Groundwater Transfer Review Summary Form

Transfer/PA # T- <u>13973</u>

GW Reviewer __Gerald H. Grondin__

Date Review Completed: <u>19 December 2022</u>

Summary of Same Source Review:

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

Summary of Injury Review:

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

Summary of GW-SW Transfer Similarity Review:

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

None of the Above

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

OREGON WATER RESOURCES DEPARTMENT	Oregon Water Resou 725 Summer Street NI Salem, Oregon 97301 (503) 986-0900 www.wrd.state.or.us	E, Suite A 1271	Ground Wat Water Rig Permit An GR Modifi Other	ter Review Form: ht Transfer nendment ication
Application: T -	<u>13973</u>		Арр	licant Name: Daniel Roth
Proposed Chang	es: 🛛 POA USE	□ APOA ⊠ POU	$\Box SW \rightarrow GW$ $\Box OTHER$	\Box RA
Reviewer(s): <u>(</u>	Gerald H. Grondin	<u>n</u> Date Reviewed	Date of Re by GW Mgr. and F	eview: <u>19 December 2022</u> Returned to WRSD: - jti 2/16/23
The information transfer may be	provided in the ap approved because:	oplication is inst	ufficient to evaluate	e whether the proposed
The water wa	well reports provide the transfer.	ed with the appl	lication do not corre	espond to the water rights
□ The applica details suff	tion does not inclu cient to establish t	de water well r he ground wate	eports or a descripti r body developed o	ion of the well construction r proposed to be developed.
Other	_			

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

This transfer application relates to three water right certificates 53450, 53452, and 84982. The explanation statement says the applicant seeks "Transfer of water from the outer edges of 3 existing pivots to fill in the remaining area of an existing partial pivot not currently covered. Also, change the point of appropriation on one of the pivots to an existing well that is located at the center of the pivot, replacing the approved well which is located approximately ¹/₂ mile away."

The transfer application proposes moving 18.30 authorized POU acres on the outer edges of three center pivots (two are in T25S/R18E-sections 3 in the SW qtr & SE qtr; the third is in T25S/R18E-sections 7 & 18) moved to a center pivot located in T25S/R18E-section 3 NE qtr.

The transfer application further proposes redistributing groundwater pumping (1.71 cfs, 766.38 gpm) related to 136.60 authorized POU acres from three authorized POA wells (owner wells 2, 7, & 8: LAKE 238, LAKE 223, & LAKE 225, 0.11 cfs, 0.05 cfs, & 1.54 cfs respectively) to one authorized POA well (owner well 8, LAKE 225, 0.17 cfs) and to one proposed POA well (owner well 9, LAKE 51691, 1.54 cfs).

The authorized and proposed POA wells are shown in the attached maps.

Essentially yes, the "same aquifer" (source) given the same groundwater system will likely be tapped despite the authorized and proposed POA wells are constructed to varying depths and tap varying geologic units (see attached well logs). Long term groundwater level data indicates groundwater levels at wells in the vicinity of the currently authorized and proposed POA locations have similar elevations, seasonally fluctuate similarly, and show the same long-term trends (see attached hydrograph) despite being completed at varying depths and different geologic units.

Additionally, groundwater in the Fort Rock--Valley-Christmas Valley area (Fort Rock Classified Area) is identified as a single groundwater system. Groundwater is found in both a shallower predominantly basin-fill sediment unit and a deeper predominantly volcanic rocks and sediments unit below. The two units are hydraulically connected. Both units can yield groundwater readily with some exceptions.

Miller (1984 and 1986) describes the groundwater source as the main groundwater reservoir. That reservoir includes groundwater in different geologic units. The reservoir has three characteristics. First, the "natural" groundwater level changes less than 1.5 feet annually, indicating the system is highly modulated. Second, the 1980s potentiometric surface was approximately 4292 feet elevation amsl basin-wide with Silver Lake an exception. Third, the reservoir consists of numerous water producing zones in several formations, all having an essentially common potentiometric level, and all being very transmissive in general. 3. a) Is there more than one source developed under the right (e.g., basalt and alluvium)? □ Yes ⊠ No_____

Essentially no. Single hydraulically connected groundwater system. See discussion in part 2 above.

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

No estimate made and no limitation recommended. Single groundwater system. See item 2 and 3a above.

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**?

 \boxtimes Yes \square No Comments: _____

The proposed POA well change and pumping redistribution will move the net groundwater pumping change further away from some POA wells (seasonal interference at those wells should decrease, see attached calculation for well LAKE 221) and closer to other POA wells (seasonal interference at those wells should increase, see attached calculation for an unidentified water right well in T25S/R18E-sec 10, NE qtr).

The proposed POA well change and pumping redistribution will move net groundwater pumping change closer to an unidentified groundwater right POA within T25S/R18E-sec 10, NE qtr (see attached). The net increase in seasonal drawdown is calculated to be less than 1.0 feet. That POA well should be able to accommodate the seasonal drawdown change. The net increase in seasonal drawdown at other wells further away should be less.

The long-term impact on the groundwater system should be the same. That impact is to continue contributing to the ongoing annual Fort Rock Classified Area groundwater level decline (see the attached hydrograph...it shows an annual decline rate from 0.30 to 0.50 feet per year).

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

 \Box Yes \boxtimes No If yes, explain:

See discussion in part 4a above.

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

🛛 Yes	🛛 No	Comments:	
🛛 Yes	🛛 No	Comments:	

Yes for Silver Lake and No for Paulina Marsh.

The seasonal groundwater level drawdown at the closest Silver Lake shoreline is calculated to increase less than 0.002 feet. The resultant increase in interference at the lake is calculated to be less than 1200 ft³/day (less than 0.02 cfs, 6.5 gpm). See attached calculation for a full lake.

The seasonal groundwater level drawdown at the closest Paulina Marsh boundary is calculated to decrease. The interference at the marsh should decrease.

The long-term interference at Paulina Marsh and Silver Lake should be the same.

b) If yes, at its maximum allowed rate of use, what is the expected change in degree of interference with any surface water sources resulting from the proposed change?												
Stream: <u>Silver Lake</u> \square Minimal \square Significant												
Stream: Silver Lake \square Minimal \square Significant Stream: Paulina Marsh \square Minimal \square Significant												
Stream: Paulina Marsh	🛛 Minimal	□ Significant										
Provide context for minimal/significan	t impact:											
See comment in part 5a above.												
For SW-GW transfers, will the propose	ed change in po	int of diversion affect the surface										
water source similarly (as per OAR 690-	380-2130) to the	e authorized point of diversion										
specified in the water use subject to tra	insfer?	-										
☐ Yes ⊠ No Comments:	\Box Yes \blacksquare No Comments:											

Not Applicable. No SW-GW transfer.

6.

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

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

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

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

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

Condition 7T (modified) for all "To" POA wells: "Prior to use, all POA wells shall be configured to allow a strictly clean water (no oil) static water level measurements with an electric-tape. That can include measurement access via an unobstructed vertical discharge pipe that allows the groundwater level to fluctuate freely within the discharge pipe (no valves, etc.). Otherwise, a dedicated measuring tube must be installed prior to use. The tube must be unobstructed, have a diameter of ³/₄ inch (0.75 inch) or greater, and pursuant to figure 200-5 in OAR 690-200."

8. Any additional comments:

No additional comments.

References:

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

Groundwater Transfer Application T-13973 Daniel Roth



Green = Proposed Well Yellow = Authorized Wells Red = Groundwater PODs or Other Wells Blue = Surface Water PODs

Groundwater Transfer Application T-13973 Daniel Roth



Green = Proposed Well Yellow = Authorized Wells Red = Groundwater PODs or Other Wells Blue = Surface Water PODs

Miles

T-13973 (Daniel Roth) Proposed Change Christmas Valley (Fort Rock Groundwater Limited Area)

Certificate	From Acres	From CFS	From POD	0/POA Well	To Acres	To CFS	To PC	DD/POA Well	Change Calculation Comment
			Owner	OWRD			Owner	OWRD	change calculation comment
	0.00	0.0000	Well 1	LAKE 203	0.00	0.0000	Well 1	LAKE 203	
	0.00	0.0000	Well 2	LAKE 238	0.00	0.0000	Well 2	LAKE 238	
	0.00	0.0000	Well 3	LAKE 237	0.00	0.0000	Well 3	LAKE 237	
53450	0.00	0.0000	Well 5	LAKE 4372	0.00	0.0000	Well 5	LAKE 4372	
	4.10	0.0513	Well 7	LAKE 223	0.00	0.0000	Well 7	LAKE 223	
	0.00	0.0000	Well 8	LAKE 225	4.10	0.0513	Well 8	LAKE 225	
	0.00	0.0000	Well 9	LAKE 51691	0.00	0.0000	Well 9	LAKE 51691	
	4.10	0.0513			4.10	0.0513			
	0.00	0.0000	Well 1	LAKE 203	0.00	0.0000	Well 1	LAKE 203	
	0.00	0.0000	Well 2	LAKE 238	0.00	0.0000	Well 2	LAKE 238	
	0.00	0.0000	Well 3	LAKE 237	0.00	0.0000	Well 3	LAKE 237	
53452	0.00	0.0000	Well 5	LAKE 4372	0.00	0.0000	Well 5	LAKE 4372	
	0.00	0.0000	Well 7	LAKE 223	0.00	0.0000	Well 7	LAKE 223	
	123.40	1.5425	Well 8	LAKE 225	0.00	0.0000	Well 8	LAKE 225	Net Decrease
	0.00	0.0000	Well 9	LAKE 51691	123.40	1.5425	Well 9	LAKE 51691	Net Increase
	123.40	1.5425		-	123.40	1.5425			
	0.00	0.0000	Well 1	LAKE 203	0.00	0.0000	Well 1	LAKE 203	No Change
	9.10	0.1138	Well 2	LAKE 238	0.00	0.0000	Well 2	LAKE 238	Net Decrease
	0.00	0.0000	Well 3	LAKE 237	0.00	0.0000	Well 3	LAKE 237	No Change
84982	0.00	0.0000	Well 5	LAKE 4372	0.00	0.0000	Well 5	LAKE 4372	No Change
	0.00	0.0000	Well 7	LAKE 223	0.00	0.0000	Well 7	LAKE 223	
	0.00	0.0000	Well 8	LAKE 225	9.10	0.1138	Well 8	LAKE 225	Net Increase
	0.00	0.0000	Well 9	LAKE 51691	0.00	0.0000	Well 9	LAKE 51691	
	9.10	0.1138			9.10	0.1138			
Overall Totals	136.60	1.7075			136.60	1.7075			
	0.00	0.0000	Well 1	LAKE 203	0.00	0.0000	Well 1	LAKE 203	No Change
	9.10	0.1138	Well 2	LAKE 238	0.00	0.0000	Well 2	LAKE 238	Net Decrease
	0.00	0.0000	Well 3	LAKE 237	0.00	0.0000	Well 3	LAKE 237	No Change
Totals per Well	0.00	0.0000	Well 5	LAKE 4372	0.00	0.0000	Well 5	LAKE 4372	No Change
	4.10	0.0513	Well 7	LAKE 223	0.00	0.0000	Well 7	LAKE 223	Net Decrease
	123.40	1.5425	Well 8	LAKE 225	13.20	0.1650	Well 8	LAKE 225	Net Decrease
	0.00	0.0000	Well 9	LAKE 51691	123.40	1.5425	Well 9	LAKE 51691	Net Increase
	136.60	1.7075			136.60	1.7075			
Note: CFS in Table	= (Total Acres) / (8	0 Acre/CFS)							
Note: this review i	dentified LAKE 223	(owner well #7) as	the original constru	uction for LAKE 224	(deepening) and LA	KE 4578 (subsequer	nt deepening)		
All a All and the second secon	tale the base also a second a			-: f:	2				

Note: the yellow highlights the proposed transfer for each certificate as specified in the T-13973 application

Observation Well Data





Drawdown Calculations Using Theis Equation Drawdown at Well LAKE 221 (T25S/R18E-sec 02, NE qtr)

Theis Equation:	s = [Q/(4*T*pi)][W(u = (r*r*S)/(4*T*t) W(u) = (-In u)-(0.57	u)] 772157)+(u/1*1!))-(u*u/2*2!)+(u*u*u/	3*3!)-(u*u*u*u/4*4!)	I+								
	s = drawdown (L) T = transmissivity S = storage coeffic pi = 3.141592654	(L*L/T) ient (dimensionle	ess)		r = radial dis t = time (T) u = dimensi W(u) = well	stance (L) onless function							
Transmissivity	Transmissivity	Storago	Pumping Pate	Pumping Pato	Timo	Distanco	ni		W(u)	Drawdown	Drawdown	Woll	Commonts
T	T	Coefficient	Q	Q	t	r	рі	u	w(u)	S	Change s	Weil	Comments
(gpd/ft)	(ft2/day)	S	(gal/min)	(ft3/sec)	(days)	(feet)				(feet)	(feet)		
								Note : W(u)) calculation	/alid when u <	< 7.1		
Note:	yellow grid areas	are where value	es are calculated					7.0000	1.1545E-04				W(u) calculation test
"From" POA wells	s to Water Right W	ell closest to Pr	roposed "To" Well	(Transmissivity f	rom Morgar	(1988) and M	cFarland an	d Rvals (199	1)): Used S =	0.001			
	_			,	j.			, , , , , , , , , ,	//				
112,207.80	15,000.00	0.00100	0.00	0.00	30.00	23,645.00	3.14	0.3106	0.8801	0.0000		LAKE 203	Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	51.05	0.11	30.00	20,665.00	3.14	0.2372	1.0853	0.0566		LAKE 238	Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	0.00	0.00	30.00	21,055.00	3.14	0.2463	1.0560	0.0000		LAKE 237	Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	0.00	0.00	30.00	28,555.00	3.14	0.4530	0.0211	0.0000		LAKE 4372	Continuous Pumping at Full Rate
112,207.00	15,000.00	0.00100	23.00	0.05	30.00	3,995.00	3.14	0.0200	3.3003	0.0700		LAKE 225	Continuous Pumping at Full Rate
112,207.00	15,000.00	0.00100	0.00	0.00	30.00	3 750 00	3 14	0.0078	4.9002	0.0000		LAKE 51691	Continuous Pumping at Full Rate
112,201.00	10,000.00	0.00100	766.38	1.71	00.00	0,700.00	0.14		1.2020	3.6622		Er alte o too t	
										0.0012			
"To" POA wells to	Water Right Well	closest to Prop	osed "To" Well (T	ransmissivity from	n Morgan (1	988) and McFa	arland and F	yals (1991))	: Used S = 0.	001			
112,207.80	15,000.00	0.00100	0.00	0.00	30.00	23,645.00	3.14	0.3106	0.8801	0.0000		LAKE 203	Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	0.00	0.00	30.00	20,665.00	3.14	0.2372	1.0853	0.0000		LAKE 238	Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	0.00	0.00	30.00	21,055.00	3.14	0.2463	1.0560	0.0000		LAKE 237	Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	0.00	0.00	30.00	28,555.00	3.14	0.4530	0.6211	0.0000		LAKE 4372	Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	0.00	0.00	30.00	5,995.00	3.14	0.0200	3.3003	0.0000		LAKE 223	Continuous Pumping at Full Rate
112,207.00	15,000.00	0.00100	602.22	0.10	30.00	2,030.00	3.14	0.0038	4.9002	2 0270		LAKE 51601	Continuous Pumping at Full Rate
112,207.00	10,000.00	0.00100	766.38	1.71	30.00	3,730.00	5.14	0.0070	4.2020	3.4052	-0.2570	LARE 51031	
"From" POA wells	s to Water Right W	ell closest to Pr	roposed "To" Well	(Transmissivity f	rom Morgar	n (1988) and M	cFarland an	d Ryals (199	1)): Used S =	0.001			
													<u> </u>
112,207.80	15,000.00	0.00100	0.00	0.00	30.00	23,645.00	3.14	0.3106	0.8801	0.0000		LAKE 203	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	25.21	0.06	30.00	20,665.00	3.14	0.2372	1.0853	0.0279		LAKE 238	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	0.00	0.00	30.00	21,055.00	3.14	0.2463	1.0560	0.0000		LAKE 237	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	0.00	0.00	30.00	28,555.00	3.14	0.4530	0.6211	0.0000		LAKE 4372	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	241.02	0.03	30.00	5,995.00	3.14	0.0200	3.3003	0.0389		LAKE 223	Continuous Pro-Rated Pumping
112,207.00	15,000.00	0.00100	0.00	0.70	30.00	3 750 00	3.14	0.0078	4.2826	0.0000		LAKE 51691	Continuous Pro-Rated Pumping
112,207.00	10,000.00	0.00100	378.50	0.84	00.00	0,700.00	0.14	0.0070	4.2020	1.8087		EARE 01001	Continuous rito-reated r amping
"To" POA wells to	Water Right Well	closest to Prop	osed "To" Well (T	ransmissivity from	n Morgan (1	988) and McFa	arland and F	Ryals (1991)):	: Used S = 0.	001			
112,207.80	15,000.00	0.00100	0.00	0.00	30.00	23,645.00	3.14	0.3106	0.8801	0.0000		LAKE 203	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	0.00	0.00	30.00	20,665.00	3.14	0.2372	1.0853	0.0000		LAKE 238	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	0.00	0.00	30.00	21,055.00	3.14	0.2463	1.0560	0.0000		LAKE 237	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	0.00	0.00	30.00	28,555.00	3.14	0.4530	0.0211	0.0000		LAKE 202	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	0.00	0.00	30.00	2,995.00	3.14	0.0200	3.3003	0.0000		LAKE 223	Continuous Pro-Raled Pumping
112,207.00	15,000.00	0.00100	341 92	0.08	30.00	3 750 00	3 14	0.0078	4.3002	1 4954		LAKE 51601	Continuous Pro-Rated Pumping
112,201.00	10,000.00	0.00100	378 50	0.84	00.00	0,100.00	0.17	0.0070	1.2020	1 6817	-0 1269	2,112 01001	

Drawdown Calculations Using Theis Equation Drawdown at Well LAKE 221 (T25S/R18E-sec 02, NE qtr)

Theis Equation:	s = [Q/(4*T*pi)][W(u = (r*r*S)/(4*T*t) W(u) = (-In u)-(0.57	u)] 772157)+(u/1*1!))-(u*u/2*2!)+(u*u*u/	3*3!)-(u*u*u*u/4*4!))+								
	s = drawdown (L)				r = radial dis	tance (L)							
	T = transmissivity	(L*L/T)			t = time (T)	()							
	S = storage coeffic	ient (dimensionl	ess)		u = dimensio	onless							
	pi = 3.141592654				W(u) = well	function							
	·	-						1					-
Transmissivity	Transmissivity	Storage	Pumping Rate	Pumping Rate	Time	Distance	рі	u	W(u)	Drawdown	Drawdown	Well	Comments
T (and 1994)	T (ft2/dex)	Coefficient	Q (mal/min)	Q (#2/aaa)	t (dava)	r (fact)				S (fa at)	Change s		
(gpα/π)	(ft2/day)	5	(gai/min)	(ft3/sec)	(days)	(feet)				(feet)	(feet)		
								Noto : W(u)	calculation	valid whon u c	71		
-								Note. W(u)	calculation		. 7.1		
Note	vellow grid areas	are where valu	es are calculated					7 0000	1 1545E-04				W(u) calculation test
Note	Johow grid droub							1.0000	1.10402 04				M(u) subulation toot
"From" POA wells	s to Water Right W	ell closest to P	roposed "To" Well	I (Transmissivity f	rom Morgan	(1988) and Mc	Farland ar	d Ryals (199	1)): Used S =	0.001			
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112,207.80	15,000.00	0.00100	0.00	0.00	245.00	23,645.00	3.14	0.0380	2.7298	0.0000		LAKE 203	Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	51.05	0.11	245.00	20,665.00	3.14	0.0291	2.9903	0.1559		LAKE 238	Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	0.00	0.00	245.00	21,055.00	3.14	0.0302	2.9540	0.0000		LAKE 237	Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	0.00	0.00	245.00	28,555.00	3.14	0.0555	2.3694	0.0000		LAKE 4372	Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	23.00	0.05	245.00	5,995.00	3.14	0.0024	5.4390	0.1278		LAKE 223	Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	692.32	1.54	245.00	2,630.00	3.14	0.0005	7.0849	5.0092		LAKE 225	Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	0.00	0.00	245.00	3,750.00	3.14	0.0010	6.3758	0.0000		LAKE 51691	Continuous Pumping at Full Rate
			766.38	1.71						5.2929			
								D					
TO PUA wells to	o water Right well	closest to Prop	bosed to well(I	ransmissivity from	n Morgan (1	988) and MCFa	riand and	Ryais (1991)):	Usea 5 = 0.	001			
112 207 90	15 000 00	0.00100	0.00	0.00	245.00	22 645 00	2 14	0.0290	2 7209	0.0000		1 AKE 202	Continuous Rumping at Full Pata
112,207.80	15,000.00	0.00100	0.00	0.00	245.00	20,665,00	3.14	0.0380	2.7290	0.0000			Continuous Pumping at Full Rate
112,207.00	15,000.00	0.00100	0.00	0.00	245.00	21,055,00	3 14	0.0291	2,9903	0.0000		LAKE 230	Continuous Pumping at Full Rate
112,207.80	15,000,00	0.00100	0.00	0.00	245.00	28,555,00	3 14	0.0555	2 3694	0.0000		LAKE 4372	Continuous Pumping at Full Rate
112,207.80	15.000.00	0.00100	0.00	0.00	245.00	5.995.00	3.14	0.0024	5.4390	0.0000		LAKE 223	Continuous Pumping at Full Rate
112.207.80	15.000.00	0.00100	74.06	0.16	245.00	2.630.00	3.14	0.0005	7.0849	0.5358		LAKE 225	Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	692.32	1.54	245.00	3,750.00	3.14	0.0010	6.3758	4.5079		LAKE 51691	Continuous Pumping at Full Rate
,			766.38	1.71						5.0437	-0.2492		10
"From" POA wells	s to Water Right W	ell closest to P	roposed "To" Well	I (Transmissivity f	rom Morgan	(1988) and Mc	Farland ar	nd Ryals (199	1)): Used S =	0.001			
112,207.80	15,000.00	0.00100	0.00	0.00	245.00	23,645.00	3.14	0.0380	2.7298	0.0000		LAKE 203	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	25.21	0.06	245.00	20,665.00	3.14	0.0291	2.9903	0.0770		LAKE 238	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	0.00	0.00	245.00	21,055.00	3.14	0.0302	2.9540	0.0000		LAKE 237	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	0.00	0.00	245.00	28,555.00	3.14	0.0555	2.3694	0.0000		LAKE 4372	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	11.36	0.03	245.00	5,995.00	3.14	0.0024	5.4390	0.0631		LAKE 223	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	341.92	0.76	245.00	2,630.00	3.14	0.0005	7.0849	2.4739			Continuous Pro-Rated Pumping
112,207.00	15,000.00	0.00100	378 50	0.00	245.00	3,750.00	5.14	0.0010	0.3756	2 6141		LAKE 51091	Continuous FIO-Nated Fullping
			378.50	0.04						2.0141			
"To" POA wells to	Water Right Well	closest to Pror	osed "To" Well (T	ransmissivity from	n Morgan (1	988) and McFa	rland and	Rvals (1991)):	Used S = 0.	001			
112.207.80	15.000.00	0.00100	0.00	0.00	245.00	23.645.00	3.14	0.0380	2,7298	0.0000		LAKE 203	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	0.00	0.00	245.00	20,665.00	3.14	0.0291	2.9903	0.0000		LAKE 238	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	0.00	0.00	245.00	21,055.00	3.14	0.0302	2.9540	0.0000		LAKE 237	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	0.00	0.00	245.00	28,555.00	3.14	0.0555	2.3694	0.000		LAKE 4372	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	0.00	0.00	245.00	5,995.00	3.14	0.0024	5.4390	0.0000		LAKE 223	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	36.58	0.08	245.00	2,630.00	3.14	0.0005	7.0849	0.2646		LAKE 225	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	341.92	0.76	245.00	3,750.00	3.14	0.0010	6.3758	2.2264		LAKE 51691	Continuous Pro-Rated Pumping
1	1	1	378 50	0.84		1			1	2 4910	-0 1231	1	

Drawdown Calculations Using Theis Equation Drawdown at unidentified Well in T25S/R18E-sec 10, NE qtr

Theis Equation:	s = [Q/(4*T*pi)][W(u)]											
	$u = (r^{*}r^{*}S)/(4^{*}T^{*}t)$												
	$W(u) = (-\ln u) - (0.57)$	72157)+(u/1*1!))-(u*u/2*2!)+(u*u*u/	3*3!)-(u*u*u*u/4*4!)	+								
	() ()(, ()		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,									
	s = drawdown (L)				r = radial dis	stance (L)							
	T = transmissivity (L*L/T)			t = time (T)								
	S = storage coeffic	ient (dimensionl	ess)		u = dimensi	onless							
	pi = 3.141592654				W(u) = well	function							
Transmissivity	Transmissivity	Storage	Pumping Rate	Pumping Rate	Time	Distance	pi	u	W(u)	Drawdown	Drawdown	Well	Comments
T	Т	Coefficient	Q	Q	t	r				S	Change s		
(gpd/ft)	(ft2/day)	S	(gal/min)	(ft3/sec)	(days)	(feet)				(feet)	(feet)		
								Note : W(u) calculation v	valid when u <	7.1		
Nete								7 0000	4 45 455 04				M(v) colouistion to st
Note	yellow grid areas	are where valu	es are calculated					7.0000	1.1545E-04				W(u) calculation test
"From" POA woll	s to Wator Pight W	all closest to P	roposod "To" Wol	l (Tranemieeivity f	rom Morgar	(1988) and M	cEarland an	d Pyale (199	1)): Llead S =	0.001			<u> </u>
FIOII FOA well	S to water Right w	en ciosest to Fi	loposed to wei	i (Transmissivity ii	ioni worgai	i (1900) allu M	CFananu an	iu Ryais (199	1)). Useu 3 -	0.001			
112 207 80	15 000 00	0.00100	0.00	0.00	30.00	22 130 00	3 14	0 2721	0 9791	0.000		1 AKE 203	Continuous Pumping at Full Rate
112,207.80	15,000,00	0.00100	51.05	0.00	30.00	17 090 00	3 14	0.1623	1 3972	0.0729		LAKE 238	Continuous Pumping at Full Rate
112,207.80	15 000 00	0.00100	0.00	0.00	30.00	18 490 00	3 14	0 1899	1 2651	0.0000		LAKE 237	Continuous Pumping at Full Rate
112,207.80	15.000.00	0.00100	0.00	0.00	30.00	27.540.00	3.14	0.4214	0.6679	0.0000		LAKE 4372	Continuous Pumping at Full Rate
112.207.80	15.000.00	0.00100	23.00	0.05	30.00	5.060.00	3.14	0.0142	3.6898	0.0867		LAKE 223	Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	692.32	1.54	30.00	6,380.00	3.14	0.0226	3.2345	2.2869		LAKE 225	Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	0.00	0.00	30.00	3,900.00	3.14	0.0085	4.2048	0.0000		LAKE 51691	Continuous Pumping at Full Rate
			766.38	1.71						2.4464			
"To" POA wells to	Water Right Well	closest to Prop	osed "To" Well (T	ransmissivity from	n Morgan (1	988) and McFa	arland and F	Ryals (1991))	: Used S = 0.	001			
112,207.80	15,000.00	0.00100	0.00	0.00	30.00	22,130.00	3.14	0.2721	0.9791	0.0000		LAKE 203	Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	0.00	0.00	30.00	17,090.00	3.14	0.1623	1.3972	0.0000		LAKE 238	Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	0.00	0.00	30.00	18,490.00	3.14	0.1899	1.2651	0.0000		LAKE 237	Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	0.00	0.00	30.00	27,540.00	3.14	0.4214	0.6679	0.0000		LAKE 4372	Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	0.00	0.00	30.00	5,060.00	3.14	0.0142	3.6898	0.0000		LAKE 223	Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	74.06	0.16	30.00	6,380.00	3.14	0.0226	3.2345	0.2446		LAKE 225	Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	092.32	1.54	30.00	3,900.00	3.14	0.0085	4.2048	2.9729	0 7711	LAKE 51091	Continuous Pumping at Full Rate
			700.30	1.71						3.2175	0.7711		<u> </u>
"From" POA well	s to Water Right W	all closest to P	ronosed "To" Wel	l (Transmissivity fi	rom Morgar	(1988) and M	cFarland an	d Ryals (199	1)): Used S =	0.001			
					ioni morgai	(1500) and M			1)). USEU U =	0.001			
112,207.80	15,000.00	0.00100	0.00	0.00	30.00	22,130.00	3.14	0.2721	0.9791	0.0000		LAKE 203	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	25.21	0.06	30.00	17,090.00	3.14	0.1623	1.3972	0.0360		LAKE 238	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	0.00	0.00	30.00	18,490.00	3.14	0.1899	1.2651	0.0000		LAKE 237	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	0.00	0.00	30.00	27,540.00	3.14	0.4214	0.6679	0.0000		LAKE 4372	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	11.36	0.03	30.00	5,060.00	3.14	0.0142	3.6898	0.0428		LAKE 223	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	341.92	0.76	30.00	6,380.00	3.14	0.0226	3.2345	1.1294		LAKE 225	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	0.00	0.00	30.00	3,900.00	3.14	0.0085	4.2048	0.0000		LAKE 51691	Continuous Pro-Rated Pumping
			378.50	0.84						1.2082			
"To" POA wells to	Water Right Well	closest to Prop	osed "To" Well (T	ransmissivity fron	n Morgan (1	988) and McFa	arland and F	Ryals (1991))	: Used S = 0.	001			
112,207.80	15,000.00	0.00100	0.00	0.00	30.00	22,130.00	3.14	0.2721	0.9791	0.0000		LAKE 203	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	0.00	0.00	30.00	17,090.00	3.14	0.1623	1.3972	0.0000		LAKE 238	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	0.00	0.00	30.00	18,490.00	3.14	0.1899	1.2651	0.0000		LAKE 237	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	0.00	0.00	30.00	27,540.00	3.14	0.4214	0.6679	0.0000		LAKE 43/2	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	0.00	0.00	30.00	5,060.00	3.14	0.0142	3.6898	0.0000		LAKE 223	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	3/1 02	0.08	30.00	3,360.00	3.14	0.0220	3.2345	0.1208		LANE 220	Continuous Pro-Rated Pumping
112,201.00	13,000.00	0.00100	378 50	0.70	30.00	3,300.00	J.14	0.0000	4.2040	1.4003	0.3809	LAILE 91091	Continuous r 10-Mateu r umpling

Drawdown Calculations Using Theis Equation Drawdown at unidentified Well in T25S/R18E-sec 10, NE qtr

Theis Equation:	s = [Q/(4*T*pi)][Wi u = (r*r*S)/(4*T*t) W(u) = (-In u)-(0.5	(u)] 772157)+(u/1*1!))-(u*u/2*2!)+(u*u*u/	3*3!)-(u*u*u*u/4*4!)+								
	s = drawdown (L)				r = radial dis	stance (L)							
	T = transmissivity	(L*L/T)			t = time (T)								
	S = storage coeffic	cient (dimensionl	ess)		u = dimensio	onless							
	pi = 3.141592654				W(u) = well	function							
T	-	01	Dura Data	Den la Dete		Distance				D	Deside	M/- 11	0
	Transmissivity	Storage	Pumping Rate	Pumping Rate	i ime	Distance	рі	u	vv(u)	Drawdown	Change	vveii	Comments
(and/ft)	(ft2/day)	S	(gal/min)	(ft3/sec)	(days)	(feet)				s (feet)	(feet)		
(gpu/it)	(Itz/ddy)	0	(gai/min)	(110/300)	(days)	(1001)				(1001)	(1001)		
								Note : W(u) calculation v	valid when u <	< 7.1		
									<i>.</i>				
Note	yellow grid areas	are where valu	es are calculated					7.0000	1.1545E-04				W(u) calculation test
"From" POA wells	s to Water Right W	ell closest to P	roposed "To" Well	(Transmissivity f	rom Morgan	(1988) and M	IcFarland an	nd Ryals (19	91)): Used S =	0.001			
112,207.80	15,000.00	0.00100	0.00	0.00	245.00	22,130.00	3.14	0.0333	2.8576	0.0000		LAKE 203	Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	51.05	0.11	245.00	17,090.00	3.14	0.0199	3.3612	0.1752			Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	0.00	0.00	245.00	18,490.00	3.14	0.0233	3.2070	0.0000		LAKE 237	Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	23.00	0.00	245.00	5 060 00	3.14	0.0516	2.4300	0.0000		LAKE 223	Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	692.32	1.54	245.00	6 380 00	3.14	0.0017	5 3148	3 7577		LAKE 225	Continuous Pumping at Full Rate
112,207.80	15,000,00	0.00100	0.00	0.00	245.00	3 900 00	3 14	0.0010	6 2975	0.0000		LAKE 51691	Continuous Pumping at Full Rate
112,201100		0.00100	766.38	1.71	210.00	0,000.00	0.11		0.2010	4.0687		2	Commacae Famping at Familia
"To" POA wells to	o Water Right Well	closest to Prop	osed "To" Well (T	ransmissivity from	n Morgan (1	988) and McF	arland and I	Ryals (1991))): Used S = 0.0	001			
				-				ſ					
112,207.80	15,000.00	0.00100	0.00	0.00	245.00	22,130.00	3.14	0.0333	2.8576	0.0000		LAKE 203	Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	0.00	0.00	245.00	17,090.00	3.14	0.0199	3.3612	0.0000		LAKE 238	Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	0.00	0.00	245.00	18,490.00	3.14	0.0233	3.2070	0.0000		LAKE 237	Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	0.00	0.00	245.00	27,540.00	3.14	0.0516	2.4380	0.0000		LAKE 4372	Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	0.00	0.00	245.00	5,060.00	3.14	0.0017	5.7774	0.0000		LAKE 223	Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	74.06	0.16	245.00	6,380.00	3.14	0.0028	5.3148	0.4020		LAKE 225	Continuous Pumping at Full Rate
112,207.00	15,000.00	0.00100	766 38	1.54	245.00	3,900.00	5.14	0.0010	0.2975	4.4525	0 7858	LAKE 51091	Continuous Pumping at Full Rate
			700.30	1.71						4.0343	0.7050		
"From" POA well	s to Water Right W	ell closest to P	roposed "To" Well	(Transmissivity f	rom Morgan	(1988) and M	IcFarland an	nd Rvals (19	91)): Used S =	0.001			
	y			, · · · · · · · · · · · · · · · · · · ·					//				
112,207.80	15,000.00	0.00100	0.00	0.00	245.00	22,130.00	3.14	0.0333	2.8576	0.0000		LAKE 203	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	25.21	0.06	245.00	17,090.00	3.14	0.0199	3.3612	0.0866		LAKE 238	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	0.00	0.00	245.00	18,490.00	3.14	0.0233	3.2070	0.0000		LAKE 237	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	0.00	0.00	245.00	27,540.00	3.14	0.0516	2.4380	0.0000		LAKE 4372	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	11.36	0.03	245.00	5,060.00	3.14	0.0017	5.7774	0.0670		LAKE 223	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	341.92	0.76	245.00	6,380.00	3.14	0.0028	5.3148	1.8559		LAKE 225	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	0.00	0.00	245.00	3,900.00	3.14	0.0010	6.2975	0.0000		LAKE 51691	Continuous Pro-Rated Pumping
			378.50	0.84						2.0094			
"To" POA wells to	Water Right Well	closest to Pron	osed "To" Well (T	ransmissivity from	n Morgan (1	988) and McF	arland and I	Ryale (1991))): Used S = 0 (001			
		0.000001101100			li morgan (1				,,				
112.207.80	15.000.00	0.00100	0.00	0.00	245.00	22.130.00	3.14	0.0333	2.8576	0.0000		LAKE 203	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	0.00	0.00	245.00	17,090.00	3.14	0.0199	3.3612	0.0000		LAKE 238	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	0.00	0.00	245.00	18,490.00	3.14	0.0233	3.2070	0.0000		LAKE 237	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	0.00	0.00	245.00	27,540.00	3.14	0.0516	2.4380	0.0000		LAKE 4372	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	0.00	0.00	245.00	5,060.00	3.14	0.0017	5.7774	0.0000		LAKE 223	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	36.58	0.08	245.00	6,380.00	3.14	0.0028	5.3148	0.1985		LAKE 225	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	341.92	0.76	245.00	3,900.00	3.14	0.0010	6.2975	2.1990		LAKE 51691	Continuous Pro-Rated Pumping
1	1	1	378.50	0.84	1	1	1	1	1	2.3975	0.3881	1	

Drawdown Calcul	lations Using Thei	s Equation											
Theis Equation:	s = [Q/(4*T*pi)][Wiu = (r*r*S)/(4*T*t)W(u) = (-ln u)-(0.5)	(u)] 772157)+(u/1*1!))-(u*u/2*2!)+(u*u*u/	3*3!)-(u*u*u*u/4*4!')+								
	s = drawdown (L) T = transmissivity S = storage coeffic pi = 3.141592654	(L*L/T) cient (dimensionl	ess)		r = radial dis t = time (T) u = dimensio W(u) = well	stance (L) onless function							
		-											-
Transmissivity	Transmissivity	Storage	Pumping Rate	Pumping Rate	Time	Distance	рі	u	W(u)	Drawdown	Drawdown	Well	Comments
(apd/ft)	T (ft2/dav)	Coefficient	Q (gal/min)	Q (ft3/sec)	t (davs)	r (feet)				s (feet)	Change s (feet)		
(gpuilt)	(nz/ddy)	Ŭ	(gui/iiii)	(110/000)	(uujo)	(1001)				(1001)	(1001)		
								Note : W(u) calculation v	alid when u <	7.1		
Nata								7 0000	4 45455 04				
Note:	: yellow grid areas	are where valu	es are calculated					7.0000	1.1545E-04				w(u) calculation test
"From" POA wells	s to Silver Lake (Tr	ansmissivity fro	om Morgan (1988)	and McFarland a	nd Ryals (19	91)): Used S	= 0.001						
112,207.80	15,000.00	0.00100	0.00	0.00	30.00	131,705.00	3.14	9.6368	-0.3011	0.0000		LAKE 203	Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	51.05	0.11	30.00	128,665.00	3.14	9.1970	-0.1145	-0.0060		LAKE 238	Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	0.00	0.00	30.00	130,430.00	3.14	9.4511	-0.2012	0.0000		LAKE 237	Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	0.00	0.00	30.00	130,170.00	3.14	9.4135	-0.1853	0.0000		LAKE 4372	Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	23.00	0.05	30.00	141,185.00	3.14	11.0740	-5.3389	-0.1254		LAKE 223	Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	692.32	1.54	30.00	145,010.00	3.14	11.6822	-16.1146	-11.3935		LAKE 225	Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	0.00	0.00	30.00	142,870.00	3.14	11.3399	-8.7180	0.0000		LAKE 51691	Continuous Pumping at Full Rate
			766.38	1.71						-11.5249			Calculation not valid, U >7.1
"To" DOA walls to	a Silver Lake (Tren	omioobyity from	Morgon (1099) on	d McEarland and	Byole (1001)		004						
TO POA wells to	b Sliver Lake (Tran	smissivity from	worgan (1988) an	a McFarland and	Ryais (1991)): Used 5 = 0	.001						
112 207 80	15 000 00	0.00100	0.00	0.00	30.00	131 705 00	3 14	9,6368	-0.3011	0.000		1 AKE 203	Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	0.00	0.00	30.00	128 665 00	3.14	9.0000	-0.3011	0.0000			Continuous Pumping at Full Rate
112,207.00	15,000.00	0.00100	0.00	0.00	30.00	130,430,00	3.14	9.1970	-0.1143	0.0000		LAKE 237	Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	0.00	0.00	30.00	130,430.00	3 14	9.4311	-0.2012	0.0000		LAKE 4372	Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	0.00	0.00	30.00	141 185 00	3 14	11 0740	-5 3380	0.0000		LAKE 223	Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	74.06	0.00	30.00	145,010,00	3 14	11.6822	-16 1146	-1 2188		LAKE 225	Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	692.32	1.54	30.00	142,870,00	3 14	11 3300	-8 7180	-6.1639		LAKE 51691	Continuous Pumping at Full Rate
112,207.00	10,000.00	0.00100	766.38	1.71	00.00	142,070.00	0.14	11.0000	-0.7100	-7.3826	4,1423	EARE 01001	Calculation not valid. U >7.1
													, -
"From" POA wells	s to Silver Lake (Tr	ansmissivity fro	om Morgan (1988)	and McFarland a	nd Ryals (19	91)): Used S	= 0.001						
112,207.80	15,000.00	0.00100	0.00	0.00	30.00	131,705.00	3.14	9.6368	-0.3011	0.0000		LAKE 203	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	25.21	0.06	30.00	128,665.00	3.14	9.1970	-0.1145	-0.0029		LAKE 238	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	0.00	0.00	30.00	130,430.00	3.14	9.4511	-0.2012	0.0000		LAKE 237	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	0.00	0.00	30.00	130,170.00	3.14	9.4135	-0.1853	0.0000		LAKE 4372	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	11.36	0.03	30.00	141,185.00	3.14	11.0740	-5.3389	-0.0619		LAKE 223	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	341.92	0.76	30.00	145,010.00	3.14	11.6822	-16.1146	-5.6270		LAKE 225	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	0.00	0.00	30.00	142,870.00	3.14	11.3399	-8.7180	0.0000		LAKE 51691	Continuous Pro-Rated Pumping
			378.50	0.84						-5.6919			Calculation not valid, U >7.1
"To" POA wells to	o Silver I ake (Tran	emissivity from	Morgan (1988) an	d McFarland and	Rvale (1991)): Used S = 0	001						
TO TOA Wella to		Simosivity nom	Morgan (1900) an			<i>j.</i> 0360 0 - 0	.001						
112,207 80	15,000.00	0.00100	0.00	0.00	30.00	131,705.00	3.14	9,6368	-0.3011	0.000	1	LAKE 203	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	0.00	0.00	30.00	128,665.00	3.14	9,1970	-0.1145	0.0000		LAKE 238	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	0.00	0.00	30.00	130,430.00	3,14	9,4511	-0,2012	0.0000		LAKE 237	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	0.00	0.00	30.00	130,170.00	3,14	9,4135	-0,1853	0.0000		LAKE 4372	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	0.00	0.00	30.00	141,185.00	3,14	11.0740	-5,3389	0.0000		LAKE 223	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	36.58	0.08	30.00	145.010.00	3,14	11.6822	-16,1146	-0.6019		LAKE 225	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	341.92	0.76	30.00	142,870.00	3.14	11.3399	-8.7180	-3.0442		LAKE 51691	Continuous Pro-Rated Pumping
,			378.50	0.84		,				-3.6461	2.0458		Calculation not valid, U >7.1

Drawdawa Calaul	ations Holme Their	- Fauration											
Drawdown Calcul	ations Using Thes	SEquation											
Theis Equation:	s = [Q/(4*T*pi)][W(u = (r*r*S)/(4*T*t) W(u) = (-In u)-(0.57	(u)] 772157)+(u/1*1!)	-(u*u/2*2!)+(u*u*u/	3*3!)-(u*u*u*u/4*4!)+								
	s = drawdown (L)				r = radial dis	stance (L)							
	T = transmissivity	(I *I /T)			t = time(T)								
		(L L/I))		t = une(1)								
	5 - Storage coerric		855)			function							
	pi – 3. 14 1592654				w(u) – weii	Tunction							
Transmissivity	Tranamiasivity	Ctorogo	Dumping Boto	Dumping Boto	Time	Distance			M (()	Droudour	Droudourn	Wall	Commonto
	Transmissivity	Storage	Pumping Rate	Pumping Rate	Time	Distance	рі	u	vv(u)	Drawdown	Drawdown	vveli	Comments
((((0)))	Coefficient	Q	Q	t	r				S	Change s		
(gpα/π)	(ft2/day)	5	(gai/min)	(ft3/sec)	(days)	(feet)				(feet)	(feet)		
) colouiotion :		. 7.4		
								Note: W(u) calculation v	alid when u <	\$ 7.1		
Nete									4 45 455 04				
Note:	yellow grid areas	are where value	es are calculated					7.0000	1.1545E-04				W(u) calculation test
#F			M	and Marradan da	Durale (40		0.004						
"From" PUA wells	s to Sliver Lake (Tr	ansmissivity fro	om Morgan (1988)	and Micharland a	nd Ryais (19	91)): Used S	= 0.001						
110.007.00	15 000 00	0.00400		0.00	0.45.00	101 705 00			0.4005				
112,207.80	15,000.00	0.00100	0.00	0.00	245.00	131,705.00	3.14	1.1800	0.1635	0.0000		LAKE 203	Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	51.05	0.11	245.00	128,665.00	3.14	1.1262	0.1783	0.0093		LAKE 238	Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	0.00	0.00	245.00	130,430.00	3.14	1.1573	0.1696	0.0000		LAKE 237	Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	0.00	0.00	245.00	130,170.00	3.14	1.1527	0.1708	0.0000		LAKE 4372	Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	23.00	0.05	245.00	141,185.00	3.14	1.3560	0.1243	0.0029		LAKE 223	Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	692.32	1.54	245.00	145,010.00	3.14	1.4305	0.1110	0.0785		LAKE 225	Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	0.00	0.00	245.00	142,870.00	3.14	1.3886	0.1183	0.0000		LAKE 51691	Continuous Pumping at Full Rate
			766.38	1.71						0.0907			
"To" POA wells to	Silver Lake (Tran	smissivity from	Morgan (1988) an	d McFarland and	Ryals (1991)): Used S = 0	.001						
112,207.80	15,000.00	0.00100	0.00	0.00	245.00	131,705.00	3.14	1.1800	0.1635	0.0000		LAKE 203	Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	0.00	0.00	245.00	128,665.00	3.14	1.1262	0.1783	0.0000		LAKE 238	Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	0.00	0.00	245.00	130,430.00	3.14	1.1573	0.1696	0.0000		LAKE 237	Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	0.00	0.00	245.00	130,170.00	3.14	1.1527	0.1708	0.0000		LAKE 4372	Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	0.00	0.00	245.00	141,185.00	3.14	1.3560	0.1243	0.0000		LAKE 223	Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	/4.06	0.16	245.00	145,010.00	3.14	1.4305	0.1110	0.0084		LAKE 225	Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	692.32	1.54	245.00	142,870.00	3.14	1.3886	0.1183	0.0836		LAKE 51691	Continuous Pumping at Full Rate
			766.38	1.71				-		0.0920	0.0013		
"F			Manual (4000)	and Marradan day	Durale (40		0.004						
"From" POA wells	s to Sliver Lake (Tr	ansmissivity fro	om Morgan (1988)	and Micharland a	nd Ryais (19	91)): Used S	= 0.001						
112 207 00	15 000 00	0.00100	0.00	0.00	245.00	121 705 00	2 1 /	1 1 2 0 0	0.1625	0.0000	<u> </u>		Continuous Pro Dated Dumring
112,207.80	15,000.00	0.00100	0.00	0.00	245.00	131,705.00	3.14 2.14	1.1800	0.1035	0.0000	. <u></u>		Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	25.21	0.06	245.00	128,005.00	3.14	1.1202	0.1783	0.0046			Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	0.00	0.00	245.00	130,430.00	3.14	1.1573	0.1696	0.0000		LAKE 237	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	0.00	0.00	245.00	130,170.00	3.14	1.1527	0.1708	0.0000			Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	241.02	0.03	245.00	141,185.00	3.14	1.3000	0.1243	0.0014			Continuous Pro-Rated Pumping
112,207.00	15,000.00	0.00100	341.92	0.76	245.00	145,010.00	3.14	1.4305	0.1110	0.0366			Continuous Pro-Rated Pumping
112,207.00	15,000.00	0.00100	0.00	0.00	245.00	142,070.00	3.14	1.3000	0.1103	0.0000		LAKE 51091	Continuous Pro-Rated Pumping
			3/0.50	0.04						0.0440			
"To" DOA walls to	Silver Lake (Tree		Morgon (1099) on	d McEarland and	Buelo (1001)		004						
TO FOA wells to	Silver Lake (Trail	sinissivity nom	Worgan (1900) an	u Nicrananu anu	Kyais (1991)). Useu 3 – 0	.001						
112 207 80	15 000 00	0.00100	0.00	0.00	245.00	121 705 00	2 1 /	1 1 9 0 0	0 1625	0.0000	L	1 AKE 202	Continuous Pro Potod Rumping
112,207.80	15,000.00	0.00100	0.00	0.00	245.00	131,705.00	3.14 2.14	1.1800	0.1035	0.0000			Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	0.00	0.00	245.00	120,000.00	3.14	1.1202	0.1783	0.0000		LARE 230	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	0.00	0.00	245.00	130,430.00	3.14	1.1573	0.1090	0.0000		LARE 23/	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	0.00	0.00	245.00	141 195 00	3.14	1.152/	0.1708	0.0000		LAKE 202	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	0.00	0.00	245.00	141,185.00	3.14 2.14	1.3000	0.1243	0.0000			Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	30.38	0.08	245.00	143,010.00	3.14	1.4305	0.1110	0.0041		LARE 220	Continuous Pro-Rated Pumping
112,207.60	13,000.00	0.00100	341.92	0.70	240.00	142,070.00	3.14	1.3000	0.1103	0.0413	0.0007	LAKE 21091	Commuous Pro-Raleu Pumping
1	1	1	3/0.00	v.04	1	1		1	1	0.0434	0.0007	1	1

Drawdown Calcul	lations Using Their	Equation											
Diawuowii Galcui	ations using men												
Theis Equation:	s = [Q/(4*T*pi)][W(u = (r*r*S)/(4*T*t) W(u) = (-In u)-(0.5	[u)] 772157)+(u/1*1!))-(u*u/2*2!)+(u*u*u/	3*3!)-(u*u*u*u/4*4!)+								
	s = drawdown (L)				r = radial dis	tance (L)							
	T = transmissivity	(I *I /T)			t = time(T)								
	S = storogo cooffic	(E E/T)	000)		t = dimonsional dimonsi dimonsional dimonsional dimonsional dimonsional dimonsional dimo	nloss							
	ni - 3 1/150265/		633)		W(u) = well :	function							
	pi = 0.141002004				w(u) = wcii	Idilotion							
Transmissivity	Transmissivity	Storage	Pumping Rate	Pumping Rate	Time	Distance	ni	ш	W(u)	Drawdown	Drawdown	Well	Comments
Т	Т	Coefficient	0	0	t	r	p.	u	m(a)	s	Change s		Connente
(apd/ft)	(ft2/dav)	S	(gal/min)	(ft3/sec)	(days)	(feet)				(feet)	(feet)		
(gpunt)	(nz/ddy)		(guinni)	(110/000)	(uujo)	(1001)				(1001)	(1001)		
								Note : W(u) calculation v	alid when u <	7.1		
									/				
Note:	vellow grid areas	are where value	es are calculated					7.0000	1.1545E-04				W(u) calculation test
	, ,												
"From" POA wells	s to Paulina Marsh	(Transmissivity	/ from Morgan (19	88) and McFarlan	d and Ryals	(1991)): Used	I S = 0.001						
		Ì	,	,									
112,207.80	15,000.00	0.00100	0.00	0.00	30.00	127,555.00	3.14	9.0390	-0.0799	0.0000		LAKE 203	Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	51.05	0.11	30.00	127,510.00	3.14	9.0327	-0.0788	-0.0041		LAKE 238	Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	0.00	0.00	30.00	128,050.00	3.14	9.1093	-0.0939	0.0000		LAKE 237	Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	0.00	0.00	30.00	124,200.00	3.14	8.5698	-0.0265	0.0000		LAKE 4372	Continuous Pumping at Full Rate
112.207.80	15,000.00	0.00100	23.00	0.05	30.00	141,935.00	3.14	11,1920	-6.6460	-0.1561		LAKE 223	Continuous Pumping at Full Rate
112.207.80	15,000,00	0.00100	692.32	1.54	30.00	145,710.00	3.14	11,7952	-19,6616	-13,9014		LAKE 225	Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	0.00	0.00	30.00	144,200.00	3.14	11.5520	-12.7853	0.0000		LAKE 51691	Continuous Pumping at Full Rate
			766.38	1.71						-14.0616			Calculation not valid, U >7.1
"To" POA wells to	Paulina Marsh (T	ransmissivity fr	om Morgan (1988)	and McFarland a	nd Ryals (19	91)): Used S	= 0.001						
112,207.80	15,000.00	0.00100	0.00	0.00	30.00	127,555.00	3.14	9.0390	-0.0799	0.0000		LAKE 203	Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	0.00	0.00	30.00	127,510.00	3.14	9.0327	-0.0788	0.0000		LAKE 238	Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	0.00	0.00	30.00	128,050.00	3.14	9.1093	-0.0939	0.0000		LAKE 237	Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	0.00	0.00	30.00	124,200.00	3.14	8.5698	-0.0265	0.0000		LAKE 4372	Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	0.00	0.00	30.00	141,935.00	3.14	11.1920	-6.6460	0.0000		LAKE 223	Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	74.06	0.16	30.00	145,710.00	3.14	11.7952	-19.6616	-1.4870		LAKE 225	Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	692.32	1.54	30.00	144,200.00	3.14	11.5520	-12.7853	-9.0396		LAKE 51691	Continuous Pumping at Full Rate
			766.38	1.71						-10.5266	3.5350		Calculation not valid, U >7.1
"From" POA wells	s to Paulina Marsh	(Transmissivity	/ from Morgan (19	88) and McFarlan	d and Ryals	(1991)): Usec	I S = 0.001						
440.007.00	45 000 00	0.00100	0.00	0.00	00.00	107 555 05	0.1.1	0.0000	0.0700	0.0000			
112,207.80	15,000.00	0.00100	0.00	0.00	30.00	127,555.00	3.14	9.0390	-0.0799	0.0000		LAKE 203	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	25.21	0.06	30.00	127,510.00	3.14	9.0327	-0.0788	-0.0020		LAKE 238	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	0.00	0.00	30.00	128,050.00	3.14	9.1093	-0.0939	0.0000		LAKE 237	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	0.00	0.00	30.00	124,200.00	3.14	8.5698	-0.0265	0.0000		LAKE 4372	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	11.36	0.03	30.00	141,935.00	3.14	11.1920	-6.6460	-0.0771		LAKE 223	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	341.92	0.76	30.00	145,710.00	3.14	11.7952	-19.6616	-6.8656		LAKE 225	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	0.00	0.00	30.00	144,200.00	3.14	11.5520	-12.7853	0.0000		LAKE 51691	Continuous Pro-Rated Pumping
			378.50	0.84						-6.9447			Calculation not valid, U >7.1
"To" POA wells to	o Paulina Marsh (T	ransmissivity fr	om Morgan (1988)	and McFarland a	ind Ryals (19	שיו): Used S	= 0.001						
440.007.00	45 000 00	0.00100	0.00	0.00	00.00	407 555 05	0.1.1	0.0000	0.0700	0.0000	l		
112,207.80	15,000.00	0.00100	0.00	0.00	30.00	127,555.00	3.14	9.0390	-0.0799	0.0000		LAKE 203	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	0.00	0.00	30.00	127,510.00	3.14	9.0327	-0.0788	0.0000		LAKE 238	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	0.00	0.00	30.00	128,050.00	3.14	9.1093	-0.0939	0.0000		LAKE 237	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	0.00	0.00	30.00	124,200.00	3.14	8.5698	-0.0265	0.0000		LAKE 43/2	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	0.00	0.00	30.00	141,935.00	3.14	11.1920	-6.6460	0.0000		LAKE 223	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	36.58	0.08	30.00	145,710.00	3.14	11.7952	-19.6616	-0.7344		LAKE 225	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	341.92	0.76	30.00	144,200.00	3.14	11.5520	-12.7853	-4.4044	4 7450	LAKE 51691	Coloulation not wall a UST 1
1	1	1	3/0.00	U.04	1	1		1	1	-3.1900	1./439		Calculation not valid, 0 >7.1

Drawdawa Calaw	lationa Ilaina Thair	- Coursellan											
Drawdown Calcu	lations Using Theis	Equation											
Theis Equation:	s = [Q/(4*T*pi)][W(u = (r*r*S)/(4*T*t) W(u) = (-In u)-(0.57	[u)] 772157)+(u/1*1!))-(u*u/2*2!)+(u*u*u/	3*3!)-(u*u*u*u/4*4!)+								
	s = drawdown (L)				r = radial dis	stance (L)							
	T = transmissivity	(I *I /T)			$t = time_{T}$								
		(L L/I) .:	>		t – une (T)								
	S = storage coeffic	cient (dimensioni	ess)			oniess							
	pi = 3.141592654				w(u) = weii	Tunction							
	.									- ·			A (
Transmissivity	Transmissivity	Storage	Pumping Rate	Pumping Rate	Lime	Distance	рі	u	W(u)	Drawdown	Drawdown	Well	Comments
	(((0)))	Coefficient	Q	Q	t	r				S	Change s		
(gpα/π)	(ft2/day)	5	(gai/min)	(ft3/sec)	(days)	(feet)				(feet)	(feet)		
								Note : W(U) calculation	valid when u	\$ 7.1		
Nete									4 45 455 04				
Note	: yellow grid areas	are where valu	es are calculated					7.0000	1.1545E-04				W(u) calculation test
	a ta Daulina Marak	(Tuo u o uni o oli da	fram Mannan (40	00) and McCarlen	d and Duala	(4004)); Цесс	10 - 0.001						
"From" POA well	s to Paulina Marsh	(Transmissivity	from Morgan (19	88) and MicFarlan	d and Ryais	(1991)): Usec	1 5 = 0.001						
440.007.00	45,000,00	0.00100	0.00	0.00	045.00	407 555 00	2.14	4 4000	0.4020	0.0000			Continuous Dumaning at Full Data
112,207.80	15,000.00	0.00100	0.00	0.00	245.00	127,555.00	3.14	1.1008	0.1839	0.0000			Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	51.05	0.11	245.00	127,510.00	3.14	1.1060	0.1842	0.0096			Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	0.00	0.00	245.00	128,050.00	3.14	1.1154	0.1814	0.0000		LAKE 237	Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	0.00	0.00	245.00	124,200.00	3.14	1.0494	0.2021	0.0000		LAKE 4372	Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	23.00	0.05	245.00	141,935.00	3.14	1.3704	0.1216	0.0029		LAKE 223	Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	692.32	1.54	245.00	145,710.00	3.14	1.4443	0.1087	0.0769		LAKE 225	Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	0.00	0.00	245.00	144,200.00	3.14	1.4145	0.1137	0.0000		LAKE 51691	Continuous Pumping at Full Rate
			766.38	1.71						0.0893			
	Devilies Merch (T						- 0.001						
"To" POA wells to	o Paulina Marsh (Ti	ransmissivity fr	om Morgan (1988	and McFarland a	and Ryals (19	91)): Used S	= 0.001						
112 207 90	15 000 00	0.00100	0.00	0.00	245.00	107 555 00	2.14	1 1069	0.1920	0.0000			Continuous Dumning at Full Pata
112,207.00	15,000.00	0.00100	0.00	0.00	245.00	127,555.00	3.14	1.1000	0.1039	0.0000			Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	0.00	0.00	245.00	127,510.00	3.14	1.1060	0.1842	0.0000		LAKE 238	Continuous Pumping at Full Rate
112,207.80	15,000.00	0.00100	0.00	0.00	245.00	128,050.00	3.14	1.1154	0.1814	0.0000		LAKE 237	Continuous Pumping at Full Rate
112,207.00	15,000.00	0.00100	0.00	0.00	245.00	124,200.00	3.14	1.0494	0.2021	0.0000		LAKE 4372	Continuous Pumping at Full Rate
112,207.00	15,000.00	0.00100	0.00	0.00	245.00	141,935.00	3.14	1.3704	0.1210	0.0000			Continuous Pumping at Full Rate
112,207.00	15,000.00	0.00100	74.00	0.10	245.00	145,710.00	3.14	1.4443	0.1007	0.0002			Continuous Pumping at Full Rate
112,207.00	15,000.00	0.00100	766.29	1.04	245.00	144,200.00	3.14	1.4145	0.1137	0.0004	0.0007	LAKE 51091	Continuous Pumping at Full Rate
			700.30	1.71				-	-	0.0000	-0.0007		
"From" BOA woll	e te Daulina March	(Transmissivity	from Morgon (19	99) and McEarlan	d and Byala	(1991)): Цере	1 8 - 0 001	-	-				
TTOIL FOA well		(manshiissivit)	y noni worgan (13			(1331)). Used	1 5 - 0.001						
112 207 80	15 000 00	0.00100	0.00	0.00	245.00	127 555 00	3 14	1 1068	0 1830	0.0000	1	LAKE 203	Continuous Pro-Rated Pumping
112 207 80	15,000.00	0.00100	25.00	0.06	245.00	127,535.00	3 14	1 1060	0 1842	0.0000		LAKE 238	Continuous Pro-Rated Pumping
112,207.00	15,000.00	0.00100	0.00	0.00	245.00	128,050,00	3.14	1 1154	0.1042	0.000			Continuous Pro-Rated Pumping
112,207.00	15,000.00	0.00100	0.00	0.00	245.00	120,000.00	3.14	1.1134	0.1014	0.0000			Continuous Pro-Rated Pumping
112,207.00	15,000.00	0.00100	11 36	0.00	245.00	1/1 035 00	3.14	1.0494	0.2021	0.0000			Continuous Pro-Rated Pumping
112,207.00	15,000.00	0.00100	3/1 02	0.05	245.00	145,710.00	3.14	1.0704	0.1210	0.0014			Continuous Pro-Rated Pumping
112,207.00	15,000.00	0.00100	0.00	0.70	245.00	144,200,00	3.14	1 / 1 / 5	0.1007	0.0000			Continuous Pro-Rated Pumping
112,207.00	10,000.00	0.00100	378 50	0.00	243.00	144,200.00	5.14	1.4145	0.1137	0.0000		LARE 51031	Continuous 110-Rated 1 diriping
			570.50	0.04						0.0441			
"To" POA wells to	Paulina Marsh (Ti	ranemiesivity fr	om Morgan (1988	and McFarland a	and Ryals (19	S heall ·((19	= 0.001						
			chi morgan (1000				0.001						
112 207 80	15 000 00	0.00100	0.00	0.00	245.00	127 555 00	3 14	1 1068	0 1830	0.000	L	LAKE 203	Continuous Pro-Rated Pumping
112 207 80	15,000.00	0.00100	0.00	0.00	245.00	127,500.00	3 14	1 1060	0 1842	0.0000		LAKE 239	Continuous Pro-Rated Pumping
112,207.00	15,000.00	0.00100	0.00	0.00	245.00	128 050 00	3 14	1 1154	0.1814	0.0000		LAKE 230	Continuous Pro-Rated Pumping
112 207 80	15,000.00	0.00100	0.00	0.00	245.00	124 200 00	3 14	1 0494	0 2021	0.0000		LAKE 4372	Continuous Pro-Rated Pumping
112 207 80	15,000.00	0.00100	0.00	0.00	245.00	141 935 00	3 14	1.3704	0 1216	0.0000		LAKE 223	Continuous Pro-Rated Pumping
112 207 80	15,000.00	0.00100	36 58	0.00	245.00	145 710 00	3 14	1 4443	0 1087	0.0000		LAKE 225	Continuous Pro-Rated Pumping
112,207.80	15,000.00	0.00100	341.92	0.76	245.00	144,200,00	3 14	1,4145	0.1137	0.0397		LAKE 51691	Continuous Pro-Rated Pumping
		0.00100	378.50	0.84	0.00	,200.00	0.11			0.0438	-0.0004	2	- shandede i to realou i unping
		1. Contract of the second s										A	

Vertical GW Flow Using Darcy Equation

Darcy Equation: $Q = K A [(h_1 - h_2) / (L_1 - L_2)]$

Q = volumetric GW flow

K = hydraulic conductivity

A = area

h₁ - h₂ = change in head at lake edge (head at lake vs. head of "main GW reservoir" potentiometric surface below lake) L₁ - L₂ = distance for change in head (distance from lake bed to "main GW reservoir" deposits below)

 $[(h_1 - h_2) / (L_1 - L_2)] =$ hydraulic gradient

Vertical	GW Flow	Vertical GW	Flow Change	Flow Change	Flow Change	Hydraulic Conductivity	Lake A	Area	Change in Head	Head Change Distance	Comments
Q	Q	Q	Q	Percent	Increase	$K_v = K_{xy} / 100$	Α	Α	h ₁ - h ₂	L ₁ - L ₂	
(ft³/day)	(acre-ft/day)	(ft³/day)	(acre-ft/day)	%		(ft/day)	(ft ²)	(acre)	(feet)	(feet)	
Vertical GW flow	from full Silver Lake	e bed through low	er permeability de	posits to the highe	r permeability "ma	in GW reservoir"					
27,188,431	624.16					0.30	455,265,086	10,451.45	30.00	150.00	Full lake, pre-transfer, well = off
27,270,631	626.05	82,200	1.89	0.30%		0.30	455,265,086	10,451.45	30.09	150.00	Full lake, pre-transfer, well = on 245 day full rate
27,229,032	625.09	40,601	0.93	0.15%		0.30	455,265,086	10,451.45	30.04	150.00	Full lake, pre-transfer, well = on 245 day pro-rated
Vertical GW flow	from full Silver Lake	e bed through low	er permeability de	posits to the highe	r permeability "ma	in GW reservoir"					
27,188,431	624.16					0.30	455,265,086	10,451.45	30.00	150.00	Full lake, post-transfer, well = off
27,271,809	626.07	83,378	1.91	0.31%	1.01	0.30	455,265,086	10,451.45	30.09	150.00	Full lake, post-transfer, well = on 245 day full rate
27,229,576	625.11	41,145	0.94	0.15%	1.01	0.30	455,265,086	10,451.45	30.05	150.00	Full lake, post-transfer, well = on 245 day pro-rated
Post-transfer rate	e minus pre-transfei	r rate									
1,178	0.03	1,178	0.03								Full lake, well = on 245 day full rate
544	0.01	544	0.01								Full lake, well = on 245 day pro-rated
			1	1							

NOTICE TO WATER WELL CONTRACTOR The original and first copy of this report are to be filed with the STATE ENGINEER, SALEM, OREGON 97710 within 30 days from the date	203 ECEIVE PALDW ELL REPORTSEP 28 1970 IdHISI TORESTATE ENGINEER The or print SALEM ODINEER	m -> 1 bc =>/17-200
of well completion. (Do not write	above this Ime	
(1) OWNER: EPAZOP	(11) LOCATION OF WELL:	
Name Fift. 1 HACC	County 4412 Driller's well number	
Address for Moelp, and	SIE 14 SIE 14 Section 2 T. 25	<u>r. 17 E. w.m.</u>
(2) TYPE OF WORK (check): New Well Deepening Reconditioning Abandon I If abandonment, describe material and procedure in Item 12.	Bearing and distance from section or subdivision co	SE.C
(3) TYPE OF WELL: (4) PROPOSED USE (check):		
Rotary Driven Difference Domestic Industrial Municipal	(12) WELL LUG: Diameter of well below	v casing
Dug Bored I Irrigation K. Test Well Other	Depth drilled ft. Depth of completed	well ft.
CASING INSTALLED: Threaded D Welded	Formation: Describe color, texture, grain size and and show thickness and nature of each stratum a with at least one entry for each change of formation in position of Static Water Level as drilling proceed	structure of materials; nd aquifer penetrated, n. Report each change is. Note drilling rates.
"Diam from ft to ft Gage	MATTERIAL Fr	om To SWL,
	sugace	3
PERFORATIONS: Perforated? Yes No.	- Cray oroun	3 50
., pe of perforator used	Black land 5	5 62
Size of perforations in. by in.		
perforations from ft. to ft.		
perforations from ft. to ft.		
perforations from ft. to ft. to	·	
perforations from ft to ft	· · · · · · · · · · · · · · · · · · ·	
(7) SCREENS: Well screen installed? Yes No Manufacturer's Name Model No. Diam. Slot size Set from ft. to ft. Diam. Slot size Set from ft. to ft. ft.		
(8) WATER LEVEL: Completed well. Static level 53 ft. below land surface Date 6-28-57		
tian pressure lbs. per square inch Date		
(9) WELL TESTS: Drawdown is amount water level is		
Was a pump test made? BY Yes D No If yes, by whom?		
Id: 350 gal/min. with 7 ft. drawdown after here	Work started 6 - 18 19 5 Completed	6-20 1950
	Date well drilling machine moved off of well	98 19 50
n n n n	Drilling Machine Operator's Certification.	
Bailer test gal./min. with ft. drawdown after hrs.	This well was constructed under my direct rials used and information reported above a knowledge and belief.	supervision. Mate- re true to my best
Temperature of water Was a chemical analysis made?	[Signed]	1-20 mill
	(Drilling Machine Operator)	· ····· ···· ··· ··· ··· ··· ··· ··· ·
(10) CONSTRUCTION:	Drilling Machine Operator's License No.	
Well seal-Material used		Contract - The State of the Sta
Depth of seal	water Well Contractor's Certification:	n and this second is
Were any loose strata computed off? Use Use Double	true to the best of my knowledge and belief.	n and this report is
Was a drive shoe used? \square Yes \square No	NAME	
Did any strata contain unusable water? 🗌 Yes 🗌 No	(Person, firm or corporation)	(Type or print)
Type of water? depth of strata	Address TOTA S	22070
Method of sealing strata off	Smm.	and lease
Was well gravel packed? Yes No Size of gravel:	[Signed]	
Gravel placed from ft. to ft.	Contractor's License No. 102 Date 6-	20 19.58

(USE ADDITIONAL SHEETS IF NECESSARY)

NOTICE TO WATER WELL CONTRACTOR The original and first copy of this report are to be filed with the		255.	lise.	-3
WATER RESOURCES DEPARTMENT SALEM, OREGON 97310 within 30 days from the date of well completion. WATER RESOURCES DEPARTMENT (Please type (Do not write all	OREGON e or print) APR. 101973 bove this line) State Permit	No		
	(10) LOCATION OF WELL:			
no 6, b (ranson	County Lake Driller's well	number		
Name OFO CICLOCKII	14 14 Section 3 T.255	R. 18		W.M.
MODING OVE	Pooring and distance from section or subdivi	sion corne		
(2) TYPE OF WORK (check):	Bearing and distance from section of subdivi		51	
(2) III OI WORKE (Choose).				
New well of Deepening in Reconcentration of the law of the second				
If abandonment, describe matching and protocols and protoc	(11) WATER LEVEL: Completed	well.		
(3) TYPE OF WELL: (4) PROPOSED USE (cneck):	Depth at which water was first found	,		11.
Rotary 🕅 Driven 🗋 Domestic 🕰 Industrial 🗋 Municipal 🗋	Static level 50 ft. below land	surface.	Date 7	123/78
Dug 🗌 Bored 🗋 Irrigation 🗍 Test Well 💆 Other 🗌	Artesian pressure lbs. per squ	are inch.	Date	
" CASING INSTALLED: Threaded □ Welded ↓ , ↓ " Diam. from 0 ft. to 19 ft. Gage	(12) WELL LOG: Diameter of well Depth drilled ft. Depth of com Formation: Describe color, texture, grain size and show thickness and nature of each strat with at least one entry for each change of form	below ca pleted we and struc- tum and a nation. Rep	sing II 26 cture of r aquifer pe	12 <u>ft.</u> materials; enetrated, change in
PERFORATIONS: Perforated? TYes VNO.	position of Static Water Level and indicate pr	incipal wa	ter-bearin	ng strata.
vne of perforator used	MATERIAL	From	То	SWL
Size of perforations in by in.	Brown Learn	0	2	
Size of perforations in by the to the	Blue volcanic rock	3	67	
perforations from	Red Volcanic rock	67	82	
perforations from	Red Cinder B. Volcanic 1	182	135	
perforations from It. to	Redunders	135	140	
(7) SCREENS: Well screen installed? Ves V No	Blue basalt	140	200	
Manufacturer's Name	Black wolcame rock	200	310	
Type	Blue Vasait	alo	240	•
Diam	Blue candrock	240	275	
Diam Slot size Set from ft. to ft.	Blue basalt	275	285	
(8) WELL TESTS: Drawdown is amount water level is lowered below static level				
Was a pump test made? 🖸 Yes 🕅 No If yes, by whom?	- <u></u>			ļ
Yield: gal./min. with ft. drawdown after hrs.				
<i>" " " " "</i>		_		<u> </u>
"Tostod WAIR" 1000 gpm" "				<u> </u>
Bailer test gal./min. with the ft. drawdown after 4-hrs.				
Artecian flow gram.			1	
Artesian new Beptin flow encountered ft	Work started 2/2//28 19 Compl	ated Z	723	178
perature of water Depth attestan now encountered	Work started off of the comp	3	23	10 78
(9) CONSTRUCTION:	Date wen drilling machine moved off of wen			
Well seal-Material used Cemeint	Drilling Machine Operator's Certification	n:		
Well sealed from land surface toft.	This well was constructed under m	y direc d above	t super	vision. e to my
Diameter of well bore to bottom of seal $\frac{1713}{13}$ in.	best knowledge and belief		-1	
Diameter of well bore below seal	[Signed] Kobert Dectren	Date	5/10	, 1978
Number of sacks of cement used in well seal	(Drilling Machine Operator)	9,1	8	•
How was cement grout placed? POULLA	Drilling Machine Operator's License No	·	.9	
<i>I</i>	Water Well Contractor's Cartification			
	This well duilled den mer i	diation -	nd this	renewt in
	true to the best of my knowledge and h	elief.	ulu this	report 18
Was a drive shoe used? 🗆 Yes 🗙 No Plugs Size: location ft.	Name But Jones			
Did any strata contain unusable water? 🗆 Yes 💆 No	(Person, firm or corporation)	(1	ype or pr	int)
Type of water? depth of strata	Address 29404 Samuan U	un !	una	non C
Method of sealing strata off	Isimul (Sent Some			
Was well gravel packed? Yes V No Size of gravel:	(Water Well Co	ntractor)	1	•••••
Gravel placed from ft. to ft.	Contractor's License No. 514 Date .	3/10	178	, 19

SP*45656-119

WATER WELL REPORT STATE OF OREGON	RECEIVED 255/18E-3C NOV 51981 WATER RESOURCES DEPT SALEM, OREGON deepened
(1) OWNER: <u>Name</u> <u>Address F.G. Bal 275</u> City Chustmas Vollar State Cheffor	(10) LOCATION OF WELL: County Driller's well number 4 SW 4 Section 3 T. 75 S. R. / 8 W.M. Tax Lot Blk Subdivision
(9) TVDE OF WORK (check)	Address at well location:
(2) III E OF WORK (CLECK): New Well Deepening E Reconditioning If abandonment, describe material and procedure in Item 12.	(11) WATER LEVEL: Completed well.
(3) TYPE OF WELL: (4) PROPOSED USE (check):	Depth at which water was first found 351 ft.
Rotary Air D Driven Domestic Industrial Municipal Rotary Mud Dug Inrigation Test Well Other I'' Bored I's Thermal: Withdrawal Reinjection I	Static level 5.3 ft. below land surface. Date Artesian pressure İbs. per square inch. Date (12) WELL LOG: Diameter of well below casing
(5) CASING INSTALLED: Steel Threaded Heided Heided Heided Threaded Threaded Heided Threaded Heided H	Depth drilled 4.5 ft. Depth of completed well 38 ft. Formation: Describe color, texture, grain size and structure of materials; and show thickness and nature of each stratum and aquifer penetrated, with at least one entry for each change of formation. Report each change in position of Static Water Level and indicate principal water-bearing strata.
	MATERIAL From To SWL
(a) DEDECED A TROCKS	A alact and 283 311
(6) PERFORATIONS: Perforated? Yes Viso	GRAV STON F 341 351
Size of perforations in by in	BLACK LAVA ROCK WA 351 381
perforations from ft to ft	
perforations from	
(7) SCREENS: Well screen installed? Yes Yes Manufacturer's Name Model No. Model No. Type Model No. ft. Diam. Slot Size Set from	
Tield: gal/min.with ft. drawdown after hrs.	
Air test 1 400 gal/min. with drill stem at 380 ft. hrs. Bailer test gal/min. with ft. drawdown after hrs. testan flow g.p.m. Temperature of water Depth artesian flow encountered	Work started $9/18$ 198/ Completed $-19/19$ 10 $\sqrt{1}$
(9) CONSTRUCTION: Special standards: Yes □ No ☑ Well seal—Material used	Date well drilling machine moved off of well 9/3/ Date well drilling machine moved off of well 9/3/ Drilling Machine Operator's Certification: This well was constructed under my direct supervision. Materials used and information reported above are true to my best knowledge and belief. [Signed]
How was of ment grout placed? Was pump installed? Was a drive shoe used? Yes Yop Was a drive shoe used? Yes Yop Size: location ft. Did any strata contain unusable water? Yes Yop Method of sealing strata off Was well gravel packed? Yes Yes Yes Yes Yes Size of gravel:	Water Well Contractor's Certification: This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief. Name AFE SEARCH WELL DRILL/WE (Person firm or corporation) Address
Gravel placed from ft. to ft.	Contractor's License No. 16. f. Date
NOTICE TO WATER WELL CONTRACTOR The original and first copy of this report are to be filed with the	WATER RESOURCES DEPARTMENT, SALEM, OREGON 97310 within 30 days from the date of well completion

REC REC	EIVED 255/18E/3CC
STATE OF OREGON WATER WELL REPORT (as required by ORS 537.765) Instructions for completing this report are on the last page of this form.	2 6 1995 (START CARD) # 7 1 30 6
(1) OWNER, Name Well Number Address PO Bar 3.58 City Chuil Was Valley State Que Zip 76141 (2) TYPE OF WORK	(9) LOCATION OF WELL by legal description: County <u>LAK</u> <u>E</u> Latitude <u>Longitude</u> Township <u>755</u> N or S Range <u>8E</u> E or W. WM. Section <u>5M</u> <u>1/4</u> <u>5M</u> <u>1/4</u> Tax Lot <u>Lot</u> <u>Block</u> <u>Subdivision</u>
New Weil [v] DeepeningAnderation (repair/reconduction)Abandonment (3) DRILL METHOD: [v] Rotary Air Rotary Mud Cable Auger Other (4) PROPOSED USE: Domestic Community Industrial Inrigation	(10) STATIC WATER LEVEL: ft. below land surface. ft. below land surface. Artesian pressurelb. per square inch. Date (11) WATER BEARING ZONES:
Thermal Injection Livestock Uther Special Construction approval Yes No Depth of Completed Well 590 ft. Explosives used Yes No TypeAmount	Depth at which water was first found From To Estimated Flow Rate
HOLE SEAL Diameter From To Material From To Sacks or pounds 370590 How was seal placed: Method A B C D E	(12) WELLLOG: Ground Elevation
Backfill placed fromft. toft. Material Gravel placed fromft. toft. Size of gravel (6) CASING/LINER: Diameter From To Gauge Size Plastic Welded Threaded Casing:	Material From To SWL Black Balakt B70 4/4/3 GRAY BASALT 4/4/5 4/67 GRAY BASALT 4/4/5 4/67 BLACK BASALT 4/4/5 4/67 GRAY CLAY STONE 4/27 GRAY CLAY STONE 4/27 GRAY CLAY STONE 4/27 GRAY CLAY STONE 4/25 BROWN CLAY STONE 4/85 BROWN Black BASALT 505 BROWN Black BASALT 505 BROWN Black BASALT 505 BROWN Black BASALT 505 BLACK BASALT BROKEN 545 BLACK BASALT BROKEN 545
Y1 Final location of shoe(s) (7) PERFORATIONS/SCREENS: Perforations Method Screens Type Material Stot From To size Number Diameter Size Casing Liner	
(8) WELL TESTS: Minimum testing time is 1 hour	Date started 5 12 95 Completed 3 - 28 925
Pump Bailer Air Flowing <u>Yield gal/min Drawdown Drill stem at</u> <u>1500</u> <u>1500</u> <u>1500</u>	(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
Temperature of water <u>55</u> 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:	(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 fue to the best of my knowledge and belief. Signed Methods Date 6-0-0-0 ECOND COPY/CONSTRUCTOR THIRD COPY-CUSTOMER

NOTICE TO WATER WELL CONTRACTOR The original and first copy of this report	
are to be filed with the work of the work	OPECON EST WOUND 255/18-3
SALEM, DREGON 97310 NULL 1 8 1980 (Please type	e or print)
of well completion.	bove this line State Permit No.
(1) OWNER: SALEM, OREGON	(10) LOCATION OF WELL.
Name G. VDest (FOWSON	County / a Ke Driller's well number
Address Box 402 Christman Halley, OR.	1/4 1/ Section Z T Z G R J Z F W W
	Bearing and distance from section or subdivision corner
(2) TYPE OF WORK (check):	
New Well Deepening Reconditioning Abandon	
(3) TYPE OF WELL: (4) PROPOSED USE (aboat):	(11) WATER LEVEL: Completed well.
Rötary Driven	Depth at which water was first found ft.
Bored □ Jetted □ Industrial □ Municipal □ Industrial □ Municipal □ Irrigation S Test Well □ Other □	Static level 5 / ft. below land surface. Date 5/7/80
	Artesian pressure lbs. per square inch. Date
Threaded Welded	(12) WELL LOG: Diameter of well below casing $\overset{\mathcal{H}}{$
"Diam. from	Depth drilled 370 ft. Depth of completed well 370 ft.
" Diam. from ft. to	Formation: Describe color, texture, grain size and structure of materials; and show thickness and nature of each stratum and aquifer ponotected
(6) PERFORATIONS: Perforated? Ves XNo.	with at least one entry for each change of formation. Report each change in position of Static Water Level and indicate principal water-bearing strata.
Type of perforator used	MATERIAL From To SWL
Size of perforations in. by in.	Brown Clay 0.4
perforations from ft. to ft.	Black Java Pock 4 67
perforations from ft. to ft.	Red Cinders 6774
perforations from ft. to ft.	Black Laders 1981
(7) SCREENS: Well screen installed? Ves No	Pumice Writer Bearing 21 124
Manufacturer's Name	Black Java Rock 124 136
Diam. Slot size Set from the to the	Brown, Cinglers 13614
Diam. Slot size Set from ft. to ft.	Black land Fack 153135
(8) WELL TESTS. Drawdown is amount water level is	Bed lava FOCK 185197
lowered below static level	Black lava Fock 197 246
Vald	black sand 246 248
" ", 150 b31 "tet "	Black sand 370 350
" X " " " "	Grey Stone 350370
Bailer test 000 gal./min. with ft. drawdown after hrs.	÷
esian flow g.p.m.	
Temperature of water Depth artesian flow encountered ft.	Work started 4/13 19 \$0 Completed 5/7 1980
(9) CONSTRUCTION:	Date well drilling machine moved off of well 5/3 1950
Well seal-Material used <u>emen</u>	Drilling Machine Operator's Certification:
Well sealed from land surface to ft.	This well was constructed under my direct supervision. Materials used and information reported above are true to my
Diameter of well bore below seal	best knowledge and belief.
Number of sacks of cement used in well seal sacks	[Signed]
How was cement grout placed? Ceiment Was	Drilling Machine Operator's License No. 6 1 1
along side & pressure arouted	Water Well Contractor's Certification:
in,	This well was drilled under my jurisdiction and this report is
Was a drive shoe used? Yes No Plugs	Name P S arcia light Asilist
Did any strata contain unusable water? Yes No	(Person, firm or corporation) (Type or print)
Lype or water? depth of strata	Address <u>Strebanon</u> OK.
Was well gravel packed?	[Signed] "11/fl sensh
Gravel placed from	Contractor's License No 567 Data (1/1)
(USE ADDITIONAL SH	EETS IF NECESSARY)
	611-3c3c2+**43c

	RECEIVEN JAHISI DE 1/8 DIN
WATER WELL REPORT	MAD 10 1001 State Well No. ODS 1. Xe
STATE OF OREGON	MARIZ 1981 LEB
(Lake 23)	SALEM ODECON
(1) OWNER.	(10) LOCATION OF WELL.
(1) OWNER:	(10) LOCATION OF WELL:
Name flave Mark	County Lafee Driller's well number
City Sur egg Hamp State State	Tax Lot # Lot Blk Subdivision
(2) TVDF OF WORK (sheek):	Address at well location:
(2) TITE OF WORK (CHECK):	
If abandonment, describe material and procedure in Item 12.	(11) WATER LEVEL: Completed well.
(3) TYPE OF WELL: (4) PROPOSED USE (check):	Depth at which water was first found 103 ft.
ry Air Driven Domestic Industrial Municipal	Artesian pressure lbs. per square inch. Date
Ketary Mud Dug Irrigation Prest Well Other Cable Bored I Thermal: Withdrawal Reinjection	(12) WELLLOG: Disperture function of the law series (2)
(5) CASING INSTALLED. ALL TO THE T	Depth drilled 12/2 ft.
(5) CASING INSTALLED: Steel Threaded U Welded	Formation: Describe color, texture, grain size and structure of materials; and show
1." Diam. from	for each change of formation. Report each change in position of Static Water Level
"Diam. from	and indicate principal water-bearing strata.
LINER INSTALLED:	MATERIAL From To SWL
	Candy Clay 017
(6) PERFORATIONS: Perforated? Ves Pro	Blue Claystone 17 65
Type of perforator used	Basalt 65 20
Size of perforations in. by in.	
	•
perforations from	
(7) SCREENS: Well screen installed? Yes 22 No Monufacture in Name	
Type	
Diam	
Diam	
WELL TESTS: Drawdown is amount water level is lowered below static level	
Was a nump test made? \Box Yes β No. If yes by whom?	
Yield: gal/min. with ft. drawdown after hrs.	
Air test 1000 + gal./min. with drill stem at 60 ft. 1 hrs.	
ler test gal/min. with ft. drawdown after hrs.	
Temperature of water Depth artesian flow encountered #	
(a) CONSTRUCTION.	Work started $2-12$ 1981 Completed $2-16$ 1981
Well seal-Material used Cument	Date went drilling machine moved off of went
Well sealed from land surface to	This well was constructed under my direct supervision.
Diameter of well bore to bottom of seal	and information reported above are true to my best knowledge and belief.
Diameter of well bore below seal	[Signed] Drilling Machine Operator) Date 2-25, 19,8-1
Number of sacks of cement used in well seal	Drilling Machine Operator's License No
How was cement grout placed?	Water Well Contractor's Contification
	This well was drilled under my jurisdiction and this report is true to
Was pump installed?	the best of my knowledge and belief.
Was a drive shoe used? Dres D No Plugs Size: location ft.	Name . Att. M. 5
Did any strata contain unusable water? Yes Ho	Address 290/1 Santeam Hery Sweit Home
Method of sealing strata off	[Signed] Stoward Mins
Was well gravel packed? Ves Size of gravel:	(Water Well Contractor)
Gravel placed from	Contractor's Literise 110
NOTICE TO WATER WELL CONTRACTOR	WATER RESOURCES DEPARTMENT, SP#12658-690
are to be filed with the	SALEM, OREGON 97310 within 30 days from the date of well completion.

LAKE 51147

STATE OF OREGON	
WATER SUPPLY WELL	REPORT
(as required by ORS 537-765)	

 \mathbf{N}

LAKE 51147

WATER SUP (as required by) Instructions for	PLY WELL REP ORS 517 765) completing this re	ORT	: ic last page of this :	5", 1 4 (form.		WELL I.D. # START CAR	1. 47604 D# 1335	3/	
(1) LAND OW Name 6 47 Address 90	BOJ 35	14 5 W 8 State 12	cli Number	76.1	(9) LOCATION County <u>Les M</u> Tractiship <u>2</u>	OF WELL by lega	ec / S	Langitude E of W.	WM.
(2) TYPE OF () New Well W	WORK Deepening Ala	ration (reparto	scundation) Alism	diminent	Tax Lot 100 Sjreet Address o	HI HI f Well tor onarest addin	nck	,174 Subdivision _ SH	<u>5 Ki</u> l
(3) DRILL MI 7 Rotary Air 1 (1) Other	ETHOD: [] Rotary Mud [.] (."able Aug	;ur		(10) STATIC WA	TER LEVEL: below land surface.		Date ¥-	11.01
(4) PROPOSE []Domestic []Thermat	DUSE: Community [] In Injection [] In	dustrial (* i r vestuck (1] G	ripation Kher		Artesian pressure (11) WATER BEA	ARING ZONES:	r square inch	Date	
(5) BORE HO Special Construct Explosives used HOLK	LE CONSTRUC non approval I l'Ye U l'Yes MNO - Type	TION: « 🕅 No. Depti « SEAL	nof Completed Wel	1 <u>110 m</u>	Depth at which wate	r was first found The	Estimated	Flow Rate	<u>\$W1.</u>
Dismeter From	'lls Malería !	il Krom	To Sacks or pou	und x					· · ·
134 65 8 100	100								
(1) Other	non R_to nn fr_to INER: From To G From To G C Inside [, Outsu shoe(s) TTONS/SCREET ss Method Type Stat size Number	ft. ?ft ?[][][][][][][][][] de []None NS:	Material	Darraded !		CEIVE CEIVE V 1 3 2005 CEIVE M, OREGON	From /2 0 /2 br>/2 /2 /2 /2 /2 /2 /2 /2 /2		
(8) WELL TES 1 Pump Vield gul/min 110 C ³ Temperature of w Was a water analy Did any strata cos 1 Satey 11 Ma	STS: Minianum (Bailer Drawdown Drawdown atter <u>55</u> atter <u>55</u> 1 ysis done? [] Ye shan water not suita atdy [] Octor []	The second secon	is I hour Flowi at Th Flow Found flow Found d use? ∐The [Other	ing ian he b. 	Innbondard) Water W Lecrify that the w ment of this well as in standards. Materials a knowledge and behet. Signed (bouled) Water Well Laccept responsib performed on this well performed during this constructions standards	The Constructor Cert ork I performed on the compliance with Oreg and information re Constructor Certific dify for the construction time is in compliance . Bus report as true to	Mention: e construction, ale on water supply a ported above are WWC Na atton: on alteration, or i an dates reported with Oregon wate the best of my ka	enation, or aby well constructs roue to the bes nither Date disandioarment above All well envicedge and I	natur- ion totory work rk

ORIGINAL - WATER RESOURCES DEPARTMENT FIRST COPY - CONSTRUCTOR SECOND COPY - CUSTOMER

	LAKE	51503		•		· _ ,
					3	
					Ø	
STATE OF OREGON				() /		
WATER SUPPLY WELL REPORT (as required by ORS 537 765)	· · ·		WELL I.D. #	$L = \frac{4}{66}$	<u>, 4</u>	
Instructions for completing this report are on t	the last page of this form.	16051503	SIARI CARI)# <u>16261</u>		
(1) LAND OWNER	Well Number	(9) LOCATION O	F WELL by legal	description:		
Name Conviru Alla		County Lan	Latitude	L	ongitude	
Address 10 /bov 55	1	Township <u>25</u>	N or S Rang	e_18	E or W.	WM.
City (h115/m4)value State (<u>Zip 9 16011</u>	Section 7	<u>5</u> E 1/4	IVW1	/4	
(2) TYPE OF WORK	(recondition) 🗖 Abandonment	Tax Lot 1 900	LotBlo	ckSi	ubdivision _	<u> </u>
		Street Address of V	Well (or nearest addres	(s) 8405 C	<u>5 Kir</u>	1'00
(3) DRILL METHOD:	lûer			01 4 100		
Other		67 ft h	EK LEVEL: elow land surface.	u same	Date 3-	12.04
(4) PROPOSED USE:	····	Artesian pressure		square inch	Date	
Domestic Community Industrial	rrigation	(11) WATER BEAL	RING ZONES:			
Thermal Injection Livestock	Other	Donth at which we	una first from 1			
(5) BURE HOLE CONSTRUCTION: Special Construction approval TVes Mina Dam	th of Completed Well 2m	Depin at which water v	was first found	·····		
Explosives used \Box Yes \blacksquare No Type	Amount	From		Estimated F	low Rate	SWL
HOLE SEAL		140	100	1000	Γ	<u>}</u> {
Diameter From To Material From	To Sacks or pounds			<u> </u>		
140 200						
		(12) WELL LOG:			·····	
How was seal placed: Method A	$B \square C \square D \square E$	'Grou	Ind Elevation			
Backfill placed from ft to ft	Matorial	Mate	rial	From	То	SWI
Gravel placed fromft. toft.	Size of gravel	BlachL	n La Nah	140	1/3	311
(6) CASING/LINER:		Broken L	wn Arel	1631	180	
Diameter From To Gauge Steel	Plastic Welded Threaded	ned lider	LWB	180	185	
Casing:		Gra-1 Ba	salt	185	210	
IN Cashy Add			Enro			
		<u> </u>		$D \rightarrow \downarrow$		
Liner:		II	IN 1 2 200	•		
		MATE				
Drive Shoe used \Box Inside \Box Outside \Box None Final location of shoe(s)		S S	ALEM OBECCA	EPT,	· · · · · · · · · · · · · · · · · · ·	
(7) PERFORATIONS/SCREENS:			SEAFIN			
Perforations Method			ACCEIN			
Screens Type	Material		JUN - 3 or	04-	{	
510t From To size Number Diameter	size Casing Liner					
		WA	TER RESOURCE	S DEPT		
		L	SALEM, OREG	UN		
			7-011 0	7	11-06	/
(8) WELL TESTS: Minimum testing time	is 1 hour Flowing	Unite started	Constructor Cont	antion:	10 00	
🗆 Pump 🗆 Bailer 🛱 Air	Artesian	(unbonded) water well	Constructor Certin	cation: construction. alter:	ation. or abar	don-
Yield gal/min Drawdown Drill ster	n at Time	ment of this well is in co	mpliance with Oregon	n water supply we	Il constructio	n of mu
1500 * 200	(L)at.	standards. Materials used -knowledge and belief.	and information rep	oneu above are tru	ie to the dest	or my
	RECEIVED			WWC Num	ber	
		Signed		Da		
Temperature of water <u>56</u> Depth Artestan	FlovFreuged 1 8 2005	(ponded) Water Well Co	v for the construction	uon: alteration or ab	undonment w	ork
was a water analysis done? Uses By whom Did any strata contain water not suitable for intend	MATED DECASE	performed on this well du	iring the construction	dates reported ab	ove. All worl	s
□ Salty □ Muddy □ Odor □ Colored >	OUSALEM OREGON	performed during this tin construction standards. T	ie is in compliance w his report is true to th	in Oregon water : he best of my know	supply well vledge and be	elief.
Depth of strata:		M	18		ber <u>1650</u>	(10-011
		Signed			ne <u> </u>	<u> </u>

ORIGINAL - WATER RESOURCES DEPARTMENT	FIRST COPY – CONSTRUCTOR	SECOND COPY – CUSTOMER
URIGINAL – WATER RESOURCES DEPARTMENT	FIRST COFT - CONSTRUCTOR	SECOND COLT = COSTOMER

• • • • • • • • • • • • • • • • • • •	RECEIVEN	
WATER WELL REPORT	L L L L L L L L L	255/18E-Jaa
STATE OF OREGON	OCT 271981	
P10 238	WATER RESOURCES DEP	r
(Jake	SAL OREGON	
$(1) OWNER \cdot 0 \qquad A A$	(10) LOCATION OF WELL:	<u> </u>
The add the Rath	Country of the Doctorio	voll numbor
Address Charp Con and Mallow	ALE WALE 'S Section 7 T.7.5	S R / 8 W.M.
City State Overland	Tax Lot # Lot Blk	Subdivision
(2) TYPE OF WORK (aback):	Address at well location:	
If shandonment, describe material and procedure in Item 12.	(11) WATER LEVEL: Completed	well.
(2) TYPE OF WELL (4) BRODOSED LISE (check)	Depth at which water was first found 90	ft.
(3) TIPE OF WELL: (4) PROPOSED USE (CHECK):	Static level 40 ft. belo	w land surface. Date
Rotary Air 🗹 Driven 🗆 Domestic 🗆 Industrial 🗆 Municipal 🗆 Rotary Mud 🗆 Dug 🗀 Irrigation 🖬 Test Well 🗆 Other 🗆	Artesian pressure lbs	. per square inch. Date
Bored Thermal: Withdrawal Reinjection	(12) WELL LOG: Diameter of well be	low casing
(5) CASING INSTALLED: Steel Plastic	Depth drilled / / ft. Depth	t of completed well ft.
$\begin{array}{c} \text{Threaded} \square \text{Welded} \square \\ \hline \\ \hline \\ \hline \\ \hline \\ \hline \\ \\ \\ \hline \\ \\ \\ \\ \hline \\$	formation. Describe coor, excite, grain size and thickness and nature of each stratum and aquifer p for each change of formation. Report each change and indicate principal water-bearing strata.	enetrated, with at least one entry in position of Static Water Level
		From The CULT
"Diam from ft to "ft Cause		0 4
	Jandy Soil	4 16
(6) PERFORATIONS: Perforated? Yes Pro	Cloh	1626
Size of perforations in. by in.	Barolt	26/20
	······································	
- perforations from ft. to ft.		
perforations from ft. to ft.		
(7) SCREENS: Well screen installed? Yes		
Manufacturer's Name		
Type Model No	-	
Diam. Slot Size Set from ft. to ft.		
(8) WELL TESTS: Drawdown is amount water level is lowered below static level		
We a pump test made? \Box Yes $\stackrel{\bullet}{\Box}$ No If yes, by whom?		
d: gal./min. with ft. drawdown after hrs.		
<u> </u>		
Air test 1000 gal./min. with drill stem at 40 ft. hrs.		
Bailer test gal./min. with ft. drawdown after hrs.	-	
perature of water Depth artesian flow encountered ft.		
	Work started 2013 2 8 19 Comp	ileted of a to a
Well seal-Material used	Drilling Machine Operator's Cartification	<u></u>
Well sealed from land surface to	This well was constructed under my dire	r: ct supervision Materials used
Diameter of well bore to bottom of seal	and information reported above are true to m	y best knowledge and belief.
Diameter of well bore below seal	[Signed] / Outling Machine Operator	J
Number of sacks of cement used in well seal	Drilling Machine Operator's License No	69
How was cement grout placed?	Water Well Contractor's Cartification	
	This well was drilled under my jurisdict	tion and this report is true to
Was pump installed?	the best of my knowledge and belief.	Vanuell Deill.
Was a drive shoe used? Yes No Plugs	Name 1.1.//1	(Type or print)
Did any strata contain unusable water? Yes No	Address 29.0.3.0 San TA 1.1	N SWEET HOME (
Type of Water? depth of strata Method of scaling strate off	[Signed] Inurealt Pr	20
Was well gravel packed? Yes TNo Size of gravel	(Water Well Copi	tractor) + 0 8 01
Gravel placed from	Contractor's License No. 2.2Date	× 19.01
NOTICE TO WATER WELL CONTRACTOR The original and first copy of this report are to be filed with the	WATER RESOURCES DEPARTMENT, SALEM, OREGON 97310 within 30 days from the date of well completion	SP*12658-690

WATER WELL REPORT

STATE OF OREGON

Was well gravel packed? 🗆 Yes 🚺 🗙

Gravel placed from ft. to ft.

ED AKE 437 MAR 12 1981

-dac State Well No.

WATER RESOURCES DEPState Permit No.

Ling Huy Sweet Hone

R.

	SALEM. OREGON LAKE 4372	2	
(1) OWNER:	(10) LOCATION OF WELL:		
Name Day 12 Porth	County / a bat Drillor's well number		
Address Junburne Rel	SW 4 NE 4 Section 2 T. 25-S R 17E		
City Sucht alamie State Oul	Tax Lot # Lot Blk Subdivisio	07	
(2) TYPE OF WORK (check):	Address at well location:		
		_	
If abandonment, describe material and procedure in Item 12.	(11) WATER LEVEL: Completed well.		
(3) TYPE OF WELL: (4) PROPOSED USE (check):	Depth at which water was first found //D	ft.	
vry Air 😧 Driven 🗆 Domestic 🗆 Industrial 🗂 Municipal 🗆	Static level 25 ft. below land surface. Date		
Locary Mud Dug Irrigation Test Well Other Cable Bored Thermal: Withdrawal Reinjection	(12) WELL LOG: Diameter of well below casing	<u>te</u>	
CASING INSTALLED: Steel Plastic Welded	Depth drilled 12.0 ft. Depth of completed well Formation: Describe color, texture, grain size and structure of materia thickness and nature of each stratum and aquifer penetrated, with at lea for each change of formation. Report each change in position of Static and indicate principal water-bearing strata.	ls; and show ast one entry Water Level	
LINER INSTALLED:	MATERIAL From To	SWL	
ft. Gauge	Sandy Clay 0 15		
(6) PERFORATIONS: Perforated? Van	Rlue Classitions 15 67		
Type of perforator used	Basalt 67 120		
Size of perforations in. by in.			
perforations from ft. to ft.			
perforations from ft. to ft.			
(7) SCREENS: Well screen installed? □ Yes	· · · · · · · · · · · · · · · · · · ·		
Manufacturer's Name		<u> </u>	
Type			
Diam. Slot Size			
Diam Slot Size Set from ft. to ft.		<u> </u>	
(9) WELL TESTS: Drawdown is amount water level is lowered below static level			
Was a pump test made? \Box Yes \blacksquare No If yes, by whom?			
'd: gal./min. with ft. drawdown after hrs.		<u> </u>	
Air test 1000 + gal./min. with drill stem at 60 ft. / hrs.	•		
ler test gal./min. with ft. drawdown after hrs.		<u>† </u>	
*-tesian flow g.p.m.			
perature of water Depth artesian flow encountered ft.	Work started 2-17 19 51 Completed 2-20	198-1	
(9) CONSTRUCTION: Special standards: Yes D No D	Date well drilling machine moved off of well 2-20	198/	
Well seal-Material used Camine	Drilling Machine Operator's Certification:		
Well sealed from land surface to	This well was constructed under my direct supervision. Mat	erials used	
Diameter of well bore to bottom of seal	and information reported above are true to my best knowledge a	ind belief.	
Diameter of well bore below seal	[Signed]	54., 19. 3 . 7.	
Number of sacks of cement used in well seal	Drilling Machine Operator's License No		
now was conclut grout placeu:	Water Well Contractor's Certification		
	This well was drilled under my jurisdiction and this report	t is true to	
Was pump installed?	the best of my knowledge and belief.	- 15 of the W	
Was a drive shoe used? Dres \Box No Plugs	Name ALMS + SCHIIINS		
Did any strata contain unusable water? 🗆 Yes 😰 No	Address 29911 Scantian Hur Sive	et Han	
Type of Water? depth of strata	91- 1 /h	**************************************	
Method of sealing strata off	[Signed] AT au wat from		

NOTICE TO WATER WELL CONTRACTOR The original and first copy of this report are to be filed with the

Size of gravel:

WATER RESOURCES DEPARTMENT, SALEM, OREGON 97310 within 30 days from the date of well completion.

Contractor's License No. 35

,					-		
STATE OF OREGON	LAKE 516	591		-11007	0		
WATER SUPPLY WELL REPORT (as required by ORS 537 765)		lako	WELL I.D. #				
(as required by Orio 557.765)		unt	START CAR	w# <u>/7/7/8</u>			
Instructions for completing this report are on the last page of this form. 5			5 1691				
(1) LAND OWNER E Well Number		_ (9) LOCATION OF WELL (legal description)					
Name 1/0 Mar 358		Tax Lot 300 Lot					
City Ch/15 Thursdald State 191	Zip 97611	Township 25 Nor S Range 18 E or W WM					
	Section 3 5F 1/4 5E 1/4						
Deepening Alteration (repair/recondition) Aband	onment	Lat°	'" or	(deg	grees or decimal)		
	Long' or (degrees or decimal)						
(3) DRILL METHOD M Rotary Air Rotary Mud Cable Auger Ca	(3) DRILL METHOD			Street Address of Well (of nearest address) 100 AUVES 5			
☐ Other		assign_u					
(4) PROPOSED USE		(10) STATIC WA	ATER LEVEL	R	C 05		
Domestic Community Industrial MIrrig	gation		ft. below land surf	face. Date <u>5 - 1</u>	2-0		
Thermal Injection Livestock Oth	cr	ft. below land surface. Date 5 C			C		
(5) BORE HOLE CONSTRUCTION Special Const	ruction: 🗌 Yes 🚺 No	Artesian pressure	lb. per squ	uare inch Date			
Depth of Completed Well 2 20 ft. Explosives used: Ves 2 No. Type	ount	(11) WATER BE	ARING ZONES	6			
		Depth at which wate	r was first found				
Diameter From To Material From T	o_ Sacks or Pounds	From	То	Estimated Flow Rate	SWL		
23-2 0 19 Bent 0 1	9 50 Sach	105	220	2000 94			
		·					
How was seal placed: Method $\Box A \Box B \Box C$		(12) WELL LOG	Grou	nd Elevation			
Backfill placed from ft. to ft. Material		Maje	erial	From To	SWL		
Gravel placed from ft. to ft. Size of g	ravel	TOI Sail	. /T	$\begin{array}{c c} O & 2 \\ \hline 2 & F_{1} \end{array}$			
(6) CASING/LINER		Rev Lata R	UCK	IU 60			
Diameter From To Gauge Steel Pla	stic Welded Threaded	Black Lac	MACCE	40 80			
Casing: $/8 -/1 /7 / 250$		Grai Luva	ROCA,	105 145			
		Black be	ALCIA	145 189			
Liner: \Box		BlackEO	ENED	200 270			
					IVED 1		
Drive Shoe used 🗌 Inside 🗌 Outside 🗌 Nonc		SEP 2	7 2005				
Final location of shoe(s)		WATER RESC	UBCES DEDT	- DEC 3 (2005		
(7) PERFORATIONS/SCREENS		SALEM,	OREGON				
Perforations Method	Material		2-7 05	SALEM, OK	RCES DEPT		
Exam To Slot Number Diameter Tele/	nine Casing Liner	Date Started <u>7</u> -	<u> </u>	ompleted	E C /		
Size siz	e	(unbonded) Water	Well Constructor (Certification	a alteration or		
	<u> </u>	abandonment of this	well is in compliand	ce with Oregon water suppl	y well		
		construction standard	Is. Materials used a edge and belief.	and information reported ab	ove are true to		
	片 片			-			
		WWC Number		Datc			
□ Pump □ Bailer ☑ Air □ Flow	r ving Artesian	Signed					
Yield gal/mip Drawdown Drill stem at	Time	(bonded) Water We	ll Constructor Cer	rtification			
1000 3-1 220	1 hr	I accept responsibility for the construction, deepening, alteration, or					
		above. All work performed during this time is in compliance with Oregon water					
Temperature of water <u>53</u> Depth Artesian Flow	Found	and belief.	ion standards. This	s report is true to the best of	my knowledge		
Was a water analysis done? Yes By whom	— — — — — —	WWC Number 1	65-1	Data 6-15-	05		
□ Salty □ Muddy □ Odor □ Colored □ Other			<u> </u>				
Depth of strata:		Signed			<u>۔</u>		
				<u> </u>			
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