PUBLIC INTEREST REVIEW FOR GROUND WATER APPLICATIONS

TO: Water Rights Section Date **June 10, 2008**

FROM: Ground Water/Hydrology Section **Josh Hackett / Karl Wozniak**
Reviewer's Name

SUBJECT: Application G- **16944** 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 ground water 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**: **David Schmerber** **County: Marion**

A1. Applicant(s) seek(s) **0.446**** cfs from **1** well(s) in the **Willamette** Basin, _____ subbasin Quad Map: **Gervais**

A2. Proposed use: **irrigation** 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 #	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 5189	1	Alluvium	0.139**	6S/3W-25 NE-NE	35' S, 665' W fr NE cor S25
2						
3						
4						
5						

* 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	**178**	**95**	**41**	**4/21/1979**	**139**	**0-20**	**0-139**		**100-138**	**300**		**A**

Use data from application for proposed wells.

A4. **Comments:** ** The applicant is seeking irrigation of 11.1 acres. The maximum allowed instantaneous rate is 1/80th of 1 cfs per acre irrigated. This results in a rate of 0.139 cfs. This application will be evaluated based on this rate.

A5. ☒ **Provisions of the** Willamette Basin rules relative to the development, classification and/or management of ground water hydraulically connected to surface water ☐ **are**, *or* ☒ **are not**, activated by this application. (Not all basin rules contain such provisions.)
Comments: The applicant's well produces from a confined aquifer, so the pertinent basin rules do not apply.

A6. ☐ **Well(s) #** _____ , _____ , _____ , _____ , _____ , tap(s) an aquifer limited by an administrative restriction.
Name of administrative area: _____
Comments: _____

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

B1. **Based upon available data**, I have determined that ground water* 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 ground water 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 ground water 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 ground water resource; or

d. ☒ **will, if properly conditioned**, avoid injury to existing ground water rights or to the ground water resource:
   i. ☒ The permit should contain condition #(s) **7B, 7C**;
   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 ground water production from no deeper than _____ ft. below land surface;

b. ☐ **Condition** to allow ground water production from no shallower than _____ ft. below land surface;

c. ☐ **Condition** to allow ground water production only from the _____ ground water 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 Ground Water 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. **Ground water availability remarks: SPECIAL CONDITION:**
Prior to using water on this permit, the permittee shall ensure that all wells on the permit have an OWRD Well Identification Number (Well ID or Well tag number). If a well does not have a Well ID, the permittee shall apply for one from the Department. The Well ID shall be attached to the well and shall be used as a reference identification number for any correspondence regarding the well including any water use, water level, or pump test reports.

The applicant's well is located in an area that contains low-permeability silt and clay from land surface to a depth of approximately 50-60 feet. A 120-140 feet thick package of sand and gravel underlies the low-permeability silt. Underlying the sand and gravel is a >200 feet thick sequence of mostly fine grained alluvium with thin beds of sand and gravel (Gannett and Caldwell, 1998). The applicant's well is open only to shallow water bearing zones (60-200 feet below land surface).

There is some conflicting evidence about the stability of the system in this area. Water levels in nearby well MARI 4550 shows a decline of 15.5 feet from 1999 to 2006, while water levels in MARI 5148 are relatively stable over the same time period (see attached hydrograph). Nearby long term observation well MARI 5030 shows a response to climatic cycles that is typical of nearby alluvial wells (Conlon and others, 2005) (see attached hydrograph). The thick package of sand and gravel and the relatively small amount of use in the area suggest the alluvial aquifer should be capable of accommodating the additional stress without harm to the resource or to existing rights. However, additional data is necessary to further evaluate the stability of the resource.

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

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

Well	Aquifer or Proposed Aquifer	Confined	Unconfined
1	**alluvial**	☒	☐
		☐	☐
		☐	☐
		☐	☐
		☐	☐

Basis for aquifer confinement evaluation: The applicant's well produces water from sands and gravels that are confined by at least 15 feet of saturated silt. This is confirmed by static water levels that rise above the level of the producing sand and gravel beds in nearby alluvial wells.

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**	**Labish Ditch**	**137**	**140**	**3900**	☒	☐	☐	☐	☒
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐

Basis for aquifer hydraulic connection evaluation: Water level elevations in the alluvial aquifer are essentially equivalent to the elevation of nearby creeks. Water table maps in the area indicate that ground water discharges to streams in the area. Because nearby creeks do not fully penetrate the confining layer above the aquifer, the efficiency of the connection between these streams and the ground water system will be quite low.

Water Availability Basin the well(s) are located within: 182 WILLAMETTE R > COLUMBIA R – AB MOLALLA R

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?
1	**1**	☐	☐	**n/a**	**n/a**	☐	**3830**	☐	**<<25%**	☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐

C3b. **690-09-040 (4):** Evaluation of stream impacts <u>by total appropriation</u> 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: Interference simulations in similar situations indicates impacts will be <<25% after 30 days of pumping. Assuming at least 5-10 feet of Willamette Silt separates the streams from the aquifer, the hydraulic connection between the streams and the aquifer is likely to be very inefficient.

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													
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
		%	%	%	%	%	%	%	%	%	%	%	%
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:

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 ground water 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:**

References Used:

Conlon and others, 2005, Ground-water hydrology of the Willamette Basin, Oregon: U.S Geological Survey Scientific Investigations Report 2005-5168.

Gannett and Caldwell, 1998, Geologic framework of the Willamette lowland aquifer system, Oregon and Washington: U.S. Geological Survey Professional Paper 1424-A,

Hunt, B., 1999, Unsteady stream depletion from ground water pumping: Ground Water, v. 37, no. 1, p. 98-102.

Hunt, B., 2003, Unsteady stream depletion when pumping from semiconfined aquifer: Journal of Hydrologic Engineering, January/February, 2003.

Jenkins, C.T., 1970, Computation of rate and volume of stream depletion by wells: U.S. Geol. Survey Techniques of Water-Resources Investigations of the Unites States Geological Survey, Chapter D1, Book 4,17 p.

Woodward and others, 1998, Hydrogeologic framework of the Willamette lowland aquifer system, Oregon and Washington: U.S. Geological Survey Professional Paper 1424-B,

D. WELL CONSTRUCTION, OAR 690-200

D1. **Well #**: _____ **Logid:** _____

D2. **THE WELL does not 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**:
- a. ☐ constitutes a health threat under Division 200 rules;
- b. ☐ commingles water from more than one ground water reservoir;
- c. ☐ permits the loss of artesian head;
- d. ☐ permits the de-watering of one or more ground water reservoirs;
- e. ☐ other: (specify) _____

D4. **THE WELL construction deficiency is described as follows:** _____

D5. **THE WELL**
- a. ☐ **was**, *or* ☐ **was not** constructed according to the standards in effect at the time of original construction or most recent modification.
- b. ☐ I don't know if it met standards at the time of construction.

D6. ☐ **Route to the Enforcement Section.** I recommend withholding issuance of the permit until evidence of well reconstruction is filed with the Department and approved by the Enforcement Section and the Ground Water Section.

THIS SECTION TO BE COMPLETED BY ENFORCEMENT PERSONNEL

D7. ☐ Well construction deficiency has been corrected by the following actions: _____

_____ _____, 200____.
(Enforcement Section Signature)

D8. ☐ **Route to Water Rights Section (attach well reconstruction logs to this page).**

Water Availability Tables

DETAILED REPORT ON THE WATER AVAILABILITY CALCULATION
Water Availability as of 5/22/2008 for
WILLAMETTE R > COLUMBIA R - AB MOLALLA R

Watershed ID #: 182 Basin: WILLAMETTE Exceedance Level: 80
Time: 10:46 Date: 05/22/2008

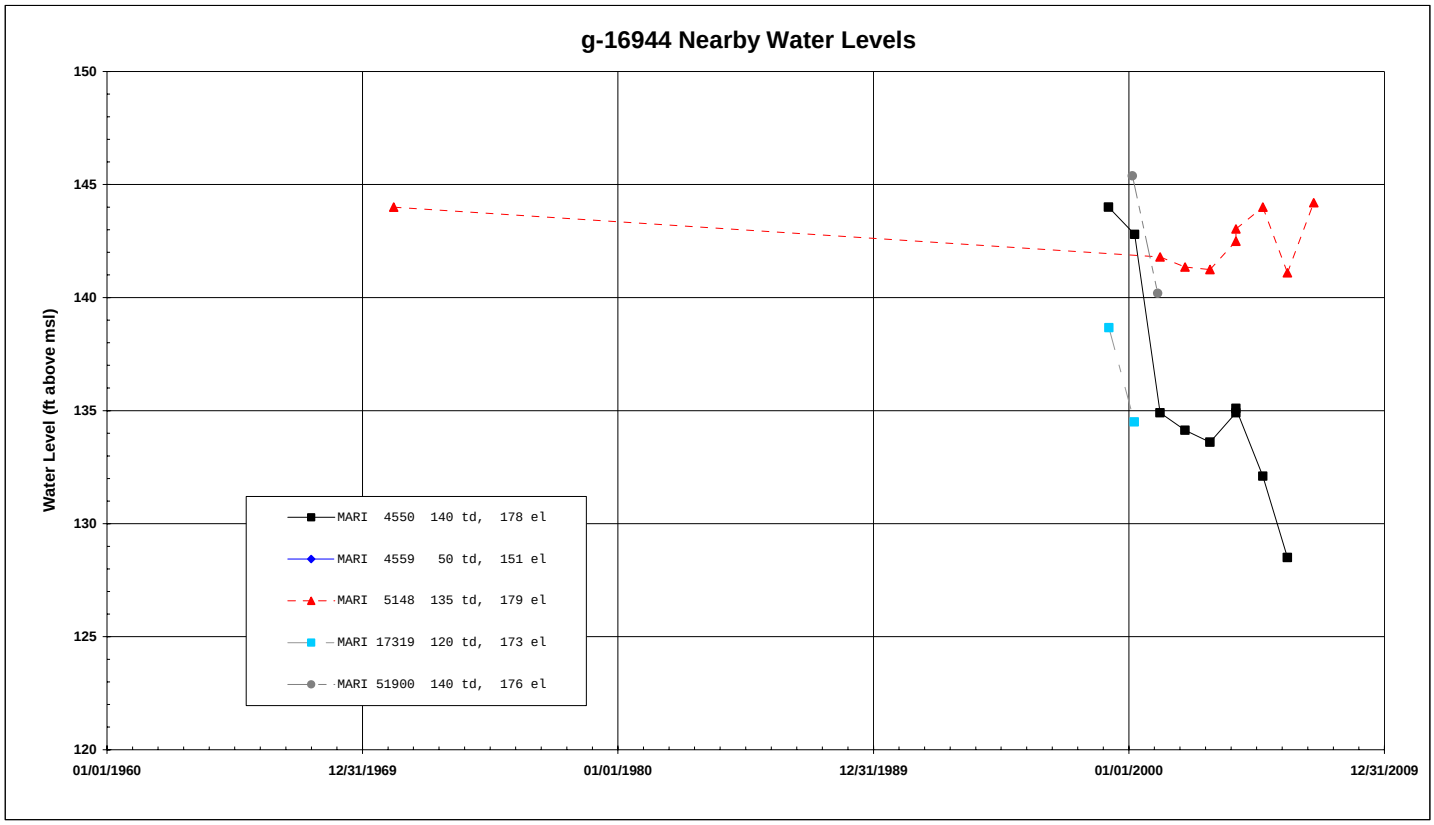
Month	Natural Stream Flow	Consumptiv Use and Storage	Expected Stream Flow	Reserved Stream Flow	Instream Require-ments	Net Water Available
1	21400.00	2250.00	19100.00	0.00	1500.00	17600.00
2	23200.00	7440.00	15800.00	0.00	1500.00	14300.00
3	22400.00	7220.00	15200.00	0.00	1500.00	13700.00
4	19900.00	6870.00	13000.00	0.00	1500.00	11500.00
5	16600.00	4200.00	12400.00	0.00	1500.00	10900.00
6	8740.00	2050.00	6690.00	0.00	1500.00	5190.00
7	4980.00	1870.00	3110.00	0.00	1500.00	1610.00
8	3830.00	1710.00	2110.00	0.00	1500.00	614.00
9	3890.00	1470.00	2420.00	0.00	1500.00	917.00
10	4850.00	718.00	4130.00	0.00	1500.00	2630.00
11	10200.00	851.00	9350.00	0.00	1500.00	7850.00
12	19300.00	924.00	18400.00	0.00	1500.00	16900.00
Stor-50%	15200000	2245000	13000000	0	1090000	11900000

DETAILED REPORT OF INSTREAM REQUIREMENTS
Water Availability as of 5/22/2008 for
WILLAMETTE R > COLUMBIA R - AB MOLALLA R

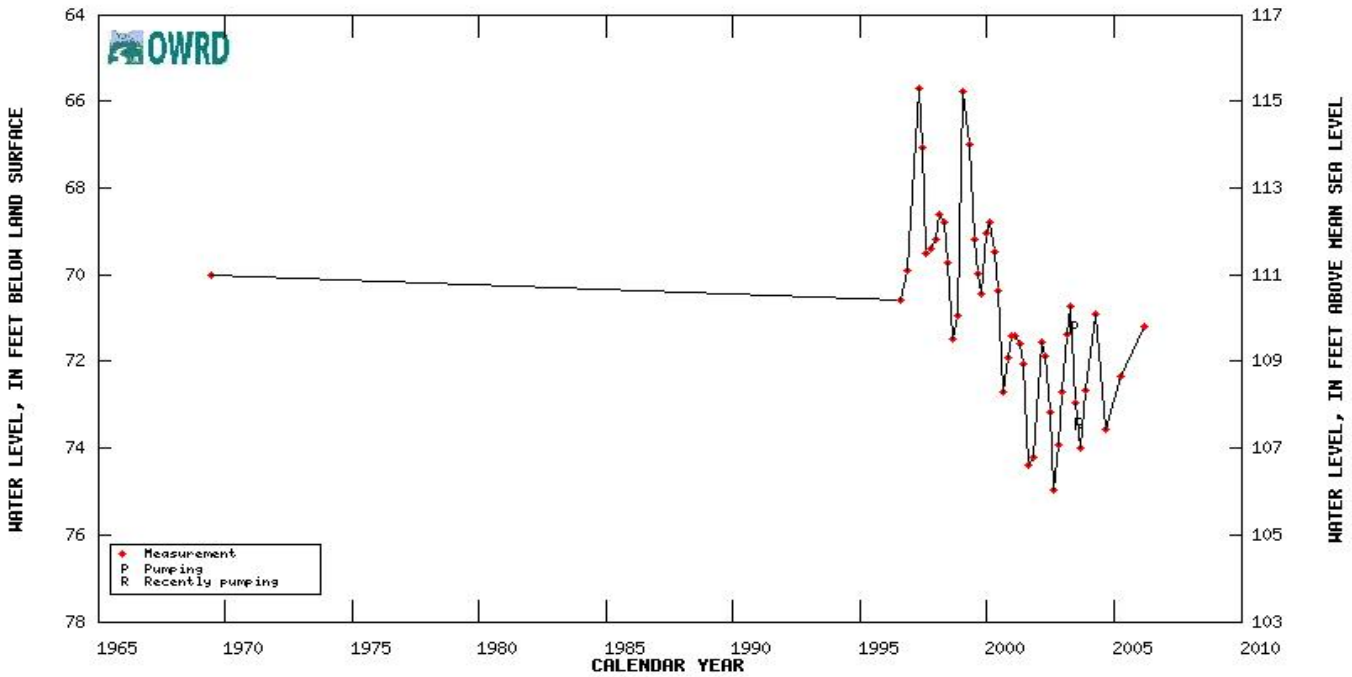
Watershed ID #: 182 Basin: WILLAMETTE Exceedance Level: 80
Time: 10:46 Date: 05/22/2008

APP #	MF 182	0	0	0	0	0	0	MAXIMUM
Status	Cert.	ISWRs						
1	1500.00	0.00	0.00	0.00	0.00	0.00	0.00	1500.00
2	1500.00	0.00	0.00	0.00	0.00	0.00	0.00	1500.00
3	1500.00	0.00	0.00	0.00	0.00	0.00	0.00	1500.00
4	1500.00	0.00	0.00	0.00	0.00	0.00	0.00	1500.00
5	1500.00	0.00	0.00	0.00	0.00	0.00	0.00	1500.00
6	1500.00	0.00	0.00	0.00	0.00	0.00	0.00	1500.00
7	1500.00	0.00	0.00	0.00	0.00	0.00	0.00	1500.00
8	1500.00	0.00	0.00	0.00	0.00	0.00	0.00	1500.00
9	1500.00	0.00	0.00	0.00	0.00	0.00	0.00	1500.00
10	1500.00	0.00	0.00	0.00	0.00	0.00	0.00	1500.00
11	1500.00	0.00	0.00	0.00	0.00	0.00	0.00	1500.00
12	1500.00	0.00	0.00	0.00	0.00	0.00	0.00	1500.00

Water levels in nearby wells



Well Location	6.00S3.00W23CAA2
Oregon Water Resources Department Well Log ID	MARI 5030
Oregon Water Resources Department State Observation Well Number	----
Well depth, in feet below land surface	104
Land surface elevation, in feet above mean sea level	181
Primary use of well	DOMESTIC



Well Location Map