

Approved: 

MEMO

To: Kristopher Byrd, Well Construction and Compliance Section Manager
From: Travis Kelly, Well Construction Program Coordinator
Subject: Review of Water Right Application G-18967
Date: August 18, 2020

The attached application was forwarded to the Well Construction and Compliance Section by the Groundwater Section. Travis Brown reviewed the application. Please see Travis's review and the Well Reports.

Applicant's Well #1 (CLAC 53757): Based on a review of the Well Report, Applicant's Well #1 seems to protect the groundwater resource.

The construction of Applicant's Well #1 may not satisfy hydraulic connection issues.

Applicant's Well #2 (CLAC 74503): Based on a review of the Well Report, Applicant's Well #2 seems to protect the groundwater resource.

The construction of Applicant's Well #2 may not satisfy hydraulic connection issue.

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

Clac
53757

RECEIVED

WELL I.D.# 13590

SEP 11 1998

(START CARD) # 101527

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

(1) OWNER:
Name Ron Heyerly & Sons
Address 32899 S. Dryland Rd.
City Molalla State OR Zip 97038

Well No. WATER RESOURCES DEPT. SALEM, OREGON

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

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

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

(5) BORE HOLE CONSTRUCTION:
Special Construction approval Yes No Depth of Completed Well 411 ft.
Explosives used Yes No Type _____ Amount _____

HOLE			SEAL			
Diameter	From	To	Material	From	To	Sacks or pounds
16"	0	180	cement & 5% bentonite	0	180	89sacks
16"	180	411				

How was seal placed: Method A B C D E
 Other _____
Backfill placed from _____ ft. to _____ ft. Material _____
Gravel placed from 180 ft. to 411 ft. Size of gravel 5x8

(6) CASING/LINER:

Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing: 10"	+1 1/2'	347'	.250	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2"	+1'	343 1/2'	galv	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Liner:			gravel feed pipe	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Final location of shoe(s) None

(7) PERFORATIONS/SCREENS:

From	To	Slot size	Number	Diameter	Tele/pipe size	Casing	Liner
347'	374'	6 1/2" .080		10"	p.s.	<input type="checkbox"/>	<input type="checkbox"/>
374'	390'	6 1/2" .080		10"	p.s.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
390'	395'	3" .080		10"	p.s.	<input type="checkbox"/>	<input type="checkbox"/>
395'	411'			10"		<input checked="" type="checkbox"/>	<input type="checkbox"/>

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

<input checked="" type="checkbox"/> Pump	<input type="checkbox"/> Bailer	<input type="checkbox"/> Air	<input type="checkbox"/> Flowing Artesian
Yield gal/min	Drawdown	Drill stem at	Time
680	113'		1 hr.
650	122' 6"		4 hrs
650	124'		6 hrs

Temperature of water 54 Depth Artesian Flow Found _____
Was a water analysis done? Yes By whom _____
Did any strata contain water not suitable for intended use? Too little
 Salty Muddy Odor Colored Other _____
Depth of strata: _____

(9) LOCATION OF WELL by legal description:
County Clackamas Latitude _____ Longitude _____
Township 5S N or S Range 1E E or W. WM.
Section 12 NE 1/4 SE 1/4
Tax Lot 1800 Lot _____ Block _____ Subdivision _____
Street Address of Well (or nearest address) _____

(10) STATIC WATER LEVEL:
122 ft. below land surface. Date 8/5/98
Artesian pressure _____ lb. per square inch. Date _____

(11) WATER BEARING ZONES:

Depth at which water was first found 347'

From	To	Estimated Flow Rate	SWL
347	365	200gpm	137'
368	374	200gpm	137'
390	395	300gpm	137'

(12) WELL LOG:
Ground Elevation _____

Material	From	To	SWL
Topsoil	0	1	
Clay brown	1	5	
Gravel, clay	5	29	
Clay brown	29	34	
Gravel, clay	34	48	
Clay red-brown, gravel	48	52	
Clay gray sticky	52	59	
Clay red-brown w/sand	59	62	
Clay brown sandy	62	82	
Clay brown	82	86	
Clay brown sandy	86	102	
Clay gray sticky	102	105	
Clay gray w/sand & gravel	105	112	
Sand brown & clay	112	138	
Sandy clay gray	138	147	
Clay blue sandy	147	158	
Clay blue w/sand & gravel	158	165	
Clay blue	165	188	
Clay blue & claystone	188	194	
Clay brown			

~~Clay brown~~ See Attached Sheet

Date started 4/29/98 Completed 8/7/98

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

Signed Jay A. Aoz WWC Number 1704
Date 9/8/98

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

Signed Ivan Grossen WWC Number 783
Date 9/4/98

Clac
53157

Ron Heyerly & Sons

Start Card # 101527

Well I.D.# L13590

Well Log Continued	From	To	SWL
Clay Green	194	203	
Clay gray	203	224	
Clay blue	224	229	
Clay blue sticky	229	247	
Clay brown	247	282	
Sand & clay brown	282	283	
Clay gray sticky	283	288	
Sand clay gray	288	306	
Clay gray w/blue claystone	306	329	
Clay & claystone blue	329	347	
Sandstone black	347	350	137'
Sand black coarse	350	354	137'
Sand black w/hard sandy clay	354	356	137'
Sand gravel, & clay	356	365	137'
Clay gray sticky	365	368	
Sand black	368	374	137'
Clay gray	374	390	
Sand black	390	395	137'
Clay gray	395	411	

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

WELL I.D. LABEL# L 120911
 START CARD # 215098
 ORIGINAL LOG #

CLAC 74503

(1) LAND OWNER
 Owner Well I.D. _____
 First Name _____ Last Name _____
 Company East Valley Seed Co.
 Address 31958 S. Hwy 213
 City Molalla State OR Zip 97038

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

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

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

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

(5) BORE HOLE CONSTRUCTION Special Standard (Attach copy)
 Depth of Completed Well 422.25 ft.
 BORE HOLE SEAL

Dia	From	To	Material	From	To	Amt	sacks/lbs
20	0	50	Bentonite Chps	0	50	98	S
16	50	422.25				Calculated	95
						Calculated	

 How was seal placed: Method A B C D E
 Other Or 690-210-0340
 Backfill placed from _____ ft. to _____ ft. Material _____
 Filter pack from 320 ft. to 422.25 ft. Material pea gravel Size 3/6
 Explosives used: Yes Type _____ Amount _____

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

(6) CASING/LINER

Casing	Liner	Dia	+	From	To	Gauge	Stil	Plstc	Wld	Thrd
<input checked="" type="checkbox"/>	<input type="checkbox"/>	16	<input checked="" type="checkbox"/>	1.58	344		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	10	<input checked="" type="checkbox"/>	2.42	422.25		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

 Shoe Inside Outside Other Location of shoe(s) 344
 Temp casing Yes Dia _____ From _____ To _____

(7) PERFORATIONS/SCREENS
 Perforations Method _____
 Screens Type v wire Material stainless steel

Perf/S	Casing/Screen	Liner	Dia	From	To	Scrn/slot width	Slot length	# of slots	Tele/pipe size
Screen			10	346.5	374	.08			10
Screen			10	393	410.25	.08			10

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

Yield gal/min	Drawdown	Drill stem/Pump depth	Duration (hr)
425	161		4

 Temperature 53 °F Lab analysis Yes By _____
 Water quality concerns? Yes (describe below) TDS amount 97

From	To	Description	Amount	Units

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(9) LOCATION OF WELL (legal description)
 County CLACKAMAS Twp 5 S N/S Range 1 E E/W WM
 Sec 12 SW 1/4 of the SE 1/4 Tax Lot 01700
 Tax Map Number _____ Lot _____
 Lat _____ DMS or DD
 Long _____ DMS or DD
 Street address of well Nearest address
 11738 S Hwy 213, Molalla OR 97038

(10) STATIC WATER LEVEL

Existing Well / Pre-Alteration	Date	SWL(psi)	+ SWL(ft)
Completed Well	08-09-2018		147

 Flowing Artesian? Dry Hole?
 WATER BEARING ZONES Depth water was first found 318

SWL Date	From	To	Est Flow	SWL(psi)	+ SWL(ft)
06-10-2018	347	361	200		147
06-13-2018	393	399	200		147

(11) WELL LOG
 Ground Elevation _____

Material	From	To
topsoil	0	2
clay, brown, hard	2	5
claybound gravel, brown	5	41
clay, red and brown, sticky	41	57
red and brown clay, some gravel	57	59
clay, dark gray, sticky	59	64
brown, sandy clay	64	93
clay, dark gray, sandy	93	96
clay, dark gray, silty	96	98
clay, greenish green, sticky	98	106
clay, dark gray, hard, sticky	106	129
clay, greenish gray, sticky	129	136
clay, gray, gravel, drills open	136	143
claystone, bluish greenish gray, soft	143	157
clay, green, hard	157	163
clay, green and gray, med	163	188
claystone, dark gray, soft	188	191
silt, greenish gray, very dense	191	207
silt, gray, very dense	207	229

 Date Started 04-06-2018 Completed 08-21-2018

(unbonded) Water Well Constructor Certification
 I certify that the work I performed on the construction, deepening, alteration, or abandonment of this well is in compliance with Oregon water supply well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.
 License Number 1704 Date 09-10-2018
 Signed _____

(bonded) Water Well Constructor Certification
 I accept responsibility for the construction, deepening, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon water supply well construction standards. This report is true to the best of my knowledge and belief.
 License Number 783 Date 09-10-2018
 Signed *Jan Drossen*
 Contact Info (optional) _____

WATER SUPPLY WELL REPORT - continuation page

WELL I.D. LABEL# L	120911
START CARD #	215098
ORIGINAL LOG #	

(2a) PRE-ALTERATION

Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd

Material	From	To	Amt	sacks/lbs

(5) BORE HOLE CONSTRUCTION

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

FILTER PACK

From	To	Material	Size

(6) CASING/LINER

Casing Liner	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd

(7) PERFORATIONS/SCREENS

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

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

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

Water Quality Concerns

CLAC 74503

From	To	Description	Amount	Units

(10) STATIC WATER LEVEL

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

(11) WELL LOG

Material	From	To
clay, dark gray, hard	229	232
claystone, dark bluish green	232	274
clay, brown, hard	274	276
claystone, blueish green	276	281
clay, blueish gray, sticky	281	284
silt, gray, very dense	284	296
clay, gray, sandy	296	297
claystone, blueish gray	297	304
silt, grey,	304	316
clay, sandy, dark grey	316	318
sand, black, course	318	319
silt, blue/grey	319	337
clay, grey	337	342
silt, brown, soft	342	347
sand, med fine, brown	347	355
sand course, cemented black	355	359
sand, med course black	359	361
sand, Cemented grey	361	363
clay, blueish green	363	366
silt, brown, , with sand layers	366	374
silt, dark brown	374	378
clay, green, hard	378	383
silt, dark green,	383	386
silt, dark, green, hard	386	391
clay, grey, soft	391	393
sand, course, black	393	395
Sand, black, silt	395	399
silt, grey,	399	409
clay, sticky, green	413	422

Comments/Remarks

lift bail at 420.75
bottom plate at 422.25

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OCT 17 2018

Groundwater Application Review Summary Form

Application # G- 18967

GW Reviewer Travis Brown Date Review Completed: 8/12/2020

Summary of GW Availability and Injury Review:

Groundwater for the proposed use is either over appropriated, will not likely be available in the amounts requested without injury to prior water rights, OR will not likely be available within the capacity of the groundwater resource per Section B of the attached review form.

Summary of Potential for Substantial Interference Review:

There is the potential for substantial interference per Section C of the attached review form.

Summary of Well Construction Assessment:

The well does not appear to meet current well construction standards per Section D of the attached review form. Route through Well Construction and Compliance Section.

This is only a summary. Documentation is attached and should be read thoroughly to understand the basis for determinations and for conditions that may be necessary for a permit (if one is issued).

WATER RESOURCES DEPARTMENT

MEMO

August 12, 2020

TO: Application G- 18967

FROM: GW: Travis Brown
(Reviewer's Name)

SUBJECT: Scenic Waterway Interference Evaluation

YES The source of appropriation is hydraulically connected to a State Scenic Waterway or its tributaries

NO

YES Use the Scenic Waterway Condition (Condition 7J)

NO

Per ORS 390.835, the Groundwater Section is **able** to calculate ground water interference with surface water that contributes to a Scenic Waterway. The calculated interference is distributed below

Per ORS 390.835, the Groundwater Section is **unable** to calculate ground water interference with surface water that contributes to a scenic waterway; **therefore, the Department is unable to find that there is a preponderance of evidence that the proposed use will measurably reduce the surface water flows necessary to maintain the free-flowing character of a scenic waterway**

DISTRIBUTION OF INTERFERENCE

Calculate the percentage of consumptive use by month and fill in the table below. If interference cannot be calculated, per criteria in 390.835, do not fill in the table but check the "unable" option above, thus informing Water Rights that the Department is unable to make a Preponderance of Evidence finding.

Exercise of this permit is calculated to reduce monthly flows in [Enter] Scenic Waterway by the following amounts expressed as a proportion of the consumptive use by which surface water flow is reduced.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date 8/12/2020
 FROM: Groundwater Section Travis Brown
 Reviewer's Name
 SUBJECT: Application G- 18967 Supersedes review of _____
 Date of Review(s) _____

PUBLIC INTEREST PRESUMPTION; GROUNDWATER

OAR 690-310-130 (1) *The Department shall presume that a proposed groundwater use will ensure the preservation of the public welfare, safety and health as described in ORS 537.525. Department staff review groundwater applications under OAR 690-310-140 to determine whether the presumption is established. OAR 690-310-140 allows the proposed use be modified or conditioned to meet the presumption criteria. This review is based upon available information and agency policies in place at the time of evaluation.*

A. GENERAL INFORMATION: Applicant's Name: Heyerly Brothers c/o Jeff Heyerly County: CLACKAMAS

A1. Applicant(s) seek(s) 1.63^a cfs from 2 well(s) in the Willamette Basin,
Pudding-Molalla subbasin

A2. Proposed use Irrigation (130.1 acre; 325.25 af/year) Seasonality: March 1 – October 31

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

Well	Logid	Applicant's Well ID	Proposed Aquifer*	Proposed Rate(cfs)	Location (T/R-S QQ-Q)	Location, metes and bounds, e.g. 2250' N, 1200' E fr NW cor S 36
1	CLAC 53757	Well 1	Alluvium	3.93 ^a	5S/1E-12 NE-SE	420' S, 690' W fr E ¼ cor S 12
2	CLAC 74503	Well 2	Alluvium	3.93 ^a	5S/1E-12 NW-SE	App: 1025' S, 2520' W fr E ¼ cor S 12^b OWRD: 1230' S, 2600' W fr E ¼ cor S 12

* Alluvium, CRB, Bedrock

Well	Well Elev (ft msl)	First Water (ft bls)	SWL (ft bls)	SWL Date	Well Depth (ft)	Seal Interval (ft)	Casing Intervals (ft)	Liner Intervals (ft)	Perforations Or Screens (ft)	Well Yield (gpm)	Draw Down (ft)	Test Type
1	320 ^c	347	139.50	3/5/2008	411	0-180	+1.5-347 (10")		347-374.5 390-395.25	650 ^d	124 ^d	Pump ^d (6 hr)
2	307 ^c	347	128.08	3/13/2019	422	0-50	+1.58-344 (16") +2.42-422.25 (10")		356.5-374 393-410.25	430 ^e	158 ^e	Pump ^e (4 hr)

Use data from application for proposed wells.

A4. **Comments:** The proposed POA/POU are ~0.5 miles west of Molalla, Oregon.

^a The proposed POA are already authorized POA under Permit G-17897*. The proposed rate listed above represents the authorized rate from Permit G-17897* (2.3 cfs) plus the rate requested in this Application G-18967. However, because the authorized season of use for Permit G-17897* only extends from May 1 – October 30 of each year, the combined rate subsequent to this application would be only 1.63 cfs from March 1 – April 30 of each year. The proposed POA were also the subject of temporary transfer T-13439; however, the rate requested in T-13439 has not been added to the rate assessed in this application as the stated intent of that temporary transfer was to provide water until a permit could be issued under this new groundwater right application.

^b There is a discrepancy between the metes and bounds location of POA 2 (CLAC 74503) described in the application (and Permit G-17897*) and the well location as verified by a field well inspection by Department staff (see Table A3, above). The Department-verified location will be used for assessing potential impacts resulting from the proposed use.

^c Ground surface elevation at well location estimated from LIDAR (Watershed Sciences, 2009).

^d Based on well report; ^e Based on pumping test report.

A5. **Provisions of the** _____ **Willamette** _____ **Basin rules relative to the development, classification and/or management of groundwater hydraulically connected to surface water** **are, or** **are not, activated by this application.**
 (Not all basin rules contain such provisions.)

Comments: The proposed POA produce water from a confined aquifer; therefore, per OAR 690-502-0240, the relevant basin rules do not apply.

A6. **Well(s) #** _____, _____, _____, _____, _____, tap(s) an aquifer limited by an administrative restriction.

Name of administrative area: N/A

Comments: _____

B. GROUNDWATER AVAILABILITY CONSIDERATIONS, OAR 690-310-130, 400-010, 410-0070

B1. **Based upon available data**, I have determined that groundwater* for the proposed use:

- a. is over appropriated, is not over appropriated, or **cannot be determined to be** over appropriated during any period of the proposed use. * This finding is limited to the groundwater portion of the over-appropriation determination as prescribed in OAR 690-310-130;
- b. **will not** or **will** likely be available in the amounts requested without injury to prior water rights. * This finding is limited to the groundwater portion of the injury determination as prescribed in OAR 690-310-130;
- c. **will not** or **will** likely to be available within the capacity of the groundwater resource; or
- d. **will, if properly conditioned**, avoid injury to existing groundwater rights or to the groundwater resource:
 - i. The permit should contain condition 7n(annual measurement), large water use reporting;
 - ii. The permit should be conditioned as indicated in item 2 below.
 - iii. The permit should contain special condition(s) as indicated in item 3 below;

- B2.
- a. **Condition** to allow groundwater production from no deeper than _____ ft. below land surface;
 - b. **Condition** to allow groundwater production from no shallower than _____ ft. below land surface;
 - c. **Condition** to allow groundwater production only from the Troutdale Formation groundwater reservoir between approximately 150 ft. and 600 ft. below land surface;
 - d. **Well reconstruction** is necessary to accomplish one or more of the above conditions. The problems that are likely to occur with this use and without reconstructing are cited below. Without reconstruction, I recommend withholding issuance of the permit until evidence of well reconstruction is filed with the Department and approved by the Groundwater Section.

Describe injury –as related to water availability– that is likely to occur without well reconstruction (interference w/ senior water rights, not within the capacity of the resource, etc): _____

B3. **Groundwater availability remarks:** Groundwater for the proposed use cannot be determined to be over-appropriated due to insufficient available data regarding rates of recharge and the current quantity of groundwater withdrawals from the aquifer system.

The proposed POA produce water from saturated sand within the Troutdale Formation, with water-bearing zones noted from depths of ~347 to 399 ft bls (elevation ~ -27 to -92 ft msl). Well completion statistics indicate falling head with depth in this area (see attached Well Completion Statistics).

Based on their reported yields, the proposed POA are not capable of individually or collectively supplying the maximum combined rate of appropriation (3.93 cfs) under both this **Application G-18967** (1.63 cfs) and **Permit G-17987*** (2.3 cfs); however, two (2) additional POA (not yet constructed) are authorized under **Permit G-18967*** and may be able to supply the remainder of the combined rate of appropriation under **Permit G-17897***.

The nearest neighboring well to the proposed POA is CLAC 66134, an authorized POA under **Certificate 92166*** and **Permits G-15254*** and **G-18008***. Interference with CLAC 66134 due to the proposed use was estimated using the Theis (1935) equation for drawdown in a confined aquifer. To provide a reasonable but still conservative analysis, it was assumed that both POA would pump continuously from March 1 through April 30 (61 days) at the necessary minimum rate (~0.67 cfs) to achieve the applicable duty under **Application G-18967** and subsequently at their maximum reported yield (~2.41 cfs) from May 1 through October 30 (183 days), to account for the potential overlapping use under **Permit G-17897***. **Results of the analysis indicate that by the end of the irrigation season (October 30), interference with CLAC 66134 could exceed ~84 ft of drawdown from the combined use of Application G-18967 and Permit G-17897* (see attached Interference Analysis). Standard condition 7n, recommended for any permit issued pursuant to this application, stipulates that use of water from the proposed POA must be curtailed if interference with a neighboring well exceeds 25 ft of drawdown. Analyzing the impact of just the use proposed under Application G-18967 indicated that at the maximum rate of use (1.63 cfs), interference with CLAC 66134 would likely exceed 25 ft of drawdown after ~4 days of continuous pumping. Therefore, the proposed use is not likely to be available in the amounts requested without injury to prior water rights.**

Water levels reported for POA 1 (CLAC 53757) and CLAC 66134 indicate a moderate declining trend, with observed declines averaging ~0.5 ft/yr over the last decade for CLAC 66134 (see attached Hydrographs). Additional use of the proposed POA could exacerbate these declines. If a permit is issued pursuant to this application, the conditions listed in B1(d)(i) and B2(c) are strongly recommended to protect senior users and the groundwater resource. **The reference water level for the proposed POA under Condition 7n should be set at the same level as currently established for POA well CLAC 53757 (126.66 ft bls / 193.34 ft AMSL) under Permit G-17897*.**

C. GROUNDWATER/SURFACE WATER CONSIDERATIONS, OAR 690-09-040

C1. 690-09-040 (1): Evaluation of aquifer confinement:

Well	Aquifer or Proposed Aquifer	Confined	Unconfined
1	Troutdale Formation	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2	Troutdale Formation	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Basis for aquifer confinement evaluation: Reported static water levels are significantly above the applicable water-bearing zones, indicating confined conditions. Additionally, thick sequences of fine-grained sediments are noted overlying the target water-bearing zones. The available evidence indicates that the aquifer is confined in this area.

C2. 690-09-040 (2) (3): Evaluation of distance to, and hydraulic connection with, surface water sources. All wells located a horizontal distance less than ¼ mile from a surface water source that produce water from an unconfined aquifer shall be assumed to be hydraulically connected to the surface water source. Include in this table any streams located beyond one mile that are evaluated for PSI.

Well	SW #	Surface Water Name	GW Elev (ft msl)	SW Elev (ft msl)	Distance (ft)	Hydraulically Connected?			Potential for Subst. Interfer. Assumed?	
						YES	NO	ASSUMED	YES	NO
1	1	Kaiser Creek	~170-180	~201-261 ^a	~3,620	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	2	Bear Creek	~170-180	~249-310 ^a	~3,170	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2	1	Kaiser Creek	~170-180	~189-247 ^a	~2,400	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2	2	Bear Creek	~170-180	~249-281 ^a	~4,310	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Basis for aquifer hydraulic connection evaluation: Groundwater elevations near the proposed POA are similar to the estimated surface water elevations for SW 1 (Kaiser Creek). Additionally, water table mapping in this area indicates that groundwater is discharging to SW 1 (Kaiser Creek) within 1 mile of the proposed POA (Woodward et al., 1998). The available evidence indicates that the proposed POA are hydraulically connected to SW 1 (Kaiser Creek).

Groundwater elevations near the proposed POA are at least 60 ft lower than the estimated surface water elevations for SW 2 (Bear Creek) within 1 mile of the proposed POA. Water table mapping does not indicate that groundwater is discharging to SW 2 (Bear Creek) within 1 mile of the proposed POA. The available evidence indicates that the proposed POA are not hydraulically connected to SW 2 (Bear Creek) within 1 mile of the proposed POA.

^a Surface water elevation within 1 mile of proposed POA, estimated from LIDAR (Watershed Sciences, 2009).

Water Availability Basin the well(s) are located within: WID #151 PUDDING R > MOLALLA R – AB MILL CR

C3a. 690-09-040 (4): Evaluation of stream impacts for each well that has been determined or assumed to be **hydraulically connected and less than 1 mile** from a surface water (SW) source. Limit evaluation to instream rights and minimum stream flows that are pertinent to that SW source, not lower SW sources to which the stream under evaluation is tributary. Compare the requested rate against the 1% of 80% *natural* flow for the pertinent Water Availability Basin (WAB). If Q is not distributed by well, use full rate for each well. Any checked box indicates the well is assumed to have the potential to cause PSI.

Well	SW #	Well < ¼ mile?	Qw > 5 cfs?	Instream Water Right ID	Instream Water Right Q (cfs)	Qw > 1% ISWR?	80% Natural Flow (cfs)	Qw > 1% of 80% Natural Flow?	Interference @ 30 days (%)	Potential for Subst. Interfer. Assumed?
1	1	<input type="checkbox"/>	<input type="checkbox"/>	N/A	N/A	<input type="checkbox"/>	67.30	<input checked="" type="checkbox"/>	<25%	<input checked="" type="checkbox"/>
2	1	<input type="checkbox"/>	<input type="checkbox"/>	N/A	N/A	<input type="checkbox"/>	67.30	<input checked="" type="checkbox"/>	<25%	<input checked="" type="checkbox"/>

C3b. **690-09-040 (4):** Evaluation of stream impacts by total appropriation for all wells determined or assumed to be **hydraulically connected and less than 1 mile** from a surface water source. **Complete only if Q is distributed among wells.** Otherwise same evaluation and limitations apply as in C3a above.

	SW #		Qw > 5 cfs?	Instream Water Right ID	Instream Water Right Q (cfs)	Qw > 1% ISWR?	80% Natural Flow (cfs)	Qw > 1% of 80% Natural Flow?	Interference @ 30 days (%)	Potential for Subst. Interfer. Assumed?
			<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>

Comments: **The proposed combined rate of appropriation (3.93 cfs) is greater than 1 percent (0.673 cfs) of the stream discharge which is equaled or exceeded 80 percent of time (67.3 cfs) for SW 1 (Kaiser Creek). Per OAR 690-009-0040(c), the Potential for Substantial Interference (PSI) is assumed.**

Modeling in similar settings indicates that interference with SW 1 is highly unlikely to exceed 25 percent of the rate of appropriation within 30 days of continuous pumping. Depletion of local surface water will be buffered by the low vertical hydraulic conductivity and substantial thickness of fine-grained sediments between the relevant water-bearing zones and local streambeds. However, there will still be some depletion of surface water. Net impacts will be small at the onset of pumping but will increase with time until a new equilibrium between local recharge and discharge is reached, at which time surface water depletion is anticipated to be relatively constant throughout the year.

C4a. **690-09-040 (5):** Estimated impacts on **hydraulically connected surface water sources greater than one mile** as a percentage of the proposed pumping rate. Limit evaluation to the effects that will occur up to one year after pumping begins. This table encompasses the considerations required by 09-040 (5)(a), (b), (c) and (d), which are not included on this form. Use additional sheets if calculated flows from more than one WAB are required.

Non-Distributed Wells													
Well	SW#	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
Distributed Wells													
Well	SW#	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
(A) = Total Interf.													
(B) = 80 % Nat. Q													
(C) = 1 % Nat. Q													
(D) = (A) > (C)		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
(E) = (A / B) x 100		%	%	%	%	%	%	%	%	%	%	%	%

(A) = total interference as CFS; (B) = WAB calculated natural flow at 80% exceed. as CFS; (C) = 1% of calculated natural flow at 80% exceed. as CFS; (D) = highlight the checkmark for each month where (A) is greater than (C); (E) = total interference divided by 80% flow as percentage.

Basis for impact evaluation: N/A

C4b. **690-09-040 (5) (b)** The potential to impair or detrimentally affect the public interest is to be determined by the Water Rights Section.

- C5. **If properly conditioned**, the surface water source(s) can be adequately protected from interference, and/or groundwater use under this permit can be regulated if it is found to substantially interfere with surface water:
- i. The permit should contain condition #(s) _____;
 - ii. The permit should contain special condition(s) as indicated in "Remarks" below;

C6. **SW / GW Remarks and Conditions:** **PSI is assumed per OAR 690-009-0040(c). Due to the overlapping water rights (Permit G-17897*, 2.3 cfs) on the proposed POA, the applicant cannot reduce the requested rate to avoid the assumption of PSI.**

References Used:

Application File: G-18967, T-12460, T-13439

Permits: G-15254*, G-17897*, G-18008*

Certificate: 92166*

Pumping Test Reports: CLAC 53757, CLAC 66134, CLAC 74503

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, Scientific Investigations Report 2005-5168: U. S. Geological Survey, Reston, VA.

Domenico, P.A. and Mifflin, 1965, Water from low-permeability sediments and land subsidence: Water Resource Research, v. 1, no. 4, p. 563-576.

Freeze, R.A. and Cherry, J.A., 1979, Groundwater, Prentice Hall, Englewood Cliffs, New Jersey, 604 p.

Gannett, M.W. and Caldwell, R., 1998, Geologic framework of the Willamette Lowland aquifer system, Oregon and Washington, Professional Paper 1424-A, 32 p: U. S. Geological Survey, Reston, VA.

Halford, K.J., and Kuniandy, E.L., 2002, Documentation of Spreadsheets for the Analysis of Aquifer-Test and Slug-Test Data, Open File Report 02-197, 51 p: U. S. Geological Survey, Reston, VA.

Hampton, E. R., 1972, Geology and Ground Water of the Molalla-Salem Slope Area, Northern Willamette Valley, Oregon, Water-Supply Paper 1997: U. S. Geological Survey, Reston, VA.

McFarland, W.D., and Morgan, D.S., 1996, Description of the Ground-Water Flow System in the Portland Basin, Oregon and Washington, Water Supply Paper 2470-A, 58 p: U. S. Geological Survey, Reston, VA.

O'Connor, J. E., Sarna-Wojcicki, A., Wozniak, K. C., Polette, D. J., Fleck, R. J., 2001, Origin, Extent, and Thickness of Quaternary Units in the Willamette Valley, Oregon, Professional Paper 1620: U. S. Geological Survey, Reston, VA.

Swanson, R. D., McFarland, W. D., Gonthier, J. B., and Wilkinson, J. M., 1993, A description of hydrogeologic units in the Portland Basin, Oregon and Washington, Water-Resources Investigations Report 90-4196, 56 p.: U. S. Geological Survey, Reston, VA.

Theis, C.V., 1935, The relation between the lowering of the piezometric surface and the rate and duration of discharge of a well using groundwater storage, American Geophysical Union Transactions, vol. 16, p. 519-524.

United States Geological Survey, 2014, National Hydrography Dataset (NHD), 1:24,000, U. S. Department of the Interior, Reston, VA.

United States Geological Survey, 2017a, Molalla quadrangle, Oregon [map], 1:24,000, 7.5 minute topographic series, U.S. Department of the Interior, Reston, VA.

United States Geological Survey, 2017b, Yoder quadrangle, Oregon [map], 1:24,000, 7.5 minute topographic series, U.S. Department of the Interior, Reston, VA.

Watershed Sciences, 2009, LIDAR remote sensing data collection, Department of Geology and Mineral Industries, Willamette Valley Phase I, Oregon: Portland, OR, December 21.

Woodward, D.G., Gannett, M.W., and Vaccaro, J.J., 1998, Hydrogeologic framework of the Willamette Lowland aquifer system, Oregon and Washington: U.S. Geological Survey Professional Paper 1424-B, 82 p.

D. WELL CONSTRUCTION, OAR 690-200

D1. Well #: _____ Logid: _____

D2. **THE WELL does not appear to meet current well construction standards based upon:**

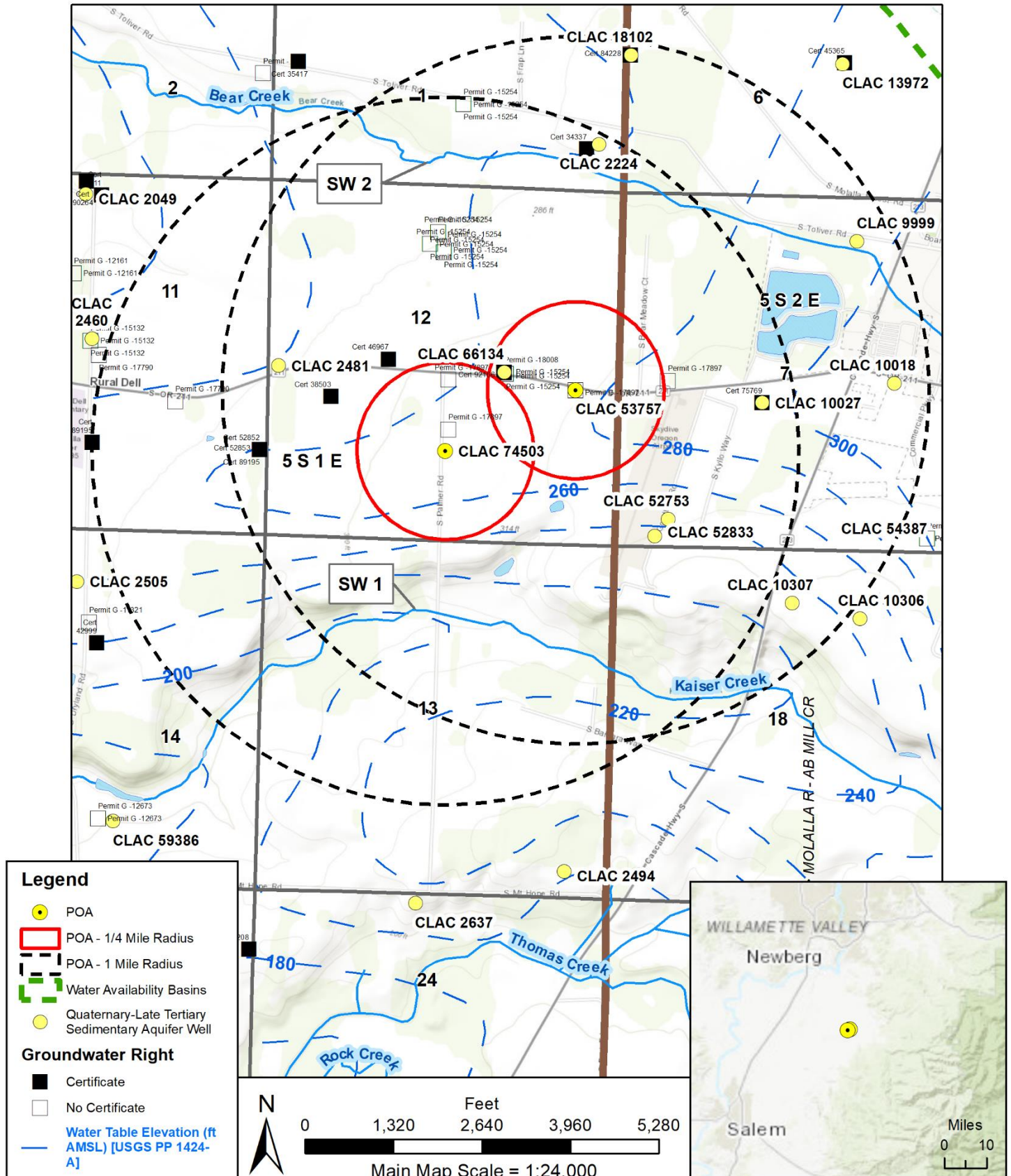
- a. review of the well log;
- b. field inspection by _____;
- c. report of CWRE _____;
- d. other: (specify) _____

D3. **THE WELL construction deficiency or other comment is described as follows:** _____

D4. **Route to the Well Construction and Compliance Section for a review of existing well construction.**

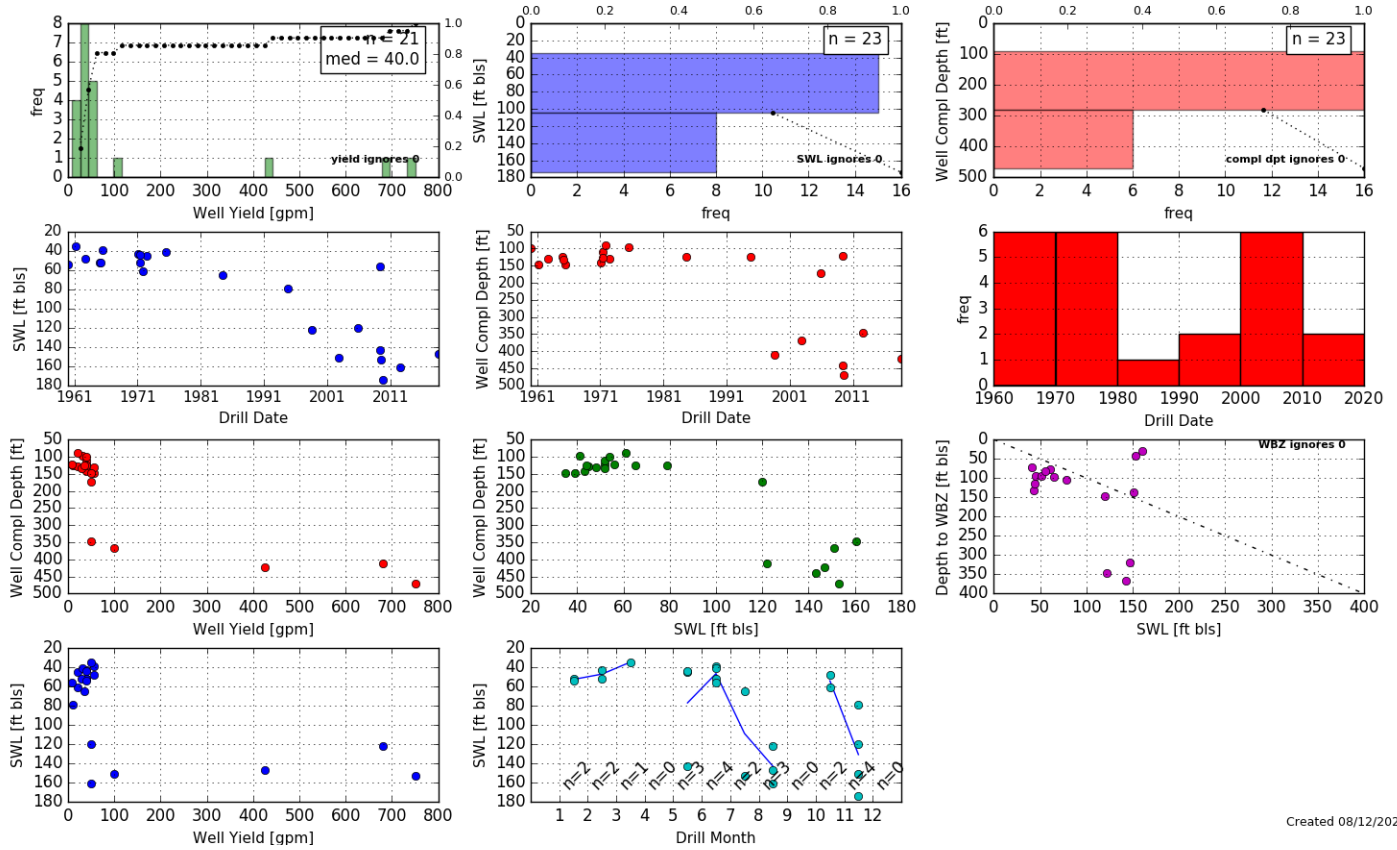
Well Location Map

G-18967 Heyerly Brothers



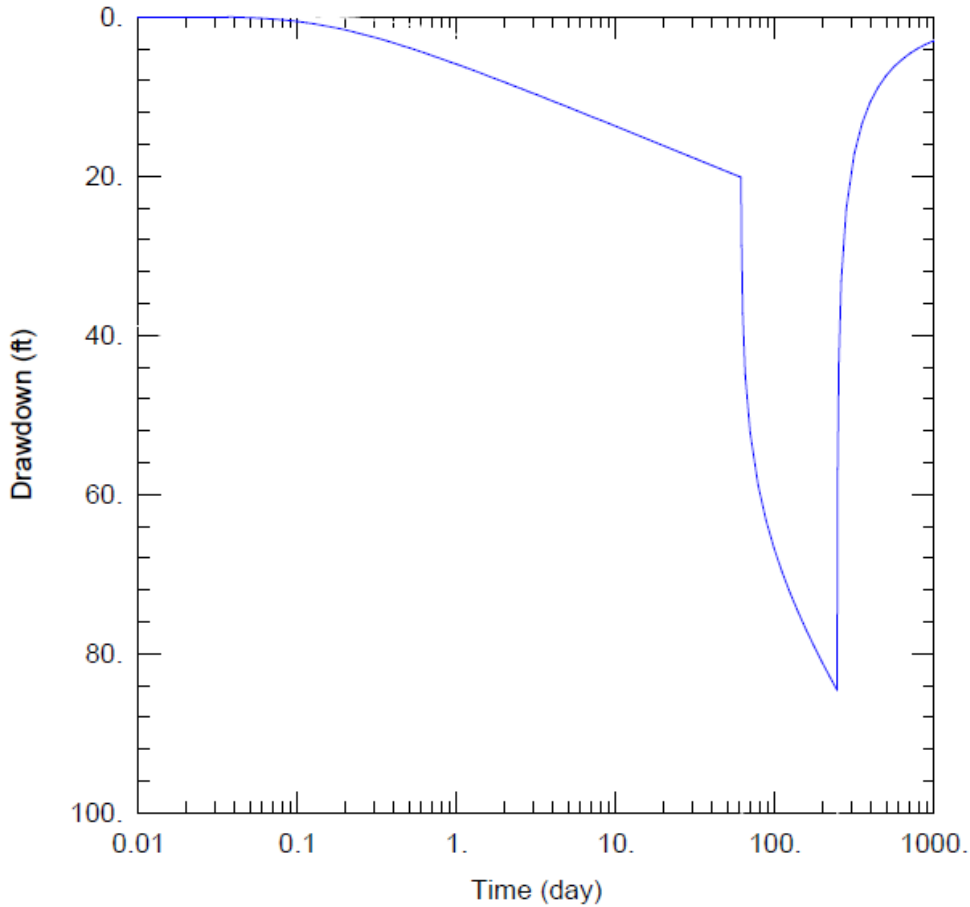
Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community

Water Well Completion Statistics – T5S/R1E-12



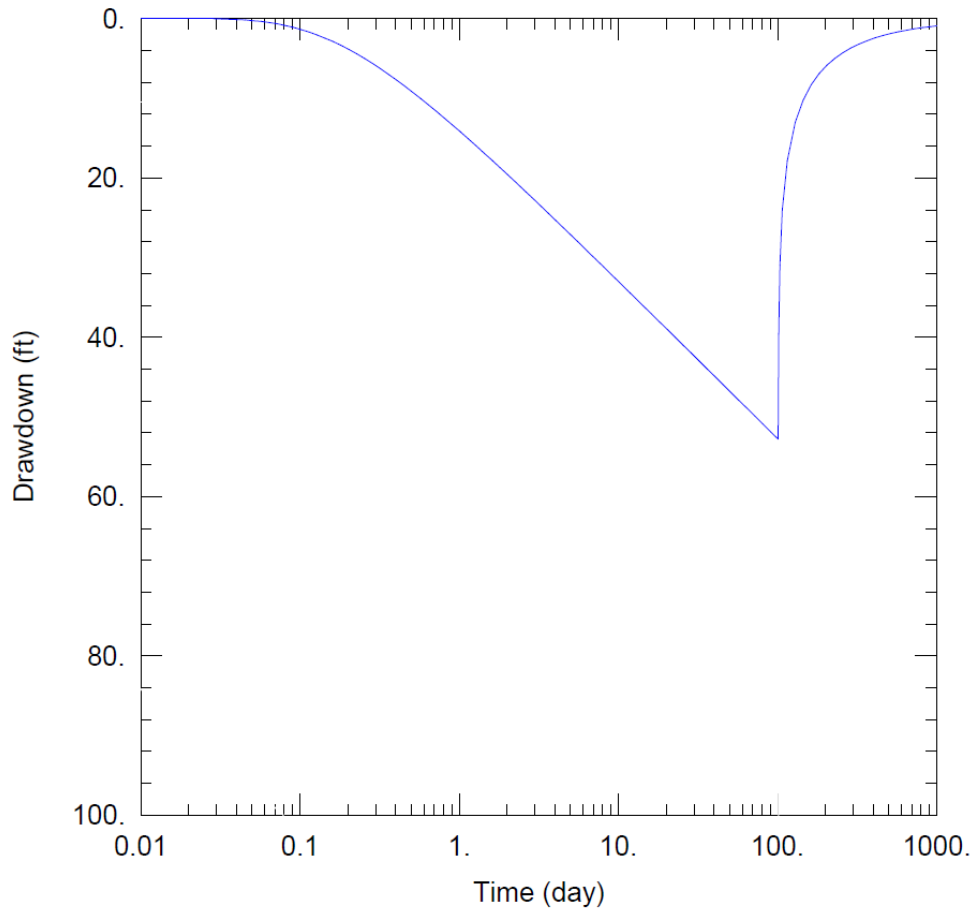
Created 08/12/2020

Interference Analysis – Combined Average Rate



<u>WELL TEST ANALYSIS</u>					
Data Set: S:\...\CombinedInterference_yieldQ.aqt			Time: 09:30:14		
Date: 08/12/20					
<u>PROJECT INFORMATION</u>					
Company: OWRD					
Client: HeyerlyBros					
Project: G18967					
Test Well: CLAC 53757 + CLAC 74503					
Test Date: 8/10/2020					
<u>WELL DATA</u>					
Pumping Wells			Observation Wells		
Well Name	X (ft)	Y (ft)	Well Name	X (ft)	Y (ft)
CLAC 53757	0	1100	□	0	1100
CLAC 74503	1370	-532	□	1370	-532
			□ CLAC 66134	0	0
<u>SOLUTION</u>					
Aquifer Model: <u>Confined</u>			Solution Method: <u>Theis</u>		
T = 1300. ft ² /day [Pumping test reports]			S = 0.0005 [McFarland and Morgan, 1996]		
Kz/Kr = 1.			b = 100. ft		

Interference Analysis – Application G-18967 Maximum Rate Requested (1.63 cfs)



WELL TEST ANALYSIS

Data Set: S:\...\AppG18967Interference_maxQ.aqt
 Date: 08/12/20 Time: 14:32:47

PROJECT INFORMATION

Company: OWRD
 Client: HeyerlyBros
 Project: G18967
 Test Well: CLAC 53757 + CLAC 74503
 Test Date: 8/10/2020

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
<u>CLAC 53757</u>	0	1100
<u>CLAC 74503</u>	1370	-532

Observation Wells

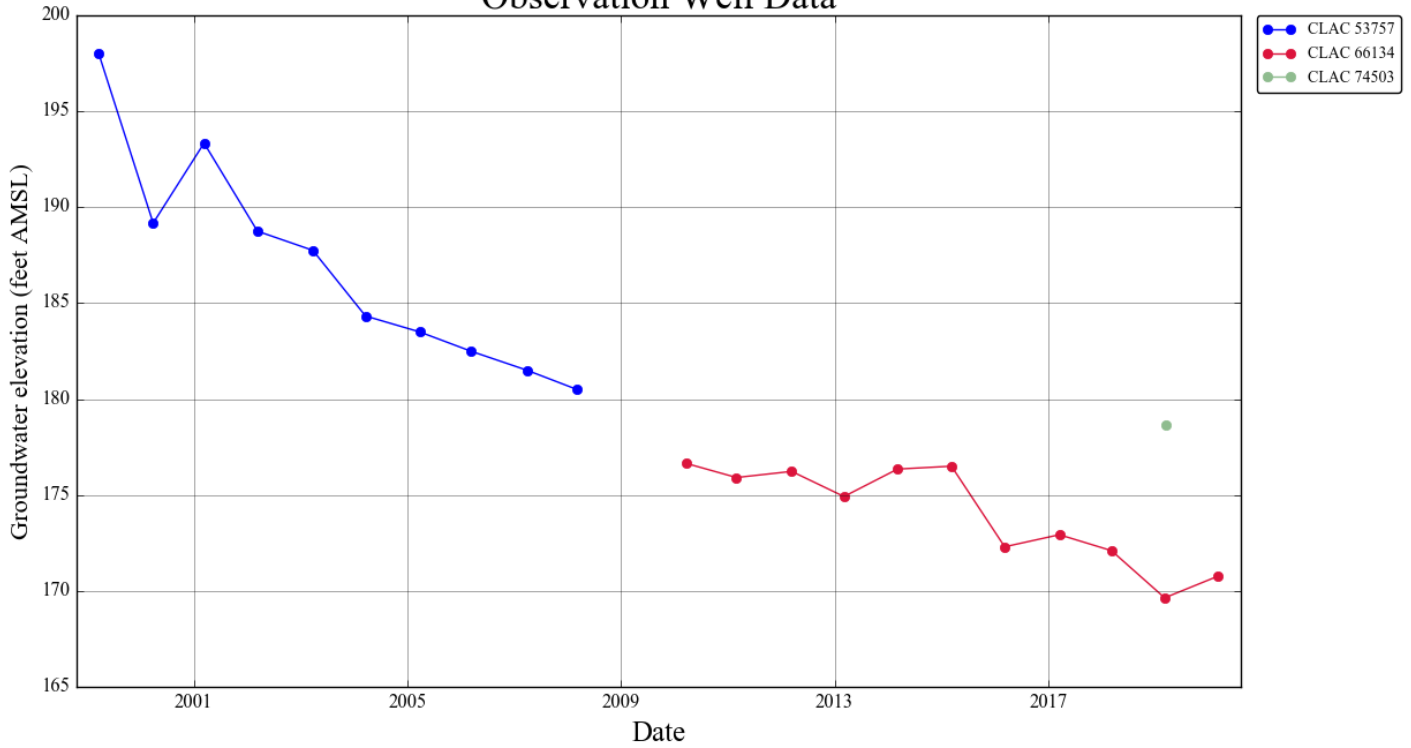
Well Name	X (ft)	Y (ft)
□	0	1100
□	1370	-532
□ <u>CLAC 66134</u>	0	0

SOLUTION

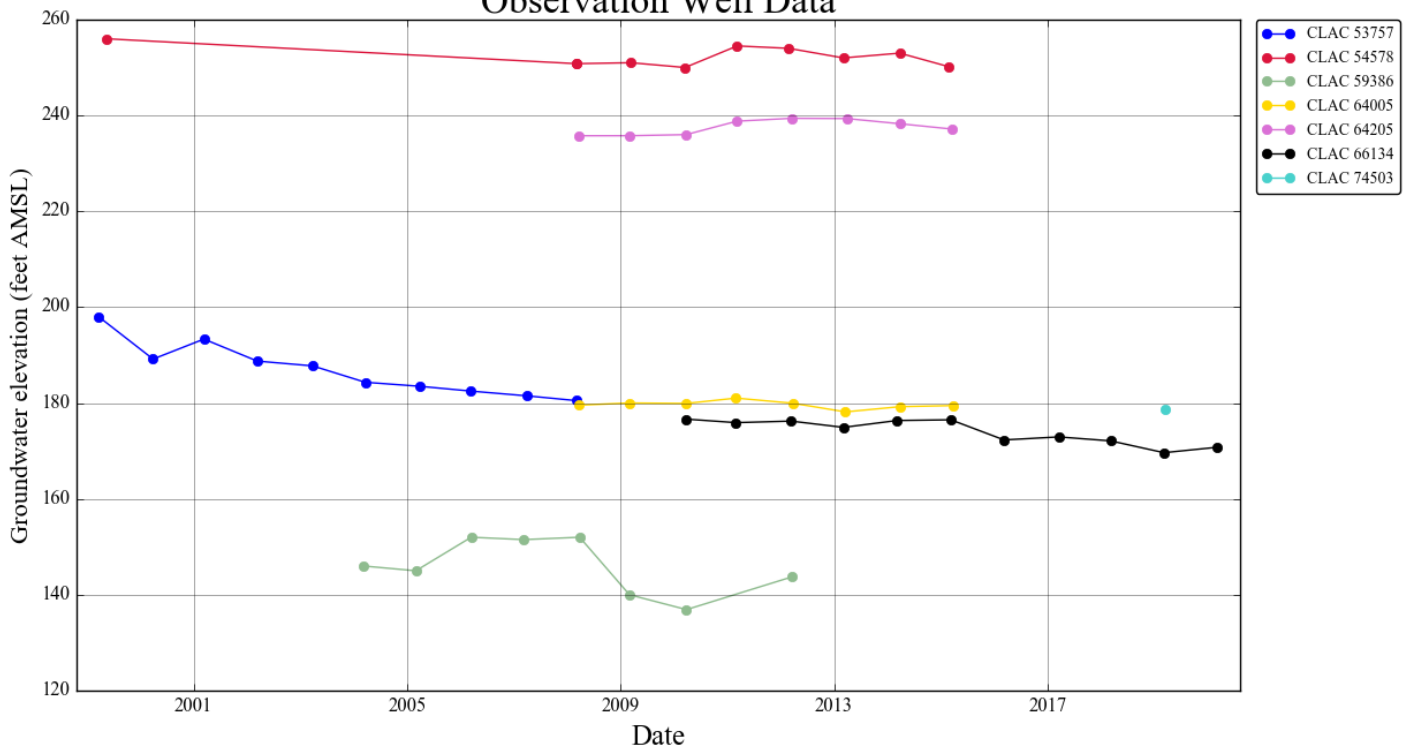
Aquifer Model: Confined Solution Method: Theis
 $T = 1300 \text{ ft}^2/\text{day}$ [Pumping test reports] $S = 0.0005$ [McFarland and Morgan, 1996]
 $Kz/Kr = 1$ $b = 100 \text{ ft}$

Hydrographs

Observation Well Data



Observation Well Data



Water Availability Analysis

Water Availability Analysis

Detailed Reports

PUDDING R > MOLALLA R - AB MILL CR
WILLAMETTE BASIN

Water Availability as of 8/12/2020

Watershed ID #: 151 [\(Map\)](#)

Exceedance Level: ▾

Date: 8/12/2020

Time: 12:02 PM

Water Availability Calculation	Consumptive Uses and Storage	Instream Flow Requirements	Reservations
Water Rights	Watershed Characteristics		

Water Availability Calculation

Monthly Streamflow in Cubic Feet per Second
Annual Volume at 50% Exceedance in Acre-Feet

Month	Natural Stream Flow	Consumptive Uses and Storages	Expected Stream Flow	Reserved Stream Flow	Instream Flow Requirement	Net Water Available
JAN	1,040.00	125.00	915.00	0.00	36.00	879.00
FEB	1,180.00	114.00	1,070.00	0.00	36.00	1,030.00
MAR	1,010.00	76.10	934.00	0.00	36.00	898.00
APR	787.00	52.00	735.00	0.00	36.00	699.00
MAY	425.00	50.10	375.00	0.00	36.00	339.00
JUN	224.00	71.80	152.00	0.00	36.00	116.00
JUL	109.00	113.00	-3.92	0.00	36.00	-39.90
AUG	71.00	92.50	-21.50	0.00	36.00	-57.50
SEP	67.30	52.50	14.80	0.00	36.00	-21.20
OCT	91.60	11.20	80.40	0.00	36.00	44.40
NOV	363.00	48.60	314.00	0.00	36.00	278.00
DEC	957.00	118.00	839.00	0.00	36.00	803.00
ANN	706,000.00	55,800.00	650,000.00	0.00	26,100.00	626,000.00