

Approved: 

MEMO

To: Kristopher Byrd, Well Construction and Compliance Section Manager
From: Travis Kelly, Well Construction Program Coordinator
Subject: Review of Water Right Application G-19013
Date: September 23, 2020

The attached application was forwarded to the Well Construction and Compliance Section by the Groundwater Section. Jen Woody reviewed the application. Please see Jen's review and the Well Report.

Applicant's Well #1 (WASH 3526): Based on a review of the Well Report, Applicant's Well #1 does not appear to comply with current minimum well construction standards (See OAR 690 Division 210). The problem is that the Well Report does not indicate that the well is sealed to the appropriate depth. In order to meet minimum well construction standards, the well must be resealed to a minimum depth of 465 feet below land surface.

My recommendation is that the Department not issue a permit for Applicant's Well #1 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.

The reconstruction of Applicant's Well #1 may not satisfy hydraulic connection issues.

STATE OF OREGON
WATER WELL REPORT
(as required by ORS 537.765)

RECEIVED

NOV 22 1993

2N/2W/35ca

57232

WATER RESOURCES DEPT. (START CARD) #

(1) OWNER:

Name STUART WILSON C/O D.R. PETERSON DEVELOPMENT
Address 570 NE 53RD ST., SUITE 222
City HILLSBORO State OR Zip 97124

(2) TYPE OF WORK:

☒ New Well ☐ Deepen ☐ Recondition ☐ Abandon

(3) DRILL METHOD:

☒ Rotary Air ☐ Rotary Mud ☐ Cable
☐ Other

(4) PROPOSED USE:

☒ Domestic ☐ Community ☐ Industrial ☐ Irrigation
☐ Thermal ☐ Injection ☐ Other

(5) BORE HOLE CONSTRUCTION:

Special Construction approval ☐ Yes ☒ No Depth of Completed Well 555 ft.
Explosives used ☐ Yes ☒ No Type _____ Amount _____

HOLE			SEAL			Amount sacks or pounds
Diameter	From	To	Material	From	To	
12	0	138	Cement/Gel	0	138	35 sks.
8	138	555				

How was seal placed: Method ☐ A ☐ B ☐ C ☒ D ☐ E
☐ Other

Backfill placed from _____ ft. to _____ ft. Material _____

Gravel placed from _____ ft. to _____ ft. Size of gravel _____

(6) CASING/LINER:

	Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing:	8"	+1	138	250	☒	☐	☒	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
Liner:	6"	-5	555	PVC160	☐	☒	☒	☐
					☐	☐	☐	☐

Final location of shoe(s) _____

(7) PERFORATIONS/SCREENS:

☒ Perforations Method DRILLED
☐ Screens Type _____ Material PVC 160

From	To	Slot size	Number	Diameter	Tele/pipe size	Casing	Liner
515	555		160	1/2"		☐	☒
						☐	☐
						☐	☐
						☐	☐
						☐	☐

(8) WELL TESTS: Minimum testing time is 1 hour

☐ Pump ☐ Bailer ☒ Air ☐ Flowing Artesian

Yield gal/min	Drawdown	Drill stem at	Time
90		550	1 hr.
50		450	"

Temperature of Water 57°F Depth Artesian Flow Found _____

Was a water analysis done? ☐ Yes By whom _____

Did any strata contain water not suitable for intended use? ☐ Too little

☐ Salty ☐ Muddy ☐ Odor ☐ Colored ☐ Other _____

Depth of strata: _____

(9) LOCATION OF WELL by legal description:

County WASHINGTON Latitude _____ Longitude _____
Township 2N N or S. Range 2W E or W. WM. _____
Section 35 NE 1/4 SW 1/4 _____
Tax Lot 900 Lot _____ Block _____ Subdivision _____
Street Address of Well (or nearest address) 12960 NW DICK RD
HILLSBORO, OR

(10) STATIC WATER LEVEL:

245 ft. below land surface. Date 11/16/93
Artesian pressure _____ lb. per square inch. Date _____

(11) WATER BEARING ZONES:

Depth at which water was first found 474

From	To	Estimated Flow Rate	SWL
474	555	90 gpm	245

(12) WELL LOG:

Ground elevation _____

Material	From	To	SWL
Brown & Red-brown clay	0	42	
Decomp gray-brown basalt	42	63	
Decomp brown basalt	63	93	
Hard gray basalt	93	113	
Firm gray-black basalt	113	122	
Firm gray-gray-brown basalt	122	163	
Hard gray-black basalt	163	194	
Lt tan & brown clay	194	199	
Firm gray-brown basalt	199	227	
Hard gray-black basalt	227	240	
Soft brown basalt	240	245	
Firm gray-brown basalt	245	254	
Hard gray-black basalt	254	276	
Firm black basalt	276	326	
Hard gray basalt	326	379	
Soft brown basalt w/clay	379	397	
Firm gray-black basalt	397	416	
Hard gray basalt	416	449	
Broken brown basalt	449	460	
Firm gray-brown basalt	460	468	
Hard gray basalt	468	474	
Firm gray-black basalt	474	555	245

Date started 11/05/93 Completed 11/16/93

(unbonded) Water Well Constructor Certification:

I certify that the work I performed 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 my best knowledge and belief.

WWC Number _____

Signed _____

Date _____

(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.

WWC Number 1266

Signed [Signature]

Date 11/19/93

Groundwater Application Review Summary Form

Application # G- 19013

GW Reviewer Jen Woody Date Review Completed: 9/17/2020

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

9/17/2020

TO: Application G- 19013

FROM: GW: Jen Woody
(Reviewer's Name)

SUBJECT: Scenic Waterway Interference Evaluation

- ☐ YES The source of appropriation is hydraulically connected to a State Scenic Waterway or its tributaries
- ☒ NO
-
- ☐ YES Use the Scenic Waterway Condition (Condition 7J)
- ☒ NO
-
- ☐ 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 9/17/2020
 FROM: Groundwater Section Jen Woody
 Reviewer's Name
 SUBJECT: Application G- 19013 Supersedes review of n/a
 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: Stuart Wilson County: Washington

A1. Applicant(s) seek(s) 0.02 cfs up to 51 acre-feet from 1 well(s) in the
Willamette Basin,
Tualatin subbasin

A2. Proposed use Irrigation and Agriculture 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	WASH 3526	1	CRBG	0.02	2N/2W-35 NE ¼ SW ¼	2575' N, 2160' E fr SW cor S 35*
2						
3						
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	586	474	245	11/16/1993	555	0-138	0-138	5-555	515-555	90	unknown	air

Use data from application for proposed wells.

A4. **Comments:** *the metes and bounds provided on the application do not agree with the application map. This review is based on the application map location, and the adjusted metes and bound are noted here.

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. This application proposes use from a confined aquifer in the CRBG, so this rule is not activated.

A6. ☐ **Well(s) #** _____, _____, _____, _____, _____, tap(s) an aquifer limited by an administrative restriction.
 Name of administrative area: n/a
 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) 7i, 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 a single aquifer within the Columbia River Basalt Group 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 wells will produce from one or more water-bearing zones in the Columbia River Basalt Group (CRBG), a series of lava flows with a composite thickness that ranges from 600 to 800 feet in this area (Conlon et al., 2005). Each flow is characterized by a series of internal features, including a thin rubble zone at the contact between flows and a thick, dense, low porosity and low permeability interior zone. In some cases, sedimentary layers were deposited during the time between basalt flow emplacements. A flow top, sedimentary interbed and flow bottom are collectively referred to as an interflow zone. Unconfined groundwater occurs near the weathered top of the basalts, but most water occurs in interflow zones at the contacts between lava flows. CRBG flow features result in a series of stacked, thin aquifers that are confined by dense flow interiors. The low permeability of the basalt flow interiors usually results in little connection between stacked aquifers, which generally results in tabular aquifers with unique water level heads.

The proposed pumping rate of 9 gallons per minute (gpm) is unlikely to create drawdown interference with nearby wells that prevents access to water. Most neighboring tax lots are larger than 20 acres, indicating development by exempt wells is sparse. Nearby wells access a variety of water bearing zones within the CRBG aquifer system and show reasonably stable trends (see Figure 3). Water use and water level monitoring conditions are recommended to 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	Columbia River Basalt Group (CRBG)	☒	☐
		☐	☐
		☐	☐
		☐	☐

Basis for aquifer confinement evaluation: According to the well log, the static water level rises above water-bearing zones, indicating the aquifer is 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	Holcomb Creek	341	340	1980	☒	☐	☐	☐	☒
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐

Basis for aquifer hydraulic connection evaluation: The creek has incised through several hundred feet of CRBG. Groundwater from the uplands likely discharges to surface water, providing baseflow to sustain nearby perennial reaches of the creek. Because the open interval is coincident with perennial reaches of Holcomb Creek within a mile, the well is found to be hydraulically connected to the creek. The subject well is sealed from land surface to 138' BLSD and has a 317 foot open interval (between 448 and 31 feet above mean sea level). Therefore this review assumes the water-bearing zone may occur anywhere between the static water level (at 341' elevation) and the bottom of the open interval, and the static water level is used as the assessment elevation for hydraulic connection.

Water Availability Basin the well(s) are located within: Watershed ID#73545; Rock Creek> Tualatin 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 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		☐	2.72	☐	*	☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐

	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?
			☐			☐		☐		☐
			☐			☐		☐		☐

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.

Basis for impact evaluation: n/a

[illegible]

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:** none

References Used: 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: U.S. Geological Survey Scientific Investigations Report 2005-5168.

US Geological Survey Topographic Map, Hillsboro Quadrangle.

OWRD water level database, includes reported water levels, accessed 9/16/2020.

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:** This well has more than 300 feet of open interval. Data are sparse describing the vertical extent of discrete aquifers within the CRBG in this area, so it is difficult to determine if this well is completed into a single aquifer within the Columbia River Basalt. If the well log is taken at face value, no water was found until the hole was advanced to 474 feet below land surface. The well was drilled in November, at the end of the dry season. Nearby spring PODs indicate water is discharged from the basalt at elevations above the well head, but nothing between the wellhead and Holcomb Creek, which supports the theory that this well is open to a single primary water-bearing zone.

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

Figure 1. Water Availability Tables

Water Availability Analysis Detailed Reports

ROCK CR > TUALATIN R - AT MOUTH WILLAMETTE BASIN

Water Availability as of 9/16/2020

Watershed ID #: 73545 ([Map](#))

Exceedance Level: 80%

Date: 9/16/2020

Time: 8:13 AM

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	105.00	1.40	104.00	0.00	2.50	101.00
FEB	141.00	1.75	139.00	0.00	2.50	137.00
MAR	115.00	0.99	114.00	0.00	2.50	112.00
APR	60.10	0.77	59.30	0.00	2.50	56.80
MAY	23.80	2.85	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	1.39	46.00	0.00	2.50	43.50
ANN	81,500.00	1,500.00	80,000.00	0.00	1,810.00	78,400.00

G-19013 Wilson
T2N/R2W-Section 35

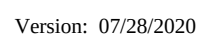


Figure 3. Water-Level Measurements in Nearby Wells

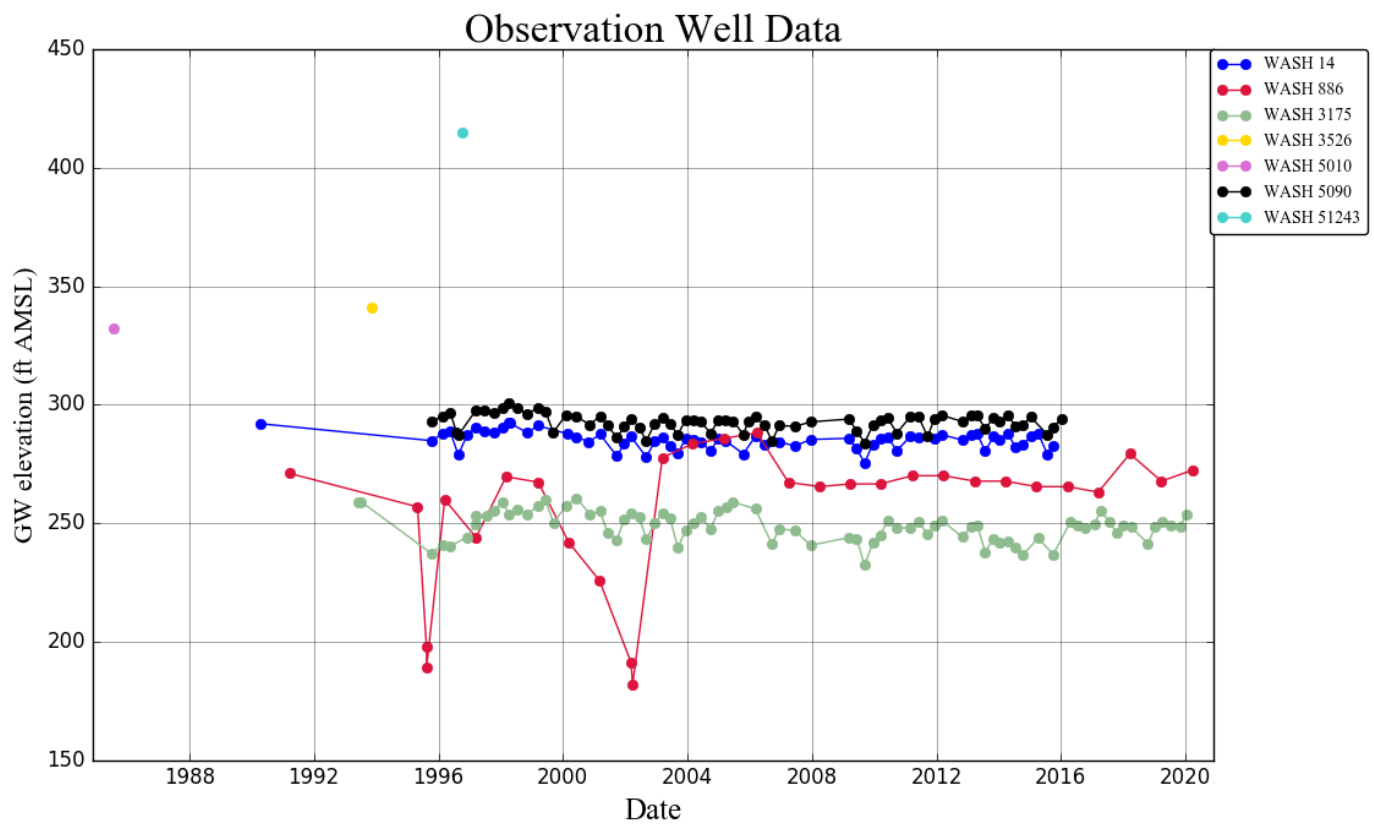


Figure 4. Cross Sectional diagram of selected wells

