Groundwater Application Review Summary Form

Application # G- 19144

GW Reviewer Phillip I. Marcy Date Review Completed: 04/12/2024

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 **_April 12, 2024**

TO: **Application** G-**_19144_**

FROM: **GW: _Phil Marcy_**
(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 04/12/2024
FROM: Groundwater Section Phillip I. Marcy
Reviewer's Name
SUBJECT: Application G- **19144** Supersedes review of 07/24/2023
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: **John Wirth** County: **Baker**

A1. Applicant(s) seek(s) 3.0 cfs from 3 well(s) in the Powder Basin, _____ subbasin

A2. Proposed use Irrigation (111.8 acres); Supplemental Irrigation (667.0 acres) Seasonality: March 1st – October 31st (245 days)

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	Proposed	1	Alluvium	3.0	7S/41E-13 SW-SE	795' N, 1425' W fr SE cor S 13
2	Proposed	2	Alluvium	3.0	7S/41E-13 SW-SE	885' N, 1508' W fr SE cor S 13
3	Proposed	3	Alluvium	3.0	7S/41E-13 SE-SE	700' N, 1340' W fr SE cor S 13
4						

* 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	3369	Unk	Unk	NA	300	0-80	0-80	NA	80-300	Unk	NA	NA
2	3376	Unk	Unk	NA	300	0-80	0-80	NA	80-300	Unk	NA	NA
3	3377	Unk	Unk	NA	300	0-80	0-80	NA	80-300	Unk	NA	NA

Use data from application for proposed wells.

A4. **Comments:** The applicant proposes to produce groundwater from the local fractured bedrock aquifer. The broken rock at depth is likely Clover Creek Greenstone of Gilluly (1937), mapped here by Brooks (1977). The upland area where the proposed POA wells are located appears to have a relatively thin mantle of sediment overlying the fractured bedrock, based on available data.

This re-review is being conducted to reevaluate the determination of Potential to Substantially Interfere (PSI) with nearby surface water sources, per Section C of the review. The applicant has amended their request to limit production of groundwater to 3.0 cfs from the underlying bedrock aquifer. Additionally, surface water sources considered in previous reviews as springs have been evaluated (personal communication with Baker City Watermaster, March 22, 2024) as either not flowing or flowing only a short distance at rates less than 5 GPM.

A5. ☒ **Provisions of the** Powder 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: _____

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) **7N; "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 **50** ft. below land surface;

c. ☐ **Condition** to allow groundwater production only from the _____ 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:** There is little groundwater development, hence little groundwater data for this area. There are only two located wells within one mile of the proposed POAs. Two wells about 1.5 miles from the POA wells have a handful of permit condition measurements that suggest groundwater levels are reasonably stable for their period of record (see hydrograph).

Nearby wells produce groundwater from a combination of alluvium and fractured bedrock, and there is no data available that suggests these two lithologies are hydraulically isolated from one another. Based upon local well reports, groundwater under confining pressure typically migrates upward through fractures in what are otherwise low-permeability lithologies. These fractured rocks have been targeted as productive water-bearing zones for usable quantities of groundwater in the majority of wells in the area.

All but one of the springs or seeps within one mile reside on the applicant's property, with the lone exception being one of two PODs under Certificate 65716, named "unnamed stream" and also mapped as the source on Certificate 70194. There is no spring mapped at this location on the USGS topographic map, but within the draw is mapped as an intermittent stream. Local Watermaster Marcy Osborn noted that any surface water emerging here did not make it off of the property in March 2024.

Another matter to consider is whether nearby surface water rights are able to be utilized under modern hydrologic conditions. Despite the lack of groundwater development locally, the availability of surface water appears to have diminished over time, suggesting that climatic changes are responsible.

Available data for nearby wells do not display significant declines that would suggest over-appropriation of the source aquifer as defined in the Iverson 2023 memo.

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	**Fractured Bedrock**	☒	☐
2	**Fractured Bedrock**	☒	☐
3	**Fractured Bedrock**	☒	☐
		☐	☐

Basis for aquifer confinement evaluation: Nearby well reports indicate that groundwater encountered at depth within the succession of fractured rock rises well above the elevation at which it is first encountered. It is anticipated that the degree of confinement varies locally due to vertical permeability being primarily controlled by the presence or absence of secondary porosity caused by fractures within low-permeability rock.

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**
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐

Basis for aquifer hydraulic connection evaluation: The geologic framework underlying the proposed POA wells is composed of fractured bedrock, in which the fractures provide the most efficient pathways for movement of groundwater. In this scenario, there does not exist a laterally continuous barrier to this movement toward land surface. Springs within one mile of the proposed POA locations are an expression of groundwater discharging at the surface where these efficient pathways intersect the surface topography. The current hydrologic regime in the area if the proposed wells includes seasonal discharge at seeps and springs that contribute to flow of intermittent streams, flowing a short distance before becoming losing reaches. Therefore, the system here is one in which groundwater only temporarily emerges and does not substantially contribute to any surface water source within one mile.

Water Availability Basin the well(s) are located within: Powder R > Snake R – AB Goose Creek

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?
		☐	☐			☐		☐		☐

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: The proposed POA wells are anticipated to be hydraulically connected to seasonal seeps and springs within one mile. Though water discharged from mapped and unmapped springs and seeps is thought to inevitably reach perennial surface waters through shallow subsurface or deeper fracture flow, this confluence does not occur within one mile of the proposed POA locations. Considering the degree of confinement suggested by nearby well logs, groundwater discharged to wells and springs in this area likely emerges from deep flow paths, migrating toward the surface where preferential flow paths exist.

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: This section does not apply.

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:**

Special Conditions:

Due to the possibility of impacts to neighboring rights by the proposed pumping, if a permit is issued it shall be conditioned to protect nearby senior water rights if impacts are observed, by cessation or curtailment of pumping until flows are restored.

Based upon the limited availability of groundwater data in the area if the proposed development and associated high uncertainty surrounding the long-term impacts of the development, OWRD staff shall be granted access to POA wells authorized under any permit issued as a result of this application in order to conduct routine water level measurements upon reasonable notice. Collected data will better inform the Department to assess the sustainability of further development of the local bedrock aquifer in order to prevent the over-appropriation of the groundwater resource.

References Used:

Brooks, H.C., Bowen, R.G., 1977, Preliminary geologic map of the Keating NW quadrangle, Oregon, Open-File Report O-77-1(b), Oregon Department of Geology and Mineral Industries, Portland, OR., map scale 1:24,000.

Gilluly, J., 1937, Geology and mineral resources of the Baker quadrangle, Oregon, USGS Bulletin 879, U.S. Geological Survey, map scale 1:125,000.

Application review for G-17758

GWIS water level database, GRID well log database

Iverson, J.I. 2023, Clarification of current policy for determining over-appropriation in section B1a of the PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS.

Amended pages for application G-19144, including a reduction in maximum rate to 3.0 CFS.

Email from Marcy Osborn, Baker County Watermaster, March 22, 2024.

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

DETAILED REPORT ON THE WATER AVAILABILITY CALCULATION

POWDER R > SNAKE R - AB GOOSE CR

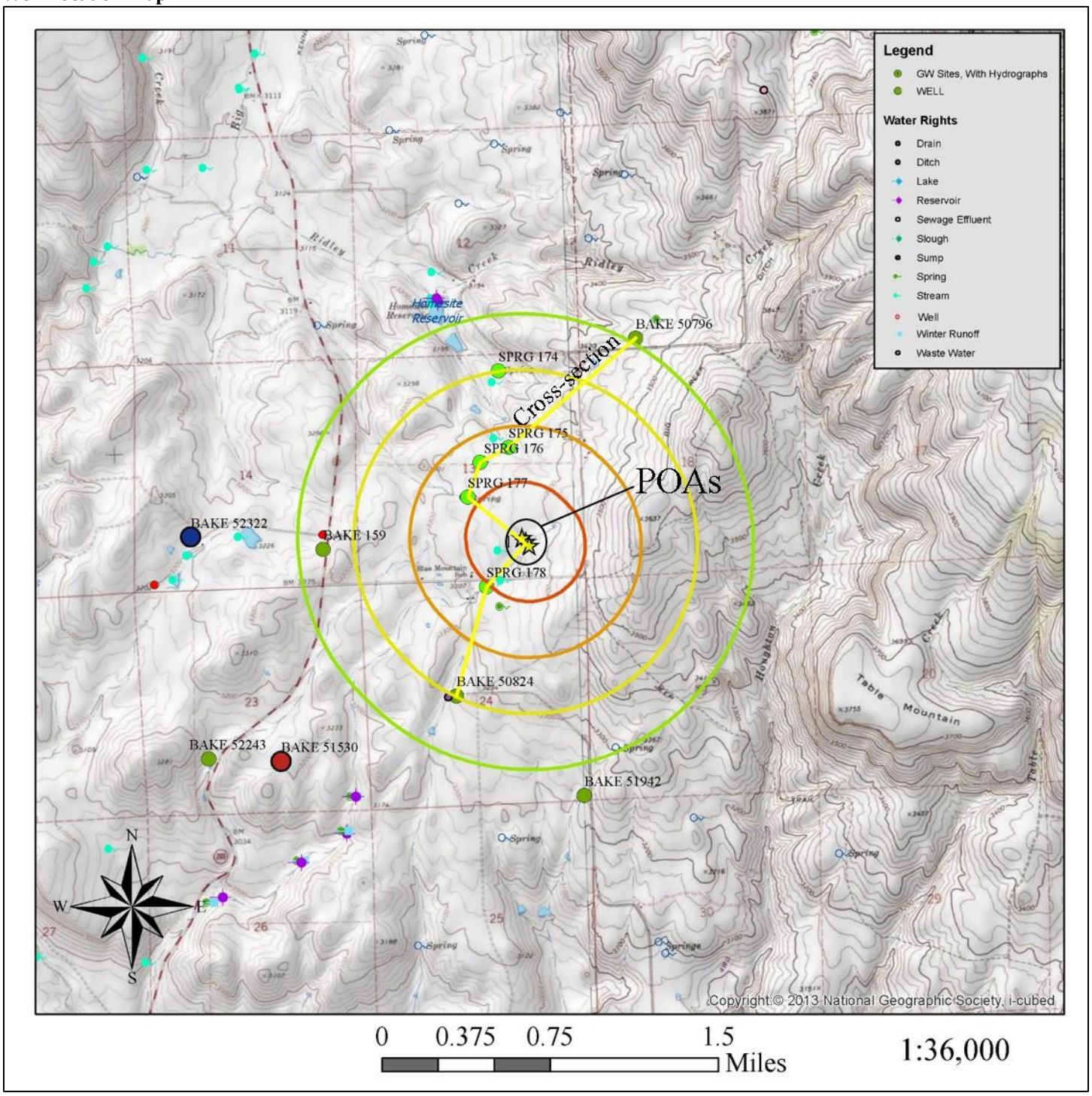
Watershed ID #: 72192 Basin: POWDER Exceedance Level: 80

Time: 5:38 PM Date: 06/08/2021

Monthly values are in cfs.
Storage is the annual amount at 50% exceedance in ac-ft.

Month	Natural Stream Flow	Consumptive Use and Storage	Expected Stream Flow	Reserved Stream Flow	Instream Requirements	Net Water Available
JAN	76.20	118.00	-41.90	6.37	50.00	-98.30
FEB	128.00	139.00	-10.80	20.60	60.00	-91.40
MAR	254.00	218.00	36.00	61.60	70.00	-95.60
APR	580.00	416.00	164.00	251.00	70.00	-157.00
MAY	800.00	1,010.00	-205.00	140.00	70.00	-416.00
JUN	620.00	1,070.00	-452.00	0.00	70.00	-522.00
JUL	210.00	578.00	-368.00	0.00	50.00	-418.00
AUG	110.00	356.00	-246.00	0.00	50.00	-296.00
SEP	75.70	275.00	-199.00	0.00	50.00	-249.00
OCT	73.60	96.30	-22.70	4.67	50.00	-77.40
NOV	80.20	73.70	6.49	5.56	50.00	-49.10
DEC	85.80	133.00	-46.90	6.14	50.00	-103.00
ANN	287,000	271,000	67,600	29,900	41,600	20,000

Well Location Map



Water-Level Measurements in Nearby Wells