.3162	0.8671	0.8657		LAKE 2820	Continuous Pumping at Full Rate
			561.94	**1.25**						**1.52**			
"To" POA well to Certificate 58073 Well (LAKE 2914?) (Transmissivity from specific capacity data: Used S = 0.001)													
4,750.13	635.00	0.00100	561.94	1.25	30.00	7,190.00	3.14	0.6784	0.3895	5.2799		Lake 2753	Continuous Pumping at Full Rate
			561.94	**1.25**						**5.28**	**3.7617**		
"From" POA wells to Certificate 58073 Well (LAKE 2914?) (Transmissivity from specific capacity data: Used S = 0.001)													
149,984.43	20,050.00	0.00100	208.81	0.47	30.00	13,925.00	3.14	0.0806	2.0201	0.3223		LAKE 2751	Continuous Pumping at Full Rate
15,970.91	2,135.00	0.00100	68.72	0.15	30.00	9,000.00	3.14	0.3162	0.8671	0.4275		LAKE 2820	Continuous Pumping at Full Rate
			277.53	**0.62**						**0.75**			
"To" POA well to Certificate 58073 Well (LAKE 2914?) (Transmissivity from specific capacity data: Used S = 0.001)													
4,750.13	635.00	0.00100	277.53	0.62	30.00	7,190.00	3.14	0.6784	0.3895	2.6076		Lake 2753	Continuous Pumping at Full Rate
			277.53	**0.62**						**2.61**	**1.8578**		

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)	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**
"From" POA wells to Certificate 58073 Well (LAKE 2914?) (Transmissivity from specific capacity data: Used S = 0.001)													
149,984.43	20,050.00	0.00100	422.80	0.94	245.00	13,925.00	3.14	0.0099	4.0510	1.3086		LAKE 2751	Continuous Pumping at Full Rate
15,970.91	2,135.00	0.00100	139.14	0.31	245.00	9,000.00	3.14	0.0387	2.7127	2.7082		LAKE 2820	Continuous Pumping at Full Rate
			561.94	**1.25**						**4.02**			
"To" POA well to Certificate 58073 Well (LAKE 2914?) (Transmissivity from specific capacity data: Used S = 0.001)													
4,750.13	635.00	0.00100	561.94	1.25	245.00	7,190.00	3.14	0.0831	1.9922	27.0066		Lake 2753	Continuous Pumping at Full Rate
			561.94	**1.25**						**27.01**	**22.9899**		
"From" POA wells to Certificate 58073 Well (LAKE 2914?) (Transmissivity from specific capacity data: Used S = 0.001)													
149,984.43	20,050.00	0.00100	208.81	0.47	245.00	13,925.00	3.14	0.0099	4.0510	0.6463		LAKE 2751	Continuous Pumping at Full Rate
15,970.91	2,135.00	0.00100	68.72	0.15	245.00	9,000.00	3.14	0.0387	2.7127	1.3375		LAKE 2820	Continuous Pumping at Full Rate
			277.53	**0.62**						**1.98**			
"To" POA well to Certificate 58073 Well (LAKE 2914?) (Transmissivity from specific capacity data: Used S = 0.001)													
4,750.13	635.00	0.00100	277.53	0.62	245.00	7,190.00	3.14	0.0831	1.9922	13.3380		Lake 2753	Continuous Pumping at Full Rate
			277.53	**0.62**						**13.34**	**11.3542**		

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

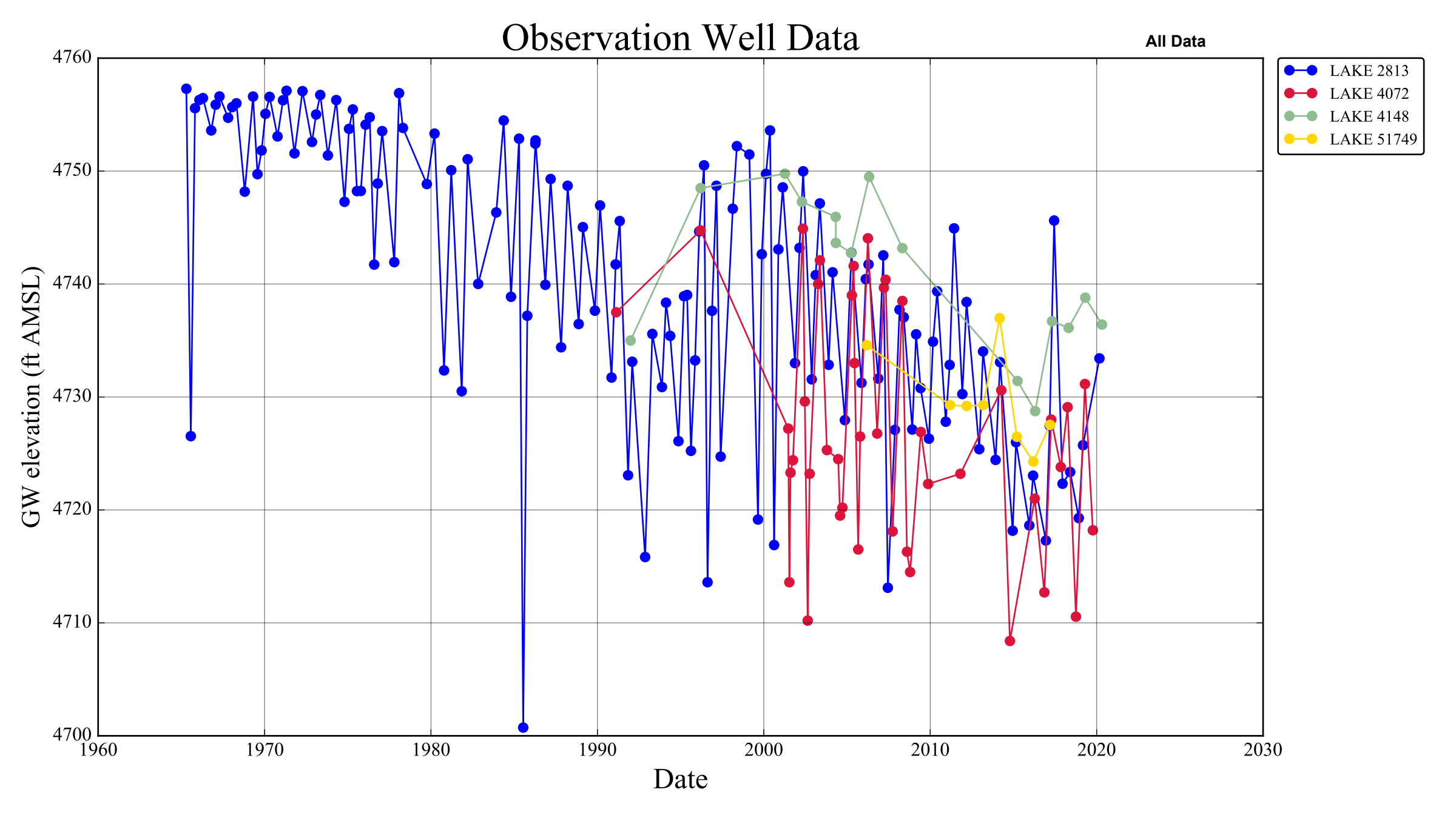
Transmissivity T (gpd/ft)	Transmissivity T (ft2/day)	Storage Coefficient S	Pumping Rate Q (gal/min)	Pumping Rate Q (ft3/sec)	Time t (days)	Distance r (feet)	pi	u	W(u)	Drawdown s (feet)	Drawdown Change s (feet)	Well	Comments
								Note : W(u) calculation valid when u < 7.1					
Note:	**yellow grid areas are where values are calculated**							**7.0000**	**1.1545E-04**				**W(u) calculation test**
"From" POA wells to Mill Creek or perennial tributary (Transmissivity from specific capacity data: Used S = 0.001)													
149,984.43	20,050.00	0.00100	422.80	0.94	30.00	3,055.00	3.14	0.0039	4.9788	1.6083		LAKE 2751	Continuous Pumping at Full Rate
15,970.91	2,135.00	0.00100	139.14	0.31	30.00	950.00	3.14	0.0035	5.0748	5.0664		LAKE 2820	Continuous Pumping at Full Rate
			561.94	**1.25**						**6.67**			
"To" POA well to Mill Creek or perennial tributary (Transmissivity from specific capacity data: Used S = 0.001)													
4,750.13	635.00	0.00100	561.94	1.25	30.00	7,190.00	3.14	0.6784	0.3895	5.2799		Lake 2753	Continuous Pumping at Full Rate
			561.94	**1.25**						**5.28**	**-1.3948**		
"From" POA wells to Mill Creek or perennial tributary (Transmissivity from specific capacity data: Used S = 0.001)													
149,984.43	20,050.00	0.00100	208.81	0.47	30.00	3,055.00	3.14	0.0039	4.9788	0.7943		LAKE 2751	Continuous Pumping at Full Rate
15,970.91	2,135.00	0.00100	68.72	0.15	30.00	950.00	3.14	0.0035	5.0748	2.5022		LAKE 2820	Continuous Pumping at Full Rate
			277.53	**0.62**						**3.30**			
"To" POA well to Mill Creek or perennial tributary (Transmissivity from specific capacity data: Used S = 0.001)													
4,750.13	635.00	0.00100	277.53	0.62	30.00	7,190.00	3.14	0.6784	0.3895	2.6076		Lake 2753	Continuous Pumping at Full Rate
			277.53	**0.62**						**2.61**	**-0.6889**		

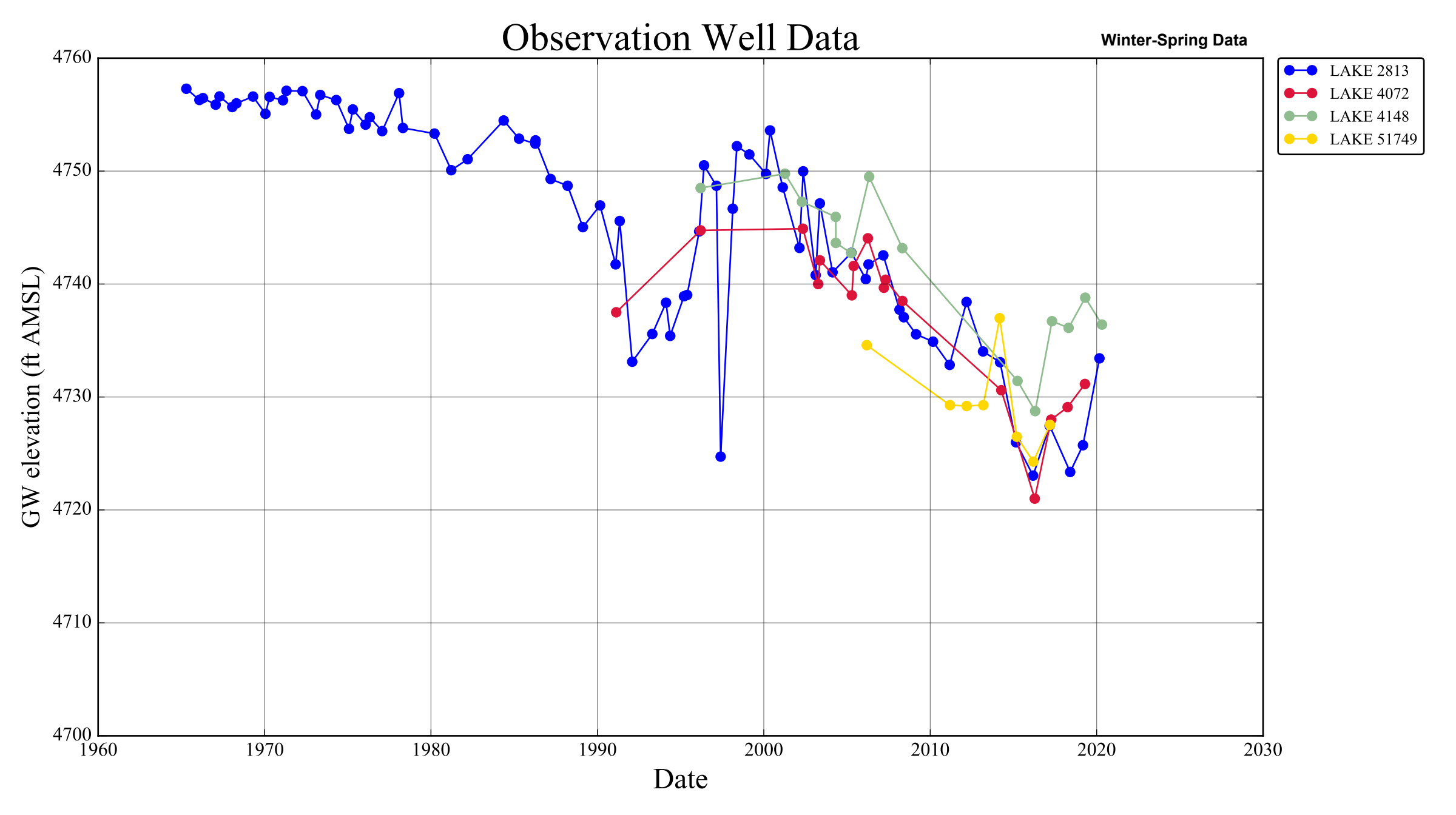
Drawdown Calculations Using Theis Equation

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)	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**
"From" POA wells to Mill Creek or perennial tributary (Transmissivity from specific capacity data: Used S = 0.001)													
149,984.43	20,050.00	0.00100	422.80	0.94	245.00	3,055.00	3.14	0.0005	7.0755	2.2856		LAKE 2751	Continuous Pumping at Full Rate
15,970.91	2,135.00	0.00100	139.14	0.31	245.00	950.00	3.14	0.0004	7.1718	7.1599		LAKE 2820	Continuous Pumping at Full Rate
			561.94	**1.25**						**9.45**			
"To" POA well to Mill Creek or perennial tributary (Transmissivity from specific capacity data: Used S = 0.001)													
4,750.13	635.00	0.00100	561.94	1.25	245.00	7,190.00	3.14	0.0831	1.9922	27.0066		Lake 2753	Continuous Pumping at Full Rate
			561.94	**1.25**						**27.01**	**17.5612**		
"From" POA wells to Mill Creek or perennial tributary (Transmissivity from specific capacity data: Used S = 0.001)													
149,984.43	20,050.00	0.00100	208.81	0.47	245.00	3,055.00	3.14	0.0005	7.0755	1.1288		LAKE 2751	Continuous Pumping at Full Rate
15,970.91	2,135.00	0.00100	68.72	0.15	245.00	950.00	3.14	0.0004	7.1718	3.5362		LAKE 2820	Continuous Pumping at Full Rate
			277.53	**0.62**						**4.66**			
"To" POA well to Mill Creek or perennial tributary (Transmissivity from specific capacity data: Used S = 0.001)													
4,750.13	635.00	0.00100	277.53	0.62	245.00	7,190.00	3.14	0.0831	1.9922	13.3380		Lake 2753	Continuous Pumping at Full Rate
			277.53	**0.62**						**13.34**	**8.6730**		


Observation Well Data
All Data
LAKE 2813
LAKE 4072
LAKE 4148
LAKE 51749
GW elevation (ft AMSL)
4760
4750
4740
4730
4720
4710
4700
1960
1970
1980
1990
2000
2010
2020
2030
Date


Observation Well Data
Winter-Spring Data
LAKE 2813
LAKE 4072
LAKE 4148
LAKE 51749
GW elevation (ft AMSL)
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4750
4740
4730
4720
4710
4700
1960
1970
1980
1990
2000
2010
2020
2030
Date

T_13502_Evans_Ranch_creek_interference_compare

From Wells		Distance to Chewaucan River	Pumping Rate		River Interference (cfs)		River Interference (cfs)		River Interference (cfs)	
Well	GW Source	(feet)	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 2751	Volcanic Rock & Seds	3,055	0.9400	0.4700	0.0019	0.0009	0.0030	0.0019	0.0056	0.0028
LAKE 2820	Volcanic Seds	950	0.3100	0.1500	0.0019	0.0009	0.0037	0.0018	0.0056	0.0027
	Average	2,003	0.6250	0.3100	0.0019	0.0009	0.0034	0.0019	0.0056	0.0028
	Net Total	4,005	1.2500	0.6200	0.0038	0.0018	0.0067	0.0037	0.0112	0.0055
Total Creek Interference as Percent of Total Pumping Rate					0.30	0.29	0.54	0.60	0.90	0.89

To Wells		Distance to Chewaucan River	Pumping Rate		River Interference		River Interference		River Interference	
Well	GW Source	(feet)	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 2753	Volcanic Tuff & Seds	3,285	1.2500	0.6200	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	Average	3,285	1.2500	0.6200	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	Net Total	3,285	1.2500	0.6200	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total Creek Interference as Percent of Total Pumping Rate					0.00	0.00	0.00	0.00	0.00	0.00