

Groundwater Transfer Review Summary Form

Transfer/PA # T- 13563

GW Reviewer Jen Woody Date Review Completed: 11/9/2021

Summary of Same Source Review:

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

Summary of Injury Review:

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

Summary of GW-SW Transfer Similarity Review:

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

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



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Ground Water Review Form:

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

Application: T-13563 Applicant Name: ACMPC Oregon 2, LLC (dba Halls Ferry Farms)

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

Reviewer(s): Jen Woody

Date of Review: 11/9/2021

Date Reviewed by GW Mgr. and Returned to WRSD: JTI 12/14/21

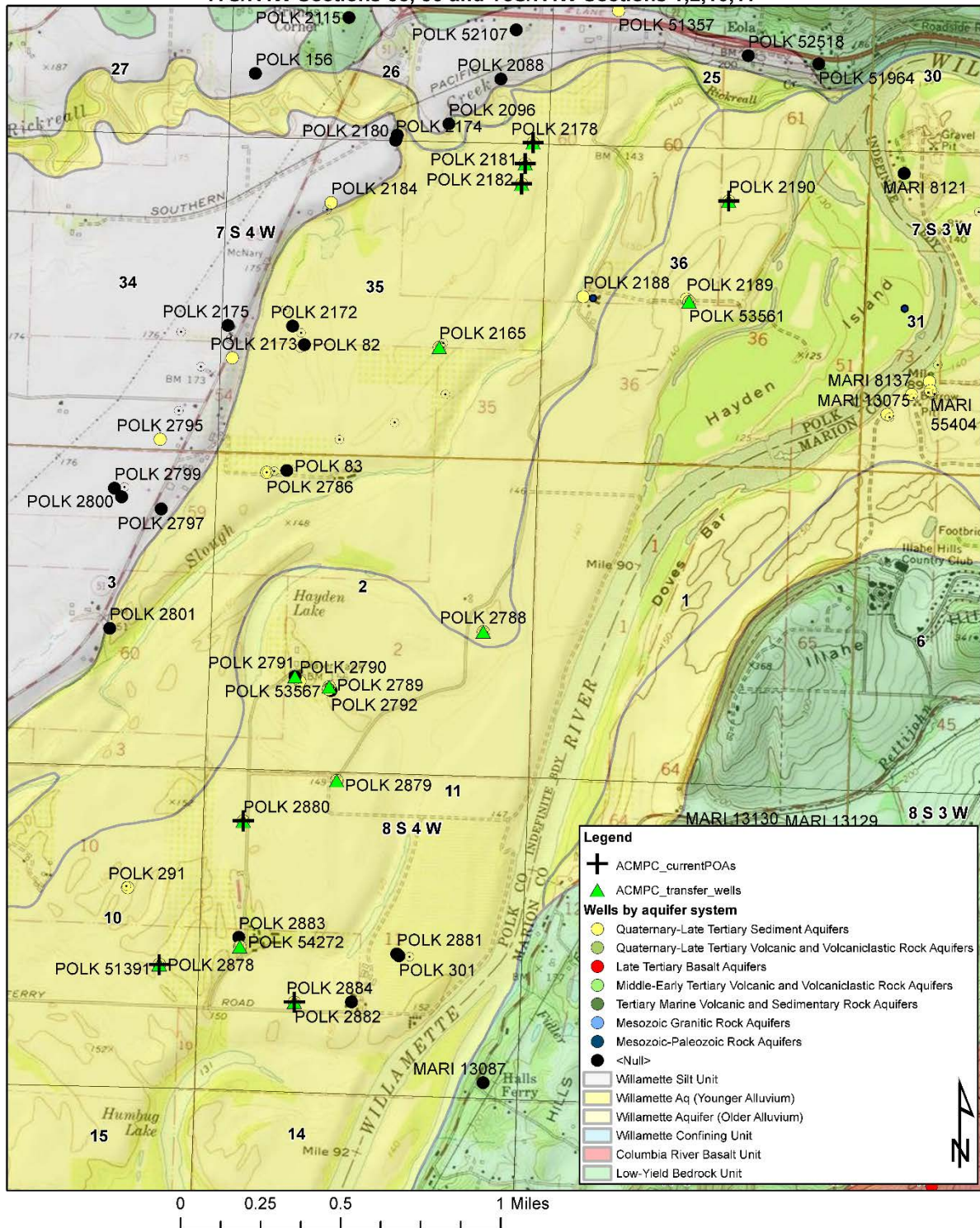
The information provided in the application is insufficient to evaluate whether the proposed transfer may be approved because:

- ☐ The water well reports provided with the application do not correspond to the water rights affected by the transfer.
- ☒ The application does not include water well reports or a description of the well construction details sufficient to establish the ground water body developed or proposed to be developed. This comment is limited to Well 28, which is a proposed APOA for Cert 67321.
- ☐ Other _____

This transfer is unusual because there are seven additional transfers/GR Modifications in concurrent review that affect the same lands, many of the same wells and are also applied for by ACMPC Oregon 2. See Overview map for more detail. Section 7 of this review addresses the potential cumulative impact of changes to wells that are affected by this transfer in addition to other transfers or GR Modifications in concurrent review.

Overview Map

ACMPC Oregon 2 LLC DBA Halls Ferry Farms
T13563, T13564, T13565, T13566, T13567, T13568, T13569, T13570
T7S/R4W Sections 35, 36 and T8S/R4W Sections 1,2,10,11



1. Basic description of the changes proposed in this transfer: There are seven certificates affected by this transfer. Four of the proposed changes involve groundwater and are addressed in this review. While the review was in progress, the applicant modified the changes to Cert 37342 by removing Well 28 as an APOA.

Certificate	Authorized POA(s)	Proposed Changes	Groundwater Review?
79879	POLK 2878	Add POLK 54272/Well 27 and POLK 51391/Well 22	yes
67321	4 surface water PODs	Add NLOG/Well 28	yes (SW to GW)
49817	1 surface water POD	Add surface water POD U	no
37342	POLK 2190	Add POLK 53561/Well 12 and NLOG/Well 28	yes
14257	3 surface water PODs	Add surface water POD F	no
86655	1 surface water POD	Add surface water POD F	no
95332	POLK 2880/Well 3	Add POLK 54272/Well 27	yes

2. Will the proposed POA develop the same aquifer (source) as the existing authorized POA?
☐ Yes ☐ No Comments: See table for individual assessments. There is no well log available to confirm or deny same aquifer for Well 28. All other wells develop groundwater from predominately course-grained Holocene flood deposits that have a saturated thickness of approximately 20 feet (Conlon et al., 2005). Water levels in the aquifer are closely tied to stream stage in the Willamette River (Conlon et al., 2005). The proposed wells are located within the floodplain and old meander loops of the Willamette River where the Willamette Silt has largely been removed.

Certificate	Authorized POA(s)	Proposed Changes	Same Aquifer?
79879	POLK 2878	Add POLK 54272/Well 27	Yes
		Add POLK 51391/Well 22	Yes
67321	4 surface water PODs	Add NLOG/Well 28	Cannot confirm or deny
37342	POLK 2190	Add POLK 53561	Yes
		add NLOG/Well 28	Cannot confirm or deny
95332	POLK 2880/Well 3	Add POLK 54272/Well 27	Yes

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

☐ Yes ☒ No see comments in section 2a.

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.): n/a

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

☐ Yes ☐ No Comments: see table for assessment of each proposed change

Certificate	Authorized POA(s)	Proposed Changes	Increase GW interference?	Prevents GW access?
79879	POLK 2878	Add POLK 54272/Well 27	yes	No, see Fig.2
		Add POLK 51391/Well 22	no	no
67321	4 surface water PODs	Add NLOG/Well 28	yes	No, Fig. 5
37342	POLK 2190	Add POLK 53561	yes	No, Fig. 7
		Add NLOG/Well 28	n/a	n/a
95332	POLK 2880/Well 3	Add POLK 54272/Well 27	yes	No, Fig. 9

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

☐ Yes ☒ No If yes, explain: Drawdown estimates between a single pumping well and a conservatively close neighbor indicate well to well interference are estimated (see figures detailing each proposed transfer). Water level elevations in the subject wells indicate a reasonably efficient, fully penetrating well could accommodate this degree of drawdown and still access groundwater. Aquifer parameters used in the Theis drawdown modeling are associated with Conlon et al. (2005) Upper Sedimentary Unit.

4. 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: **see table below

Certificate	Authorized POA(s)	Proposed Changes	Increase SW interference?	Change in degree of interference
79879	POLK 2878	Add POLK 54272/Well 27	no	n/a
		Add POLK 51391/Well 22	no	n/a

67321	4 surface water PODs	Add NLOG/Well 28	Does not meet standard, see section 5	Does not meet standard, see Fig. 4
37342	POLK 2190	Add POLK 53561	no	n/s
		Add NLOG/Well 28	n/a	n/a
95332	POLK 2880/Well 3	Add POLK 54272/Well 27	no	n/a

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: **see table above

☐ Minimal ☐ Significant

Stream: _____

☐ Minimal ☐ Significant

Provide context for minimal/significant impact: The assessment of changes in interference are limited to Rickreall Creek, Hayden Slough and the Willamette River.

5. For SW-GW transfers, will the proposed change in point of diversion affect the surface water source similarly (as per OAR 690-380-2130) to the authorized point of diversion specified in the water use subject to transfer?
☐ Yes ☒ No Comments: The change proposed to Certificate 67321 is the only surface water to groundwater transfer. As shown in Figure 4, stream depletion (estimates made with Hunt, 1999) does not meet the standard of 50% of pumping after 10 days of pumping. Additionally, there is no well log for Well 28, so this review cannot determine that the well meets current minimum well construction standards. This well was denied a groundwater permit in part because of the lack of well construction records for Application G-18552.
6. What conditions or other changes in the application are necessary to address any potential issues identified above: none
7. Any additional comments:

Cumulative effects of wells included in multiple transfers on the subject property are addressed here.

Changes to Certificates 95332 (0.28 cfs) and 79879 (0.59 cfs) propose transferring an unspecified portion of the water rights to POLK 54272. GR Modifications are also under review (T-13567, T-13568, T-13569) that propose to transfer use to POLK 54272 for a total possible rate of 4.212 cfs (total of 300 acres of primary irrigation). POLK 54272 is located in close proximity (within 300 feet) to at least 3 wells, and the cumulative impact of a new pumping center at this location is modeled in Figure 10. The cumulative impact of moving 300 acres of primary irrigation to POLK 54272, as proposed by the combination of changes produces a total drawdown at a distance of 300 feet ranging from 1 to 12 feet. This is not expected to prevent nearby fully penetrating and reasonably efficient wells from accessing water.

Changes are proposed to add POLK 53561 to 5 groundwater rights (Certificate 37342, GR 682, GR 683, GR 685, GR 1515) for a cumulative right of 430 acres of primary irrigation. These changes are proposed through T13563, T13564, T13565, T13566, T13570. This cumulative rate, normalized to 240 days of pumping up to 3 acre-feet per acre, is 1,216 gpm. This is not expected to prevent nearby fully penetrating and reasonably efficient wells from accessing water (see Figure 12).

References

Conlon, T.D., Wozniak, K.C., Woodcock, D., Herrera, N.B., Fisher, B.J., Morgan, D.S., Lee, K.K., and Hinkle, S.R., 2005. Ground-Water Hydrology of the Willamette Basin, Oregon; U.S. Geological Survey Scientific Report 2005-5168.

Hunt, B., 1999, Unsteady stream depletion from ground water pumping: Ground Water, v. 37, no. 1, p. 98-102. OWRD water level, well log, and pump test databases including reported water levels.

Theis, C.V., 1941, The effect of a well on the flow of a nearby stream: American Geophysical Union Transactions, v. 22, pt.3, p. 734-738.

US Geological Survey Topographic Map, Rickreall and Salem West Quadrangles.

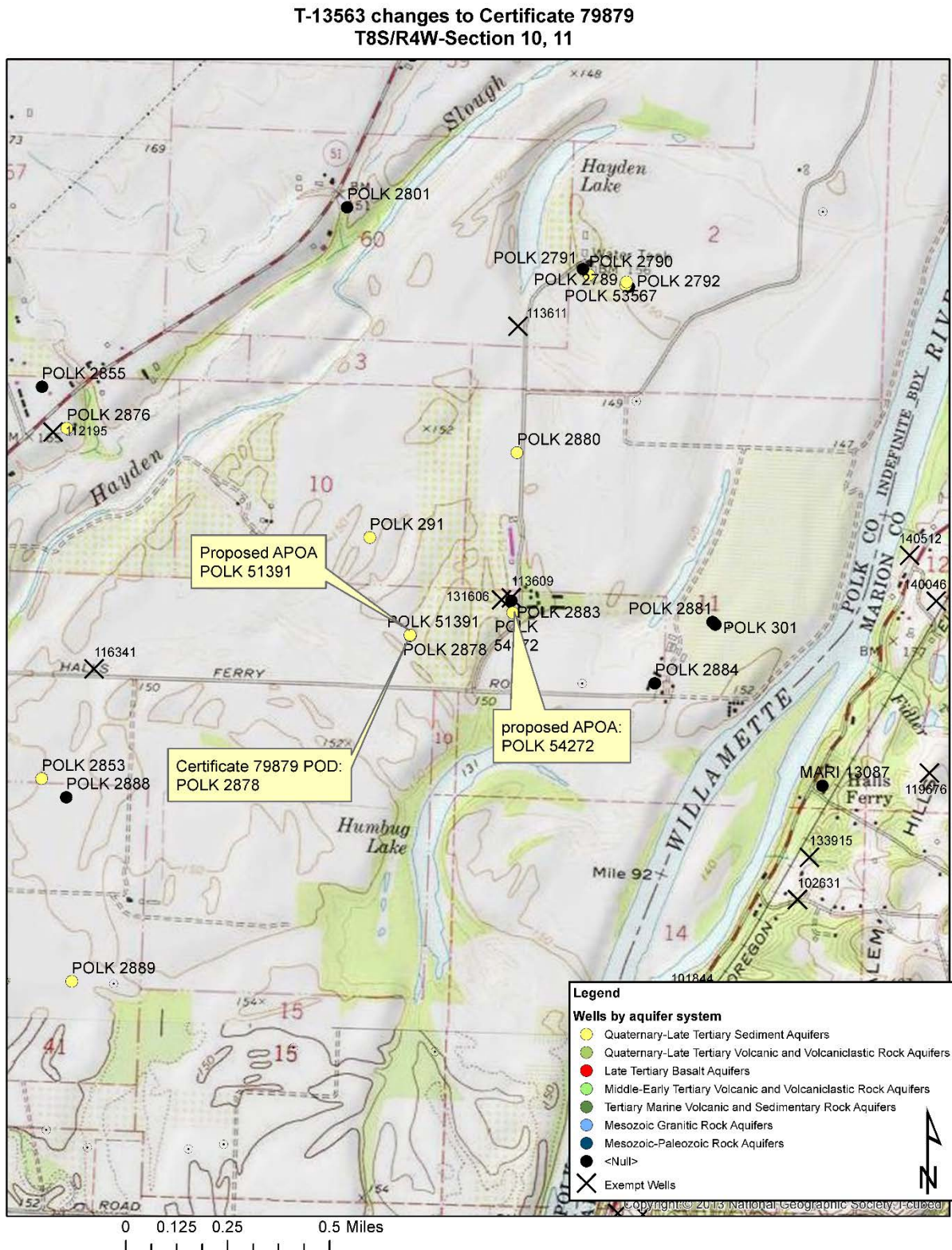
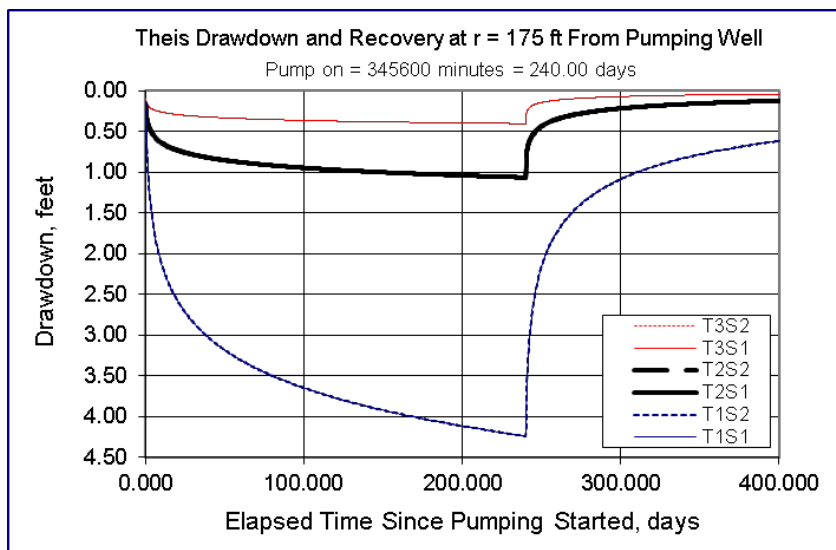
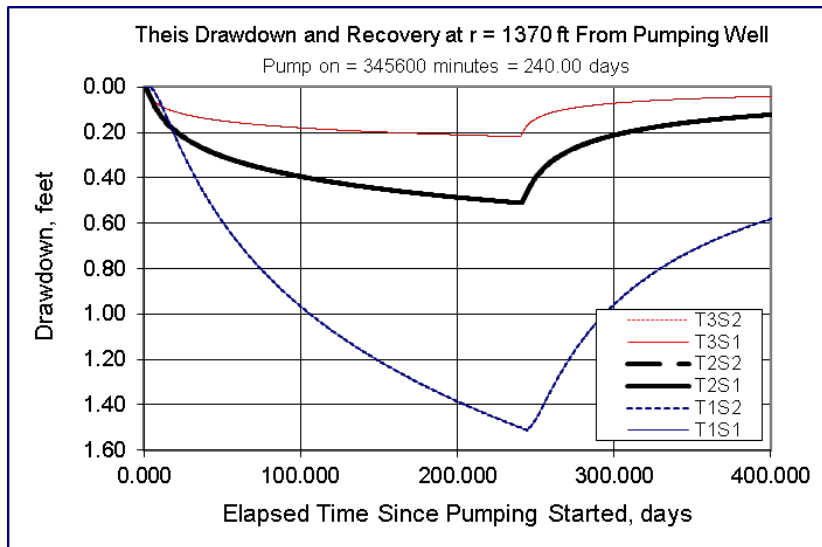
Figures related to Changes to Certificate 79879**Figure 1. Well locations**

Figure 2. Change in groundwater interference associated with moving 0.59 cfs of Certificate 79879 from POLK 2878 to POLK 54272 ranges from 0.25 to 4 feet.



Input Data:	Var Name	Scenario 1	Scenario 2	Scenario 3	Units
Total pumping time	t		240		d
Radial distance from pumped well:	r		175		ft
Pumping rate	Q		0.59		cfs
Hydraulic conductivity	K	300	1500	4500	ft/day
Aquifer thickness	b		20		ft
Storativity	S_1		0.2		
	S_2		0.2		
Transmissivity Conversions	T_f2pd	6000	30000	90000	ft ² /day
	T_ft2pm	4.1666667	20.833333	62.5	ft ² /min
	T_gpdpt	44880	224400	673200	gpd/ft

Figure 3. Well locations

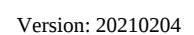
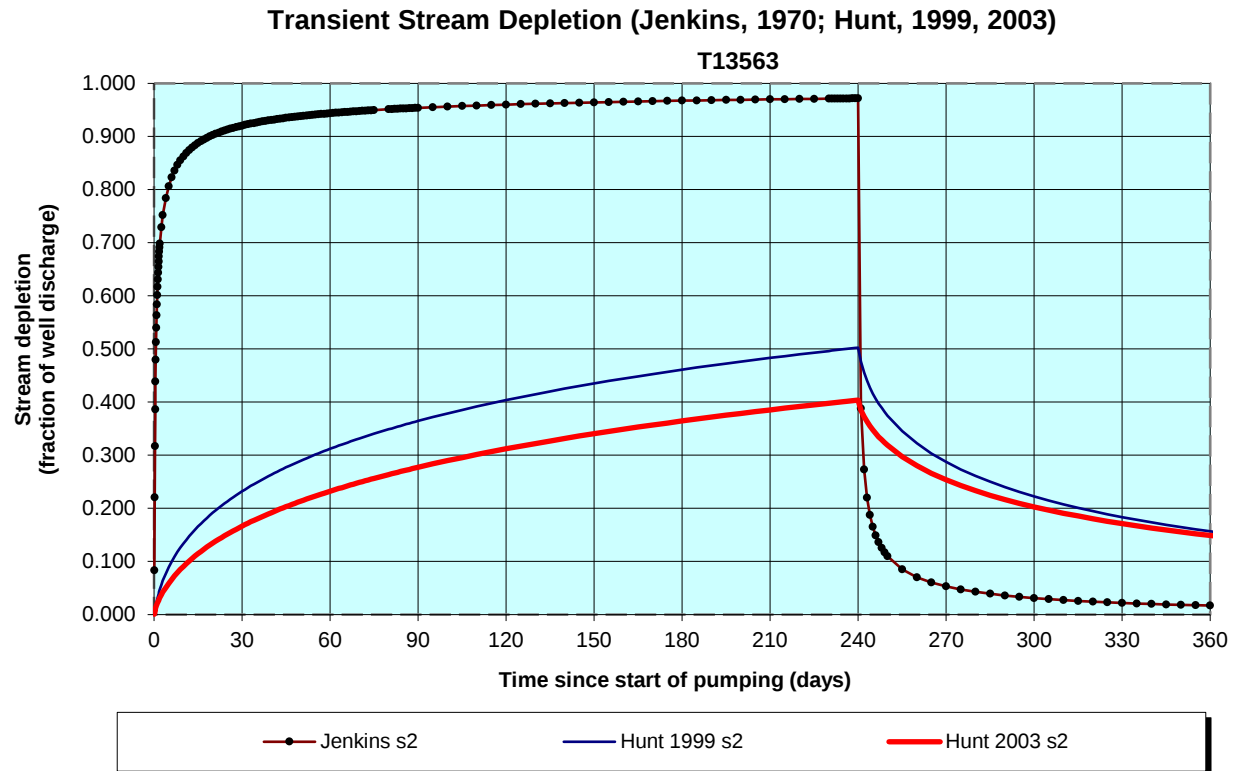


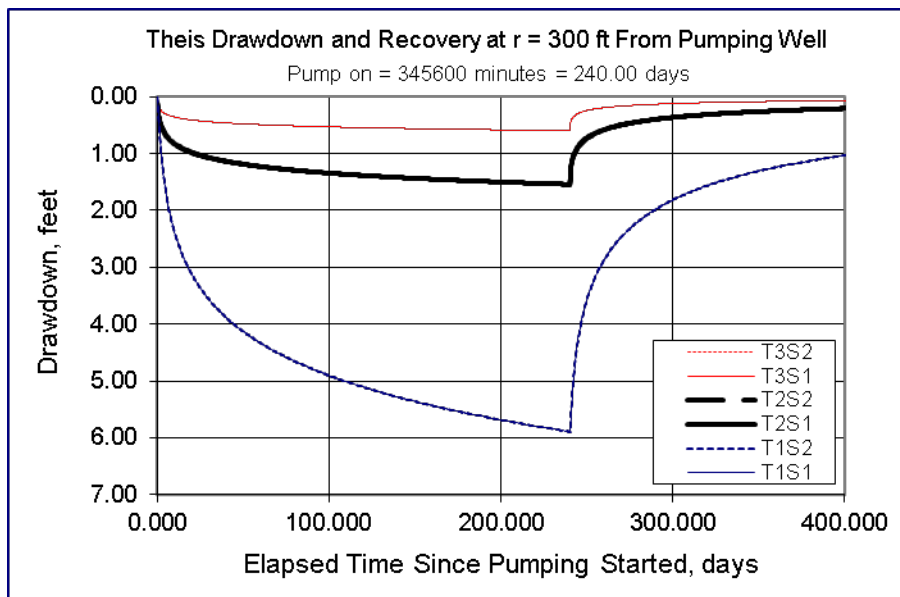
Figure 4. Stream depletion of Rickreall Creek by pumping Well 28/no log. The degree of surface water interference does not meet the standard for surface water to groundwater transfers.



Output for Stream Depletion, Scenario 2 (s2):						Time pump on (pumping duration) = 240 days							
Days	30	60	90	120	150	180	210	240	270	300	330	360	
J SD	92.0%	94.4%	95.4%	96.0%	96.4%	96.7%	97.0%	97.2%	5.3%	3.1%	2.2%	1.7%	
H SD 1999	23.2%	31.2%	36.5%	40.4%	43.5%	46.1%	48.3%	50.2%	28.7%	22.3%	18.4%	15.7%	
H SD 2003	16.65%	23.23%	27.74%	31.21%	34.06%	36.45%	38.54%	40.38%	25.38%	20.28%	17.13%	14.89%	
Qw, cfs	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
H SD 99, cfs	0.232	0.312	0.365	0.404	0.435	0.461	0.483	0.502	0.287	0.223	0.184	0.157	
H SD 03, cfs	0.166	0.232	0.277	0.312	0.341	0.365	0.385	0.404	0.254	0.203	0.171	0.149	

Parameters:		Scenario 1	Scenario 2	Scenario 3	Units
Net steady pumping rate of well	Qw	1.00	1.00	1.00	cfs
Time pump on (pumping duration)	tpon	240	240	240	days
Perpendicular from well to stream	a	300	300	300	ft
Well depth	d	61	61	61	ft
Aquifer hydraulic conductivity	K	300	1500	4500	ft/day
Aquifer saturated thickness	b	20	20	20	ft
Aquifer transmissivity	T	6000	30000	90000	ft*ft/day
Aquifer storativity or specific yield	S	0.2	0.2	0.2	
Aquitard vertical hydraulic conductivity	Kva	0.5	0.5	0.5	ft/day
Aquitard saturated thickness	ba	3	3	3	ft
Aquitard thickness below stream	babs	3	3	3	ft
Aquitard porosity	n	0.2	0.2	0.2	
Stream width	ws	50	50	50	ft

Figure 5. Change in groundwater interference for moving 0.99 cfs of Certificate 67321 from a surface water diversion to Well 28 (which has no well log).



Input Data:	Var Name	Scenario 1	Scenario 2	Scenario 3	Units
Total pumping time	t		240		d
Radial distance from pumped well:	r		300		ft
Pumping rate	Q		0.99		cfs
Hydraulic conductivity	K	300	1500	4500	ft/day
Aquifer thickness	b		20		ft
Storativity	S ₁		0.2		
	S ₂		0.2		
Transmissivity Conversions	T _{f2pd}	6000	30000	90000	ft ² /day
	T _{f2pm}	4.1666667	20.833333	62.5	ft ² /min
	T _{gdpft}	44880	224400	673200	gpd/ft

Figure 6. Well locations map

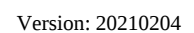
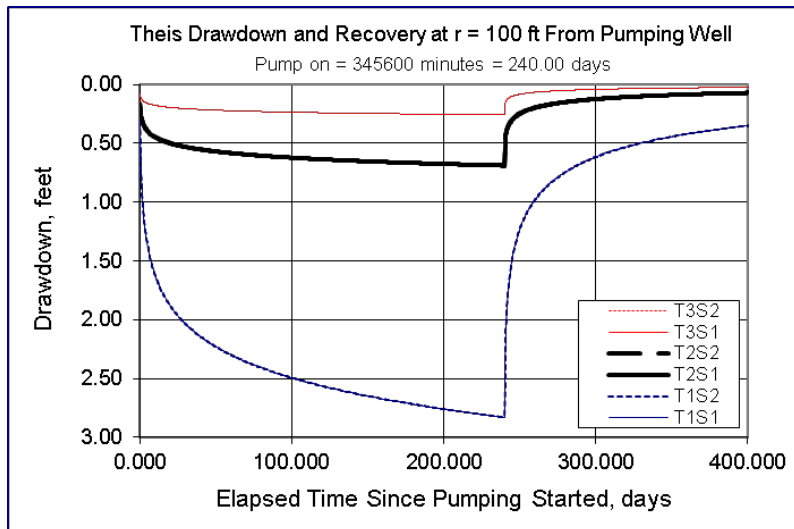
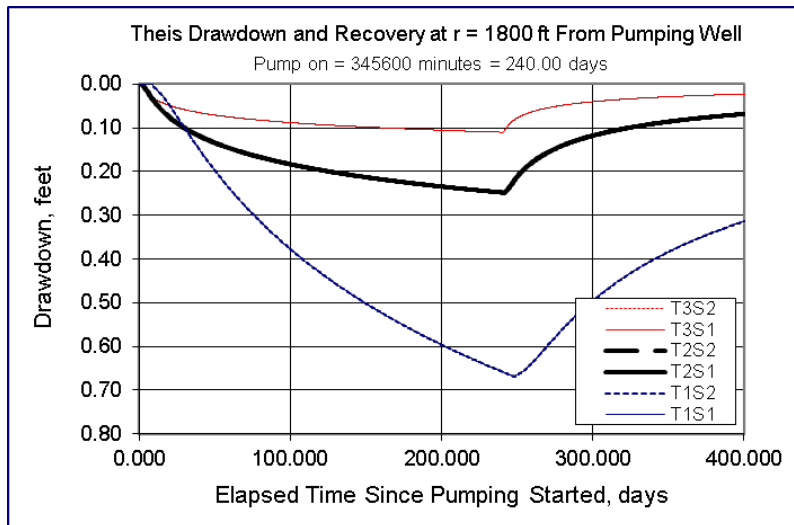


Figure 7. Groundwater interference when moving 53 acres of supplemental irrigation of Certificate 37342 from POLK 2190 to POLK 53561 increases up to 2 feet.



Input Data:	Var Name	Scenario 1	Scenario 2	Scenario 3	Units
Total pumping time	t		240		d
Radial distance from pumped well:	r		100		ft
Pumping rate	Q		150		gpm
Hydraulic conductivity	K	300	1500	4500	ft/day
Aquifer thickness	b		20		ft
Storativity	S_1		0.2		
	S_2		0.2		
Transmissivity Conversions	T_f2pd	6000	30000	90000	ft ² /day
	T_ft2pm	4.1666667	20.833333	62.5	ft ² /min
	T_gpdft	44880	224400	673200	gpd/ft

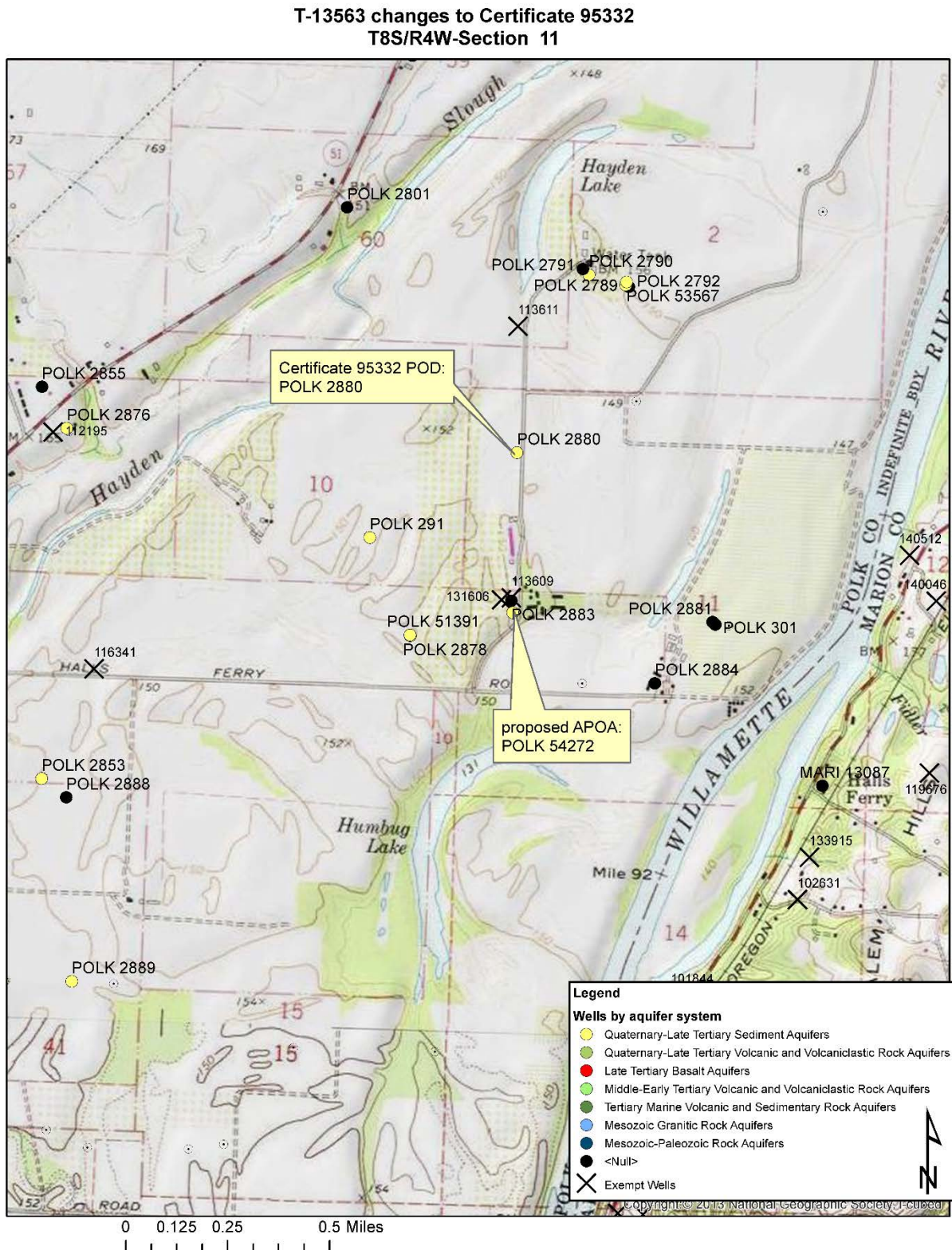
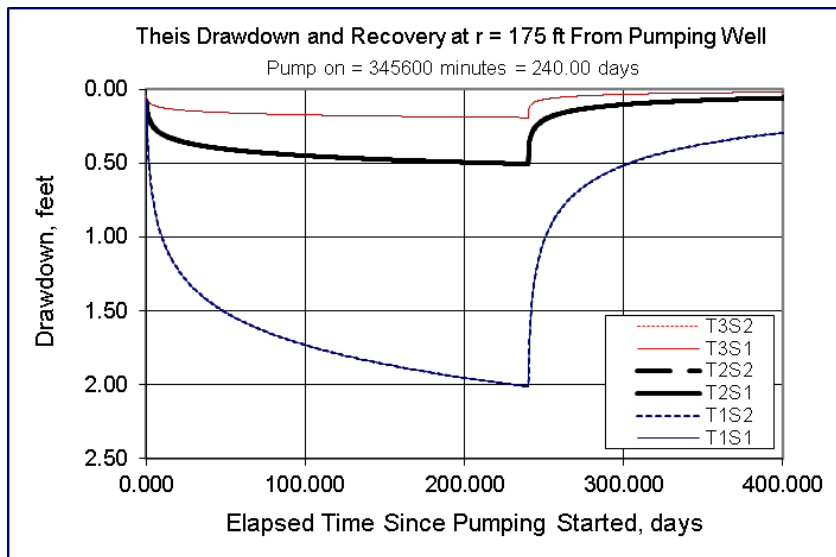
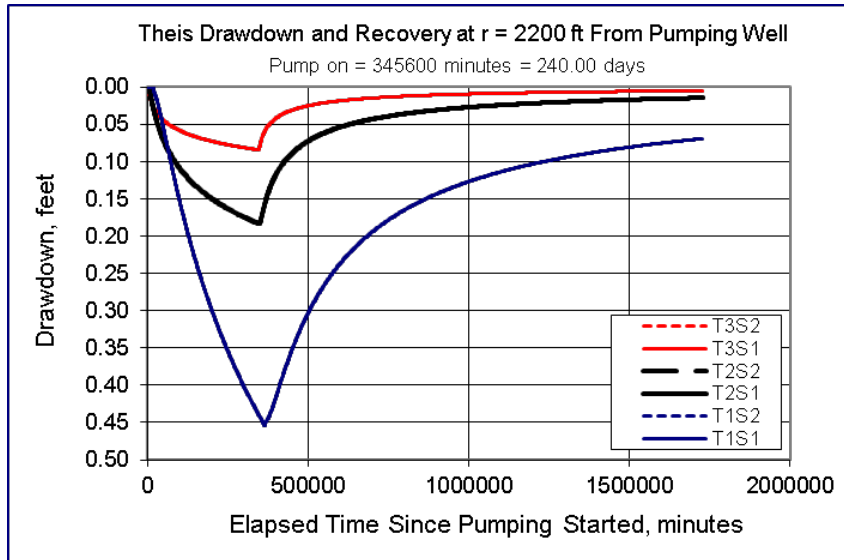
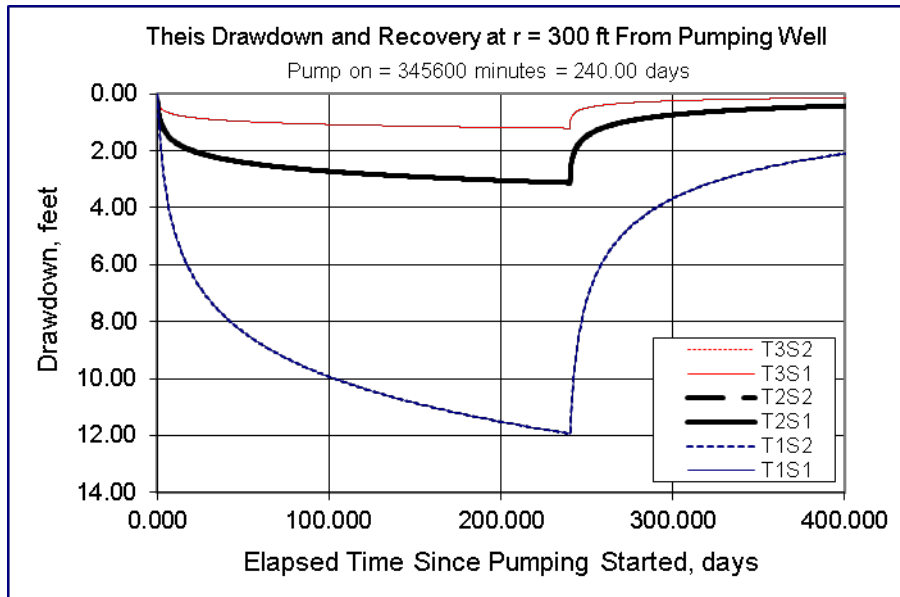
Changes to Certificate 95332**Figure 8. Well locations**

Figure 9. Groundwater interference for Certificate 95332 increases up to 1.5 feet by moving the entire pumping rate from POLK 2880 to POLK 54272.



Input Data:	Var Name	Scenario 1	Scenario 2	Scenario 3	Units
Total pumping time	t		240		d
Radial distance from pumped well:	r		175		ft
Pumping rate	Q		0.28		cfs
Hydraulic conductivity	K	300	1500	4500	ft/day
Aquifer thickness	b		20		ft
Storativity	S 1		0.2		
	S 2		0.2		
Transmissivity Conversions	T_f2pd	6000	30000	90000	ft ² /day
	T_ft2pm	4.1666667	20.833333	62.5	ft ² /min
	T_gpdpft	44880	224400	673200	gpd/ft

Figure 10. Cumulative drawdown from irrigating 300 acres solely from POLK 54272 with pumping rate normalized to 3 AF/acre over 240 days. This is a cumulative result of the changes proposed to Certificates 79879 and 95332 in addition to T-13567, T-13568, T-13569.



Input Data:	Var Name	Scenario 1	Scenario 2	Scenario 3	Units
Total pumping time	t		240		d
Radial distance from pumped well:	r		300		ft
Pumping rate	Q		900		gpm
Hydraulic conductivity	K	300	1500	4500	ft/day
Aquifer thickness	b		20		ft
Storativity	S 1		0.2		
	S 2		0.2		
Transmissivity Conversions	T f2pd	6000	30000	90000	ft ² /day
	T_ft2pm	4.1666667	20.8333333	62.5	ft ² /min
	T_gpdpft	44880	224400	673200	gpd/ft

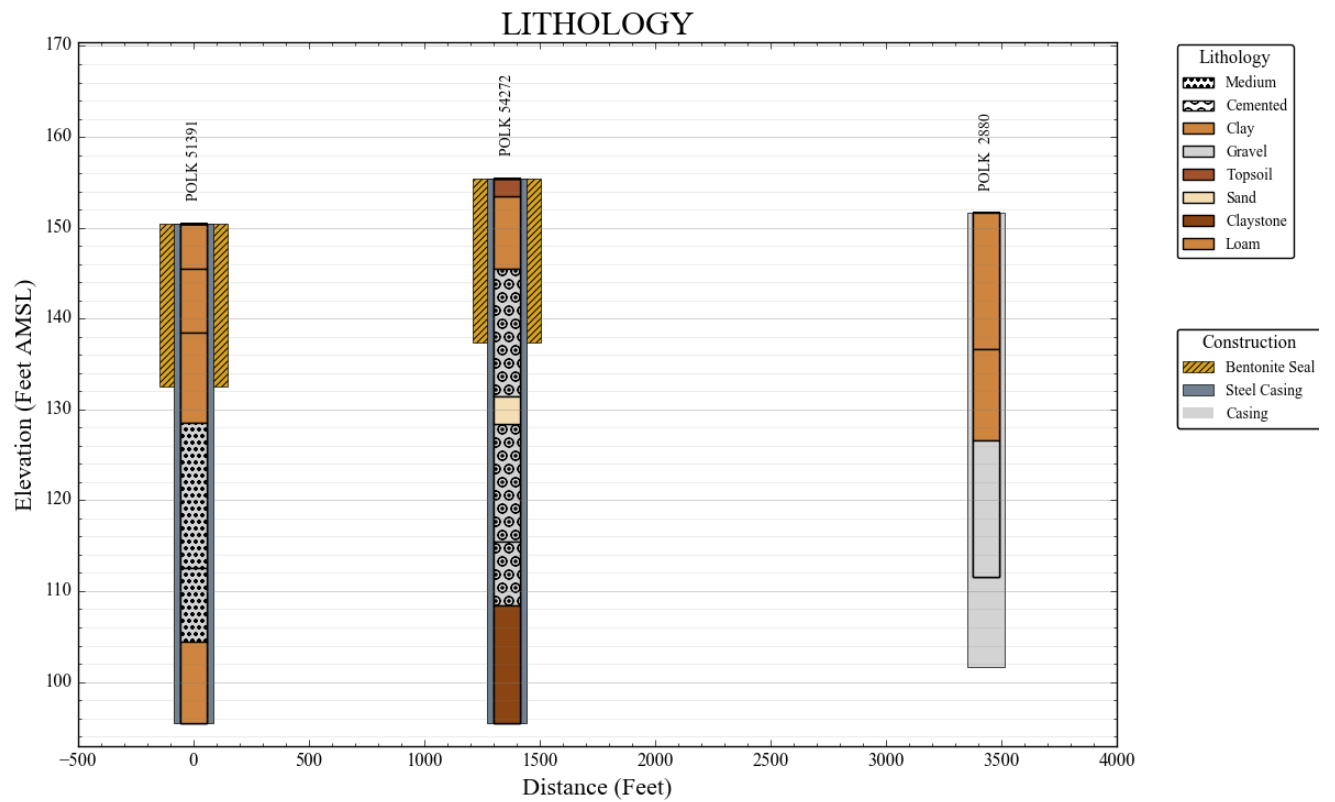
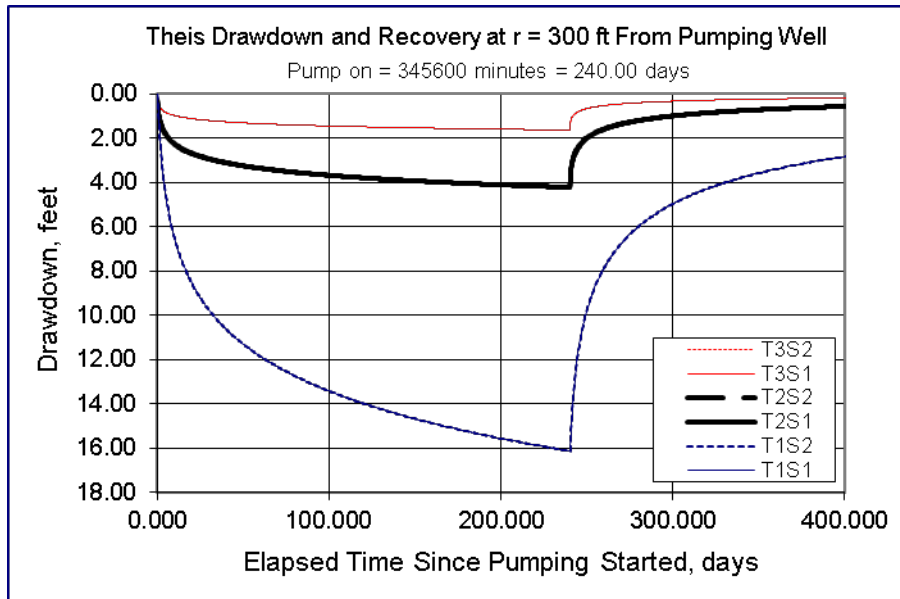
Figure 11. Cross Sectional diagram for this pumping center:

Figure 12. Cumulative drawdown from irrigating 430 acres solely from POLK 53561 with pumping rate normalized to 3 AF/acre over 240 days. This is a cumulative result of the changes proposed to Certificates 37342 in addition to T-13564, T-13565, T-135669, T-13570.



Input Data:	Var Name	Scenario 1	Scenario 2	Scenario 3	Units
Total pumping time	t		240		d
Radial distance from pumped well:	r		300		ft
Pumping rate	Q		1216		gpm
Hydraulic conductivity	K	300	1500	4500	ft/day
Aquifer thickness	b		20		ft
Storativity	S 1		0.2		
	S 2		0.2		
Transmissivity Conversions	T f2pd	6000	30000	90000	ft ² /day
	T ft2pm	4.1666667	20.8333333	62.5	ft ² /min
	T gpdpft	44880	224400	673200	gpd/ft