Groundwater Application Review Summary Form

Application # G- 19392

GW Reviewer Stacey Garrison Date Review Completed: 6/26/2024

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 **_June 26 2024_**

TO: **Application** G-**_19392_**

FROM: **GW:** **_Stacey Garrison_**
(Reviewer's Name)

SUBJECT: Scenic Waterway Interference Evaluation

☐ **YES**
☒ **NO**

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

☐ **YES**
☒ **NO**

Use the Scenic Waterway Condition (Condition 7J)

☐ 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 6/26/2024
FROM: Groundwater Section Stacey Garrison
Reviewer's Name
SUBJECT: Application G- **19392** 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: **Homes For Good** County: **Lane**

A1. Applicant(s) seek(s) 0.0125 cfs from 1 well(s) in the Willamette Basin, McKenzie subbasin

A2. Proposed use irrigation Seasonality: April 15-October 15*
*NOTE: the applicant has requested to irrigate for less than the maximum allowed time period for irrigation (April 15 through October 15 instead of March 1 through October 31). The analyses for this review utilize this reduced period of time (April 15 through October 15).

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

POA 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	LANE 79123	1	Alluvium	0.0125	16S/4E-22 SE-SE	398' N, 1038' E fr SE ¼ cor S 22

* Alluvium, CRB, Bedrock

POA Well	Well Depth (ft)	Seal Interval (ft)	Casing Intervals (ft)	Liner Intervals (ft)	Perforations Or Screens (ft)	Well Yield (gpm)	Drawdown (ft)	Test Type
1	60	0 to 18	+2 to 58		30 to 60	75	Not recorded	Air

Use data from application for proposed wells.

A4. **Comments:** The POA/POU are 29 miles northeast of Lowell, Oregon.
[a] There appears to be a discrepancy in the Public Lands Survey System (PLSS) projection used in the application map and that used by Department. The "metes-and-bounds" location description provided in the application for POA 1 (LANE 79123) is 83 ft west of the mapped location, which coincides with the latitude/longitude position on the well log. The mapped location is used.

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 develops the **unconfined alluvium aquifer within 0.25 miles of the McKenzie River**, therefore, per OAR 690-502-0240, the relevant Willamette Basin Rules (OAR 690-502-0080) apply. Per OAR 690-502-0080 (1) (e), "the McKenzie River main stem downstream from Paradise Campground near river mile 73 (Sec 9, T16S, R6E) is classified **only** for domestic, livestock, municipal, industrial, agricultural, commercial, power, mining, fish life, wildlife, recreation, pollution abatement, wetland enhancement, off-channel power development in conjunction with storage and public instream uses". **Irrigation is not listed as a classified use for the mainstem McKenzie River at this location.**

A6. ☐ **Well(s) #** _____ , _____ , _____ , _____ , _____ , tap(s) an aquifer limited by an administrative restriction.
Name of administrative area: _____
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) **7RLN (Medium 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 **shallow, unconsolidated alluvium** groundwater reservoir ~~between approximately _____ ft. and _____ 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:** The POA/POU are on unconsolidated Quaternary glacial outwash deposits that include a wide range of clast sizes ranging from boulders to clays, and may be stratified locally (Brown et al., 1980; Priest et al., 1983; Sherrod and Smith, 2000). These deposits vary in thickness up to 176 ft (LANE 5334) but are more commonly less than 100 ft thick in this area (LANE 67585, LANE 57985, LANE 59835, LANE 79123) and may interfinger with Quaternary landslide deposits and basalt flows (LANE 57989).

A review of statistics for nearby well records was completed and compared with the proposed rate of 0.0125 (5.61 gpm) for this application (see Well Statistics). The median reported well yield is 27 gpm and the maximum reported well yield is 100 gpm. The proposed rate for this application is 21% of the median and 6% of the maximum reported yield. The subject POA well log reports 75 gpm yield via air test, but no drawdown. The proposed rate of use of 0.0125 (5.61 gpm) is likely within the capacity of the groundwater resource.

The nearest observation wells to the subject POA are over 23 miles away and do not utilize the same groundwater resource. Given that the subject POA utilizes the unconfined alluvium within a quarter mile of the mainstem McKenzie River, it is anticipated that groundwater levels will reflect the river stage. US Geological Stream Gage 14159110 on the McKenzie River Above South Fork, Near Rainbow, OR is located approximately 2.8 miles upstream of the POA and has data back to 2017. River stage here varies between 8 and 12 ft for the years that data is available. Within a mile of the POA there are no groundwater rights and five surface water PODs on five water rights. According to the Water Availability Basin Report for this stretch of the McKenzie River, there is water available year-round (see attached WAB report). It is not likely that the groundwater resource is over appropriated.

The nearest groundwater user to the POA is LANE 79030 (exempt domestic well) at an elevation of 1,077 ft amsl and 328 ft southeast of the POA. It is likely the proposed use would cause some degree of well-to-well interference with LANE 79030. To assess the degree of drawdown, a Theis drawdown analysis was conducted for the proposed use (see attached Theis Drawdown Analysis). Results indicate that the proposed use is not likely to cause well-to-well interference that exceeds the

threshold under the standard condition for alluvial aquifers in the Willamette Basin, and therefore is likely within the capacity of the resource.

Based on this analysis of the available data and under the assumptions previously identified, groundwater for the proposed use is likely within the capacity of the resource; if a permit is issued for this application, the conditions in B1(d)(i) and B2(c) are recommended to protect senior users and the groundwater resource.

NOTE: This evaluation considers a conservative scenario for the nearest authorized POA not owned by the applicant. Other authorized POAs in the area may also experience an increase in interference as a result of this application, although to a lesser extent than the scenario evaluated here.

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	**Alluvium**	☐	☒

Basis for aquifer confinement evaluation: The source aquifer is unconsolidated Quaternary glacial outwash deposits, which may contain discontinuous confining layers of clay and/or silt. The POA (LANE 79123) reports a static water level (SWL) of 14 ft bls [1,067 ft amsl] within the water bearing zone (WBZ) that spans from 11 to 60 ft bls [1,021 to 1,063 ft amsl]. There is no confining layer, and the static water level correlates with the McKenzie River stage.

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**	**McKenzie River**	**1050 to 1070**	**1044 to 1097**	**313**	☒	☐	☐	☒	☐
1	**2**	**Unnamed western tributary to McKenzie River**	**1050 to 1070**	**1069 to 1338**	**655**	☒	☐	☐	☒	☐
1	**3**	**Unnamed middle tributary to McKenzie River**	**1050 to 1070**	**1077 to 1099**	**1070**	☒	☐	☐	☒	☐
1	**4**	**Unnamed eastern tributary to McKenzie River**	**1050 to 1070**	**1091 to 1277**	**2527**	☐	☒	☐	☐	☒
1	**5**	**South Fork McKenzie River**	**1050 to 1070**	**1095 to 1100**	**4880**	☐	☒	☐	☐	☒
1	**6**	**Blue River**	**1050 to 1070**	**1353 to 1357**	**4652**	☐	☒	☐	☐	☒

Basis for aquifer hydraulic connection evaluation: POA (LANE 79123) utilizes the unconfined alluvium of the McKenzie River. Wells utilizing this aquifer record SWLs at or near river stage and nearly all well logs show the SWL within the WBZ and lacking a confining layer above the WBZ [a]. SWLs are coincident with surface water elevations in SW 1 (McKenzie River). The POA is within 0.25 miles of SW 1 (McKenzie River), SW 2 (western tributary to McKenzie River), and SW 3 (middle tributary to McKenzie River), so hydraulic connection is assumed in accordance with OAR 690-009-0040(2). WBZs span from 11 to 176 ft bls [891 to 1063 ft amsl] in nearby wells. Neither SWLs or WBZs are coincident with surface water elevations in SW 4 (eastern tributary to McKenzie River), SW 5 (South Fork McKenzie River), or SW 6 (Blue River); it is not likely the POA is in hydraulic connection with these surface water sources.

[a] Groundwater elevation calculated from static water level and WBZs reported in well logs and/or latest static water level reported for LANE 67585, LANE 9578, LANE 5334, LANE 57985, LANE 59835, LANE 78892

[b] Surface water elevations were estimated from land surface elevations along stream reaches (Watershed Sciences, 2009; USGS, 2013).

Water Availability Basin the well(s) are located within:
SW 1, 2, 3, 4: MCKENZIE R>WILLAMETTE R-AB BEAR CREEK
SW 5: S FK MCKENZIE R>MCKENZIE R-AT MOUTH
SW 6: BLUE R>MCKENZIE R-AT MOUTH

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	Instream Water Right Q	Qw > 1% ISWR?	80% Natural Flow	Qw > 1% of 80% Natural	Interference @ 30 days (%)	Potential for Subst. Interfer.

				ID	(cfs)		(cfs)	Flow?		Assumed?
1	**1**	☒	☐	**MF529A**	**1400**	☐	**1560**	☐	**<0.25**	☒
1	**2**	☒	☐	**N/A**	**N/A**	☐	**1560**	☐	**<0.25**	☒
1	**3**	☒	☐	**N/A**	**N/A**	☐	**1560**	☐	**<0.25**	☒

Comments: **Hydraulic connection with SW 1 (McKenzie River), SW 2 (western tributary to McKenzie River), and SW 3 (middle tributary to McKenzie River) is assumed per OAR 690-009-0040(2) because the POA (LANE 79123) is within a quarter mile. In addition, because SW 1, SW 2, and SW 3 are within a quarter mile of the proposed POA, the POA would be assumed to have Potential for Substantial Interference (PSI) with all three SWs per OAR 690-009-0040(4)(a).** Potential depletion (interference with) SW 1 (McKenzie River) by proposed pumping at proposed POA (LANE 79123) was estimated using Hunt 1999 analytical model. The Hunt 1999 analytical model was used because there is not likely a continuous, thick confining layer. Because only the distance is expected to vary between the POA and surface water sources, only the POA-SW pair with the shortest distance (in this case, POA 1 and SW 1) was analyzed quantitatively for interference (stream depletion). All other POA-SW pairs would presumably result in less interference due to their greater separation relative to POA 1 and SW 1. Therefore, the interference of both proposed POA with all surface water sources within 1 mile are anticipated to result in less than 25 percent of the well discharge at 30 days of continuous pumping.

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: N/A-Q not distributed

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													
		%	%	%	%	%	%	%	%	%	%	%	%
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 streams within 1 mile evaluated above

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:** **Hydraulic connection with SW 1 (McKenzie River), SW 2 (western tributary to McKenzie River), and SW 3 (middle tributary to McKenzie River) is assumed per OAR 690-009-0040(2) because the POA (LANE 79123) is within a quarter mile. In addition, because SW 1, SW 2, and SW 3 are within a quarter mile of the proposed POA, the POA would be assumed to have Potential for Substantial Interference (PSI) with all three SWs per OAR 690-009-0040(4)(a).**

The proposed POA develops the **unconfined alluvium aquifer within 0.25 miles of the McKenzie River**, therefore, per OAR 690-502-0240, the relevant Willamette Basin Rules (OAR 690-502-0080) apply. Per OAR 690-502-0080 (1) (e), "the McKenzie River main stem downstream from Paradise Campground near river mile 73 (Sec 9, T16S, R6E) is classified **only** for domestic, livestock, municipal, industrial, agricultural, commercial, power, mining, fish life, wildlife, recreation, pollution abatement, wetland enhancement, off-channel power development in conjunction with storage and public instream uses". **Irrigation is not listed as a classified use for the mainstem McKenzie River at this location.**

References Used:

Well Reports: LANE 4224, LANE 5334, LANE 9565, LANE 9566, LANE 9568, LANE 9569, LANE 9578, LANE 51566, LANE 54933, LANE 57985, LANE 57989, LANE 59675, LANE 59835, LANE 61558, LANE 63909, LANE 63995, LANE 66268, LANE 67585, LANE 74499, LANE 76527, LANE 78121, LANE 78339, LANE 78371, LANE 78584, LANE 78892, LANE 79030, LANE 79123, LANE 79244

Brown, D.E., McLean, G.D., Priest, G.R., Woller, N.M., Black, G.L. 1980. Preliminary geology and geothermal resource potential of the Belknap-Foley area, Oregon. Oregon Department of Geology and Mineral Industries Open File Report O-80-2, 59 p.

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.

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

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.

Heath, R.C., 1983. Basic ground-water hydrology, U.S. Geological Survey Water-Supply Paper 2220, 86p.

Hunt, B. 1999. Unsteady Stream Depletion from Ground Water Pumping. Journal of Hydrologic Engineering, Vol 8(1), pp 12-19

Priest, G.R., Woller, N.M., Black, G.L., and Evans, S.H., 1983, Overview of the geology of the central Oregon Cascade Range, in Priest, G.R., and Vogt, B.F., eds., Geology and geothermal resources of the central Oregon Cascade Range: Oregon Department of Geology and Mineral Industries Special Paper 15, p. 3-28.

Sherrod, D.R. and Smith, J.G. 2000. Geologic map of upper Eocene to Holocene volcanic and related rocks of the Cascade Range, Oregon. US Geological Survey. Geologic Investigations Series.

Theis, C.V., 1935, The relation between the lowering of the piezometric surface and the rate and duration of discharge of a well using ground-water storage: American Geophysical Union transactions, v. 16, p. 519-524.

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

Wallick, J.R., Jones, K.L. O'Connor, J.E., Keith, M.K., Hulse, D., and Gregory, S.V., 2013. Geomorphic and vegetation processes of the Willamette River floodplain, Oregon—Current understanding and unanswered questions: U.S. Geological Survey Open-File Report 2013-1246., 70 p.

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.**

Water Availability Tables
MCKENZIE R>WILLAMETTE R-AB BEAR CR

Oregon Water Resources Department
Water Availability Analysis

Main Help Return Contact Us

Water Availability Analysis
Detailed Reports

MCKENZIE R > WILLAMETTE R - AB BEAR CR
WILLAMETTE BASIN
Water Availability as of 3/26/2024

Watershed ID #: 529 (Map)
Date: 3/26/2024

Exceedance Level: 80%
Time: 3:52 PM

Water Availability Calculation | Consumptive Uses and Storages | 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	3,380.00	227.00	3,150.00	0.00	1,400.00	1,750.00
FEB	3,790.00	922.00	2,870.00	0.00	1,400.00	1,470.00
MAR	3,620.00	926.00	2,690.00	0.00	1,400.00	1,290.00
APR	3,600.00	978.00	2,620.00	0.00	1,400.00	1,220.00
MAY	3,270.00	470.00	2,800.00	0.00	1,400.00	1,400.00
JUN	2,450.00	42.40	2,410.00	0.00	1,400.00	1,010.00
JUL	1,770.00	5.09	1,760.00	0.00	1,400.00	365.00
AUG	1,560.00	2.87	1,560.00	0.00	1,400.00	157.00
SEP	1,580.00	1.79	1,580.00	0.00	1,400.00	178.00
OCT	1,640.00	1.02	1,640.00	0.00	1,400.00	239.00
NOV	2,380.00	1.04	2,380.00	0.00	1,400.00	979.00
DEC	3,300.00	1.06	3,300.00	0.00	1,400.00	1,900.00
ANN	2,630,000.00	213,000.00	2,420,000.00	0.00	1,010,000.00	1,410,000.00

Oregon Water Resources Department
Water Availability Analysis

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Water Availability Analysis
Detailed Reports

MCKENZIE R > WILLAMETTE R - AB BEAR CR
WILLAMETTE BASIN
Water Availability as of 3/26/2024

Watershed ID #: 529 (Map)
Date: 3/26/2024

Exceedance Level: 80%
Time: 3:52 PM

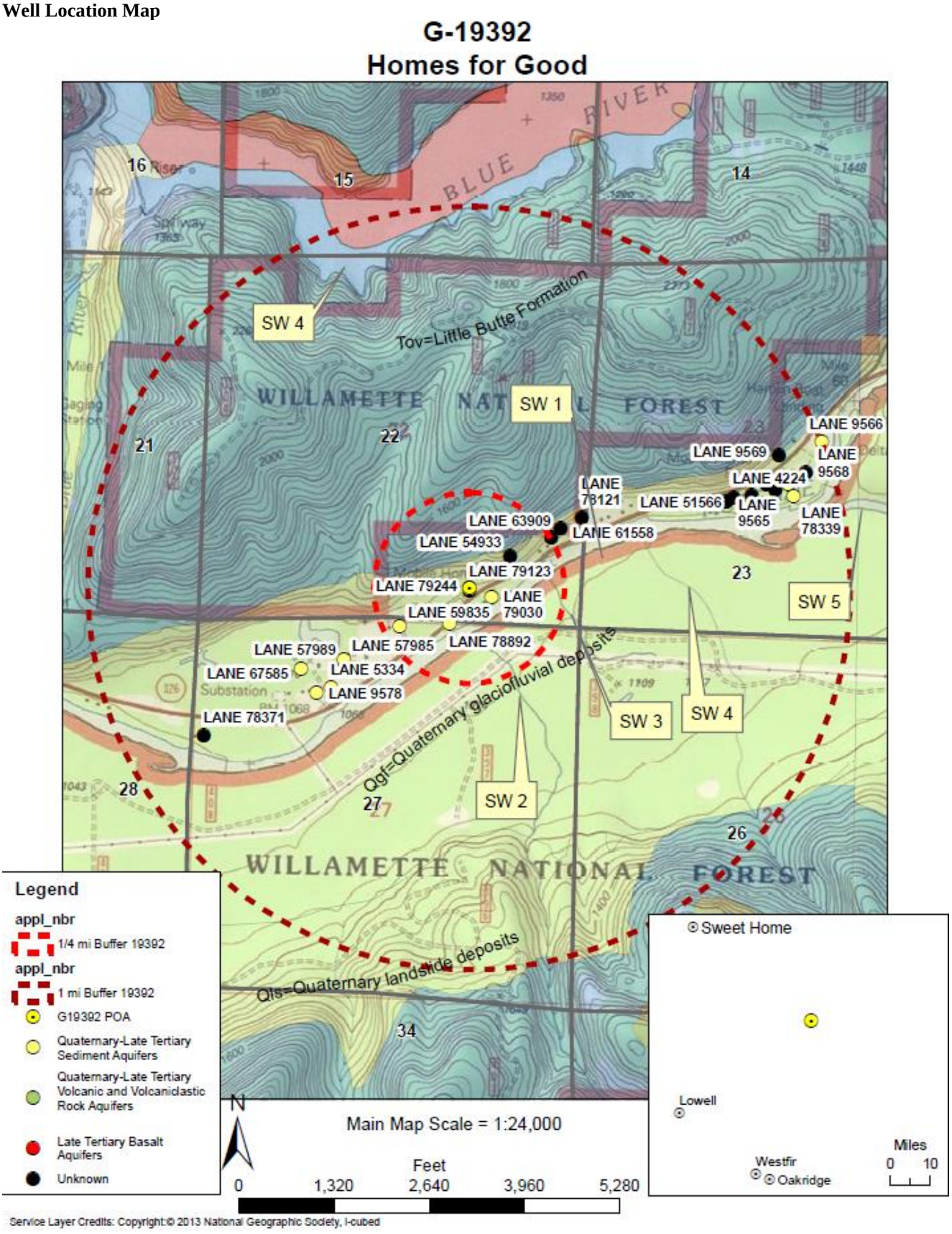
Water Availability Calculation | Consumptive Uses and Storages | Instream Flow Requirements | Reservations
Water Rights | Watershed Characteristics

Detailed Report of Instream Flow Requirements

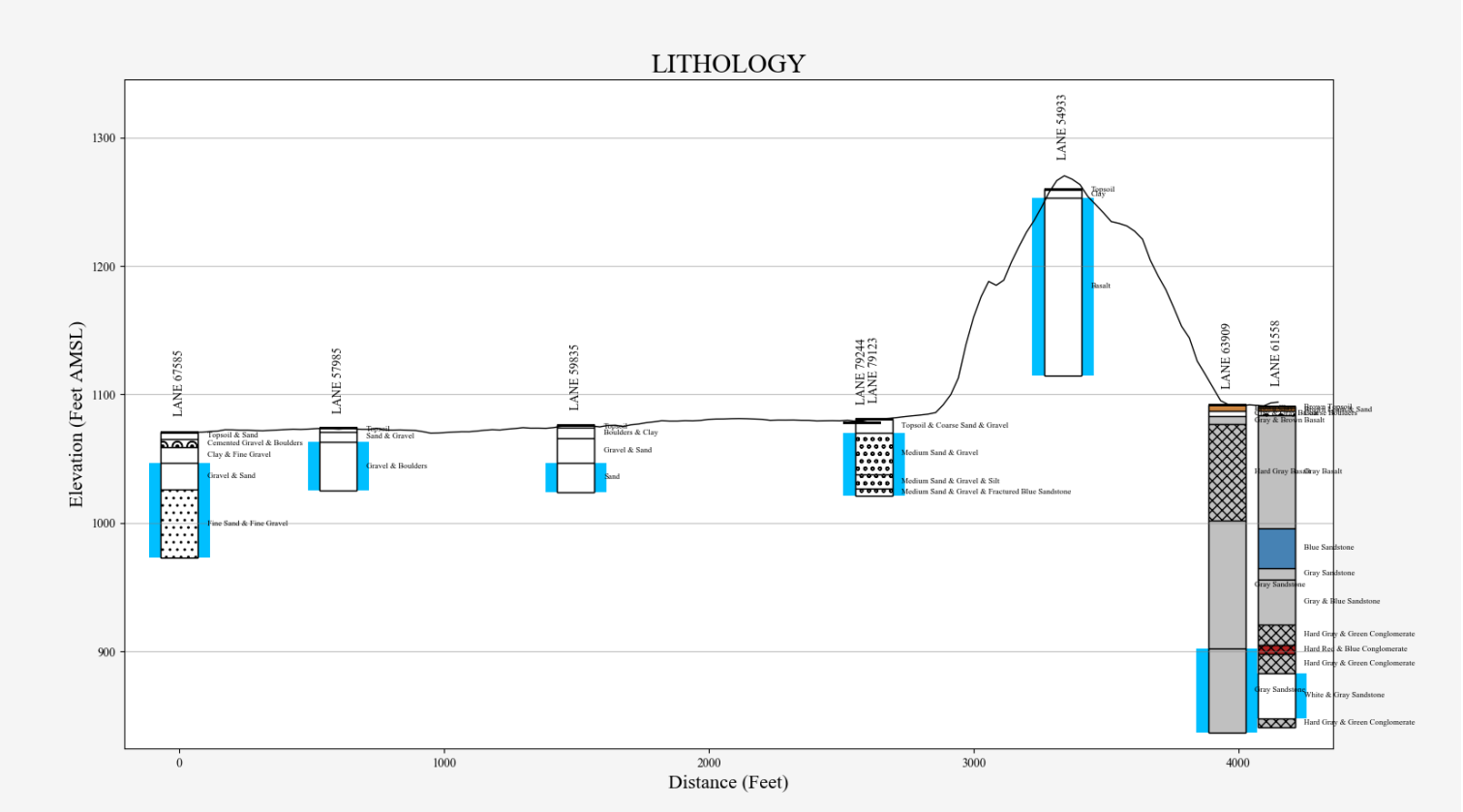
Instream Flow Requirements in Cubic Feet per Second

Application #	Status	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
MF529A	CERTIFICATE	1,400.00	1,400.00	1,400.00	1,400.00	1,400.00	1,400.00	1,400.00	1,400.00	1,400.00	1,400.00	1,400.00	1,400.00
MF127A	APPLICATION	1,400.00	1,400.00	1,400.00	1,400.00	1,400.00	1,400.00	1,400.00	1,400.00	1,400.00	1,400.00	1,400.00	1,400.00
Maximum		1,400.00	1,400.00	1,400.00	1,400.00	1,400.00	1,400.00	1,400.00	1,400.00	1,400.00	1,400.00	1,400.00	1,400.00

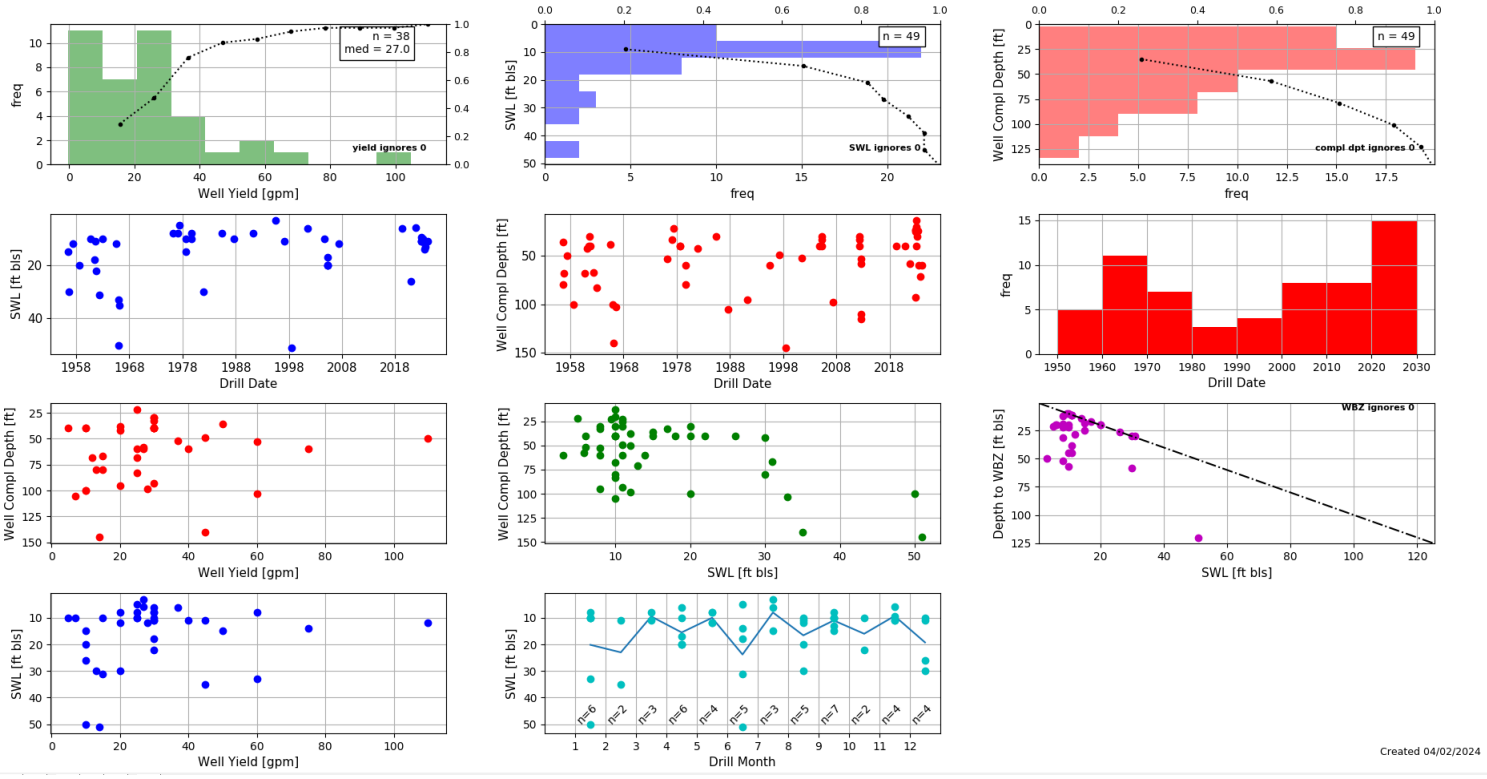
Well Location Map



Cross-Section



Well Statistics

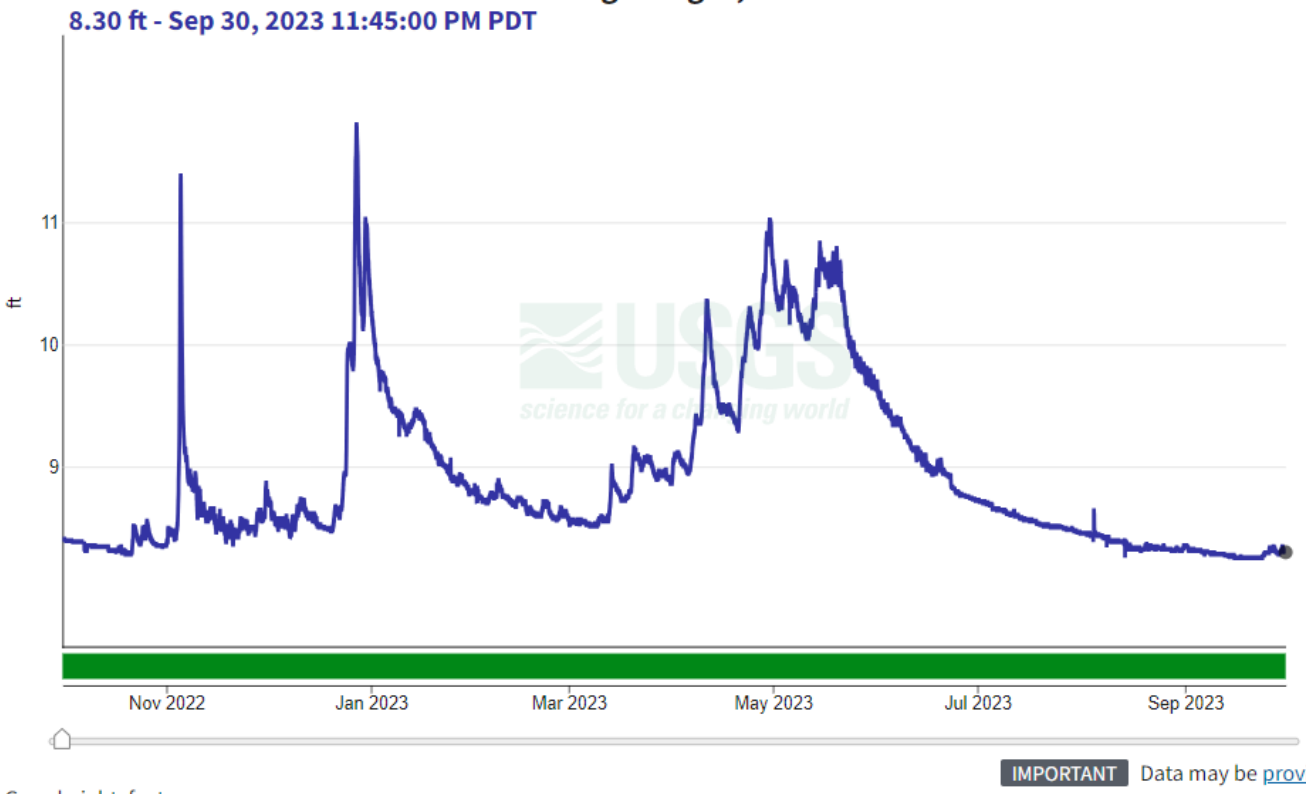


Water-Level Measurements McKenzie River

Mckenzie River Above South Fork, Near Rainbow, OR - 14159110

October 1, 2022 - September 30, 2023

Gage height, feet



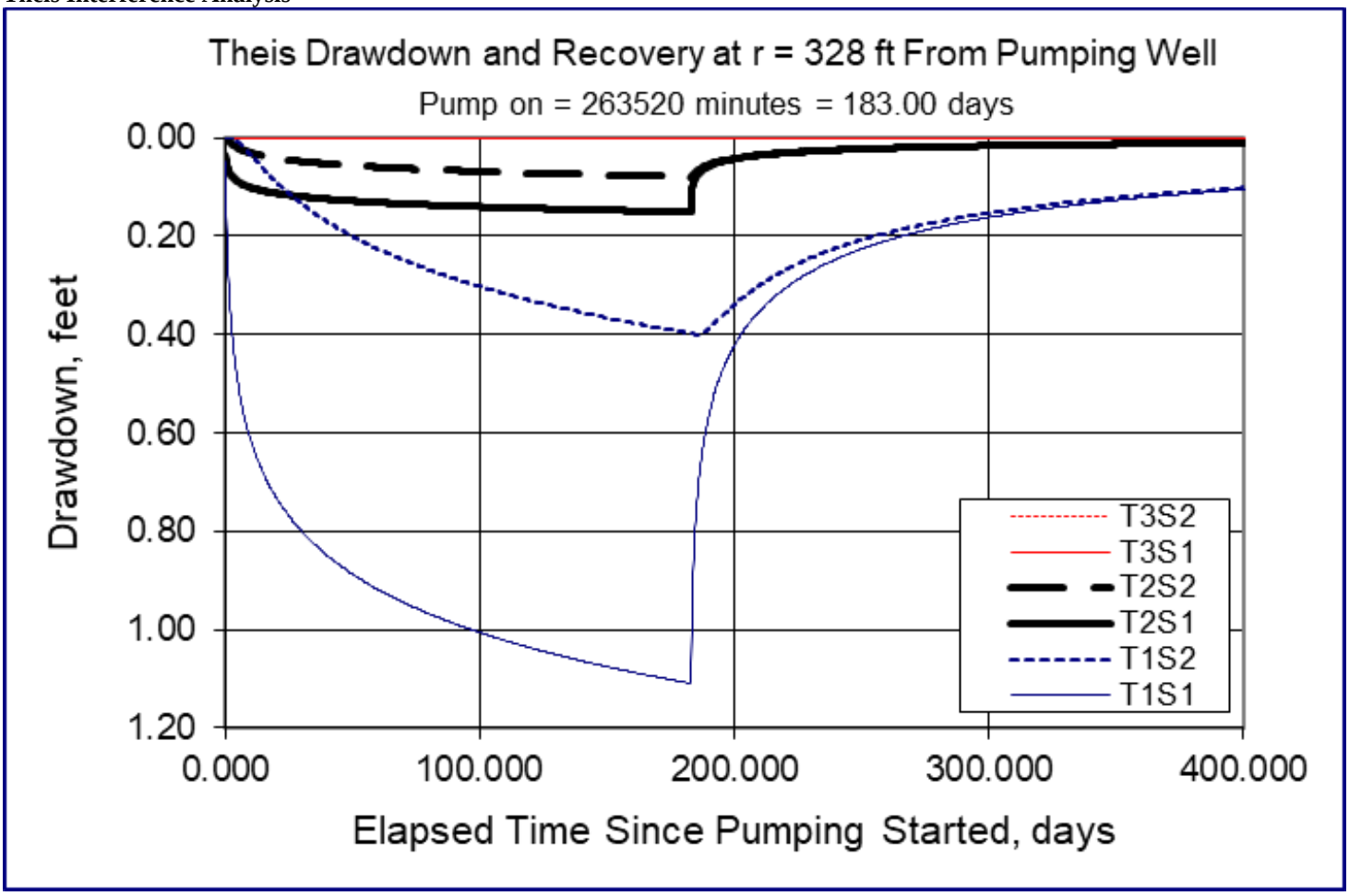
IMPORTANT Data may be provisional

Gage height, feet
Recorded

Data approval period
Approved

Operational limits in ft

Theis Interference Analysis



Radial distance from pumping well (r)=328 ft [estimated radial distance from POA 1 to nearest user, LANE 79030]

Pumping Rate (Q)= 0.0125 cfs (~5.61 gpm)

Aquifer Transmissivity (T1)= 3,740 gpd/ft (500 ft^2/day), (T2)=37,400 gpd/ft (5,000 ft^2/day), (T3)= 374,000 gpd/ft (50,000 ft^2/day) [Conlon et al., 2005 values for USU; Heath, 1983 values for sand and gravel; Domenico and Schwartz, 1990 values for sand and gravel]

Storativity (s1) = 0.003, (s2) = 0.2 [Conlon et al., 2005 values for USU]

Total pumping time=184 days*

*The applicant has requested to irrigate for less than the maximum allowed time period for irrigation (April 15 through October 15 instead of March 1 through October 31). The analyses for this review utilize this reduced period of time (April 15 through October 15).

Stream Depletion (Hunt) Model Analysis

Application type:	G
Application number:	19392
Well number:	1
Stream Number:	1
Pumping rate (cfs):	0.0125
Pumping duration (days):	184
Pumping start month number (3=March)	4

Parameter	Symbol	Scenario 1	Scenario 2	Scenario 3	Units
Distance from well to stream	a	313	313	313	ft
Aquifer transmissivity	T	500	5000	50000	ft2/day
Aquifer storativity	S	0.01	0.05	0.2	-
Aquitard vertical hydraulic conductivity	Kva	0.001	0.001	0.001	ft/day
Not used		10.0	20.0	30.0	
Aquitard thickness below stream	babs	1	1	1	ft
Not used		0.2	0.2	0.2	
Stream width	ws	173	173	173	ft

Stream depletion for Scenario 2:

Days	10	300	330	360	30	60	90	120	150	180	210	240	270
Depletion (%)	1	4	3	3	3	4	5	6	7	7	5	4	4
Depletion (cfs)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00