Groundwater Application Review Summary Form

Application # G- 18766

GW Reviewer Travis Brown **Date Review Completed:** 4/30/2019

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.

JJ Stelly

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 April 30, 2019

TO: **Application G-** 18766

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

SUBJECT: Scenic Waterway Interference Evaluation

☐ YES
The source of appropriation is within or above a Scenic Waterway
☒ 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 _____ 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

MEMO

To: Kristopher Byrd, Well Construction and Compliance Section Manager

From: Joel Jeffery, Well Construction Program Coordinator

Subject: Review of Water Right Application G-18766

Date: May 16, 2019

The attached application was forwarded to the Well Construction and Compliance Section by Water Rights. Travis Brown reviewed the application. Please see Travis's Groundwater Review and the Well Log.

Applicant's Well #1 (MARI 59533): Based on a review of the Well Report, Applicant's Well #1 seems to protect the groundwater resource.

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

Applicant's Well #2 is proposed and has not been constructed.

The construction of Applicant's Well #2 must comply with current minimum well construction standards (See OAR 690 Division 210).

MARI 59533

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

WELL I.D. # L 79515

START CARD # 183628

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

(1) LAND OWNER Well Number ____
Name JPLN, Inc.
Address 1118 Lancaster Drive N.E.
City Salem State Oregon Zip 97301

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

(3) DRILL METHOD
☑ Rotary Air ☐ Rotary Mud ☐ Cable ☐ Auger ☐ Cable Mud
☐ Other ____

(4) PROPOSED USE
☐ Domestic ☐ Community ☐ Industrial ☑ Irrigation
☐ Thermal ☐ Injection ☐ Livestock ☐ Other ____

(5) BORE HOLE CONSTRUCTION Special Construction: ☑ Yes ☐ No
Depth of Completed Well 328 ft.
Explosives used: ☐ Yes ☑ No Type ____ Amount ____

BORE HOLE Diameter	From	To	SEAL Material	From	To	Sacks or Pounds
12"	0	39'	Cement	0	39'	15 sacks
9 5/8"	39'	182'	Cement	159'	182'	10 sacks
7 7/8"	182'	328'				

How was seal placed: Method ☐ A ☐ B ☑ C ☑ D ☐ E
☐ Other ____
Backfill placed from ____ ft. to ____ ft. Material ____
Gravel placed from ____ ft. to ____ ft. Size of gravel ____

(6) CASING/LINER

	Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing:	8"	+1' 4"	182'	.250	☑	☐	☑	☑
					☐	☐	☐	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
Liner:	7" OD	167' 2"	328'	.188	☑	☐	☑	☐
					☐	☐	☐	☐

Drive Shoe used ☑ Inside ☐ Outside ☐ None
Final location of shoe(s) 182' Note: inside of shoe was milled off

(7) PERFORATIONS/SCREENS
☑ Perforations Method Cutting Torch
☐ Screens Type ____ Material ____

From	To	Slot Size	Number	Diameter	Tele/pipe size	Casing	Liner
310'	328'	1x6"	42			☐	☑
						☐	☐
						☐	☐
						☐	☐
						☐	☐

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

Yield gal/min	Drawdown	Drill stem at	Time
500+		325'	2 hr.

Temperature of water 53 +/- 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 (legal description)
County Marion
Tax Lot 2600 Lot ____
Township 7 S N or S Range 2 W E or W WM
Section 28 SW 1/4 SE 1/4
Lat ____ ° ____ ' ____ " or ____ . ____ (degrees or decimal)
Long ____ ° ____ ' ____ " or ____ . ____ (degrees or decimal)
Street Address of Well (or nearest address) 5590 State Street S.E.
Salem, Oregon

(10) STATIC WATER LEVEL
40' 6" ft. below land surface. Date 12/12/2005
____ ft. below land surface. Date ____
Artesian pressure ____ lb. per square inch Date ____

(11) WATER BEARING ZONES
Depth at which water was first found 12'

From	To	Estimated Flow Rate	SWL
12'	22'	5	5'
60'	159'	150 to 200	38'
277'	328'	500+	40' 6"

(12) WELL LOG Ground Elevation ____

Material	From	To	SWL
Top soil	0	5	
Brown clay	5	12	
Silty brown clay	12	23	
Brown and tan clay	23	30	
Very sandy tan clay with gravel	30	60	
Sandy brown tight gravel	60	81	
Very fine sandy gravel brown	81	86	
Medium to large semi-tight gravel with loose seams	86	111	
Tight large sand and gravel	111	134	
Red clay and gravel	134	139	
Tan sandy clay with gravel	139	147	
Weathered brown basalt	147	159	
Firm brown and gray basalt	159	161	
Gray basalt hard	161	208	
continued on page 2			

Date Started 11/30/2005 Completed 2/3/2006

(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.

WWC Number 1629 Date 2/6/2006
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.

WWC Number 1273 Date 2/6/2006
Signed Floyd Sipp

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SALEM, OREGON

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MARI 59533

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

WELL I.D. # L 79515 **Page** 2

START CARD # 183828

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

(1) LAND OWNER Well Number ____
Name JPLN, Inc.
Address 1118 Lancaster Drive N.E.
City Salem State Oregon Zip 97301

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

(3) DRILL METHOD
☑ Rotary Air ☐ Rotary Mud ☐ Cable ☐ Auger ☐ Cable Mud
☐ Other ____

(4) PROPOSED USE
☐ Domestic ☐ Community ☐ Industrial ☑ Irrigation
☐ Thermal ☐ Injection ☐ Livestock ☐ Other ____

(5) BORE HOLE CONSTRUCTION Special Construction: ☑ Yes ☐ No
Depth of Completed Well 328 ft.
Explosives used: ☐ Yes ☑ No Type ____ Amount ____

BORE HOLE Diameter	From	To	SEAL Material	From	To	Sacks or Pounds
12"	0	39'	Cement	0	39'	15 sacks
9 5/8"	39'	182'	Cement	159'	182'	10 sacks
7 7/8"	182'	328'				

How was seal placed: Method ☐ A ☐ B ☑ C ☑ D ☐ E
☐ Other ____
Backfill placed from ____ ft. to ____ ft. Material ____
Gravel placed from ____ ft. to ____ ft. Size of gravel ____

(6) CASING/LINER

	Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing:	8"	+1' 4"	182'	.250	☑	☐	☑	☑
					☐	☐	☐	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
Liner:	7" OD	167' 2"	328'	.188	☑	☐	☑	☐
					☐	☐	☐	☐

Drive Shoe used ☑ Inside ☐ Outside ☐ None
Final location of shoe(s) 182' Note: Inside of shoe was milled off

(7) PERFORATIONS/SCREENS
☑ Perforations Method Cutting Torch
☐ Screens Type ____ Material ____

From	To	Slot Size	Number	Diameter	Tele/pipe size	Casing	Liner
310'	328'	1x6"	42			☐	☑
						☐	☐
						☐	☐
						☐	☐
						☐	☐

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

Yield gal/min	Drawdown	Drill stem at	Time
500+		325'	2 hr.

Temperature of water 53 +/- Depth Artesian Flow Found ____
Was a water analysis done? ☐ Yes By whom ____
Did any strata contain water not suitable for intended use? ☐ Too Little ☐ Too Hard
☐ Salty ☐ Muddy ☐ Odor ☐ Colored ☐ Other ____
Depth of strata: ____

(9) LOCATION OF WELL (legal description)
County Marion
Tax Lot 2800 Lot ____
Township 7 S N or S Range 2 W E or W WM
Section 28 SW 1/4 SE 1/4
Lat ____ ° ____ ' ____ " or ____ (degrees or decimal)
Long ____ ° ____ ' ____ " or ____ (degrees or decimal)
Street Address of Well (or nearest address) 5580 State Street S.E.
Salem, Oregon

(10) STATIC WATER LEVEL
40' 6" ft. below land surface. Date 12/12/2005
____ ft. below land surface. Date ____
Artesian pressure ____ lb. per square inch Date ____

(11) WATER BEARING ZONES
Depth at which water was first found 12'

From	To	Estimated Flow Rate	SWL
12'	22'	5	5'
60'	159'	150 to 200	38'
277'	328'	500+	40' 6"

(12) WELL LOG Ground Elevation ____

Material	From	To	SWL
Black basalt	208	216	
Hard gray basalt	216	277	
Semi-fractured basalt	277	324	
Very porous semi-broken light gray basalt	324	328	
Continued from page 1.			

Date Started 11/30/2005 Completed 2/3/2006

(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.

WWC Number 1629 Date 2/6/2006
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.

WWC Number 1273 Date 2/6/2006
Signed Floyd Sippe

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SALEM, OREGON

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ev

Oregon

Theodore R. Kulongoski, Governor

Water Resources Department
North Mall Office Building
725 Summer Street NE, Suite A
Salem, OR 97301-1266
503-986-0900
FAX 503-986-0904

December 9, 2005

FLOYD G SIPPEL #1273
SIPPEL WELL DRILLING
7195 LAWNRIDGE ST NE
KEIZER OR 97303

FINAL ORDER

Dear Floyd:

The Special Standard request you submitted for owner: JLPN Inc., Start Card number 183628 is hereby approved for the following: You may install this well using an under-reaming system. The lower under-reamed borehole shall be at least 9.5 inches and you may install eight inch steel casing. The lower seal shall be placed at least 20 feet into solid, uncreviced, consolidated rock overlying the water bearing zone. See Oregon Administrative Rule (OAR) 690-210-0150. The upper seal shall be placed according to standards. Your Special Standard request form is enclosed. This Special Standard was verbally approved on December 6, 2005.

The Well Construction Standards serve to protect ground water resources. By approving and issuing this special construction standard the Oregon Water Resources Department is not representing that a well constructed in accordance with this condition will maintain structural integrity or that it meets engineering standards. The well constructor/or landowner is responsible for ensuring that a well is constructed in a manner that protects ground water resources as required under Oregon Administrative Rules 690-200 through 690-240.

If you have any questions concerning this letter, please contact me at (503) 986-0851, or by e-mail at Kristopher.R.Byrd@wrd.state.or.us.

Sincerely,

Kristopher Byrd
Well Construction Program Coordinator
Enforcement Section

enclosure

cc: Ken Wilcke, NW Region Well Inspector
File

This is a final order in other than contested case. This order is subject to judicial review under ORS 183.484. Any petition for judicial review must be filed within the 60 day time period specified by ORS 183.484(2). Pursuant to ORS 536.075 and OAR 137-004-0080 you may either petition for judicial review or petition the Director for reconsideration of this order. A petition for reconsideration may be granted or denied by the Director, and if no action is taken within 60 days following the date the petition was filed, the petition shall be deemed denied.

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SALEM, OREGON

Oregon Water Resources Department

REQUEST FOR WRITTEN APPROVAL TO USE CONSTRUCTION METHODS NOT INCLUDED IN OREGON ADMINISTRATIVE RULES 690-200 THROUGH 690-240

Before the request can be considered, this form must be completed. Requests shall be submitted to the Well Construction Specialist, Water Resources Department, 725 Summer Street NE, Suite "A", Salem OR 97301-2430. Requests may also be considered by the appropriate Regional Manager.

Date of request: 12/7/05 **Oral approval date (if applicable):** 12/6/05

Bonded Well Constructor (**name, license #, and mailing address**): Sippel Well Drilling Inc.
Lic# 1273 7195 Lawnridge Street NE Keizer OR 97303

(1) Location of Well: SW 1/4 SE 1/4 Tax lot 2600 Section 28,
Township 7-S N/S, Range 2-W E/W, Marion County
Address at well site: 5590 State St SE
Salem, OR 97301

(2) Start Card Number(s)(for work to be done): 183628

(3) Name and Address of Land Owner: JJPN Inc.
1118 Lancaster Dr NE PMB 409 Salem, OR 97301

(4) Distance to the nearest septic tank, drainfield, closed sewage line (if water supply well)
100 + ft.

(5) The unusual site conditions which necessitate this request: underreamming into Basalt Rock with 9.5 in reamer.

(6) The proposed construction methods that the bonded well constructor believes will be adequate for this well: (attach additional pages if needed)
Seal apprx 20 ft into basalt rock

W
AS

Remarks: Small lower Borehole for underreaming

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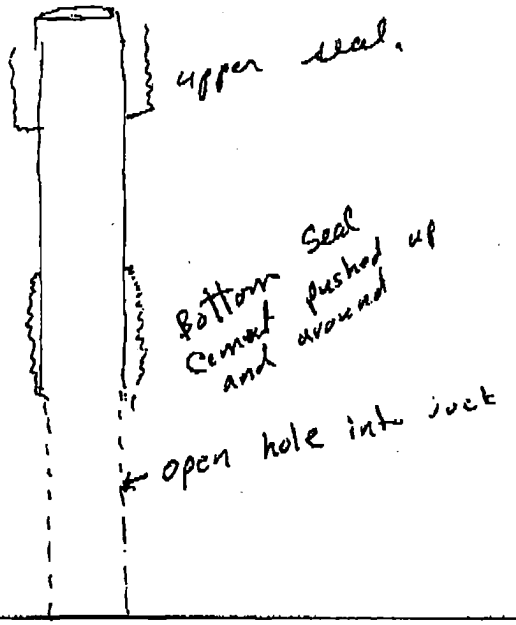
(7) Diagram showing the pertinent features of the proposed well design and construction: (attach additional pages if needed)



PLEASE NOTE:

(1) The Well Construction Standards serve to protect ground water resources. By approving and issuing this special construction standard the Oregon Water Resources Department is not representing that a well constructed in accordance with this condition will maintain structural integrity or that it meets engineering standards. The well constructor/or landowner is responsible for ensuring that a well is constructed in a manner that protects ground water resources as required under Oregon Administrative Rules 690-200 through 690-240.

(2) If it should be determined at some future date that the well, due to its construction, is allowing ground water contamination, waste or loss of artesian pressure, the undersigned shall return to the site and rectify the problem.

(3) If oral approval was granted, a written request must be submitted to the Department either within three (3) working days of the date of oral approval or prior to the completion of the associated well work. Failure to submit a written request as described above may void prior oral approval.

I have read and understand the above information. I further attest that the information provided is accurate to the best of my knowledge.

Bonded Constructor Signature: Floyd H. Soppe

PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date April 30, 2019
FROM: Groundwater Section Travis Brown
Reviewer's Name
SUBJECT: Application G- 18766 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: **JLPN, Inc.** County: **Marion**

A1. Applicant(s) seek(s) 1.67[a] cfs from 2 well(s) in the Willamette River Basin, Molalla-Pudding River subbasin

A2. Proposed use Nursery Seasonality: Year-round

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

Well	Logid	Applicant's Well #	Proposed Aquifer*	Proposed Rate (cfs)	Location (T/R-S QQ-Q)	Location, metes and bounds, e.g. 2250' N, 1200' E fr NW cor S 36
1	MARI 59533	1	Basalt	1.67[a]	7S/2W-33 NW-NW	110' S, 410' E fr NW cor S 33
2	Proposed	2	Basalt	1.67[a]	7S/2W-29 SE-SE	360' N, 240' W fr SE cor S 29

* 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	~230[b]		40.5	12/12/2005	328	0-39 159-182	0-182		310-328	500+		Air
2	~228[b]				330	0-170	0-160		270-330			

Use data from application for proposed wells.

A4. **Comments:** The proposed POA/POU are located ~0.5 miles east of the city limits of Salem, Oregon.

[a] There is a discrepancy between the total maximum rate requested and the sum of well-specific rates listed in Section 3 of the application. The applicant lists the total maximum rate requested as 1.63 cfs (~732 gpm), but lists the sum of well-specific rates as "~750 GM [gpm]" (~1.67 cfs). As the more conservative value, the higher rate of 1.67 cfs has been used to evaluate groundwater availability and potential injury to other ground water rights and surface water.

[b] Well elevation estimated based on LIDAR elevation at existing/proposed well location (WatershedSciences, 2009).

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 are/will be completed in a confined basalt aquifer; therefore, per OAR 690-502-0240, the relevant Willamette Basin rules (OAR 690-502-0140) 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 #(s) **7i (Willamette CRB condition), 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 **Columbia River Basalt** groundwater reservoir between approximately **200** 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. **If a permit is issued, the following Special Conditions are recommended:**

1. Upon drilling the proposed POA 2 well, whenever possible drill cuttings shall be collected at 10 foot intervals and at changes in lithology, with a labeled split of each sampled interval provided to the Department.

2. The proposed POA 2 well shall be open to a single aquifer in the Columbia River Basalt Group and shall meet applicable well construction standards (OAR 690-200 and OAR 690-210). In addition, the open interval in the proposed POA 2 well shall be no greater than 50 feet. However, a larger open interval may be approved by the Department if the applicant can demonstrate to the satisfaction of the Department that the well is only open to a single aquifer. Following well completion, the wells shall be thoroughly developed to remove cuttings and drilling fluids. Substantial evidence of a single aquifer completion may be collected by video log, downhole flowmeter, water chemistry and temperature, or other downhole geophysical methods approved by the Department. These methods shall characterize the nature of the basalt rock and assess whether water is moving in the borehole. Any discernable movement of water within the well bore when the well is not being pumped shall be assumed as evidence of the presence of multiple aquifers in the open interval.

3. The proposed POA 2 well shall be continuously cased and continuously sealed at least 5 feet into the confining flow interior overlying the water-bearing zone accessed by the well to prevent commingling with shallower aquifers and hydraulic connection to local surface waters.

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 a fractured basalt interflow zone between ~270 to 328 ft below land surface (bls). Water level in POA 1 (MARI 59533) was reported at ~40.5 ft bls (elevation ~190 ft above mean sea level [amsl]). Water levels observed in nearby basalt observation wells range from ~135 to 239 ft amsl and do not show widespread or consistent declining trends (see attached "Hydrograph"). Reported yields in nearby basalt wells range from 14 to 575 gpm (~0.031 to 1.281 cfs) with a median yield of 60.0 gpm (~0.134 cfs) (see attached "Well Statistics – Sections 28, 29, 32, & 33"). The reported yield for POA 1 (existing well MARI 59533) is greater than 500 gpm (~1.114 cfs). To achieve the requested rate of

appropriation, POA 2 would need to yield at least ~0.516 cfs (~232 gpm), which – although greater than the median yield – is within the range of reported yields for nearby wells.

The nearest known basalt groundwater right to the proposed POA is Permit G-11666/MARI 7894 (also owned in part by the applicant), ~1,190 ft northwest of POA 2 and ~2,010 ft northwest of POA 1 (MARI 59533). A Theis drawdown analysis was conducted to assess potential interference between the proposed POA and MARI 7894. As a conservative scenario, the nearest POA (POA 2) to MARI 7894 was assumed to pump at the maximum requested rate (750 gpm / ~1.67 cfs) continuously up to the total requested annual volume (325.5 AF) – which would take ~98 days. Using aquifer hydraulic parameters from nearby pumping tests (MARI 7729, 7750, 9943, 11337, 15392, 19261, and 63686) and regional studies (McFarland and Morgan, 1996), intereference with MARI 7894 is not anticipated to deprive Permit G-11666 of its customary use of groundwater (see Theis Drawdown analysis, attached).

Based on the available evidence, it appears that if conditioned as recommended in B(1)(d)(ii), B(2)(c), and B(3) Special Conditions above, the requested use will likely be available within the capacity of the groundwater resource and avoid injury to existing groundwater rights.

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	**Columbia River Basalt**	☒	☐
2	**Columbia River Basalt**	☒	☐

Basis for aquifer confinement evaluation: The reported water level in POA 1 (MARI 59533) was ~236 ft above the applicable water-bearing zone shown on its water supply well report. Reported water levels in nearby basalt wells also appear to generally be above the applicable water-bearing zones (see attached "Well Statistics – Sections 28, 29, 32, & 33"). Based on the available evidence, the basalt aquifer near the proposed POA appears to be confined.

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? YES	NO	ASSUMED	Potential for Subst. Interfer. Assumed? YES	NO
1	1	**Fruitland Creek**	**185-195**	**220-180**	**~570**	☐	☒	☐	☐	☒
1	2	**Unnamed Tributary to Fruitland Creek**	**185-195**	**220-190**	**~1,550**	☐	☒	☐	☐	☒
1	3	**Willa Lake**	**185-195**	**~215**	**~2,040**	☐	☒	☐	☐	☒
2	1	**Fruitland Creek**	**185-195**	**220-180**	**~1,140**	☐	☒	☐	☐	☒
2	2	**Unnamed Tributary to Fruitland Creek**	**185-195**	**220-190**	**~720**	☐	☒	☐	☐	☒
2	3	**Willa Lake**	**185-195**	**~215**	**~2,730**	☐	☒	☐	☐	☒

Basis for aquifer hydraulic connection evaluation: The proposed POA produce water from the fractured basalt interflow zone between ~270 to 328 ft bls. According to the log for MARI 59533 (POA 1), at least 110 ft of competent basalt overly the water-bearing zone. This generally concurs with estimates of top of bedrock (basalt) elevations for this area (Gannett and Caldwell, 1998). None of the identified surface water sources within 1 mile of the proposed POA appear to have incised into the top of the basalt, much less into the water-bearing interflow zone. Because of the deep casing and seal of the proposed and existing wells and the extremely low vertical hydraulic conductivity of the basalt flow interior, there is no effective hydraulic connection between the basalt aquifer that supplies the POA and nearby surface water sources.

Water Availability Basin the well(s) are located within: 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 source. Limit evaluation to instream rights and minimum stream flows that are pertinent to that surface water source, and 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?
		☐	☐			☐		☐		☐

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?
			☐			☐		☐		☐

Comments: No hydraulically connected surface water sources were identified within 1 mile of the proposed POA.

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													
(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: _____

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:** The proposed use is not anticipated to significantly impact nearby surface water sources.

References Used:

Application File: G-18644

Pumping Test Files: MARI 7729, 7750, 9943, 11337, 15392, 19261, and 63686

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: U.S. Geological Survey Professional Paper 1424-A, 32 p.

Iverson, J., 2002, Investigation of the hydraulic, physical, and chemical buffering capacity of Missoula flood deposits for water quality and supply in the Willamette Valley of Oregon: Unpublished M.S. thesis, Oregon State University, 147 p.

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, 2013, National Elevation Dataset (NED) [DEM geospatial data]. 1/9th arc-second, updated 2013.

United States Geological Survey, 2017, *Salem East quadrangle*, Oregon [map], 1:24,000, 7.5 minute topographic series, U.S. Department of the Interior, Reston, Virginia.

Watershed Sciences, 2009. LIDAR Remote Sensing Data Collection: Willamette Valley Phase I, Oregon. 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:**

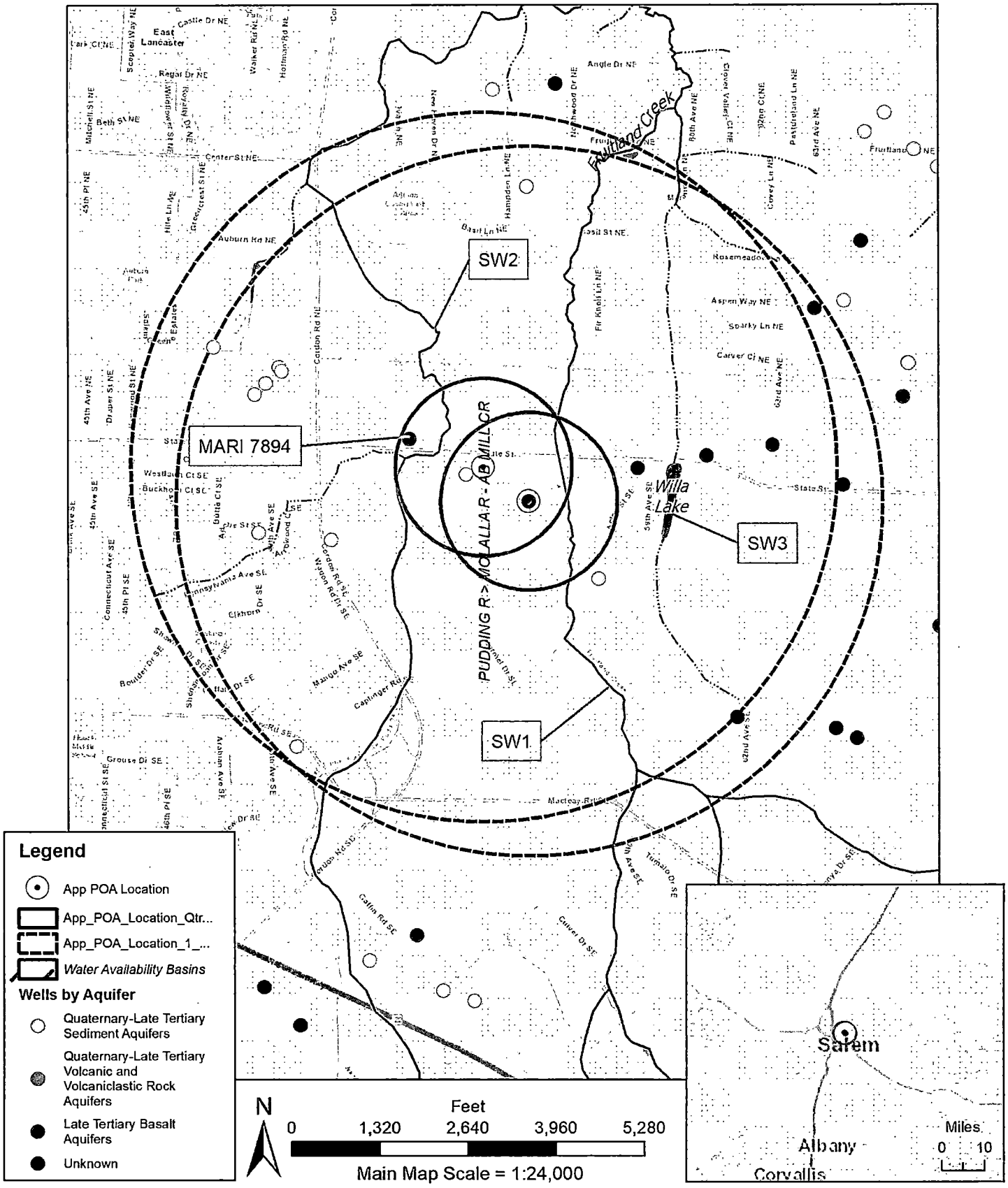
a. ☐ review of the well log;
b. ☐ field inspection by _____;
c. ☐ report of CWRE _____;
d. ☐ other: (specify) _____

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.**

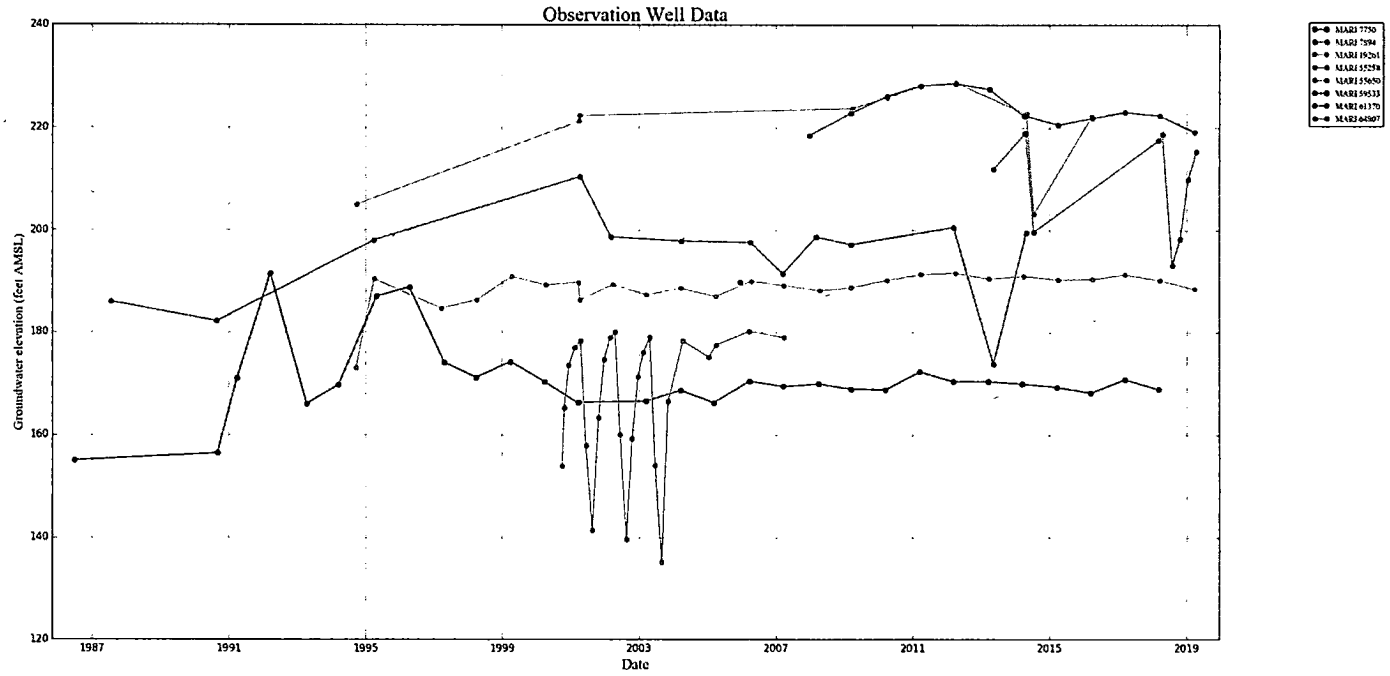
Well Location Map

G-18766 JLPN, Inc.

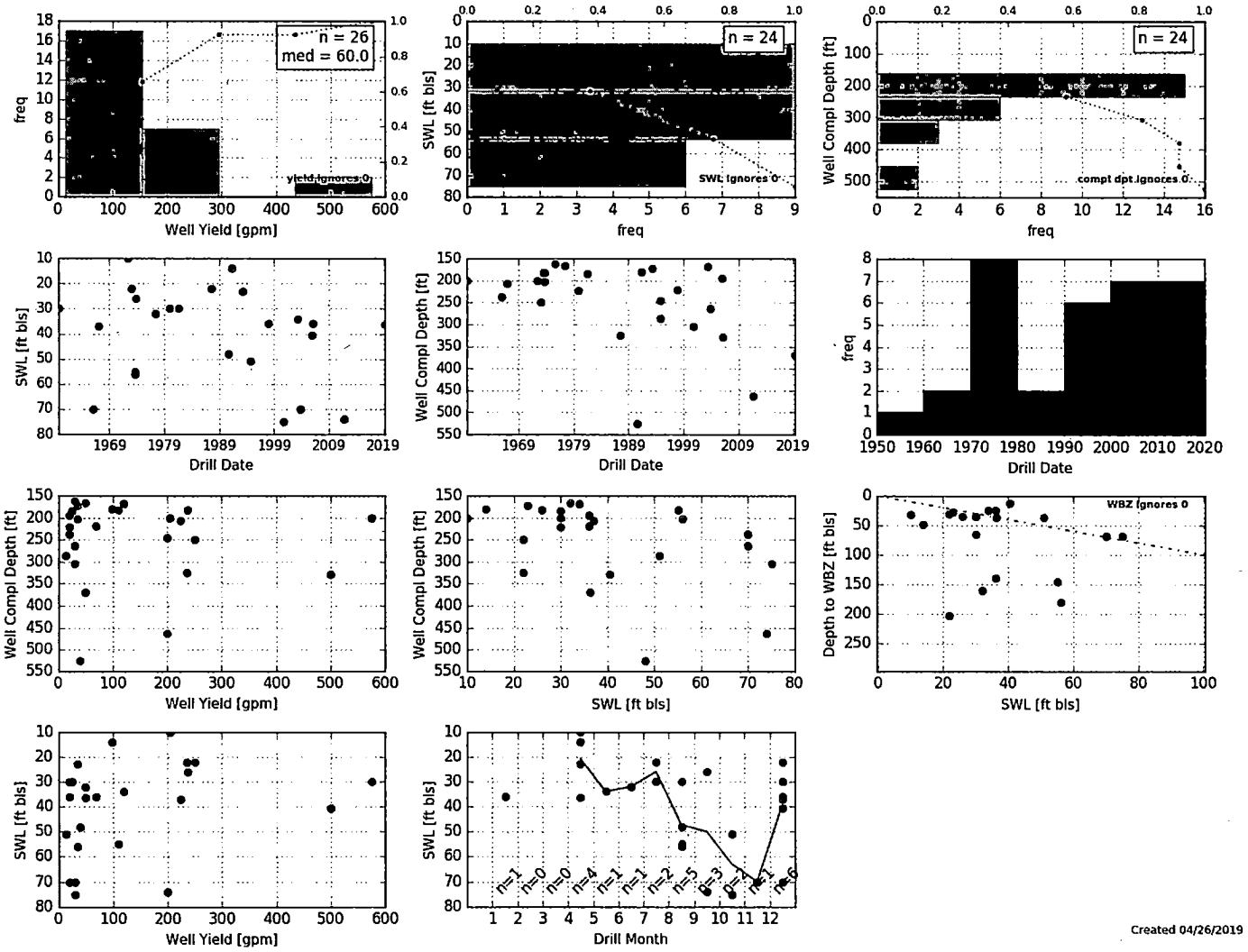


Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

Hydrographs



Well Statistics



Application G-18766 Date: 4/30/2019

Theis Drawdown Analysis

Theis Time-Drawdown Worksheet v.3.00

Calculates Theis nonequilibrium drawdown and recovery at any arbitrary radial distance, r, from a pumping well for 3 different T values and radial distance, r, from a pumping well for 3 different T values and 2 different S values.

Written by Karl C. Wozniak September 1992. Last modified December 30, 2014

Input Data:	Var Name	Scenario 1	Scenario 2	Scenario 3	Units	
Total pumping time	t		98		d	
Radial distance from pumped well:	r		1,190.00		ft	Q conversions
Pumping rate	Q		750.00		gpm	750.00 gpm
Hydraulic conductivity	K	14	64	114	ft/day	1.67 cfs
Aquifer thickness	b		100		ft	100.27 cfm
Storativity	S_1		0.000010			144,385.03 cfd
	S_2		0.001000			3.31 af/d
Transmissivity Conversions	T_f2pd	1,400	6,400	11,400	ft2/day	
	T_ft2pm	0.9722	4.4444	7.9167	ft2/min	
	T_gpdpft	10,472	47,872	85,272	gpd/ft	

Use the Recalculate button if recalculation is set to manual