

Groundwater Application Review Summary Form

Application # G- 18799

GW Reviewer Amanda Bouchier Date Review Completed: 5/9/2019

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.

5/9/19

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).

MEMO

OK
KJE

To: Kristopher Byrd, Well Construction and Compliance Section Manager
From: Joel Jeffery, Well Construction Program Coordinator
Subject: Review of Water Right Application G-18799
Date: May 16, 2019

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

Applicant's Well #1 (DESC 56245): 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.

STATE OF OREGON
Water Supply Well Report

(as required by ORS 537.765)

DESC 56245

DESC

Received Date: 08-31-2004

Well ID Tag # L 70682

Start Card # 167159

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

(1) Owner Well Number: _____
Name: _____
DEPARTMENT OF TRANSPORTATION
Street: PO BOX 5309
City: BEND State: OR Zip Code: 97701

(2) Type of Work
 New Alter (Recondition) Alter (Repair)
 Deepening Abandonment

(3) Drill Method
 Rotary Air Rotary Mud Cable Auger
Other: _____

(4) Proposed Use
 Domestic Community Industrial Irrigation Injection
 Livestock Thermal Other: _____

(5) Bore Hole Construction
 Special Standards: Depth of completed well: 532.00 ft.
 Explosives Used: Amount: _____ Type: _____

Diameter	Hole		Seal			Sacks/lbs
	From	To	Mtrl	From	To	
12.00	0.00	38.00	BC	0.00	38.00	28
8.00	38.00	532.00				

How was seal placed? _____ Other: POURED DRY
Back fill placed from: _____ Material: _____
Filter pack from: _____ Size: _____

(6) Casing / Liner

Csng/ Liner	Diameter	From	To	Gauge	Mtrl	Weld	Thrd	Shoe at	Shoe used
C	8.00	2.00	38.00	.250	S	X			
L	6.00	-6.00	532.00	.188	S	X			

(7) Perforation / Screens

Perforations:

Mtrl	From	To	Width	Height	#Slots	Dia.	t/pSize	Csng/ Lnr	Method
S	492.00	532.00	0.13	3.00	432	6.00		L	MACHINE

Screens:

Mtrl	From	To	S Size	#Slots	Dia.	t/pSize	Type	Gauge
------	------	----	--------	--------	------	---------	------	-------

(8) Well Tests (Minimum testing time is one hour)

Type	Yield	Units	Drawdown	Stem at	Duration
A	40.00	G		530.00	2.00
P	165.00	G	2.00		6.00

Temperature of Water: 70 F
Was water analysis done? Depth of artesian flow: _____
by whom? _____
Did any strata contain water unsuitable for use? Too Little Salty
 Muddy Odor Colored other: _____
Depth of strata: _____

(9) Location of Hole by legal description
County: DESC Latitude: 43°48'48" Longitude: 120°35'57"
Township: 20.00 S Range: 18.00 E
Section: 30 NENE Lot: _____ Block: _____
Tax Lot: 3199 Subdivision: _____
Street Address of Well (or nearest address):
3440 EAST HWY 20 BROTHERS
MAP, with location identified, must be attached.

(10) Static Water Level
Feet below land surface: 415.0 Date: 08 / 18 / 2004
Artesian Pressure: _____ Date: _____

(11) Water Bearing Zones

Depth at which water was first found: 400.00 ft.

From	To	est Flow	swl
400.00	532.00	40.00	415

(12) Well Log Ground Elevation: 4640 ft.

Material	From	To	swl
SAND PUMICE	0.00	3.00	
LAVA CLAY SEAMS RED	3.00	25.00	
LAVA GRAY HARD	25.00	50.00	
LAVA RED	50.00	62.00	
CLAY RED	62.00	68.00	
CONGLOMERATE BROWN	68.00	77.00	
LAVA GRAY	77.00	82.00	
LAVA BROWN	82.00	86.00	
CREVICE NO RETURNS	86.00	92.00	
HARD	92.00	185.00	
CREVICE	185.00	188.00	
SOFT HARD LAYERS	188.00	230.00	
CONGLOMERATE	230.00	272.00	
BASALT CLAY SEAMS	272.00	360.00	
CONGLOMERATE BROWN	360.00	376.00	
BASALT LAVA LAYERS	376.00	460.00	415
CONGLOMERATE	460.00	495.00	415
LAVA FRACTURED	495.00	532.00	415
4 1/2 YRDS SAND GROUT	82.00	225.00	

Date Started: 08 / 16 / 2004 Date Completed: 08 / 18 / 2004

(unbonded) Water Well Constructor Certification:
I certify that the work I perform on the construction, alteration, or abandonment of this well is in compliance with Oregon well construction standards. Materials used and information reported above are true to the best knowledge and belief.
Signed by: THOMAS R PECK WWC #: 758

(bonded) Water Well Constructor Certification:
I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon well construction standards. This report is true to the best of my knowledge and belief.
Signed by: JACK ABBAS WWC #: 1720

PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date 5/9/2019
 FROM: Groundwater Section Aurora C Bouchier
 Reviewer's Name
 SUBJECT: Application G- 18799 Supersedes review of na
 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: Oregon DOT County: Deschutes

A1. Applicant(s) seek(s) 0.018 cfs from 1 well(s) in the Deschutes Basin,
Lower Crooked River subbasin

A2. Proposed use Irrigation (1.4 acres) Seasonality: April 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	DESC 56245	1	Bedrock	0.018	20S/18E-30 NE-NE	328' S, 459' W fr ME cpr S 30
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	4635	400	415	8/18/2004	532	0-38	-2-38	6-532	492-532	165	2	G

Use data from application for proposed wells.

A4. **Comments:** The well is constructed into sedimentary and volcanic deposits along the Brothers Fault Zone. Groundwater levels are below the nearest surface water elevations.

A5. **Provisions of the** Deschutes 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: Not within USGS Groundwater Study Area boundary.

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, 7J;
 - 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 _____ 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 closest observation wells are DESC 53516 (located approximately 12.7 miles to the east-southeast) and DESC 55145 (located approximately 17.2 miles to the southeast). DESC 53516 has been monitored periodically since 1993 and DESC 55145 has been monitored periodically since 2003. DESC 53516 is located among a cluster of water rights with priority dates from the 1980's through 1994 authorizing a combined maximum rate of 18.5 cfs. DESC 55145 is located among a cluster of water rights with priority dates from 1992 through 2014 authorizing a combined maximum rate of 76.95 cfs. DESC 55145 shows similar water levels as DESC 53516 until approximately 2006 at which point a diverging trend of greater groundwater decline is seen in DESC 55145. Both wells show a declining water level over their period of record, with DESC 53516 experiencing approximately 8 to 9 feet of decline since 1993 and DESC 55145 experiencing approximately 8 feet of decline since 2003. Previous groundwater reviews had proposed that most of the groundwater decline seen in these wells is climate related.

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	Sedimentary and Volcanic units	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>

Basis for aquifer confinement evaluation: The water-bearing units may be locally semi-confined due to the heterogeneity of the sedimentary deposits and spatial variability in permeability inherent to the lava flows.

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

Well	SW #	Surface Water Name	GW Elev ft msl	SW Elev ft msl	Distance (ft)	Hydraulically Connected?			Potential for Subst. Interfer. Assumed?	
						YES	NO	ASSUMED	YES	NO
1	1	Dry River	Est 4220-4270	4485	13,800	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Basis for aquifer hydraulic connection evaluation: Ground water levels are below the elevation of nearby reaches of (intermittent) Dry River. Two nearby wells (DESC 61126 and DESC 61408) have similar construction and total depths as the applicant's well (DESC 56245). The static water level listed on the logs for these wells list water levels that are approximately 50 feet higher than that listed in DESC 56245, hence the range in groundwater elevation listed above. It is possible that DESC 56245 was not fully developed or was not static at the time of measurement.

Water Availability Basin the well(s) are located within: 30530501 Dry R > Crooked 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 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?
		<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>

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

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

Comments: Not applicable.

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													
(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: Not applicable.

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:** _____
Groundwater flow direction is uncertain, but may be towards the northwest. Interference with the nearest stream (Dry River) is highly unlikely given the hydraulic head relationship.

References Used: _____
Application file: G-18799 and nearby files: G-16320, G-17443, G-17519, and G-17918.

Brothers quadrangle map.

OWRD: Well Log and Water Level databases.

Walker, G. W., Peterson, N. V., and Greene, R. C., 1967, Reconnaissance Geologic Map of the East Half of the Crescent Quadrangle Lake, Deschutes, and Crook Counties, Oregon: U.S. Geological Survey Miscellaneous Geologic Investigations Map I-493.

D. WELL CONSTRUCTION, OAR 690-200

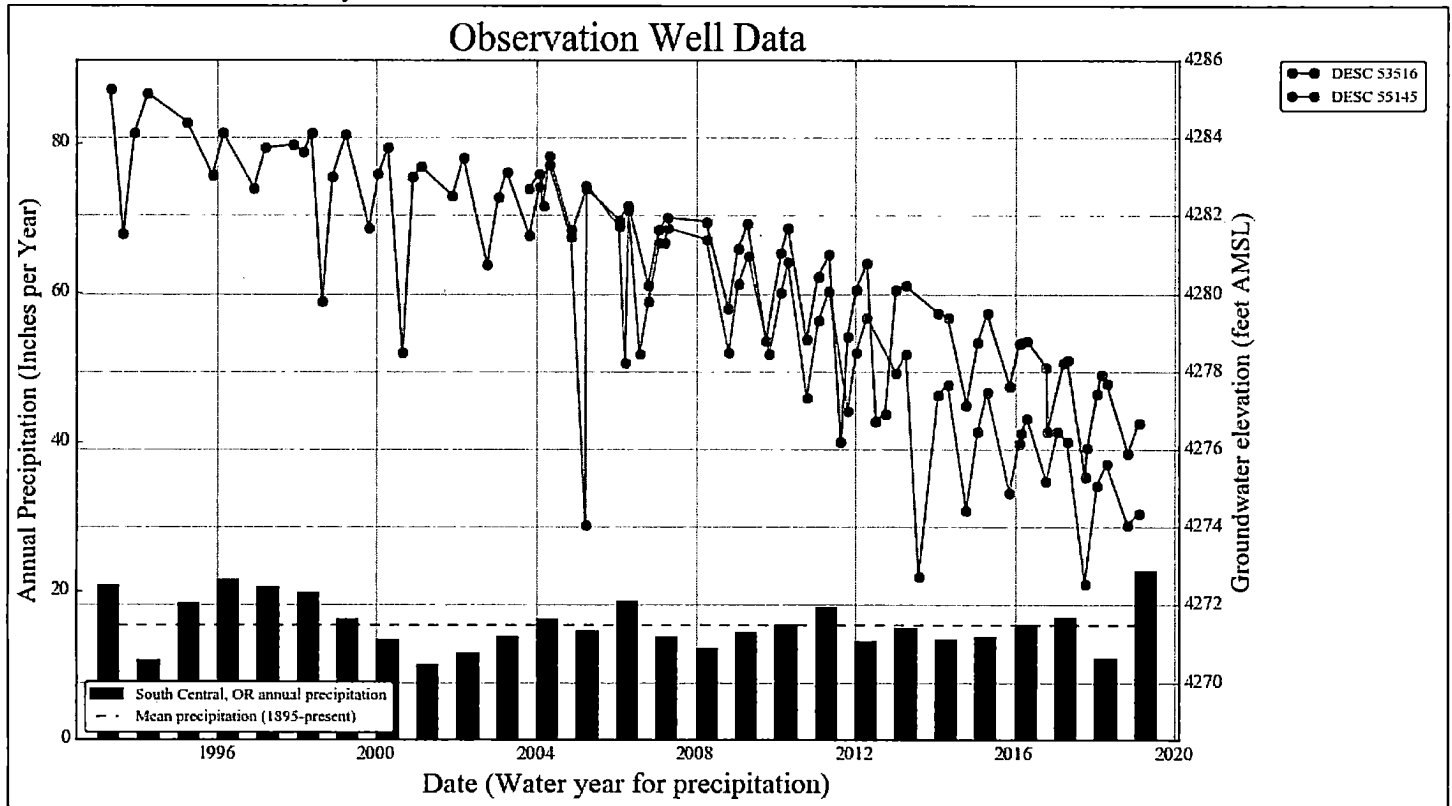
D1. Well #: 1 Logid: DESC 56245

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) _____

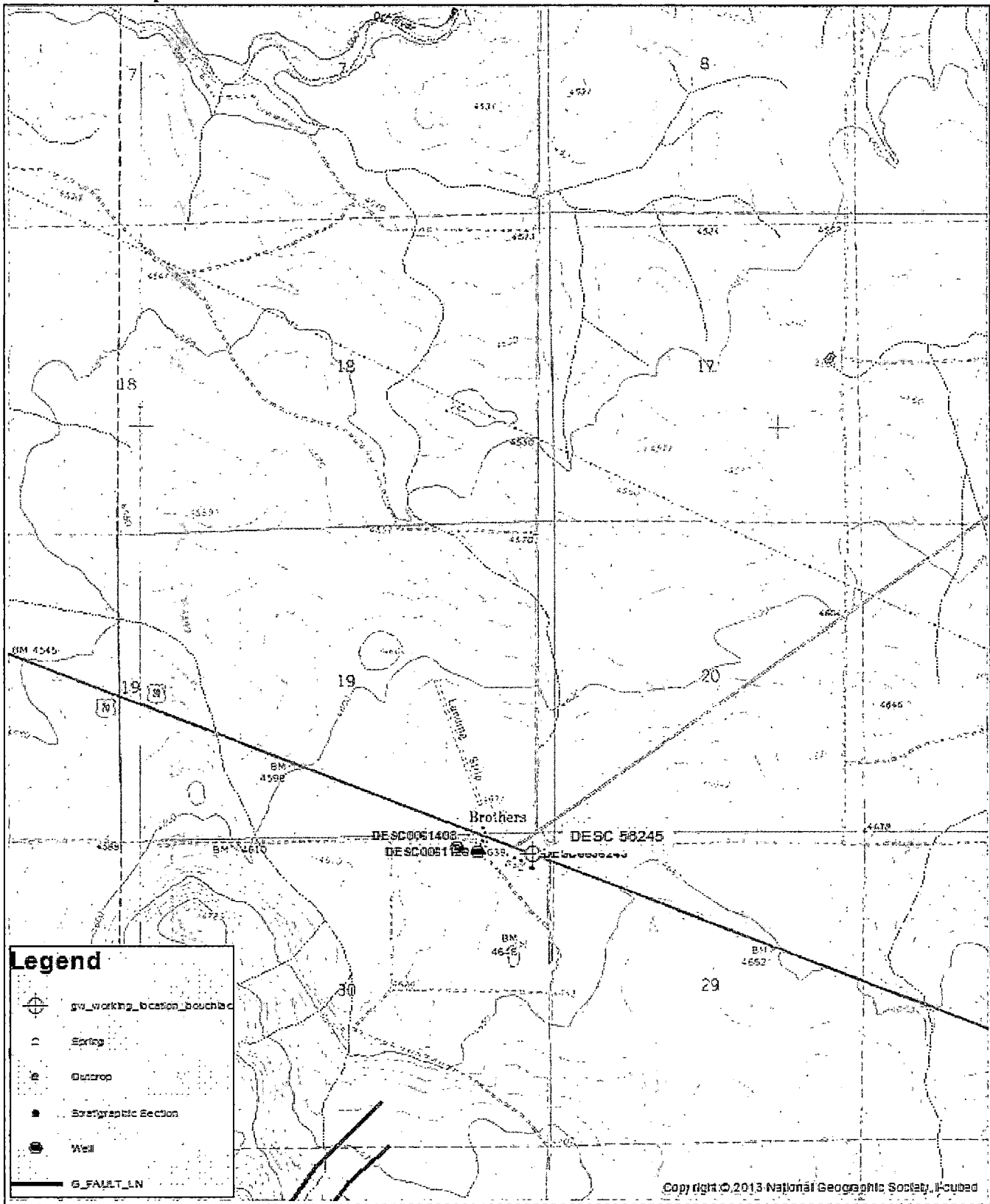
D3. THE WELL construction deficiency or other comment is described as follows: _____

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

Water-Level Trends in Nearby Wells



Well Location Map

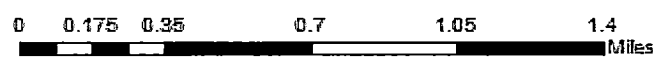


Legend

- gw_working_location_boucheid
- Spring
- Outcrop
- Stratigraphic Section
- Well
- G_FAULT_LN

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G18799
DOT



Lithology of Nearby Walls

