

Groundwater Application Review Summary Form

Application # G- 18757

GW Reviewer Ben Scandella, Joe Woody Date Review Completed: 3/22/2019

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.

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).



Oregon

Kate Brown, Governor

Water Resources Department

North Mall Office Building

725 Summer St NE, Ste A

Salem, OR 97301

Phone: 503-986-0900

Fax: 503-986-0904

www.Oregon.gov/OWRD

MEMO

To: Kristopher Byrd, Well Construction and Compliance Section Manager
From: Joel Jeffery, Well Construction Program Coordinator
Subject: Review of Water Right Application G-18757
Date: March 28, 2019

The attached application was forwarded to the Well Construction and Compliance Section by Water Rights. Ben Scandella and Jen Woody reviewed the application. Please see Ben's and Jen's Groundwater Review and the Well Record.

Applicant's Well #8638 (WASH 8638) The well record available for this well does not adequately describe the original construction of the well and therefore there is no way to determine if the well construction meets current minimum well construction standards.

My recommendation is that the Department **not issue** a permit for Applicant's Well #8638 unless it is brought into compliance with current minimum well construction standards or information is provided showing that it is in compliance with current minimum well construction standards.

Bringing Applicant's Well #8638 (WASH 8638) into compliance with minimum well construction standards may not satisfy hydraulic connection issues.



STATE ENGINEER
Salem, Oregon

WASH Well Record
008638

STATE WELL NO. 11W-100
COUNTY Washington
APPLICATION NO. OR-560

OWNER: Albert M. Thompson

MAILING ADDRESS: 15 SW. Miller Rd.

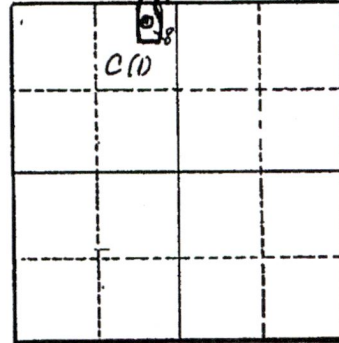
Pg 1 of 2

LOCATION OF WELL: Owner's No. 1

CITY AND STATE: Portland, Oregon

NE 1/4 NW 1/4 Sec. 1 T. 1 S., R. 1 W., W.M.

Bearing and distance from section or subdivision
corner 440 ft. W. & 275 ft. S.
from N. 1/4 cor. of sec. 1



Section 1

Altitude at well 835 feet Interpolated

TYPE OF WELL: Drilled Date Constructed Aug. 1951

Depth drilled 400 Depth cased 116

CASING RECORD:

8 inch

FINISH:

AQUIFERS:

WATER LEVEL:

382

PUMPING EQUIPMENT: Type Submersible H.P. 10
Capacity 60 G.P.M.

WELL TESTS:
Drawdown 0 ft. after _____ hours _____ G.P.M.
Drawdown _____ ft. after _____ hours _____ G.P.M.

USE OF WATER irrigation - 16 Ac. Temp. _____ °F. _____, 19____

SOURCE OF INFORMATION OR-560
DRILLER or DIGGER _____

ADDITIONAL DATA:
Log Water Level Measurements _____ Chemical Analysis _____ Aquifer Test _____

REMARKS:

PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date 3/22/2019
 FROM: Groundwater Section Benjamin Scandella, Jen Woody
Reviewer's Name
 SUBJECT: Application G-18757 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: TOUCHMARK HEIGHTS LLC County: WASHINGTON

- A1. Applicant(s) seek(s) 0.134 CUBIC FOOT PER SECOND from 1 well(s) in the Willamette Basin, Tualatin subbasin
- A2. Proposed use AGRICULTURE USES, IRRIGATION Seasonality: Agriculture uses: JANUARY 1 THROUGH DECEMBER 31, Irrigation: MARCH 1 THROUGH 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	WASH	8638	Volcanic/Volcaniclastic	0.134	1S/1W-1 NE-NW	392'S, 377'W fr N cor S 1

* 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	850	Un-known	382	Aug. 1951	402	Unknown	0-116	N/A	N/A	60	0	Unknown

Use data from application for proposed wells.

- A4. **Comments:** The applicant's well is located in the west foothills of the Tualatin mountains, about 1 mile northwest of Sylvan. The application suggests that the source aquifer would be "BEDROCK," but geologic analysis suggests that the well is completed into the Quaternary-Late Tertiary Volcanic and Volcaniclastic Aquifer System.
- 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: 690-502-0240 classifies use from unconfined alluvial aquifers within ¼ mile of a stream or surface water source. The only such surface water source within ¼ mile is Golf Creek, which is ephemeral and does not have any special classification in 690-502-130 for the Tualatin River Subbasin.

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

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 (Annual Measurement), 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 _____ 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 applicant’s proposed well is located on the west slope of the Tualatin Mountains, which consist primarily of uplifted Columbia River Basalts. Overlying the basalts on the west slope are undifferentiated Valley Fill sediments and a discontinuous surficial layer of Boring Lava (Conlon, 2005; Hart and Newcomb, 1965; Woodward *et al.*, 1998). Each of these hydrogeologic units appear on nearby well logs, and mapped faulting in the region juxtaposes these hydrogeologic units and may provide vertical connectivity between them. This varied lithology suggests that the aquifer system accessed by the well is the Quaternary-Late Tertiary Volcanic and Volcaniclastic (QLTV) Aquifer System.

While this aquifer system is technically distinct from the Columbia River Basalt (CRB) Aquifer System, they appear to be hydraulically connected in the vicinity of WASH 8368. One piece of evidence supporting this connection is that the well log for nearby well WASH 8637 identifies CRB as shallow as 114 feet below land surface (about 690 feet above mean sea level), at elevations to which WASH 8638 is also open. Another is that the water levels recorded on the well logs for WASH 8638 and nearby WASH 4956 (which is also completed above the top of the CRB) both correspond closely with that for MULT 901, which is clearly completed in the CRB (see map and hydrograph below). Therefore, water availability in WASH 8638 must be considered in conjunction with availability in the CRB.

Water levels measured after drilling in the QLTV Aquifer System are not available in the vicinity of WASH 8638, but water levels in the CRB show more than 200 feet of declines between 1983 and 2010, as measured in nearby MULT 901 and WASH 89 (see map and hydrograph below). Although the declines appear to have abated recently, their large magnitude suggests that more water is not available within the capacity of the resource. In the event that a permit is issued despite this finding that water is not available, the permit conditions indicated in section B1di above should be included to monitor the resource and protect existing users.

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	Volcanic/Volcaniclastic aquifer	<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: Nearly all of the wells in this area show water levels below or coincident with the top of the water-bearing zone, indicating that the aquifer is not 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?			Potential for Subst. Interfer. Assumed?	
						YES	NO	ASSUMED	YES	NO
1	1	Johnson Creek	470	360	8200	<input checked="" type="checkbox"/>	<input 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"/>

Basis for aquifer hydraulic connection evaluation: The nearest perennial stream reach is Johnson Creek, more than 1.5 miles away. Due to the distance and low hydraulic conductivity of the alluvial aquifer system in this area, it is possible that WASH 8638 is hydraulically connected with Johnson creek despite the 110' difference in water elevations. There is a surface water POD about 800' to the SE, but this uses winter runoff in ephemeral Golf Creek to fill 4 reservoirs. Golf Creek is presumed to be dry during the irrigation season.

Water Availability Basin the well(s) are located within: ROCK CR > TUALATIN R - AT MOUTH (WID 73545), FANNO CR > TUALATIN R - AT MOUTH (WID 73543)

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: N/A

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													
(A) = Total Interf.													
(B) = 80 % Nat. Q		105	141	115	60	23	12.3	2.58	2.72	3.68	4.57	4.02	47.4
(C) = 1 % Nat. Q		1.050	1.410	1.150	0.600	0.230	0.123	0.026	0.027	0.037	0.046	0.040	0.474
(D) = (A) > (C)													
(E) = (A / B) x 100		<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%

(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: Depletion of Johnson Creek was modeled using the Hunt (1999) analytical stream depletion model assuming constant pumping at the maximum rate and using published aquifer parameter ranges (see screenshot of model results below) (Conlon, 2005). The stream depletion values are not indicated in the table above due to the large range of plausible results, but under the most likely parameter values (Scenario 2), stream depletion remains well below 1% of the 80% natural flow in all months so that PSI is not triggered per OAR 690-009-0040.

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: _____

References Used: _____

Conlon, T.D., 2005. Ground-Water Hydrology of the Willamette Basin, Oregon. Reston, Va.: U.S. Dept. of the Interior, U.S. Geological Survey. <http://purl.access.gpo.gov/GPO/LPS100769>. Accessed 7 Jun 2018.

Hart, D.H. and R.C. Newcomb, 1965. Geology and Ground Water of the Tualatin Valley, Oregon. USGS Numbered Series, U.S. G.P.O., <http://pubs.er.usgs.gov/publication/wsp1697>. Accessed 26 Feb 2019.

Hunt, B., 1999. Unsteady Stream Depletion from Ground Water Pumping. *Groundwater* 37:98–102.

Woodward, D.G., M.W. Gannett, and J.J. Vaccaro, 1998. Hydrogeologic Framework of the Willamette Lowland Aquifer System, Oregon and Washington. U.S. G.P.O. ; For sale by U.S. Geological Survey, Information Services, Washington : Denver, CO.

D. WELL CONSTRUCTION, OAR 690-200

- D1. Well #: 1 Logid: WASH 8638
- 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:** The well log for WASH 8638 that is available in the OWRD Well Log database does not specify any seal. In order to meet current well constructions standards, the well may need to be reconstructed or inspected to confirm the presence of a seal.
- D4. **Route to the Well Construction and Compliance Section for a review of existing well construction.**

Figure 1: Water Availability Tables

DETAILED REPORT ON THE WATER AVAILABILITY CALCULATION

ROCK CR > TUALATIN R - AT MOUTH
Basin: WILLAMETTE

Watershed ID #: 73545 Exceedance Level: 80
Time: 2:29 PM Date: 02/26/2019

Month	Natural Stream Flow	Consumptive Use and Storage	Expected Stream Flow	Reserved Stream Flow	Instream Requirements	Net water Available
Monthly values are in cfs. Storage is the annual amount at 50% exceedance in ac-ft.						
JAN	105.00	1.31	104.00	0.00	2.50	101.00
FEB	141.00	1.62	139.00	0.00	2.50	137.00
MAR	115.00	0.91	114.00	0.00	2.50	112.00
APR	60.10	0.73	59.40	0.00	2.50	56.90
MAY	23.80	2.84	21.00	0.00	2.50	18.50
JUN	12.30	3.52	8.78	0.00	2.50	6.28
JUL	2.58	4.93	-2.35	0.00	2.50	-4.85
AUG	2.72	4.22	-1.50	0.00	2.50	-4.00
SEP	3.68	2.21	1.47	0.00	2.50	-1.03
OCT	4.57	0.23	4.34	0.00	2.50	1.84
NOV	4.02	0.48	3.54	0.00	2.50	1.04
DEC	47.40	1.31	46.10	0.00	2.50	43.60
ANN	81,500	1,470	80,100	0	1,810	78,400

DETAILED REPORT ON THE WATER AVAILABILITY CALCULATION

FANNO CR > TUALATIN R - AT MOUTH
Basin: WILLAMETTE

Watershed ID #: 73543 Exceedance Level: 80
Time: 2:30 PM Date: 02/26/2019

Month	Natural Stream Flow	Consumptive Use and Storage	Expected Stream Flow	Reserved Stream Flow	Instream Requirements	Net water Available
Monthly values are in cfs. Storage is the annual amount at 50% exceedance in ac-ft.						
JAN	49.50	28.50	21.00	0.00	2.50	18.50
FEB	55.80	28.50	27.30	0.00	2.50	24.80
MAR	44.30	28.40	15.90	0.00	2.50	13.40
APR	26.30	28.40	-2.07	0.00	2.50	-4.57
MAY	13.20	29.30	-16.10	0.00	2.50	-18.60
JUN	7.00	29.50	-22.50	0.00	2.50	-25.00
JUL	4.72	30.00	-25.30	0.00	2.50	-27.80
AUG	3.83	29.80	-25.90	0.00	2.50	-28.40
SEP	3.41	29.00	-25.60	0.00	2.50	-28.10
OCT	3.31	28.30	-25.00	0.00	2.50	-27.50
NOV	9.11	28.30	-19.20	0.00	2.50	-21.70
DEC	32.90	28.50	4.44	0.00	2.50	1.94
ANN	30,300	20,900	17,100	0	1,810	16,300

Figure 2: Well Location Map

G-18757 (Touchmark Heights LLC). T1S/R1W - S1

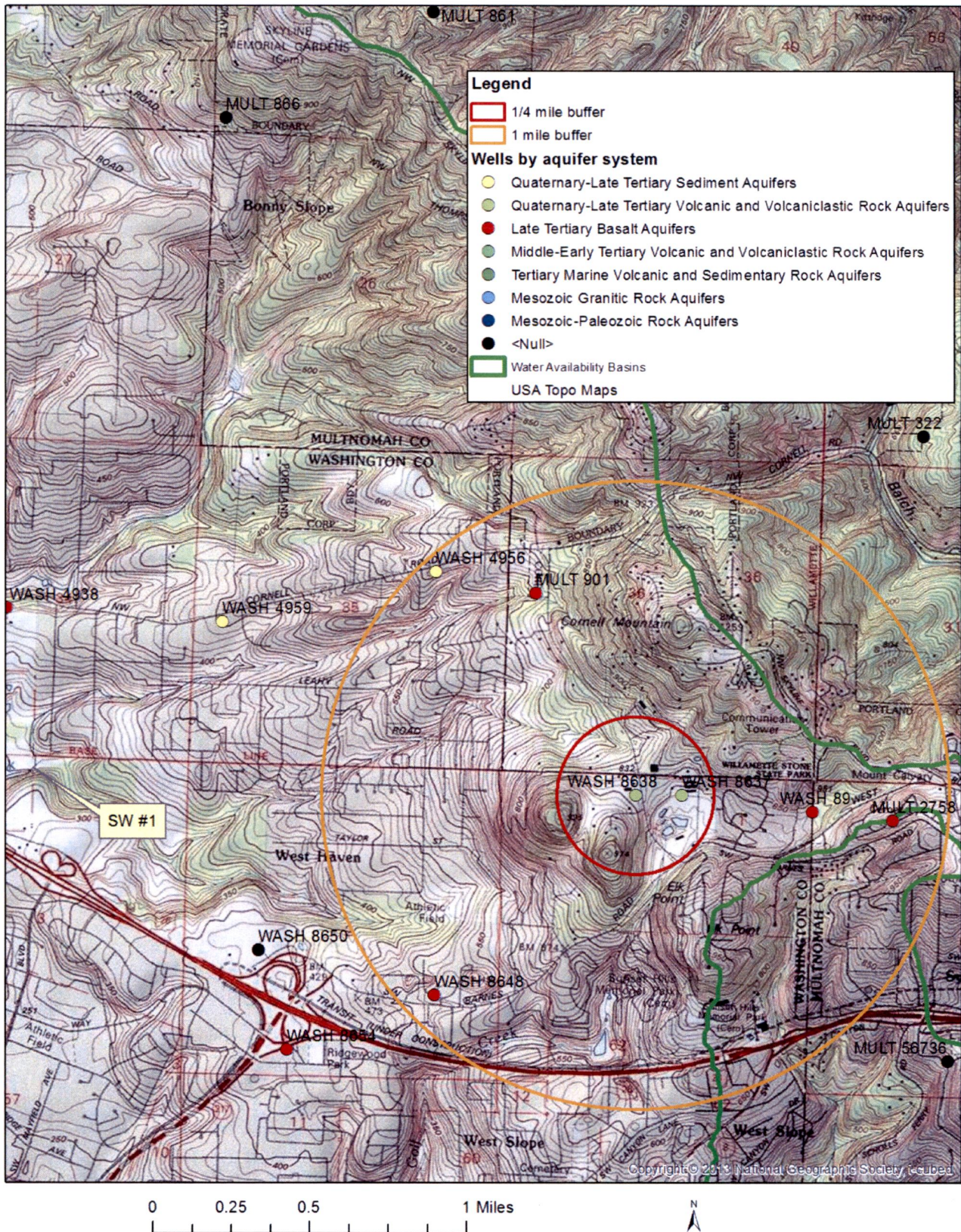


Figure 3: Hydrograph of Water Levels in Nearby Wells

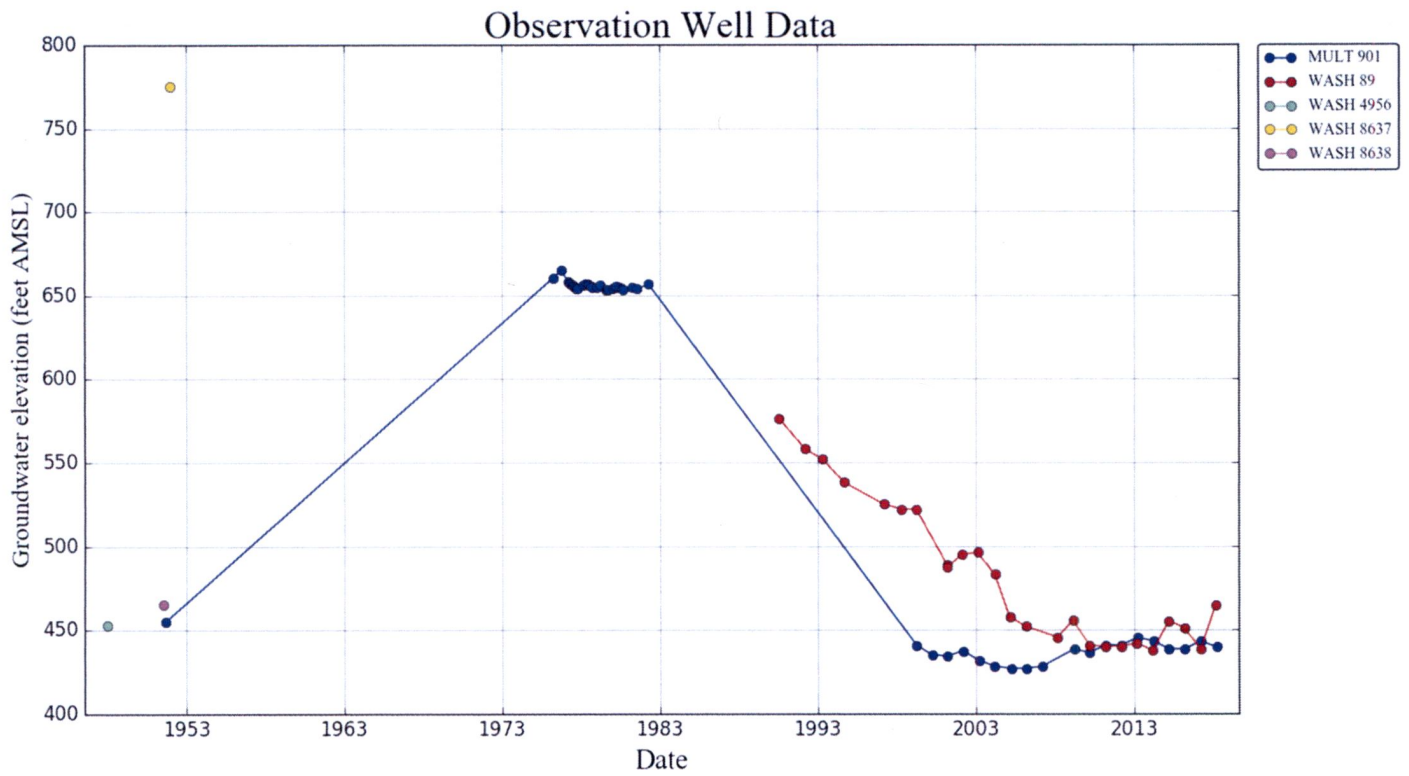


Figure 4: Results of stream depletion modeling

Application type:	G
Application number:	18757
Well number:	1
Stream Number:	1
Pumping rate (cfs):	0.134
Pumping duration (days):	100.0
Pumping start month number (3=March)	3.0

Parameter	Symbol	Scenario 1	Scenario 2	Scenario 3	Units
Distance from well to stream	a	8200.0	8200.0	8200.0	ft
Aquifer transmissivity	T	100.0	1000.0	10000.0	ft ² /day
Aquifer storativity	S	0.1	0.05	0.01	-
Aquitard vertical hydraulic conductivity	Kva	0.01	0.1	1.0	ft/day
Not used		20.0	20.0	20.0	
Aquitard thickness below stream	babs	5.0	3.0	1.0	ft
Not used		0.2	0.2	0.2	
Stream width	ws	5.0	10.0	20.0	ft

Stream depletion for Scenario 2:

Days	10	330	360	30	60	90	120	150	180	210	240	270	300
Depletion (%)	0	0	0	0	0	0	0	0	0	0	0	0	0
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

