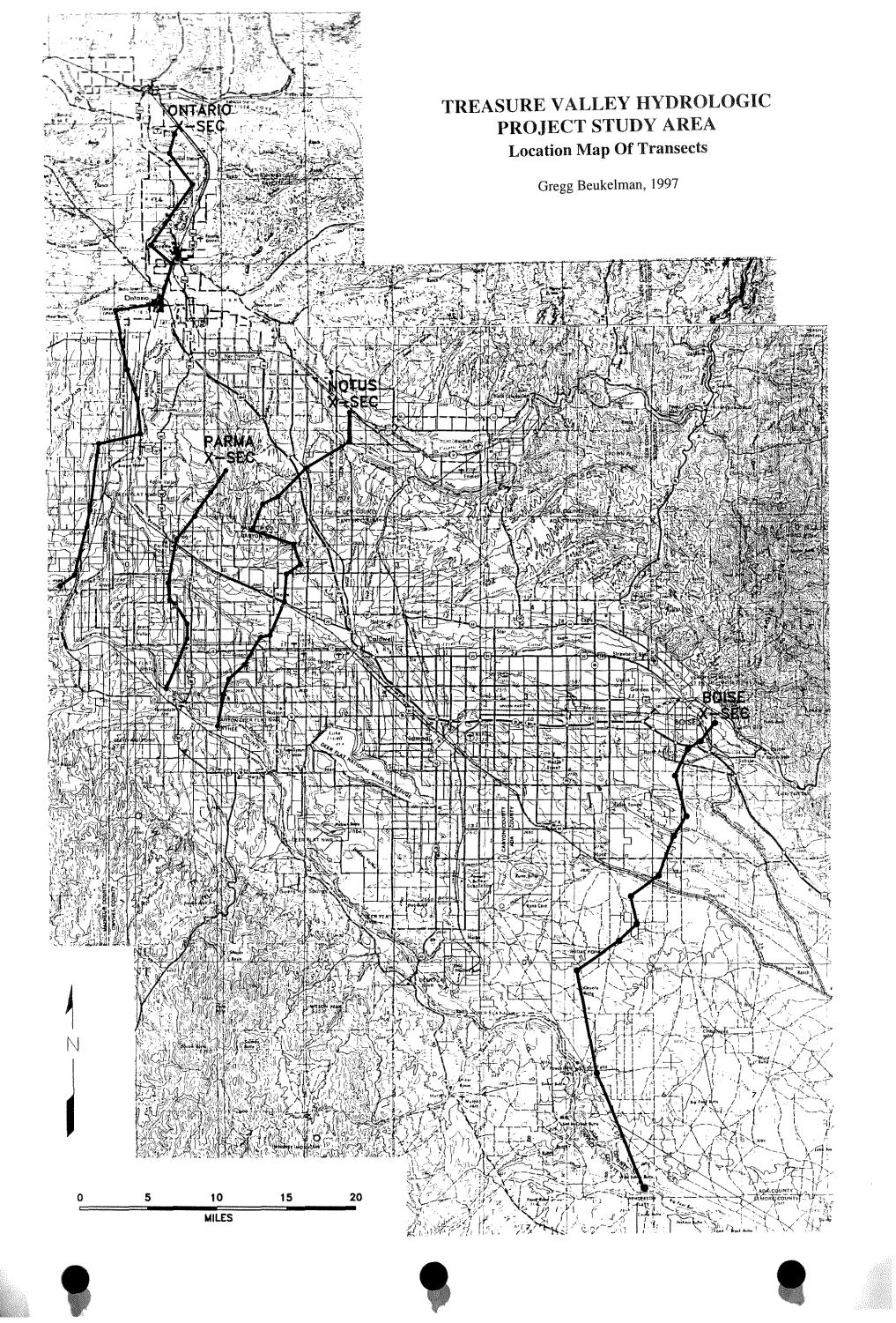
TREASURE VALLEY HYDROLOGIC PROJECT

Geological and Geophysical Framework of the Treasure Valley

Reports on the Ontario, Parma, Notus and Boise Cross Sections

Gregg Beukelman, 1997



Cross section of the Treasure Valley in the Ontario area for the TVHP (Treasure Valley Hydrologic Project): Notes on Geology of the Ontario area, Payette and Canyon Counties, Idaho and Malheur County, Oregon

by Gregg Beukelman June 14, 1997 Department of Geosciences, Boise State University Boise, Idaho 83725 tele: 208-385-1631, fax 385-4061, email: gbeukelm@trex.idbsu.edu

Introduction

The report and enclosed data are a preliminary compilation of information along a transect extending NNE-SSW from just south of the town of Weiser, southwest to the Adrian, Oregon area (Figs. 1a and 1b). The intent of this report is to show the nature of the Late Cenozoic stratified sediments in the upper portion of the western Snake River Plain near it's western extent (Figs. 2a, b, and c). Included for each well along the transect are the well owner, Land Office Grid coordinates, surface elevation $(\pm 10 \text{ feet})$, and diagrams of well construction and lithology (attached). Lithologies, taken from well drillers' reports on record at the Idaho Department of Water Resources and the Boise office of the U.S. Geological Survey for the wells completed in Idaho and the Oregon Water Resources Department for those in Oregon, are plotted in detail where distinctive units of lithologic or hydrogeologic significance are well documented by the driller. Individual drillers' reports are attached to the report should the user wish more detail. Also included is a geologic cross section drawn to show correlatable distinctive lithologic and hydrogeologic boundaries encountered in each well. A 1:100,000 map of the area Fig. 1) is included showing the route of the transect (A-A'), individual well owners and surface geology taken from: Ferns and others, (1993), Othberg and Stanford (1992), Brooks, McIntyre, and Walker (1976), and Savage (1961).

Methods

The cross section included is a graphical presentation of subsurface lithologies based on water well drillers reports and deep exploration wells. Wells along the transect were selected to ensure maximum section coverage. Water well drillers reports were obtained from the Idaho Department of Water Resources for the wells in Idaho and from the Oregon Water Resources Department by means of their Internet-based Grid program for the wells in Oregon. For each well included in the profile (1:24,000 horizontal) the stratigraphic section and well construction, as reported in the drillers logs, were plotted at a vertical scale of 1:1,200 (see attached sheets) and the well completion data noted. Correlations were made at this scale and all data digitized and reduced to produce the cross section in figure 2. Accuracy of all elevations is probably \pm 10 feet. No attempt has been made to correlate the upper contact of the lacustrine claystone because of very sparse data. However this contact occurs at about 1300-ft. elevation in the Rube Bolles #1 deep exploration well and about 1700-ft. elevation in the Kiesel Estates well based on a marked decrease in the electrical resistivity signature.



Structure

The structural nature of this area of the plain is inferred to be a normal fault-bounded graben. Faults are thought to be older structures owing to their lack of surface expression and the absence of offset in Pleistocene gravels and overlying Bonneville Flood deposits. Evidence of a major south facing fault near the southern end of the transect includes an approximate 120 ft. offset of the boundary between the overlying brown sediments and the blue sediments below. Additionally, two gravel units that occur at about 2100-ft. elevation in the Brown well are faulted against a monotonous clay in the City of Adrian well (fig. 2a). A small graben occurs in the vicinity of the confluence of the Snake River and the Payette River. This structure is evinced by an offset of the blue-brown sediment boundary (about 110 ft.). Another small graben (offset of less than 40 ft.) occurs near the north end of this transect (fig. 2c). None of these structures has been mapped on any existing surface geologic map and are here based almost exclusively on offset of the blue-brown sediment boundary. Although some of the recognized offset is likely the result of downwarping of sediments during diagenesis, the overall horizontal nature of the blue-brown boundary (0.03° between Malheur Experimental Station well and the American Fine Foods well) suggests that downwarping has been complicated by faulting.

Stratigraphy

The sedimentary section contains Late Cenozoic fluvial and lacustrine deposits and an interbedded basalt units. Basalt is not noted in any of the water wells and can be seen only in the Kiesel Estates well where the first occurrence is at -1600 ft. and in the Ore-Ida well where the first occurrence is at -2450 ft. and the basalt basement is at -6050 ft. (Minus signs indicate elevation below sea level). Surficial deposits include modern flood plain deposits, Bonneville Flood slackwater fine sediments, gravels of Pleistocene age, and older Tertiary age sediments. A typical stratigraphy in the upper potion of the section includes gravels overlain by up to 40 feet of sands and clays. Beneath the gravels is a complex sequence of interfingering gravels, sands, and clays that are interpreted to represent fluvial and shallow lacustrine deposits. This section contains an upper portion in which sediments are commonly some shade of brown, tan, or yellow and a deeper portion having sediments that are described as blue of grey in drillers logs. North of the fault that occurs near the southern extent of the transect, the boundary between these colordefined units is at 2230-ft \pm 50 ft elevation except within the graben near the Snake River (1970ft in the Mills well). The brown-colored unit is up to 130 feet thick beneath the uplands northeast the Snake River, but has apparently been mostly removed by erosion near the Snake River.

The nature of this brown-blue boundary is not well understood but is believed to reflect differences in depositional environment. The blue colored sediments are thought to be an indication of a chemically reducing depositional environment characteristic of lake deposits. The brown colors are more likely caused by oxidation of iron-bearing minerals under unsaturated conditions. Thus, these sediments are thought to represent alluvial, fluvial, and lake margin deposits which would be more apt to be oxidized. Alternatively, it is also possible that recharge by oxygenated waters percolating through reduced (blue) iron minerals may oxidize formerly blue-gray colored deposits. Groundwater that is high in dissolved iron can be associated with the oxidation of reduced iron minerals at a contact between oxidizing and reducing conditions. In

the area of this transect and others completed across the western Snake River Plain, evidence such as the uniform elevation of the contact suggests that this brown-blue contact is the result of original diagenesis. Therefore, this oxidation/reduction contact may well be useful for geologic interpretation of depositional environments.

North of the major fault in the Adrian area, the deeper part of the sedimentary section is composed of over 4000 feet of monotonous lacustrine claystone. The upper contact of this section is at 1700-ft or 1400-ft elevations as interpreted from the electrical resistivity logs of the Kiesel Estates and Rube Bolles #1 deep exploration wells respectively. This upper contact of this unit is the top of the pro-delta mudstone facies interpreted by Wood (1997). The geometry of the upper contact of this claystone cannot be determined from this cross section as only the deep exploration wells penetrate it. Included within the claystone near its base are several interbedded basaltic flows and tuffs.

Hydrogeology

The static water level in wells along this transect vary only 100 feet in elevation. All of the wells along this transect are completed in the upper portion of the blue sediments and behave as confined of semiconfined. Discharge from wells ranges from 10-55 gpm in the southernmost four wells with a general increase in those to the north (90-500 gpm) with two exceptions. The Roberts Farm well was drilled to a depth of about 400 ft. and is dry and the Mills well adjacent to the Snake River drilled to about 520 ft. and producing 8-10 gpm.

References

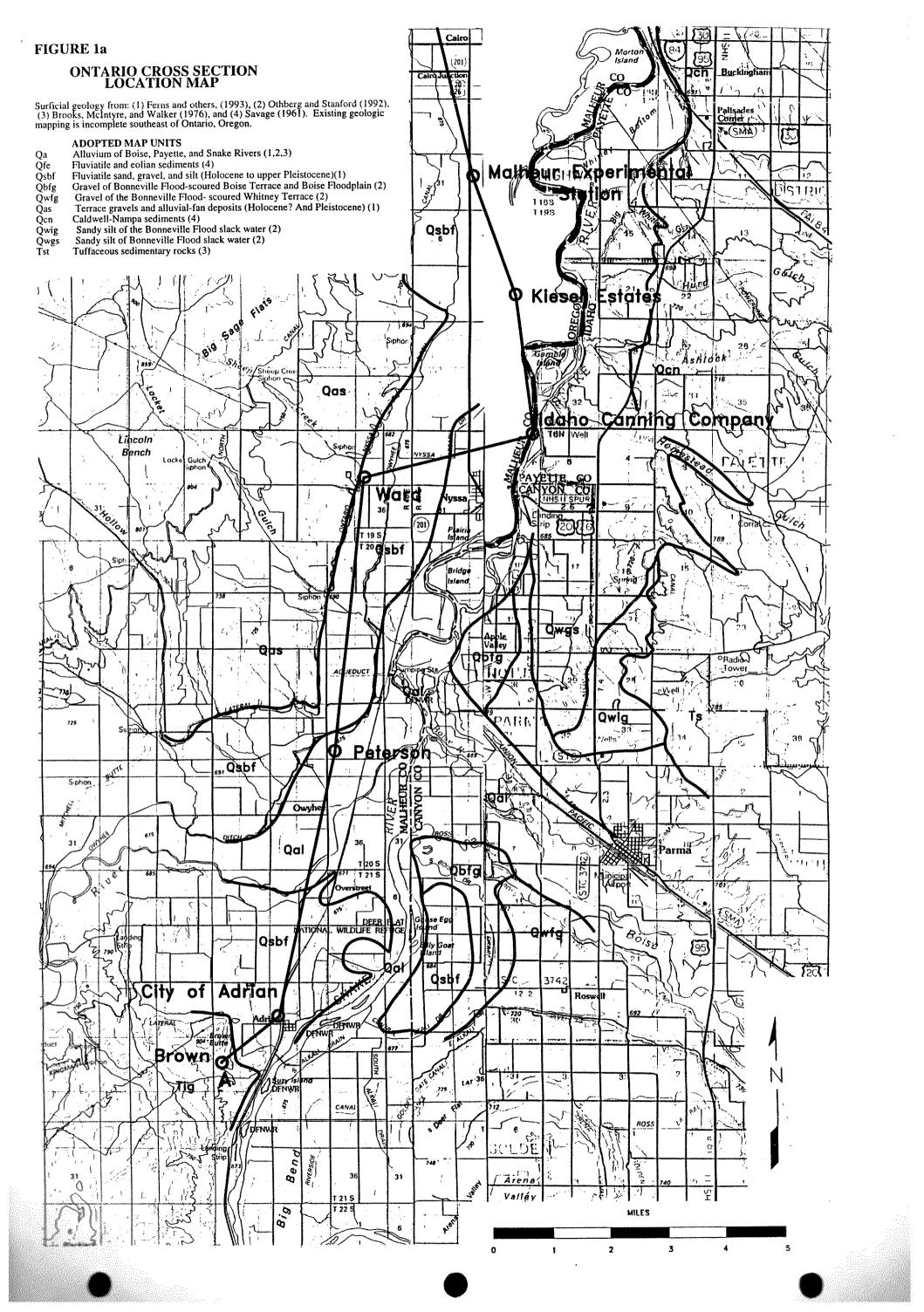
- Brooks, H.C., McIntyre, J.R., and Walker, G.W., 1976, Geology of the Oregon part of the Baker 1° by 2° quadrangle, State of Oregon, Department of Geology and Mineral Resources.
- Ferns, M.L., and Brooks, H.C., 1993, Geologic map of the Vale 30X60 minute quadrangle, Malheur county, Oregon and Owyhee county, Idaho, State of Oregon, Department of Geology and Mineral Resources.
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- U. S. Geological Survey, 1993, 30X60 minute series topographic maps of Vale, Idaho-Oregon and Brogan, Idaho-Oregon, scale 1:100,000.
- Idaho Department of Water Resources, 1997, microfiche file of drillers reports, Orchard Street Office.
- Oregon Water Resources Department, 1997, Files of drillers reports via Internet Grid program.

- Othberg, K.L., and Sanford, L.R., 1992, Geologic map of the Boise Valley and adjoining area, western Snake River Plain, Idaho: Idaho Geological Survey, Geologic Map Series, scale 1:100,000.
- Savage, C.N., 1961, Geology and Mineral Resources of Gem and Payette counties, County report no. 4, State of Idaho, Idaho Bureau of Mines and Geology.
- Wood, S.H., 1997, Structural contour map of the top of Miocene basalt basement rocks, western Snake River Plain, Idaho: Report for Idaho Department of Water Resources (2 sheets, 1:100,000).

Figures and enclosures

Figure 1a & b	Map (1:100,000) showing cross section transect, wells used in cross section, surficial geology, and location of deep exploration wells.
Figure 2a, b, and c	Cross section of geology and hydrogeology across the western Snake River Plain in the Ontario, Oregon area.
Figure 2d	Legend for cross section
Attached	Fifteen panels of wells used in cross section showing lithology, well construction, and completion data.
Attached	Drillers reports of selected wells.





Qa

ONTARIO CROSS SECTION LOCATION MAP

Surficial geology from: (1) Ferns and others, (1993), (2) Othberg and Stanford (1992), (3) Brooks, McIntyre, and Walker (1976), and (4) Savage (1961). Existing geologic mapping is incomplete southeast of Ontario, Oregon.

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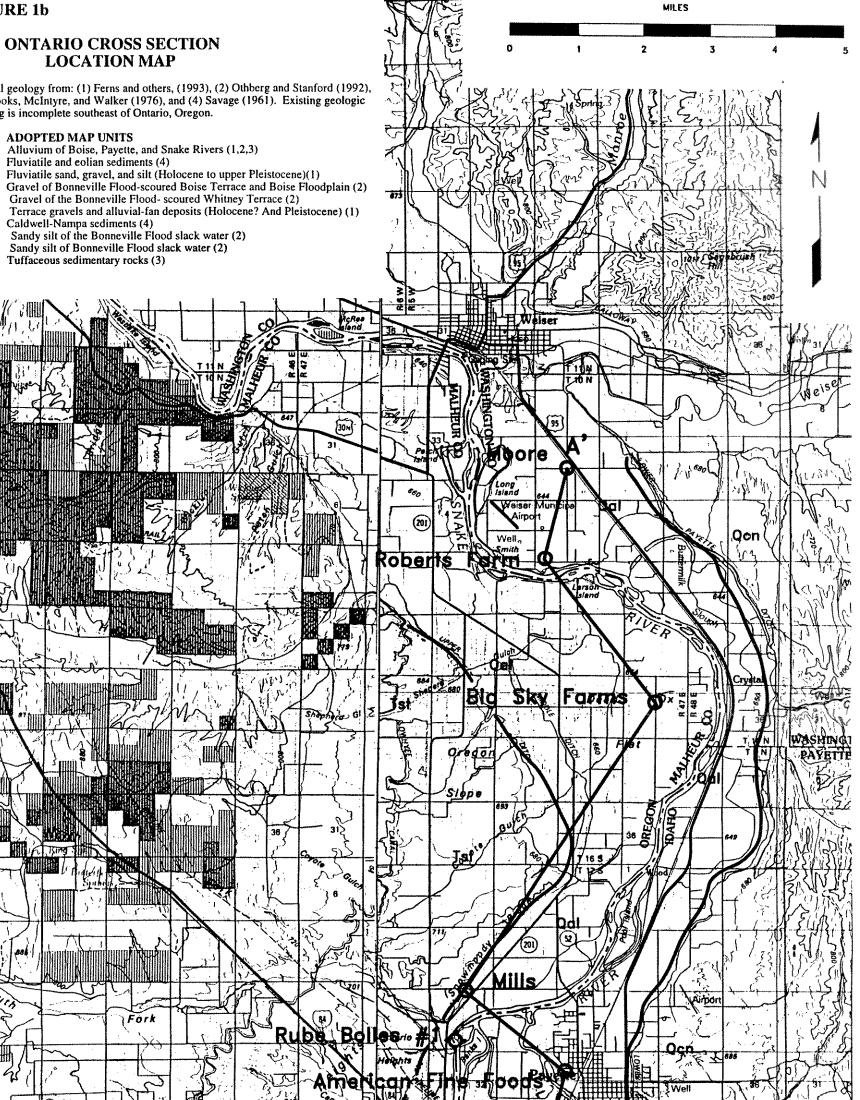
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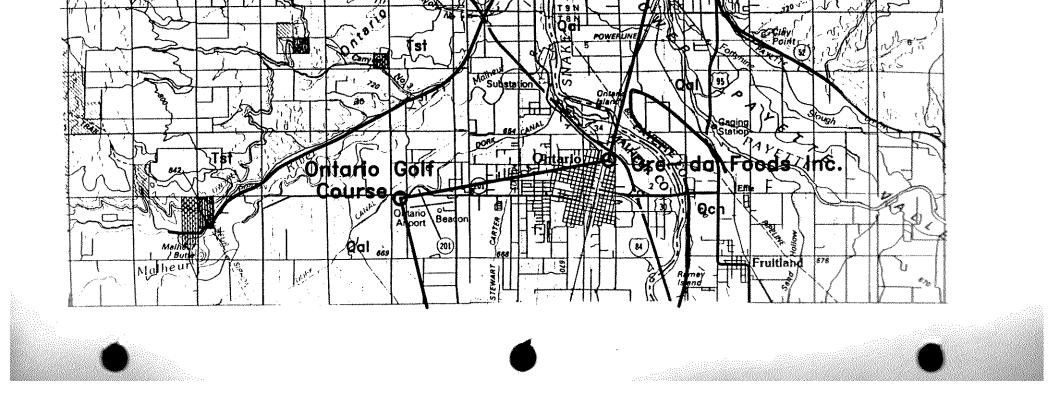
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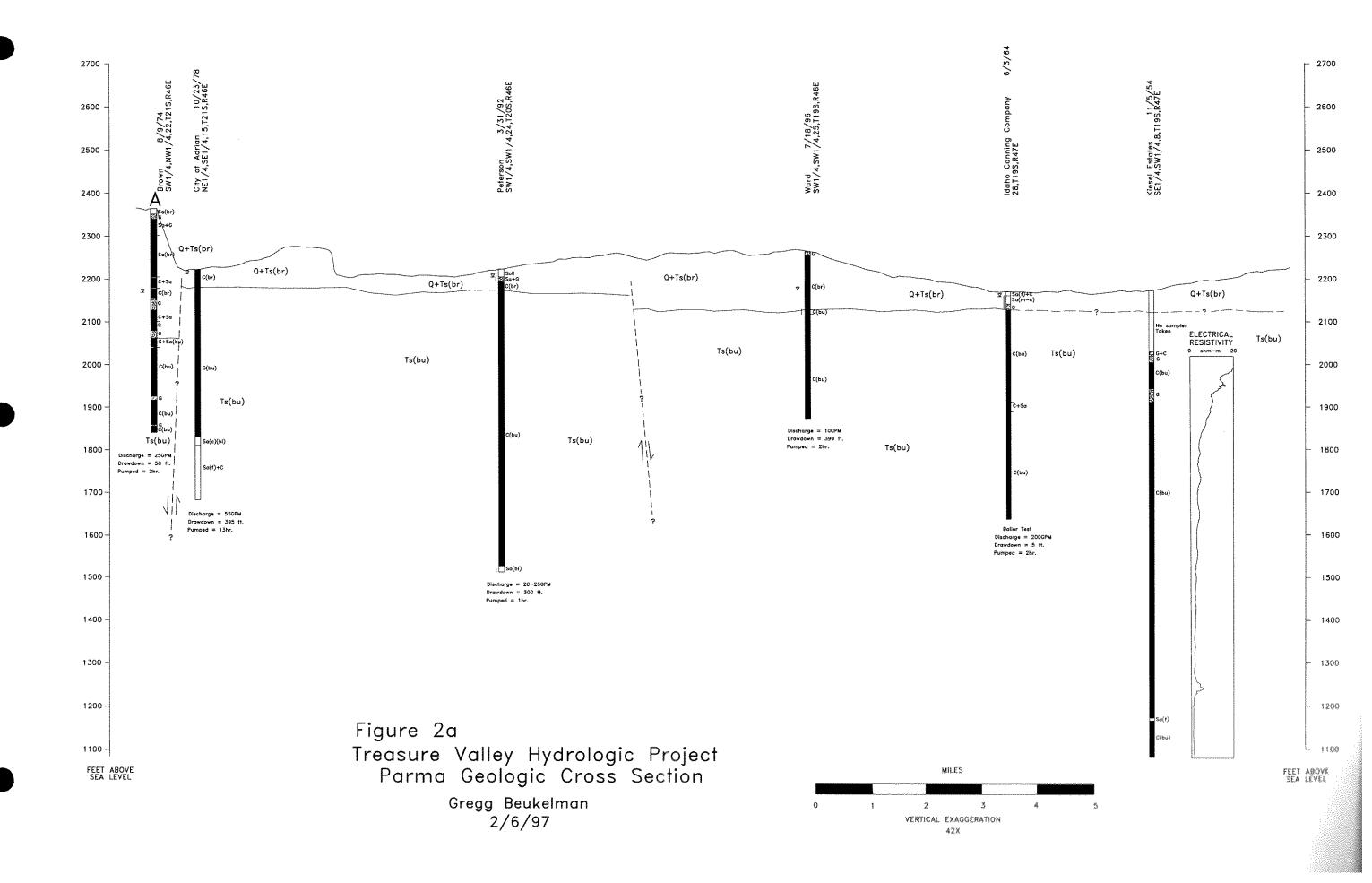


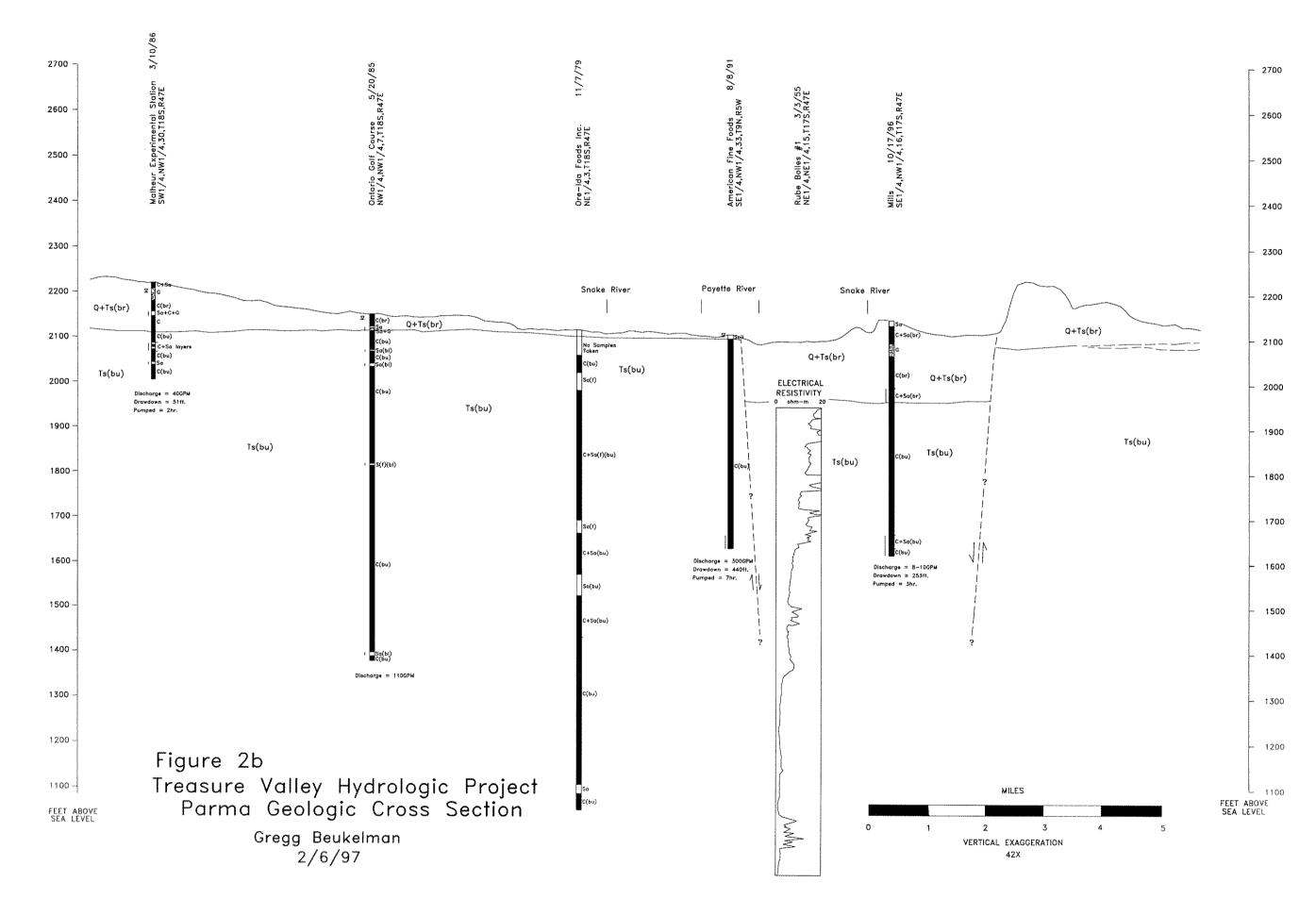


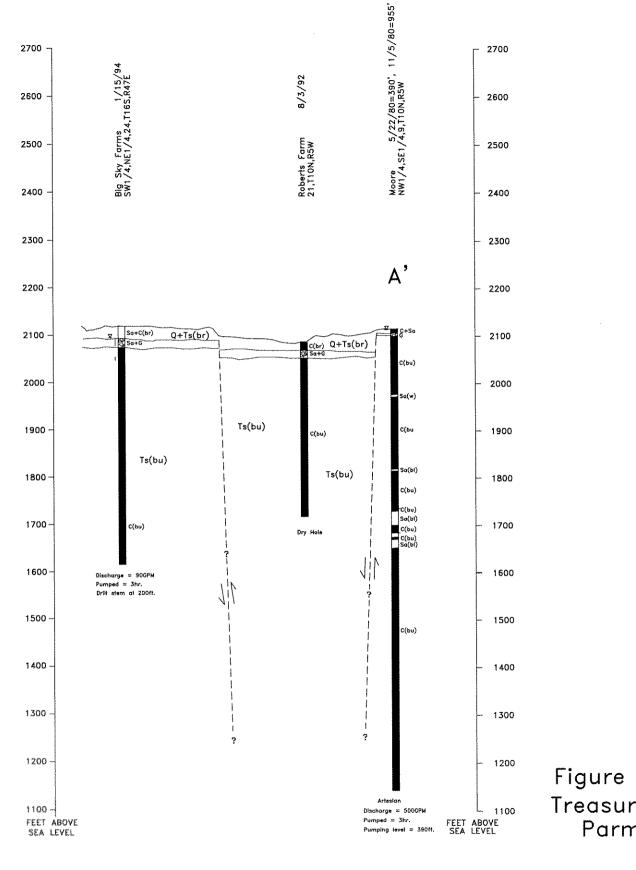
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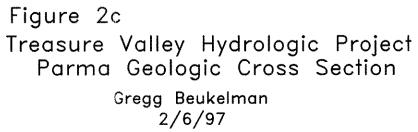
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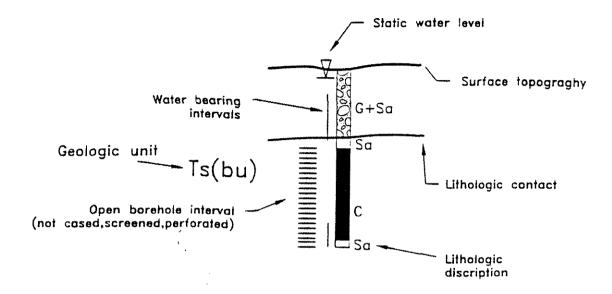






CROSS SECTION LEGEND

Diagram of Typical Well Interval



GEOLOGIC Units (After: (1) Ferns and others, (1993), (2) Othberg and Stanford (1992), (3) Brooks, McIntyre, and Walker (1976), and (4) Savage (1961).

- Qa Alluvium of Boise, Payette, and Snake Rivers (1,2,3)
- Qfe Fluviatile and eolian sediments (4)
- Qsbf Fluviatile sand, gravel, and silt (Holocene to upper Pleistocene)(1)
- Qbfg Gravel of Bonneville Flood-scoured Boise Terrace and Boise Floodplain (2)
- Qwfg Gravel of the Bonneville Flood- scoured Whitney Terrace (2)
- Qas Terrace gravels and alluvial-fan deposits (Holocene? And Pleistocene) (1)
- Qcn Caldwell-Nampa sediments (4)
- Qwig Sandy silt of the Bonneville Flood slack water (2)
- Qwgs Sandy silt of Bonneville Flood slack water (2)
- Tst Tuffaceous sedimentary rocks (3)

WELL LITHOLOGIC ABBREVIATIONS

G	Gravel
Sa(c,m,f)	Sand (coarse, medium, fine)
С	Clay

When two sediment sizes are combined (C+Sa) the first sediment is the most abundant.

Color modifiers: Brown (Br), White (W), and Blue (Bu) are included for Tertiary sediments.

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Address 270 E. 70 ST.	County 12/2017 Latitude Longitude Township 16 N or Range 47 (For WWM)
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(2) TYPE OF WORK:	Tax Lot 240/ Lot Block Subdivision Street Address of Well (or nearest address) 290 Jung Ref
(3) DRILL METHOD:	Ontario Ore 979/4
Rotary Air Rotary Mud Cable	(10) STATIC WATER LEVEL: ft. below land surface
(4) PROPOSED USE:	Artesian pressure Ib. per square inch. Date
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Perforations Method Screens Type Material	
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From To size Number Diameter size Casing Lines	r
(8) WELL TESTS: Minimum testing time is 1 hour	Date started 12-25-93 Completed 1-5-94
🗆 Pump 🗌 Bailer 🔀 Air 🔲 Flowing Artesian	(unbonded) Water Well Constructor Certification:
Yield gal/min Drawdown Drill stem at Time	I certify that the work I performed on the construction, alteration, or abandon- ment of this well is in compliance with Oregon well construction standards. Materials
<u>90</u> 200 1 hr.	used and information reported above are true to my best knowledge and belief.
	Signed Front Shelling Date 1 - 26 -99
	(bonded) Water Well Constructor Certification:
Temperature of Water Depth Artesian Flow Found Wo Was a water analysis done Ves By whom	I accept responsibility for the construction, alteration, or abandonment work per- formed on this well during the construction dates reported above. All work performed
Did any strata contain water not suitable for intended use? Too little	during this time is in compliance with Oregon well construction standards. This report is true to the best of my knowledge and belief.
Salty Muddy Odor Colored Other	WWC Number
Depth of strata: ORIGINAL & FIRST COPY - WATER RESOURCES DEPARTMENT SI	ECOND COPY - CONSTRUCTOR THED COPY - CUSTOMER 9809C 10/91

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STATE OF OREGON NOV 2 1 1996	4LIT 0397
WATER SUPPLY WELL REPORT (as required by ORS 537.765) WATER RESOURCES DEPT.LL]. Instructions for completing this repo SALEMPOREGON this form.	U.# (START CARD)#_94824
1 - 1057	(9) LOCATION OF WELL by legal description:
I) OWNER: Name Max Mills Well Number <u>L06850</u>	County Malleuv Latinde Longitude
Address ILUL SW 3 AVE	Township 17 5 × or S Range UTE B or WM.
City On Jarvo State OK Zip 97918	Section 10 SE 1/4 NW 1/4
(2) TYPE OF WORK	Tax Lot 510 dat Block Subdivision
New Well Deepening Alteration (repair/recondition) Abandorument (3) DRILL METHOD:	Street Address of Well (or nearest address)
Rotary Air Rotary Mud Cable Auger	(10) STATIC WATER LEVEL:
Other	<u>147</u> ft. below land surface. Date 10-17-
(4) PROPOSED USE:	Artesian pressure lb. per square inch. Date
Domestic Community Industrial Irrigation	(11) WATER BEARING ZONES:
Thermal Injection Livestock Other (5) BORE HOLE CONSTRUCTION:	Depth at which water was first found 150 At
Special Construction approval Yes X No Depth of Completed Well 520 ft.	
Explosives used Yes No Type Amount	From To Estimated Flow Rate SW
HOLE SEAL Diameter From To Material From To Sactor pounds	15047 182 1-26pm 10
12 0 Mit connect 10 19	
0 93 grant 10 93 36	
<u>8 71 520 Berlante 0 10 7</u>	
How was seal placed: Method A B C D E	(12) WELL LOG: Ground Elevation
De Other Bartonto was dry from surface	Ground Elevation
Backfill placed from ft. to ft. Material	Material From To SWL
Gravel placed from fi. to ft. Size of gravel	Sandy Soil 08
(6) CASING/LINER: Diameter From To Gauge Steel Plastic Welded Threaded	Sandy Bry Clothe 12 119
Sasing: 9 +1 84 .250 9 0 0 0	gravel 49 79
	Briddy 78 150
	By Sand Clay 150 182147
	Hard Bricking 7 182 189 13lue chils 189 385
	Herd Blue clay 385 387
Final location of shoe(s) 84 12	Blue clay, 387475
(7) PERFORATIONS/SCHEENS:	ney Sandy Clay 475 505 14
Perforations Method Screens Type Material	greef clay \$ 505 52014
From To size Number Diameter size Casing Liner	
(8) WELLTESTS: Minimum testing time is 1 hour	Date started <u>9-23-96</u> Completed <u>10-18-96</u> (unbonded) Water Well Constructor Certification:
Flowing Pump Bailer Air Artesian	I certify that the work I performed on the construction alteration or shandoom
Yield gal/min Drawdown Drill stem at Time	of this well is in compliance with Oregon water supply well construction standards Materials used and information reported above are true to the best of my knowledg
<u>9-10</u> 253,4 <u>1hr.</u>	and belief.
	Signed Date
Temperature of water 63° Depth Artesian Flow Found	(bonded) Water Well Constructor Certification:
Was a water analysis done? Yes By whom	I accept responsibility for the construction, alteration, or abandonment work
Did any strata contain water not suitable for intended use?	performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon water supply well construction standards. This report is true to the best of my knowledge and belief.
Salty Muddy Odor Colored Other	construction standards. This report is true to the best of my knowledge and belief. WWC Number 1485
	Signed On M Type Date 11-14-

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Form 238-7 8/90	STATE O			nuer	° E &	USE TYPEWRITER BALLPOINT PE		
WE WE	ELL DRILLE	R'S	S R	EP(
	0 days after the complet							
1. WELL OWNER Name Anerroan Frie For	le		WATE		-			
Address 25 North 674		Ade.	Static v	water le	Ver DNo GRM	w land surface.		
Drilling Permit No. 65-91-6	- OIST		Artesia	in close	d-in pressure	o.s.i.		-
Water Right Permit No.	· · · · · · · · · · · · · · · · · · ·		Contro Tempe	illed by	Valve Cap CoF, Quality The artesian or temperature	Plug	<u> </u>	 .
2. NATURE OF WORK			WELL			CORT DEGM V		
New well Deepened R	eplacement	••	D Pur		🗆 Bailer 😰 Air	D Other		
C) Abandoned (describe abandonment pro materials, plug depths, etc. in lithologi)ischarge		Pumping Level 440	Hours Pur	nped	
3. PROPOSED USE TE	ST WELL # 2							
Domestic D Irrigation Stest D N Industrial D Stock D Waste Dispo	lunicipal sal or Injection				C LOG			
[] Other (i		Bore Diam.	Dep		Mater		Wat Yes	_
4. METHOD DRILLED		12	0	121	brown Soi			
		12	11	IC B	fue slay	e		
■ Cable □ Dug □ Other	Reverse rotary	K	12	44	Rue Class	A	2	í,
		<u> </u>	885	42	Broken Salt	etone i Sant	Ø	_
5. WELL CONSTRUCTION								<u> </u>
Casing schedule: 🛛 Steel 🛛 Concrete	3 Other				····			
Thistory Dismoso	E		<u> </u>					┝─
2.50 inches 8 inches +	feet 29 feet	<u> </u>						
inches inches	feet feet	 		<u> </u>			—	
inches inches	feet feet						<u> </u>	
Was a packer or seal used? 🛛 Yes 🛛 🖻	No No		<u> </u>					
How perforated? Factory Knife Knife		 	┨────				+	╉━
Size of perforation inches by Number From	Inches To		Į	L			1	
perforations	feet feet				INTERIST.	17Em	–	
perforations	feat feet		1		1:17:054		+	
Well screen installed? I Yes INO Manufacturer's name	feet feet	ļ	ļ				<u> </u>	1_
				<u> </u>	00T 25	1991	+	╉
Type N Diameter Slot size Set from	fodel Nofeet tofeet		ļ	ļ	Department of Wat	- Farmures		t
Diameter Slot size Set from	feet to feet		+		Wather Heber	el 1312 e	–	╇
Gravel packed? Yes No Size Placed from feet to	of gravelfeet		1	1				t
Surface seal depth /8 Material used in	seal: Cement grout			185			4	+
Bentonite D Puddling clay Sealing procedure used: D Slurry pit D			1	Πť			<u>+</u>	\pm
e	Overbore to seal depth	, 		1101	NEC 04 1991	63	1	T
Method of joining casing: D Threaded B	Weided D Solvent				<u>IIE.0.04.1557</u>		+	╋
, 🗆 Cemented be	Weld tween strata			1	Barris Part Res	MICE:	<u> </u>	Т
Describe access port A pug		10	i. Wi	ork sta	red \$ 405-91 #	nished		2
6. LOCATION OF WELL		11	. DRI	LLERS	CERTIFICATION OL	×		
Sketch map location must agree with write			1/We comp	certifi lied wi	y that all minimum well th at the time the rig was	construction stand		
Subdivision Na	me				Frank Shella	Firm No_3	24	-
Lot No.	_ Block No			with	0.0601974 44	2 Date		
county Payette			<u>ងទ្វោរ</u>	N DY ()	and	Sulla !!	$ \leq $	
<u>SE / NW' x Sec. 33, T. 9</u>					(Operator)	ancing		

USE ADDITIONAL SHEETS IF NECESSARY - FORWARD THE WHITE COPY TO THE DEPARTMENT

Address Description Description 20 TYPE OF WORK (check): Allandon U 20 TYPE OF WORK (check): Allandon U 20 TYPE OF WELL Benchliching U 20 TYPE OF WELL (a) PROPOSED USE (check): 20 TYPE OF WELL (a) PROPOSED USE (check): 20 TYPE OF WELL (b) PROPOSED USE (check): 20 Type OF WELL (b) Proposed U 20 Type OF WELL (b) Proposed U 20 Type OF WELL (b) Proposed U 20 Type OF WELL (check): 20 Type OF WELL (check): 20 Type OF WELL (b) Particle U 20 Type OF WELL (check): 21 Type OF WELL (check): 22 Type OF WELL (check): 23 TYpe OF WELL (check): 24 Type OF WELL (check): 25 CASING INSTALLED: (check): 26 Type Type OF WELL (check): 27 Type OF WELL (check): 28 Type Type Type Type Type Type Type Type	WATER WELL REPORT STATE OF OREGON WATER RESOURCES D SALEM, OREGON	EPT 14499 State Permit No.	1			÷6
Address P. () BOX 24 (2) CTYPE OF WORK (check): State Address of the CHECK No. State S	I) OWNER:	(10) LOCATION OF WELL:				
Case DATABLY Same DEEGON (2) TYPE OF WORK (check): Amadian 0 Amadian 0 Amadian 0 (2) TYPE OF WORK (check): Amadian 0 Amadian 0 Amadian 0 (3) CASING INSTALLED works in local 2 Beam at well known 0 Amadian 0 Amadian 0 (3) CASING INSTALLED works in local 2 Beam at known works on local 2 The analysis of the same 0 The same 1	Name ONTARIO GOLF COURSE		number			
(2) TYPE OF WORK (check): Remotioning (C) Abandom C) (2) WEIL (D) Depending (C) Abandom C) (3) TYPE OF WEIL (D) (4) PROPOSED USE (check): (3) TYPE OF WEIL (D) (4) PROPOSED USE (check): (3) TYPE OF WEIL (D) (4) PROPOSED USE (check): (3) TYPE OF WEIL (D) (4) PROPOSED USE (check): (3) TYPE OF WEIL (D) (4) PROPOSED USE (check): (5) CASING INSTALLED: State (D) (N) (N) (N) (N) (N) (N) (N) (N) (N) (N		NW 4 NW 4 Section 7 T. 1.8 S	R 47	7E	W.M.	
22) TIPE OF WORKER Despecing C Bookers Standers C 23) TYPE OF WELL: (d) PROPOSED USE (check): 23) TYPE OF WELL: (d) PROPOSED USE (check): 24) The off well: Despecing C Bookers 25) TAPE OF WELL: (d) PROPOSED USE (check): 26) CASING RISTALLED: Despecing C Bookers 27) Them from	Dity ONTARIO State OREGON		Su	bdivision		
13 DATES OF WELLS (4) PROPOSED USE (check) 23 TYPE OF WELLS (4) PROPOSED USE (check) 26 Description 0 Description 10 Attained on the second on the se	2) TYPE OF WORK (check):	Address at well location:		<u> </u>		
(3) TYPE OF WELL (4) PROPOSED USE (check): Description 10 Actional matrixed and the statement of the	vew Well X Deepening Reconditioning Abandon				·	
(3) TACE OF WEILL (3) TACE OF WEILL (4) TACE OF WEILL (5) CASENG INSTALLED: (5) Manipul (6) CASENG INSTALLED: (7) Sumption (7) CASENG INSTALLED: (7) Tacadad	f abandonment, describe material and procedure in Item 12.	~	ell.			
Description Description <thdescription< th=""> <thdescription< th=""></thdescription<></thdescription<>	(3) TYPE OF WELL: (4) PROPOSED USE (check):				ft.	•
Bind Dimension All in the main of the mai						
(6) CASING INSTALLED Seet EX Plastic Threaded Plast EX Plastic Threaded Plastic Threa						
(a) CARANCE INSTALLED: (b) CARANCE (b) Return particular and exactive of maximum and applice previous (b) and instance of the applice previous (b) and instance of maximum and applice prev		200				·
A: Duan from 2, tr. w 10, to ft . Duan from 0, to ft Guage . Duan from ft 0, and ft Guage ft . Duan from ft ft Guage ft ft . Open form ft ft ft ft ft ft . Store ft ft ft ft ft ft ft . Store ft	Threaded 🔲 Welded 👽 🖓	Formation: Describe color, texture, grain size and str	icture of r	naterials	and show	
LINER INSTALLED:	0.* Diam from	for each change of formation. Report each change in	trated, wit	h at least	t one entry	-
Diam from ft to E Gauge (6) PERFORATIONS: Perforated? Q'No: D No Date of perforative read TOUCH Size of perforative read TOUCH 1-50 perforatives from .30. t. to .4,5tr. 1-50 perforatives from .30t. to .4,5tr. Mulasture** No 0.1 Size of perforatives from .30t. to .4 Mulasture*** No 0.1 Size of perforatives from .30t. to .4 Mulasture*** No 0.1 Size of perforatives from .30t. to .4 Mulasture*** No 0.1 Size of perforatives from .30t. to .4 Mulasture*** No 0.1 Size of perforatives from .30t. to .4 1.100 perforatives from .30t. to .4 1.101 Size of perforatives from .30t. to .4 1.102 Perforatives			I			
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Not Part For CRC HILDINGS CORCH 33 40 18 The of performants J/16 n.by 5 n. 150 performants The of the off the		SAND	<u>, y</u> 1			hedrena.
Bins of performations 3/16 in. by 5 in. 150 performations from 30. 6. to 45. 60 81 150 performations from 0. 6. to 45. 80 81 10 150 performations from 0. to 40 80 81 10 150 performations from 0. to 40 81 116 117 12 7() SCREENS: Well sceen installed Yes & Xeo 117 220 117 220 Inn Stet Size Stet from f. to	Type of perforator used TORCH	SAND GRAVEL	1		18	
1.50 perforations from .0. ft. 0. ft.5 ft. perforations from n. to n. (7) SCREENS: Well serven installed? U vs. & & o m Site Size Set from ft. to m Site Size Set from ft. to <td>2/16</td> <td></td> <td></td> <td>80</td> <td></td> <td></td>	2/16			80		
	1.50					
Drum providence from the totomethy of the second						
(7) SCREENS: Well seven installed? U ves EX.0 Manufacturer's Name Model No	perforations from					
Model No. Model No. Dam Stet Size Market From ft to Market From ft to (8) WELL TESTS: Drawdown is amount water level is lowered below static level Notest made? Market Lowel (9) WELL TESTS: Drawdown is amount water level is lowered below static level (9) WELL TESTS: address of the drawdown after har gal/min with ft drawdown af	(7) SCREENS: Well screen installed? 🗆 Yes 🗛			~~~~	, 	
Int Slot Size Set from ft to ft Dam Stot Size Set from ft to ft Stot Size Set from ft to ft Stot Size Drawdown is anount water level is lowered Int Int Int With a pump test made? EXEC DN H yee, by wingn(DALLAS DRILL) NG "(PUMP TEST) gal/min, with ft. drawdown after hrs hrs "(PUMP TEST) gal/min, with drill steps at ft. hrs "(PUMP TEST) gal/min, with drill steps at ft. hrs "(PUMP TEST) gal/min, with drill steps at ft. hrs "(PUMP TEST) gal/min, with drill steps at ft. hrs "(PUMP TEST) gal/min, with drill steps at ft. hrs "(PUMP TEST) gal/min, with drill steps at ft. hrs Wall sealed from lade wates to gal/min. ft. hrs (9) CONSTRUCTION: Social fandarda: Yes D No D Dilling Machine Operator's Certification: This well association word seal 14. in hrs Diameter of well bore botom of seal 14. in ft. Scout pipe Dim bore obstom of seal 14. ft. <td>Manufacturer's Name</td> <td></td> <td></td> <td></td> <td>······</td> <td></td>	Manufacturer's Name				······	
Dam Slot Size Set from ft. to ft. (8) WELL TESTS: Drawdown is amount water level is lowered below static level We a pump test made? EXE ON H tyc, by whom DALLAS DRILL NG "110g.p.m. gel/min. with ft. drawdown after hrs. "110g.p.m. gel/min. with ft. drawdown after hrs. "110g.p.m. gel/min. with drill steps at ft. hrs. "Artest: 100+ gel/min. with drill steps at ft. Artest: 100+ gel/min. with drill steps at hrs. Well seal-Material used						
(8) WELL TESTS: Drawdown is annum water level is lowered bolow static level (8) WELL TESTS: Drawdown is annum water level is lowered bolow static level (9) Well and the state is a flow encountered in the state is a flow encounter is a flow encountered in the state is a flow encountered in the state is a flow encountered in the state is a flow encounter is a flow encounter is a flow encounter is a flow encountered in the state is a flow encountered in the state is a flow encounter is a flow encounter is a flow encounter is a flow encounter is a flow encountered in the state is a flow encountered in the state is a flow encounter is a flow encounter is a flow encountered in the state is a flow encountered in the state is a flow encounter is a flow encounter is a flow encountered in the state is a flow encountered in the sta			 	·		A
Was a pump test made? Exact by the first of the set o	(2) WET I TECTC. Drawdown is amount water level is lowered		├			
#: 110g-p.m. gal/min.with ft. drawdown after hrs. (PUMP TEST)	below static level		╞╾──┼			
"CPUMP TEST) Ait test 100+ gal/min. with drill step at ft. brs. Ait test 100+ gal/min. with drill step at ft. brs. Ait test 100+ gal/min. with drill step at ft. brs. Bailer test gal/min. with drill step at ft. brs. Secial flow gp.m. gp.m. gp.m. erature of water 58 Depth artesian flow encountered ft. Work started 5/15 19 85 Completed 5/17 19 85 (9) CONSTRUCTION: Special frandards: Yes D< No D		LNG				
Air test 100+ gal/min. with drill steps at ft. brain Bailer test gal/min. with ft. drawdown after hrs. gene gpne gpne gpne gpne generature of water 58 Depth artesian flow encountered ft. Weil seal-Material used CEMENT Special standards: Yes 0 No 0 Weil seal-Material used 18 ft. bit well drilling machine moved off of well 5/1.7 / 85 19 Diameter of well bors to botom of seal 14 in. in. This well was constructed under my direct speervision. Materials used and information peorter above are true to my best knowledge and belief. Number of sacks of cement used in well ased 12 + 5% bent on 1 to 0 Drilling Machine Operator's Certification: This well was constructed under my direct speervision. Date						•••
Bailer test gal/min. with ft. drawdown after hrs. Sesian flow g.p.m.						· · z ··
Sessian flow g.p.m. Berature of water 58 Depth artesian flow encountered ft. (9) CONSTRUCTION: Special standards: Yes ID No ID Yes ID Date well defiling machine moved off of well 5/17/85 19 Well seal-Material used CEMENT 18 11 19 Drilling Machine Operator's Certification: Well seal-of from land surface to 18 18 10 This well was constructed under my direct supervision. Materials used and information reported shove are true to my best knowledge and belief. Diameter of well bors below seal 8 10 11 10 11 10 Number of sacks of cement used in well seal 12 + 5% bentonite 10 10 11 10 11 10 10 11 10 </td <td></td> <td></td> <td><u> </u></td> <td></td> <td></td> <td></td>			<u> </u>			
(9) CONSTRUCTION: Special standards: Yes □ No □ Well seal—Material used CEMENT Bate well drilling machine moved off of well 5/17/85 19 Well seal—Material used CEMENT Bate well drilling machine moved off of well 5/17/85 19 Wark started 5/17/85 19 Diameter of well bore to bottom of seal 14 in. Diameter of well bore below seal 12 + 5% bentonite Number of secks of cement used in well seal 12 + 5% bentonite How was cement grout placed? PUMDed through 1" Wark started Orilling Machine Operator's Certification: Date well drilled under my direct supervision. Materials used and information operator's License No. Was pump installed? Type HP Depth ft. Was a drive shoe used? Yes No Plugs Size location ft. Name Dia my strata contain unusable water? Pyse No Plugs Size of gravel. Size of grave	Sesian flow g.p.m.					!
(9) CONSTRUCTION: Special standards: Yes □ No □ Well seal—Material used CEMENT Well seal—Material used 18 19 Drilling Machine Operator's Certification: 19 Drilling Machine Operator's Certification: 19 Diameter of well bore below seal 8 10 Diameter of well bore below seal 12 + 5% bentonite Number of sacks of cement used in well seal 12 + 5% bentonite Brout pipe 0 Diameter of well operator's License No. Wase group installed? Type HP Depth Meriod of sealing strata off Type of Water? depth of strata Meriod of sealing strata off Size of gravel: Tit. Wase well gravel packed? I Yes< □ No		Work started 5/15 19 85 Complete	nd 5/	17	19 85	
Well sealed from land surface to 18 Diameter of well bore to bottom of seal 14 in. Diameter of well bore to bottom of seal 14 in. Diameter of well bore below seal 12 + 5% bentonite Number of sacks of cement used in well seal 12 + 5% bentonite Barrow was cement grout placed? pumped through 1" Was pump installed? Diverse in the operator's License No. Was pump installed? Type HP Depth Dia any strata contain unusable water? Pyes No Type of Water? depth of strata Method of sealing strata off Size of gravel; Was well gravel packed? Eyes No Size of gravel; The Max well gravel packed? Eyes No Size of gravel; The Was well gravel packed? Eyes No Size of gravel; The Max well contractor Size of gravel; Was well contractor Size of gravel; Was well contractor Size of gravel; Mexind of sealing strata off Water Well Contractor Water Well contractor? Size of gravel; Mexind for market	CTMTNT			·······		•
Diameter of well bare to bottom of seal 14 in. Diameter of well bare to bottom of seal 14 in. Diameter of well bore below seal 8 in. Number of sacks of cement used in well seal 12 + 5% bentonite Number of sacks of cement used in well seal 12 + 5% bentonite Number of sacks of cement used in well seal 12 + 5% bentonite Sacks How was cement grout placed? DIMPed through 1" Was pump installed? Was pum	10	-				
Diameter of well bore below seal <u>8</u> in Number of sacks of cement used in well seal <u>12</u> + 5% bentonite How was cement grout placed? <u>pumped through 1"</u> <u>grout pipe</u> Was pump installed? <u>0</u> Yes <u>No</u> <u>Plugs</u> <u>Size iocation</u> <u>ft</u> Did any strata contain unusable water? <u>Pres</u> <u>No</u> <u>Size of gravel</u> <u>6</u> Was well gravel packed? <u>Pres</u> <u>No</u> <u>Size of gravel</u> <u>6</u> Water Well Contractor? Certification: This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief. Name <u>DALLAS</u> <u>DRILLING</u> <u>REUMP</u> <u>CO</u> <u>INC</u> . <u>Type or print</u>) Address <u>PAYETTIF</u> , <u>IDAHO</u> <u>83661</u> [Signed] Water Well Contractor? Contractor's License No. <u>682</u> <u>Date</u> <u>5/20/85</u> , 19	Nonneten of mall have been as a better of a black	This well was constructed under my direct s	pervisio	n. Mate	rials used	
Number of sacks of cement used in well seal 12 + 5% bentonite sacks How was cement grout placed? pumped through 1" grout pipe 10 Was pump installed? 0 Was a drive shoe used? Yes Yes No Prive of Water? 10 Method of sealing strata off Size of gravel: Was well gravel packed? Yes Notrice to water well. CONTRACTOR Water Resources Department, Water Resources Department, 5/20/82	$\mathcal{B}_{\mathcal{A}}$	[Signed]		-		
BY OUL DIDE BY OUL DIDE Was pump installed? Was a drive shoe used? Yes No Piges No Piges No Size of gravel: Size of gravel: Gravel placed from (X.S. the to Water well CONTRACTOR Water Resources Department,	Number of sacks of cement used in well seal 12 + 5% bentonite					
Was pump installed? Type HP Depth ft Was a drive shoe used? Yes No Plugs Size i location ft Did any strata contain unusable water? Yes No Plugs Size i location ft Did any strata contain unusable water? Yes No Plugs No This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief. Name DALLAS DRILLING & PUMP CO. INC. Obi any strata contain unusable water? Yes No Paysen print) Address PAYETTF, IDAHO 83661 Was well gravel packed? Yes No Size of gravel; Size of gravel; Gravel placed from Q. ft. to ft. ft. Notrice to water well. CONTRACTOR WATER RESOURCES DEPARTMENT, SP*12658.650						
Was pump installed? Type HP Depth ft. Was a drive shoe used? Yes No Plugs Size: location ft. Did any strata contain unusable water? D Yes No No INC Did any strata contain unusable water? D Yes No No INC Did any strata contain unusable water? D Yes No Type or print) Nethod of sealing strata off Was well gravel packed? D Yes No Size of gravel; No Gravel placed from Q.S			• • •		_	
Was a drive shoe used? Yes No Plugs Size: location ft Did any strata contain unusable water? Yes No Size: location ft Did any strata contain unusable water? Yes No Size: location ft Method of sealing strata off Was well gravel packed? Yes No Size of gravel: No Gravel placed from Q.S. ft. NoTICE TO WATER WELL CONTRACTOR WATER RESOURCES DEPARTMENT, SP*12658.659		the best of my knowledge and belief.	and this	s report	is true to	-
Did any strata contain unusable water? Yes No No 100 for the strata (Type or print) Type of Water? depth of strata Address		Name DALLAS DRILLING & P	UMPC	Ω	INC	
Interior of Water? depth of strata PAYETTE, IDAHO. 83661 Method of sealing strata off [Signed] (Water We Contractor) Was well gravel packed? Yes DNo Size of gravel; Contractor's License No682Date	No Dici any strata contain unusable water? 🔲 Yes 🛄 No	Address 505 So. 10th St.		(Type or	print)	
Was well gravel packed? Yes No Size of gravel; Contractor Gravel placed from 2.5 ft. to ft. Contractor Contractor NOTICE TO WATER WELL CONTRACTOR WATER RESOURCES DEPARTMENT, SP 12658-690		PAYETTE, IDAHO. 836		*****		-
Was well gravel packed? 2 Yes No Size of gravel;		(Water West Contract			********	341.2
	14 110			5	, 19	
	NOTICE TO WATER WELL CONTRACTOR The original and first copy of this report	WATER RESOURCES DEPARTMENT, SALEM, OREGON 97310		SI	*12658-690	- Z

1) OWNER: htms (10) LOCATION OF WELL by legal description: differ. 0. DDA 20, 20,	5/17/85	REGON	OF OF	ILED WITH THE STATE	REPORT IS BEING I		STATE OF OREGON WATER WELL REPORT (as required by ORS 537.765)
Name ONTARIO_ORDER_OUTEST (III) WEEKING OUTEST Number of the second seco				,	,	······································) OWNER.
address P. O. BOX 21,							•
Construction CMPCAPLIC CMPCAPLIC CMPCAPLIC CMPCAPLIC (2) TYPE OF WORK (check): Reconditioning Abandon Image: Construction of the construction cons		4		200 200 200		SE = (L, WESTCOTT)	
(2) TYPE OF WORK (check): Image: Second String	, WM.	A or West)	ange is Eas	sis North or South)	Township Sour		
the weight between w			•			<u>9791/, State</u>	♥ ONTARIO, OREGON
the weight between w					MAILING ADDRESS OF WELL (o) TYPE OF WORK (check)
if absorbing starting and procedure in low 12 (3) TYPE OF WELL (4) PROPOSED USE (check): (3) TYPE OF WELL (4) PROPOSED USE (check): Datary Mol Due Divident Datary Mol Due Divident Seed							
(3) TYPE OF WELL (4) PROPOSED USE (check): Data for Deg Industrial Densitie <						•	* *
Orace A VALUE OF Description Description Description Reary Mull Deg Depth at which watery was first found Batic level It. below land sufface. Data Reary Mull Deg Dimension Oracedary Depth at which watery was first found Depth at which watery was first found Reary Mull Deg Dimension Oracedary Depth at which watery was first found Depth at which watery was first found Marcel Def Price Construction State Level Depth at which watery was first found Depth at which watery was first found Marcel Def Price Construction The oracedary Depth at which watery was first found Depth at which watery was first found Marcel Def Price Construction The oracedary Depth at which watery was first found Depth at which watery was first found Marcel Def Price Construction The oracedary Depth at which watery was first found Depth at which watery was first found Marcel Def Price Construction The orace of the second marge in position of State Water Level and indicate price Diam. The orace of the second marge in position of State Water Level and indicate price State Def Price Construction Environ Depth at which which watery was first found State Def Price Construction Envice Construction		ETT.	ก พา	LEVEL of COMPLET	(11) WATER LEVI		
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3 Diam. from 2 R. Guge Weiged XX 1 Diam. from R. Guge Constraint and anguiter pentation and anguiter pentation of Static Water Level and indicate per table with a diabace with a lease of the state			asing	JOG: Diameter of well below			
0 > Diam. from 1 0 A. Gauge	ft.						7 CASING INSTALLED:
Dame note: 0.00000000000000000000000000000000000						20°	8
LINER INSTALLED: Sided Planted						own fle Oddge managemains and and and	
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(6) PERFORATIONS: Perforations No in. by in. by in. Size of perforations in. by in. Op Size of perforations from ft. to ft. ind Size Size Size from ft. to ft. Size Size Size Size from ft. to ft. Size of perforations ft. to ft. ft. Size of perforations ft. to							• Things from 64 de-
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Bailer test gal/min. with ft. drawdown after hrs. Artesian flow g.p.m.				SALEM, OREGON	SALE	with chrill stern at ft br	r test gal /min
Artesian flow g.p.m. Artesian flow g.p.m. Artesian flow Depth artesian flow encounteredft. Depth artesian flow encounteredft. Date work started			T				
Imperature of water Depth artesian flow encounteredft. (v) CONSTRUCTION: Special standards: Yes □ No □ Well seal-Material used					• *		
CONSTRUCTION: Special standards: Yes No Well seal	·····					h artesian flow encountered fl	a.r
(7) CONSTRUCTION: Special standards: Yes No Image: Special standards: Yes No Image: Special standards: Yes Yes No Image: Special standards: Yes No Image: Special standards: Yes No Image: Special standards: Yes Yes No Image: Special standards: Yes No Image: Special standards: Yes Yes No Image: Special standards: Yes Yes Yes Yes Yes No <td></td> <td></td> <td></td> <td>/complete</td> <td>Date work started</td> <td></td> <td></td>				/complete	Date work started		
Well sealed from land surface to ft. Diameter of well bore to bottom of seal in. Diameter of well bore below seal in. Amount of sealing material in. Amount of sealing material sacks pounds How was cement grout placed? Date 19 Was pump installed? Type HP Depth ft. Was a drive shoe used? Yes No Plugs Size: location ft. Did any strata contain unusable water? Yes No No This well was drilled under my direct supervision. Materials us information reported above are true to my best knowledge and belief. Type of Water? depth of strata ft. Size: location It.	19			chine moved off of well	Date well drilling machine mov	pecial standards: Yes 🖾 No 🗖	b) CONSTRUCTION:
Weil sealed from and surface to in. Diameter of well bore to bottom of sealin. in. Diameter of well bore below sealin. in. Amount of sealing materialin. in. Amount of sealing materialin. Sacks □ pounds □ How was cement grout placed? Date19 (bonded) Water Well Constructor Certification: Bond		opplieg	tion (if	ar Well Constructor Contifie	(unhanded) Water Well	Personal state and a server strack and server a general server and a second	ell seal-Material used
Diameter of well bore to bottom of seal in. Diameter of well bore below seal in. Amount of sealing material bate Date Date 19 How was cement grout placed? Date Date Date 19 How was cement grout placed? Date Date 19 How was cement grout placed? Date Date 19 How was cement grout placed? Date Date Date 19 How was cement grout placed? Date Date Date 19 How was cement grout placed? Date Datae Date Date Date						f	ell sealed from land surface to
Diameter of well bore below seal in. Amount of sealing material Date Date Date 19 How was cement grout placed? Dete						in.	iameter of well bore to bottom of seal
How was cement grout placed? (bonded) Water Well Constructor Certification: How was cement grout placed? (bonded) Water Well Constructor Certification: Was pump installed? Type Was pump installed? Type Was a drive shoe used? Yes Did any strata contain unusable water? Yes Type of Water? depth of strata			2	· •			
Was pump installed? Type HP Depth ft. Was a drive shoe used? Yes No Plugs Size: location ft. Did any strata contain unusable water? Yes No No Did this report is true Type of Water? depth of strata Mo This well was drilled under my jurisdiction and this report is true	19)ate		[Signed]	sacks 🛛 pounds 🛙	mount of sealing material
Was pump installed? Type HP Depth ft. Was a drive shoe used? Yes No Plugs ft. Did any strata contain unusable water? Yes No No Type of Water? depth of strata Ft. Did was defined under my jurisdiction and this report is true best of my knowledge and belief. Wester			n:				ow was cement grout placed?
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Was a drive shoe used? Yes No Plugs Size: location ft. Did any strata contain unusable water? Yes No No Did any strata contain unusable water? This well was drilled under my jurisdiction and this report is true best of my knowledge and belief:		y Name)	ty Company	r) (Sur	(number)		
Was a drive shoe used? Yes No Plugs Size: location ft. Did any strata contain unusable water? Yes No No This well was drilled under my jurisdiction and this report is true best of my knowledge and belief: Type of Water? depth of strata Data and the strata Data and the strata		nstructor1	er Well Con	JOHNNY J. CONF	On behalf of	e HP Depth	as pump installed?
Type of Water? depth of strata best of my knowledge and belief:						······································	
	ue to the	port is t	d this re	s drilled under my jurisdiction a	This well was drilled	······································	
Method of seeling strata off		1	1	ige and belief:	best of my knowledge and l	h of strata	ype of Water? dep
	*****	/		Jaly 1- L	(Signed)		ethod of sealing strata off
Was well gravel packed? Ves No Size of gravel: (Water Well Constructor				1/14/86 (Water Well Construct	1/1/./	Size of gravel:	as well gravel packed? 🛛 Yes 🛄 No
avel placed from ft. to ft.	*******	* ******			(Dated)		
	2*46866-690	<u> </u>		RESOURCES DEPARTMENT	WATER RESOUR		
The original and first copy of this report SALEM, OREGON 97310		~		SALEM, OREGON 97310	SALEM, C	inal and first copy of this report.	
are to be filed with the within 30 days from the date of well completion.				ays from the date of well completion.	within 30 days from t	are to be filed with the	

STHE BROASSON DI TAGE DE ADUI SED	THIS REPORT PERTAINS TO T	CHE /		-	***
PLEASE BE ADVISED	XISTING WELL, REPORT PREVIO		·····-		- 1
SALEM, OREGON FILED. SAME OWNE		REV.	pe	ep.	
1) OWNER: COMPLETED - 5/17/	10) LOCATION OF WELL:	•	<u>-</u>		
ONTARIO COLE COTTER - (L. WESTCO	TT) MALHEUR				
Address P. O. BOX 24	NW * NW *Section 7 T.185	R. L.7	 ፓፔየ	W.M.	
Sity ONTARIO, OREGON 979 Solite	Tax Lot # Lot. Blk		bdivision		• • • • • • • • • •
2) TYPE OF WORK (check):	Address at well location:			······································	
Vew Well D Deepening X Reconditioning Abandon .					
if abandonment, describe material and procedure in Item 12.	(11) WATER LEVEL: Completed w				
(3) TYPE OF WELL: (4) PROPOSED USE (check):				IFO. ft.	,
Rotary Air XX Driven Domestic Diadustrial Municipal	Static level ft. below 1				
Regary Mud 🗆 Dug 🖸 📋 Irrigation XIX Test Well 🗔 Other 🖂		r square i			
Borsd Thermal: Withdrawal Reinjection	(12) WELL LOG: Diameter of well below Depth drilled EXISTING INFOQepth of			_	
(5) CASING INSTALLED: Steel Plastic Welded Welded	Depth drilled <u>EXISTING</u> INF: (Depth of Formation: Describe color, texture, grain size and str			ft. and show	
EXISTING INF ^D readed ^[] Welded ^[]	thickness and nature of each stratum and equifer pene for each change of formation. Report each change in	trated, wi	th at less	t one entry	-
"Diam from	and indicate principal water-bearing strata.	r			
LINER INSTALLED:	MATERIAL	From	To	BWL	
"Diam from	DEEPENING_INFO.				
(6) PERFORATIONS: Perforated?			007		
Type of perforator used EXISTING INFO.	SAND FINE BLACK	220 335	<u>335</u> 336	181	
Size of perforations in by in	SAND FINE BLACK	336	750		
perforations from	OAND TITNE DI LOR OTMENDED	750	755	181	-
perforations from	SHALE GREY	755	765		
7) SCREENS: Well screen installed? Yes No					
Annufacturer's Name EXISTING INFO,					
ype					
Diam					
Diam. Slot Size	· · · · · · · · · · · · · · · · · · ·				
(8) WELL TESTS: Dramowith is another water rever is inwerter below static level					
es a pump test made? 🗆 Yes 🗋 No _Ii yes, by whom?	·				
eld: gal/min. with ft. drawdown after hrs.	· · · · · · · · · · · · · · · · · · ·				· ·
					-
Air test gal/min with drill stem at ft. hrs. Bailer test gal/min with ft. drawdown after hrs.	······································	ļ			
Baner test gal/min, with ft, drawdown after hrs. tesian flow g.p.m.	· · · · · · · · · · · · · · · · · · ·				•··· •••
inperature of water Depth artesian flow encountered ft.		6	7197	85 ₁₉	
(9) CONSTRUCTION: Special standards: Yes D No D		0/85		19	
Well seal-Material used EXISTING INFO.	Drilling Machine Operator's Certification:	-97-09		-	-
Well sealed from land surface to	This well was constructed under my direct	upervisi	on. Mate	rials used	
Diameter of well bore to bottom of seal in.	and information reported above are trie to nov	Dest know	viedge a	nd berief	^
Diameter of well bors below seal	(Defiling Machine Operator)	L. Date	4-5	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	
How was cement grout placed?	Drilling Machine Operators License No.	<u></u>	S		
and a second	Water Well Contractor's Certification:	-			
1977 - Anna Anna Anna Anna Anna Anna Anna An	the heat of my beautinder and halist	n and th	is report	is true to	
Was pump installed?	Nema DATTAS DOTTATING & DI	IMPĆ	0	INĆ	
Was a drive shoe used? 🗆 Yes 🗆 No 🦳 Plugs	505 States of the states of th		Type of	print)	
Type of Water? depth of strata	Address PAYETTE IDAHO 8360	51	·····	/	275
Method of sealing strata off	[Signed]		//	~	
Was well gravel packed? Ves No Size of gravel:			Goff	, 19	
Gravel placed from		/11/8	<u> </u>		
NOTICE TO WATER WELL CONTRACTOR The original and first copy of this report	WATER RESOURCES DEPARTMENT, BALEM, OREGON 97310		٤	P*12658-690	

STATE OF OREGON RECEIVED	Amaria	18 s/47E-3000
WATER WELL REPORT MAY 2 3 1986 (as required by ORS 537 765) WATER RESOURCES BEATE TYPE 0	PRINT IN INK 1723	(for official use only)
(1) OWNER:	(10) LOCATION OF WELL by lega	al description:
ame MALHEUR EXPERIMENTAL STATION		of Section 30 of
Address RT. 1 BOX 620	Township 18 South Range	7 East WM
City ONTARIO OREGON 9791/State	(Township is North or South)	(Range is East or West)
(2) TYPE OF WORK (check):	Tax Lot Block Subdivision MAILING ADDRESS OF WELL (or nearest address)	· · ·
	SAME AS OWNER ADDRI	700
New Well XX Deepening Reconditioning Abandon I If abandonment, describe material and procedure in Item 12.	CALL NO OWNER ADDA	
(3) TYPE OF WELL: (4) PROPOSED USE (check):	(11) WATER LEVEL of COMPLE	TED WELL:
Rotary Air KX Driven D Domestic XX Industrial D Municipal D	Depth at which water was first found 67	A.
Rotary Mud KX Dug	Static level 29 ft. below	v land surface. Date 3/10/86
Other: AX Handking D Test	Artesian pressure lbs. pe	er square inch. Date
	(12) WELL LOG: Diameter of well belo	6 ¹¹
(5) CASING INSTALLED: Steel TX Plastic Threaded Welded Grave	Depth drilled ZZU ft. Depth	of completed well 220 ft.
6 id Diam. from 2 ft. to 134 ft. Gauge	Formation: Describe color, texture, grain size and structur and nature of each stratum and aquifer penetrated, with at formation. Report each change in position of Static Wa water-bearing strata.	least one entry for each change of
LINER INSTALLED: Steel Threaded Welded	MATERIAL	From To SWL
Diam. from	SANDY CLAY	0 15
(6) PERFORATIONS: Perforated? Ves XNo	DRY CEMENTED GRAVEL	15 40 :
Size of perforations in. by in.	BROWN CLAY	40 67 -
perforations from ft. to ft.	SAND, SILT, GRAVEL	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$
	BLUE CLAY	112 130
perforations from	HARD BLUE SHALE	130 136
(7) SCREENS: Well screen installed? Ves XX No	BLACK AND GREY SANDSTONE	136 137 30
Manufacturer's Name	BLUE SHALE	137 140
Type	GREY SANDSTONE	140 141 30
Diam	BLUE SHALE	141 148
iam Slot Size Set from ft. to ft.	GREY SANDSTONE	148 150 30
(8) WELL TESTS: Drawdown is amount water level is lowered below static level	GREY SANDSTONE	<u>150 175</u> 175 177 30
Was a pump test made? Aves DNo If yes, by whom? DALLAS DRILLING		177 220
d: 40 gal./min. with 51' ft. drawdown after 2 hrs.		
· · · · · · · · · · · · · · · · · · ·	4	<u> </u>
Air test 45 gal/min. with drill stem at 220 ft. 2 hrs.	×	
Bailer test gal/min. with ft. drawdown after hrs. Artesian flow g.p.m. g.p.m.<		
Arlesian flow g.p.m. perature of water Depth artesian flow encountered fl.		· · · · · · · · · · · · · · · · · · ·
	Date work started 3/8/86/comple	
(9) CONSTRUCTION: Special standards: Yes D No 🕅 Well seal—Material usedCEMENT_TYPE 1 &11		/13/86 19
Well sealed from land surface to	(unbonded) Water Well Constructor Certifi	
Diameter of well hore to bottom of seal $+11$ in. Diameter of well hore below seal $\frac{10.8 + 12.6}{10.8 + 12.6}$ in.	This well was constructed under my direct su information reported above are true to my best k	pervision. Materials used and nowledge and belief.
Amount of sealing material 35 + bentonite secks & pounds	[Signed]	
How was cement grout placed? PUMPED THROUGH 126'	(bonded) Water Well Constructor Certificat	ion:
		TERN SUPERY
Was pump installed? YES Type SUB HP 1% Depth 109 ft.	On behalf of JOHNNY COFF	urety Company Name)
Was a drive shoe used? XXYes No Plugs Size: location ft.		Water Well Constructor)
Did any strata contain unusable water? 🗌 Yes 🖾 No	This well was drilled under my jurisdiction	and this report is true to the
Type of Water? depth of strata	best of my knowledge and belief:	· · ·
Method of sealing strata off	(Signed)	
Was well gravel packed? Yes XNo Size of gravel:	(Dated)3/28/85	ictor)
Gravel placed from A.		
NOTICE TO WATER WELL CONSTRUCTOR The original and first copy of this report are to be filed with the	WATER RESOURCES DEPARTMENT, SALEM, OREGON 97310 within 30 days from the date of well completion.	SP*46866-630

NOTICE TO WATER WELL CONFRACTOR The original and first contractor of this report are to be filled with the			29 da 47 - 23
STATE ENGINEER, SALEM, ORESON 47310 within 30 days from the date of well completion.	ENGINESTATE OF	F OREGON (1974) State Permit No.	······································
) OWNER:		(11) WELL TESTS: Drawdown is amount v lowered below static is	vater level is
Name Idaho CANNING C	OMPANY	Was a pump test made? I Yes INo If yes, by whom	
Address PAyItte Idah	b	Yield: gal./min. with ft. drawdow	
(2) LOCATION OF WELL:		17 yr	99
(2) LOCATION OF WELL: <u>County MAINUER Driller's well</u> <u>14</u> <u>14</u> Section 2 8 T.	1 number 117 19W R. 5W W.M.	Bailer test 200 gal/min. with 5 ft. drawdo Artesian flow g.p.m. Date	wn after 2 hrs.
Bearing and distance from section or subdivis Town: Lot At Is		Temperature of water 60 Was a chemical analysis it (12) WELL LOG: Diameter of well below of	asing _ 2. W
Nyssa ORZGON	· · · · · · · · · · · · · · · · · · ·	Depth drilled 562 ft. Depth of completed w	and a second sec
		Formation: Describe by color, character, size of materia show thickness of aquifiers and the kind and nature of stratum penetrated, with at least one entry for each c	the material in each hange of formation.
		MATERIAL	FROM TO
(3) TYPE OF WORK (check):	ditioning 🖂 Abandon 🗌	Soil Top	0 5
andonment, describe material and proce		SAND FINE SILTY	5 15
(4) PROPOSED USE (check):	(5) TYPE OF WELL:		
Domestic [] Industrial [] Municipal []	Rotary Driven	Clay Blue	40 255
Irrigation [] Test Well [] Other	Cable 🗌 Jetted 🗍 Dug 🗍 Bored 🗍	- CLAY Blue STREAK: BROWN SONS	255 275
		- Clay Bluz	275 562
"Diam. trott Mon it. to	aded [] Welded []		·
The second se	ft. Gage		
	ft. Gage	- Alota	
(7) PERFORATIONS: Perf	orated? 🗌 Yes 🗍 No	Hole Filled with Rin	DNIT. FROM
pe of perforator used Um			us set st
Size of perforations in by	in.		
perfirations from		- HO' AND hole Filled u	LICA ISENIANIT
perforations from		To SURFACE -	
perforations from			
perforations from	tt. to		`
(8) SCREENS: Well screen inst Manufacturer's Name Wowe	alled? 🗌 Yes 📋 No		· · · · ·
	Model No.		
I Slot size Set from		Work started 5/25 1864 Completed 6	13/ 1964
Diam Slot size Set from	fi. jo fi.	Date well drilling machine moved off of well 6/16	1964
(9) CONSTRUCTION: Well seal-Material issed in seal BUNTON	NITE (SEE NOTE)	(13) PUMP:	
Depth of seal 0-140 ft. Was a	packer used?	Manufacturer's Name	RP
Diameter of well bore to bottom of seal	1/4 in.		
Were any loose strata cemented off? 🗆 Yes	No Depth	Water Well Contractor's Certification:	
Was a drive shoe used? [] Yes [] No Was well gravel packed? [] Yes [] No	Size of gravel:	This well was drilled under my jurisdiction true to the best of my knowledge and belief.	and this report is
Gravel placed from ;;ft. to	_	NAME OTTO Elloworth	,
Did any strata contain unusuable water?		(Person, firm or corporation) (T)	pe or print)
	strata 15-40	Address P. Box 471 Joland City, O	RESON
(10) WATER LÉVELS:	<u>[}</u>	Drilling Machine Operator's License No	12
o t	a la tare	[Signed] Oth Elloworth	
	id surface Date 6/3/64	(Water Well Contractor)	5 11
esian pressurelbs, per sq		Contractor's License No. 398 Date July	<u> </u>
	(USE ADDITIONAL SI	HEETS IF NECESSARY)	

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STATE OF OREGON MACHAG	RECEIVED
WATER WELL REPORT	AUG 2 6 1996 (START CARD) # 66463
Instructions for completing this report are on the last page of this form. WA (1) OWNER: Well Number Name Mark Address O Address O City Mark Mark Well Number Address O City Mark Mark Well Number City Mark Mark Well Number City Mark Other State Other Other Other Other Other Industrial Insection Industrial Insection Livestock Other Other (3) BORE HOLE CONSTRUCTION Special Construction approval Yes Yes No No Depth of Completed Well Special Construction approval Yes Yes No HOLE SEAL Diameter From 10 25 25 700	SALEM OREGON (9) LOCATION OF WELL by legal description: County Maluer Latitude Longitude Township 19 N of ORange 4/0 Or W. WM. Section 25 Street Address of Well (or nearest address) 3/25 Mathematical Street Address of Well (or nearest address) 3/25 Mathematical Street Address of Well (or nearest address) 3/25 Mathematical Street Address of Well (or nearest address) 3/25 Mathematical Street Address of Well (or nearest address) 3/25 Mathematical Street Address of Well (or nearest address) Mathematical Street Address Mathematical Street Address of Well (or nearest address) Mathematical Street Address Count Address of Well (or nearest address) Date Mathematical Street Address Mathematical Street Address of Well (or nearest address) Date Mathematical Street Address
How was seal placed: Method A B C D E Other <u>Bendon te</u> Backfill placed from <u>ft.</u> to <u>ft.</u> Material Gravel placed from <u>ft.</u> to <u>ft.</u> Size of gravel (6) CASING/LINER: Diameter From To Gauge Steel Plastic Welded Tareaded Casing: <u>e 1/40.255</u> B B C D Liner: <u>Casing</u> C C D E C D E C D Liner: <u>Casing</u> C C D C D C D Casing C C D C D C D Casing C C D C D C D Casing C C C D C D C D Casing C C C D C D C D Casing C C C D C C D C D Casing C C C C C C C C C C C C C C C C C C C	(12) WELL LOG: Ground Elevation Material From To SWL Cemented Gravel (2) 7 Brown Lilty Clay 7 1.35 Blue Silt 135 145 84 Blue Clay 145 390
Final location of shoe(s) 140 (7) PERFORATIONS/SCREENS: Perforations Method Screens Type Material From To size Number Diameter size Casing Liner	
(8) WELL TESTS: Minimum testing time is 1 hour	Date started 7=6-96 Completed 7=6-96 (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 water supply well construction standards. Materials used and information reported above are true to the best of my knowledge and belief. WWC Number

ORIGINAL & FIRST COPY-WATER RESOURCES DEPARTMENT SECOND COPY-CONSTRUCTOR THIRD COPY-CUSTOMER

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			n.	ALH	al	RECEIVE	D			
	OF OREG	ON PORT	711	ALH		AUG 2 6 1996	<u>(ST</u> ART CARD) #_		1.3	
(as require	d by ORS 537.	765)	*	h - X	wa	TER RESOURCES D	(START CARD) # _ FPT	001	65	
		ing this report	are on t	ne net ha	igt of this form.	SALEM, OREGON	WELL by legal descr			
1) OWNER	k: nan l	5 117		ell Numb	er	· · · · ·			•. •	
Name	nare	$\frac{\omega_0}{\omega_0}$	sp_			County Malur		Lon	gitude	7 304
Address A	0.00	236	6	1	Zip 979	Township 19 Section 25	$\sum_{n \in S} N \text{ or } S Range_{1/4}$	<u>70</u> 511)r V 1/4	Y. WM.
$\frac{\text{City}}{\text{(2) TYPE 0}}$	WORK	Stai		<u> </u>	2007 71.3		.ot Block	and Su	1/4 bdivision	
		Alteration (mairin	conditio	1) 🗌 Abandonment		i (or nearest address)	3125		lih.
(3) DRILL									0	F
Rotary Air	Rotary	Mud Cab	lc	Auger		(10) STATIC WATE	R LEVEL:			
						ft. bel	ow land surface.	I	Date <u>7-1</u>	8-96
(4) PROPO	SED USE:					Artesian pressure	lb. per squar	re inch. I)ate	
Domestic		unity 📋 Indu	ustrial	🗍 Iu	igation	(11) WATER BEAR	NG ZONES:			
Thermal	Injecti	Transfer Street		Ou	her			2		
• •		STRUCTION	-			Depth at which water wa	s first found	<u> </u>		
			o Depti		pleted Well <u>390</u> ft.	E	T	¥7	Dans Bata	esur
Explosives us			SEAL	Am	ount	From	105	Estimated	Flow Rate	SWL
HOI Diameter Fr		2 Material	From	То	Sacks or pounds			10		87
		Bendente		25	700		1			
			<u> </u>						··· ·	
						(12) WELL LOG:				· · · · · · · · · · · · · · · · · · ·
How was seal	i placed:	Method	۱	в	C D DE	Groun	d Elevation			<u> </u>
Other _	Ben	South			-		•		T	[]
Backfill place		ft. to	ft.	Materia	· · · · · · · · · · · · · · · · · · ·	Mater	al Constant	From 7 / 2	To	SWL
Gravel placed		ft. to	ft.	Size of	gravel	Comence	a maner		-7	
(0) CASIN Diam		To Gauge	Steal	Plastic	Weided Threaded	Brause P	Ot. Chan	7	135	
Casing:		140 .257	1 -				my my			
Casing.			16			Blue &	iet	135	145	84
						Blue Ce	ay	145	390	
Liner:							0		<u> </u>	
		140							+	
Final location		<u> </u>				I	·		+	<u> </u>
Perfora		iethod								
	_	урс		Mat	erial	1				
	Slot To size	-	meter	Tele/pip size						1
FICH	AU BAAC	I TALALIPEA LAN								
\				ļ						
·				ļ		[ļ	ļ
				_		·				<u> </u>
	<u> </u>			<u> </u>			······		 	╁
(0) \$17777 # "	TESTS. M		a time	ie 1 horr		Down started 7-	16-96 Com	alasta d	1-18	-91-
(O) WELL	16919; WI	inimum testin	g unie	10 1 1100		Date started		pleted 7		<u> </u>
Pump	Пв	ailer [-	Flowing Artesian	1	I performed on the con		ration or sh	andonment
Yield gal/n		wdown	Drill ste	m at	Time	of this well is in complia	ince with Oregon water s	supply well co	instruction s	tandards.
- 10			390		Arih.	Materials used and infor and belief.	ныноп геропес абоус а	re true to the	æst or my k	HOMICORE
								WWC Nu	mber	
						Signed			Date	
Temperature	of water 👍	4 · Dept	h Artesia	an Flow F	Found	(bonded) Water Well C	onstructor Certificatio	n:		
	analysis done'	The second	ly whom			I accept responsibilit	for the construction, all	teration, or ab	andonment	work
		r not suitable for			Too little	performed on this well of performed during this time	ne is in compliance with	Oregon wate	r supply we	11
		Odor Colo	red [Other_		construction standards.	This report is true to the	best of my kr	owledge an	d belief.
Depth of strat	ta:				(1. 2.	1 S.M	WWC Nu	mber 🖉	0-
						Signed	×11		Date	

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ORIGINAL & FIRST COPY-WATER RESOURCES DEPARTMENT SECOND COPY-CONSTRUCTOR THIRD COPY-CUSTOMER

		REFER		205	141-12	1/.
STATE OF OREGON WATER WELL REPORT	NALTI NAZS) APR 29 1	992		16036	<u>rcc</u>
(as required by ORS 537.765)	The second secon		(9) LOCATION	TART CARD) #		نہ ہیں۔ ہر ے کر
Name Alan Peterson	Meir Man	SALEM ORF	County Malhe	UT Latitude	Longitude	€ " #
Address 2678 Hwy 201 City NYSSA		Zip 97913	Township 20	N or Range	46E on W V	¥M.
City Nyssa (2) TYPE OF WORK;	State OR	Zip 97913	Section2700	<u>SW</u> 4	SW *	
، السلم ، ا	Recondition D	bandon	181 LOT	Lot Block	k Subdivision	
(3) DRILL METHOD			2628 Hwy	201 Nyssa, Ö	DR	
Rotary Air Rotary Mud			(10) STATIC W	VATER LEVEL	: Date <u>3-31</u> -	92
(4) PROPOSED USE:				lb. per squ		
Domestic Community		ation	(11) WATER B			<u> </u>
	Other		Depth at which water wa	s first found 18'		
(5) BORE HOLE CONST Special Construction approval Yes N	Depth of Comple	eted Well 700 n.	From	То	Estimated Flow Rate	SWL
Yes No L IX	Amount		18	30	30-40	1 8
······	BEAL	•	684	700	20-25	18
Diameter From' To Materia	l From To	Amount sacks or pounds				
<u>10" 0 30 Cement</u>	0 30) 12 sacks	(12) WELL LO	G: Ground elevat	ion	
				Material	From To	SWL
How was seal placed: Method	Пв Пс Пр		Top soil Sand & gravel			
X Other <u>690-210-340 (1)</u>	مربع میں		Brown clay	·····	29 47	-
Backfill placed from ft. to ft.			Blue clay		47 684	
(6) CASING/LÎNER:			Black sand		685 700	18
Diameter From To C	auge Steel Plastic	Welded Threaded				
Casing: $6" + 1 59$.						
1						
·····						
Liner:			<u></u>			
Final location of shoe(s)59 '	Lad Lad Lad					
(7) PERFORATIONS/SC	REENS:			3		
Perforations Method	- • • • • • • • • • • • • • • • •					
Screens Type	Materia Tele/pipe	al				
	Diameter size	Casing Liner				
			Date started 3-20	<u>-92</u> Con	apleted <u>3-25-92</u>	
(8) WELL TESTS: Minim	um testing time is			Well Constructor Ce		.
Pump Bailer		Flowing Artesian	abandonment of this	well is in compliant	on the construction, altera ce with Oregon well const	truction
Yield gal/min Drawdown	Drill stem at	Time	standards. Materials u knowledge and belief.	used and information	reported above are true to	my best
20-25	300 '	1 hr.	Simal Dan	e (D.	WWC Number _1	
·····					Date4-20-9	۷
Temperature of water78			(bonded) Water We	ll Constructor Certi bility for the constru	i fication: action, alteration, or aband	onment
	By whom	r Found	I work performed on th	is well during the con	to hotecoor exter animimized	its store
Did any strata contain water not suitable :	or intended use? 🔲 T		construction standar	s This report is the	to the best of my knowle	on well dge and
Salty I Muddy Odor Col			belief	7/	WWC Number 1	506
			Signed	<u>L</u>	Date 4-20-9	
ORIGINAL & FIRST COPY - WATER I	LESOURCES DEPARTY	MENT SECO	ND COPY CONSTRUCT	THIRD CO	PY-CUSTOMER 9	809C 3/88

NOTICE TO WATER WELL CONTRACTOR		<u>.</u>
are to be filed with the UEIVED WATER WELL water resources department.		215/46E-15da
SALEM, OREGON SHUV 201978 (Piease type		,
of well of STER RESOURCES DEPT. (Do not write ab	ove this line)	
SALEM. OREGON		···
) OWNER:	(10) LOCATION OF WELL:	•
ame Adrian City	County Malheur Driller's well nu	27
Address Adrian Oregon	N.E 1/4 S.E 1/4 Section 15 T. 21	<u>R. 40 W.M.</u>
	Bearing and distance from section or subdivision	on corner
		······································
New Well M Diepening Reconditioning Abandon I If abandonment, describe material and procedure in Item 12.		**
	(11) WATER LEVEL: Completed w	~ ~
		88 <u>st.</u> 10-23-78
Cable Jetted Domestic/ g/ industrial Montelpar	Static level 4 ft. below land s	urface, Date LUEL / (
Dug Bored I Irrigation Test Well Other	Artesian pressure lbs. per squar	e inch. Date
CASING INSTALLED: Threaded D Welded	(12) WELL LOG: Diameter of well h	8
8 " Diam. fron ft. to27 ft. Gage250	Depth drilled 536 ft. Depth of complete	
" Diam. from ft. to ft. Gage	Formation: Describe color, texture, grain size a	
" Diam. froih ft. to ft. Gage	and show thickness and nature of each stratum	m and aquifer penetrated.
PERFORATIONS: Perforated? [] Yes XKNo.	with at least one entry for each change of format position of Static Water Level and indicate prin	
Type of perforator used	MATERIAL	From To SWL
Size of perforations likes	sticky clay	0 42
perfurations fromft. toft.	Blue shale	42 388
perforations from	Coarse black sand	388 408
perforations fromft. toft.	Fine sand & shale	408 432
(7) SCREENS	Fine Sand stone & clay	432 536
(7) SCREENS: Well screen installed? D Yes & No	······································	
Manufacturer's Name	·····	
Diam. Slot size Set from ft to ft.		·····
sm Slot size Set from ft. to ft.		·······
lowered below static level		
Was a pump test made? Yes DNo If yes, by whom? Page Bros	P	
Yield: 55 gal./min. with 395 ft. drawdown after 19 hrs.		
	······	
New York and the second s	-	
Bailer test gal./min. with ft. drawdown after hrs.		
Artesian flow		
perature of water 76 Depth artesian flow encountered	Work started 10-18-78 19 Complete	ed 10-23-78 19
(9) CONSTRUCTION:	Date well drilling machine moved off of well	10-24-78 19
well seal-Material (sed Cement	Drilling Machine Operator's Certification:	
Well sealed from land surface to _27tt.	This well was constructed under my	direct supervision.
Diameter of well bore to bottom of seal in	Materials used and information reported best knowledge and belief.	above are true to my
Diameter of well bore below seal	[Signed] [Inslight that	Date 11-2-7819
Number of sacks of tement used in well seal 5 sacks	(Drilling Machine Operator)	······································
How was cement grout placed? Pressure grouted	Drilling Machine Operator's License No.	
	Water Well Contractor's Certification:	
	This well was drilled under my jurisd	
Was a drive shoe used? I Yes D No Plugs Size; location ft.	true to the best of my knowledge and bel	ief.
Did any strata contain unusable water? [] Yes [] No	Name PAGE BROTHERS DRILL	(Type or print)
Type of water?	Address RT 2 BOX 371= VALE	OREGON 97918
Method of sealing strata off	milimity	***************************************
	[Signed]	(actor)
		1-2-78 in
avel placed from 1	Contractor's facense No. 2.3. A Date	
(USE ADDITIONAL SE	LEETS IF NECESSARY)	SP*45658-119

NOTICE TO WATER WELL CONTRACTOR The original and first copy of this report are to be filed with the 225/ STATE OF	OREGON UCT 1 7 1974 State Well No.	215 46E - 22 bc
STATE ENGINEER, SALEM, OREGON 97310 (Please type	or print)STATE ENGINEER State Permit No)
	(10) LOCATION OF WELL:	
D. P. Marthalling and the state	County Macher Driller's well nu	mber
	SW 1/4 NW 1/2 Section T. 2/	R. 46 F. W.M.
Address Address Address	Bearing and distance from section or subdivisio	
(2) TYPE OF WORK (check):	Bearing and distance from section of subdivision	
New Well Deepening D Reconditioning Abandon D		
If abandonment, describe material and procedure in Rem 12.	(11) WATER LEVEL: Completed w	ell.
(3) TYPE OF WELL: (4) PROPOSED USE (check):	Depth at which water was first found 2.	nif n
Rotary Drivell D Domestic Industrial I Municipal	Static level 1915 ft. below land s	nurface. Date \$-4-74
Cable Jetted J Homestic 2 Industrial Maintena 1	Artestan pressure lbs. per squar	
the second s	Artestan pressure post aquar	e man
(5) CASING INSTALLED: Threaded Welded	(12) WELL LOG: Diameter of well i	below casing
Diam trom ft. to8_ ft. Gage	Depth drilled 520 ft. Depth of compl	eted well 520 ft.
" Diam. from ft. to ft. Gage	Formation: Describe color, texture, grain size :	and structure of materials;
" Diam. fromft toft. Gage	and show thickness and nature of each stratus with at least one entry for each change of forma	
FERFORATIONS: Perforated? Ves INO.	position of Static Water Level and indicate prin	cipal water-bearing strata.
Type of perforator used	MATERIAL.	From To SWL
Size of perforations is in by in.	Brown tank	4 18 -
perforations from ft. toft.	Per House + Ching Brown	18 28
perforations from ft_ to ft_	And y les Hould	28 93
perforations from ft. to ft.	fine horizon tand	93 130
(7) SCREENS: Well screen installed?	Brown April Alance	130 150
Manufacturer's Name	Barris Acrigan Pary	199 204 1
Type	Res Straull -	204 235
Diam Slot size Set from ft, to ft.	Brun sondo Ptic -	2.37 271
am Slot size Set from ft to ft.	Blue Clarge the	27/ 284/
(8) WELL TESTS: Drawdown is amount water level is	Brown Attenda Clay	284 306
A CONTRACT OF A	Blue Van Bandy	318 405
Was a pump test mide? E Yes D No If yes, by whom? d, ulle.	BULL OF T	Uni 438
d: 25 gal/min. with 30 ft. drawdown after 2 hrs.	Per Stokell	1178 442
	Blue Clan	1143 41.9
	Aliel Clohy	449 504
Bailer test [gal./min. with fl. drawdown after hrs.	Per Arthel	504 505
esian flow	- Alue Clary	505 520
resperature of water Depth artesian flow encountered ft.	Work started 7-3/ - 1974 Comple	
(9) CONSTRUCTION:	Date well drilling machine moved off of well	<u>-7-12</u> 1974
Well seal-Material 45ed allers brief	Drilling Machine Operator's Certification	
Well sealed from land surface to tt.	This well was constructed under my Materials used and information reported	
Diameter of well bore to bottom of seal	best knowledge and belief.	Date left 30 -19 24
Diameter of well bore below seal in.	[Signed] (Drilling Machine Operator)	Date 22/ 19/7
Number of sacks of sement used in well seal sacks	Drilling Machine Operator's License No.	101
Number of sacks of lichtonite used in well seal	Water Well Contractor's Certification:	
Number of pounds of bentonité per 100 gallons of water6.51bs./100 gals.	This well was drilled under my jurisd true to the best of my knowledge and be	liction and this report is lief.
Was a drive shoe used? Dres DNo Plugs Size: location ft.	Name HHRULD HARTLI	NG
Did any strata contain unusable water? [] Yes [] No	Address ROX 124 CNTARIZ	(Type or print)
Type of water? depth of strata	Address P. D. X. 124 CN 1 F1 X 10	in the fair the fair the second se
Method of sealing strata off	[Signed] Itaratel E. 14	nollary
Was well gravel packed? Yes No Size of gravel:	(Water Well Con Contractor's License No. 27.3. Date	Lept 30, 1974
(USE ADDITIONAL SI		SP*45656-\19
раница и продати и пр		

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NOTICE TO WATER WELL CONTRACTOR The original and first copy of this report are to be filed with the 225/ STATE OF	RECEIVED L REPORT OREGON OCT 1 7 1974 State Well No.	215 46E - 22 bc
STATE ENGINEER: SALEM, OREGON 97310 (Please type	or print) STATE ENGINEER State Permit No over this 18ALEH, OREGON	D
of well completion.	OREGON	
) OWNER:	(10) LOCATION OF WELL:	· · · · · · · · · · · · · · · · · · ·
Name ROB A Agyword	County Machine Driller's well nu	mber
Address Attan Art	SW & NW & Section T. 2/	R. 46 F .W.M.
	Bearing and distance from section or subdivision	on corner
(2) TYPE OF WORK (check):		
New Well Diepening Reconditioning Abandon		
If abandonment, describe material and procedure in Item 12.	(11) WATER LEVEL: Completed w	ell.
(3) TYPE OF WELL: (4) PROPOSED USE (check):	Depth at which water was first found	nt ett.
	1.01	Day 5 9 74
Cable Jetted J	Static level 191- ft. below land s	
Bored I Irrigation I Test Well Other	Artesian pressure lbs. per squar	re inch. Date
(5) CASING INSTALLED: Threaded D Welded D Diam from fr to 308 ft Gage 2570	(12) WELL LOG: Diameter of well h	
[7] A second se Second second sec	Depth drilled 520 ft. Depth of compl	
" Diam. from ft to ft. Gage	Formation: Describe color, texture, grain size and show thickness and nature of each stratu	m and aquifer penetrated,
	with at least one entry for each change of forma position of Static Water Level and indicate prin	tion. Report each change in
(5, 7ERFORATIONS: Perforated? [] Yes [] No.		
Type of perforator used	MATERIAL	From To SWL
Size of perforations in by in.	boown tank	
perforations fromft toft	Geo Hravel + Cley Brown	18 28
perforations from ft. to ft.	And & Des Arand	28 93
perforations from ft. to ft.	fine figure stand	
(7) SCREENS: Well screen installed? Ves PNo	Bracon Anna Alance	130 160
Manufacturer's Name	Barris Aright Lang	199 204
Type Model No.	Per Charles	204 235
Diam Slot size Set from ft, to ft,	Rowing for la Phin -	237 27/
un Slot size Set from ft to ft.	Rone Cland to	284
(2) WFT I TECTS. Drawdown is amount water level is	Brown Annala Clay	284 306
(8) WELL TESTS: Drawdown is amount water level is lowered below static level	Blue Clan Bandi	306 317
Was a pump test made? Fi Yes I No If yes, by whom? druller	Bulle Cither	318 405
at: 25 gal/min. with 30 ft. drawdown after 2 hrs.	Oly Clary of	405 438
	Ale Artegel	478 442
"	- All Clarg	1142 41.9
Bailer test [gal/min, with ft, drawdown after hrs.	Will Cloky	504 505
esian flow	alue Plan	505 570
aperature of water Depth artesian flow encountered ft.	Work started 7-31 - 1974/Complet	
Capetatute of warra Depin alconta dow cheouterou	Date well drilling machine moved off of well	3-12 1974
(9) CONSTRUCTION:	Date weit urining machine moved out or weit	7 12
Well seal-Material used Marthmet	Drilling Machine Operator's Certification	
Well sealed from land surface to t	This well was constructed under my Materials used and information reported	
Diameter of well boye to bottom of seal in	best knowledge and belief.	1. 470 - 511
Diameter of well bore below seal in.	[Signed] (Drilling Machine Operator)	Date 407 30, 1924
Number of sacks of cement used in well seal sacks	Drilling Machine Operator's License No.	101
Number of sacks of lightonite used in well seal from sacks Brand name of bentonite Automation from from from from from from from from		
Number of pounds of bentonite per 100 gallons	Water Well Contractor's Certification:	···
of water 6.5 liss /100 gals.	This well was drilled under my juriso true to the best of my knowledge and be	alction and this report is elief.
Was a drive shoe used! Tes I No Plugs Size: location ft.	Name HARPOLD HARTLI	NE
Did any strata contain unusable water? 🗆 Yes 🗐 No	(Person, firm or corporation)	(Type or print)
Type of water? depth of strata	Address BQX 124 ONTARIC	2 ORCI
Method of sealing strata off	Isimal Delamatel E. D.L	notions
Was well gravel packed? D Yes D No Size of gravel:	[Signed]	tractor)
vel placed fromft toft	Contractor's License No. 2.7.3 Date	Sept 30, 1974
USE ADDITIONAL S	HEETS IF NECESSARY)	SP+45658-119

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NOTICE TO WATER WELL CONTRACTOR WWATER WELL The original and first copy of this report are to be filed with the STATE ENGINEER; SALEM, OREGON 97310 (Please type	OREGON UCT 1 7 1974 State Well No. 215 46E - 22 DC
within 30 days from the date of well completion. (Do not write abo	
) OWNER: Name BOB A Degrave	(10) LOCATION OF WELL: <u>County Mathews</u> Driller's well number
Address Address (check):	<u>SW W W W Section</u> T. 7/ R. 46 E .W.M. Bearing and distance from section or subdivision corner
New Well Diepening Diepening Reconditioning Abandon I If abandonment, describe material and procedure in Item 12.	(11) WATER LEVEL: Completed well.
(3) TYPE OF WELL: (4) PROPOSED USE (check): Rotary Drivel D Cable D Jetted D Domestic D Industrial D Municipal D	Depth at which water was first found 204 ft. Static level 191 ft. below land surface. Date $5-9-74$
(5) CASING INSTALLED: Threaded Weided	Artestan pressure Ibs. per square inch. Date (12) WELL LOG: Diameter of well below casing
Diam from the to the Gage 250	Depth drilled 520 ft. Depth of completed well 520 ft. Formation: Describe color, texture, grain size and structure of materials; and show thickness and nature of each stratum and aquifer penetrated,
(3,	with at least one entry for each change of formation. Report each change in position of Static Water Level and indicate principal water-bearing strata. MATERIAL From To SWL
Size of perforations to the second se	Brown tank 18 -
perforations from ff. to ft.	And y Per Stould 28 93 fine figure same 93 130 Brave Same Stone 130 150
(7) SCREENS: Well screen installed? Ves I No Manufacturer's Name Type Model No.	Brown Acarly Clay 1100 189 More Clay 189 204
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(8) WELL TESTS: Drawdown is amount water level is lowered below static level Was a pump test made? E Yes D No If yes, by whom? findle	Brun thinky Very 284 306 Blue Chang And Life 300 315 Bulle Clarg 318 405
d: 25 gal/min. with 30° ft. drawdown after 2 hrs.	Blue Clark 478 442 Blue Clark 478 442
" Teal/min. with ft. drawdown after hrs. Bailer test I gal/min. with ft. drawdown after hrs.	But Clother - 1149 504 Per Honel 504 505 New Claw - 505 520
 (9) CONSTRUCTION: 	Work started $7-3/-1974$ Completed $9-1/2$ 1974 Date well drilling machine moved off of well $9-1/2$ 1974
Well seal-Material used <u>Mart Court</u> Well sealed from ladd surface to <u>10</u> Diameter of well boil to bottom of seal <u>10</u> in <u>10</u> Diameter of well boil below seal <u>10</u> in <u>10</u>	Drilling Machine Operator's Certification: This well was constructed under my direct supervision. Materials used and information reported above are true to my best knowledge and belief. [Signed] Supervision Date 40730 1924
Number of sacks of sement used in well seal sacks Number of sacks of lightonite used in well seal sacks	[Signed] <u>A. L. A. J/ALLLA</u> Date <u>A. C. 19/7</u> (Drilling Machine Operator) Drilling Machine Operator's License No. <u>///</u>
Brand name of bentonite Number of pounds of bentonite per 100 gallons of water	Water Well Contractor's Certification: This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief. Where HHRCLD HARTLING
Did any strata contain unusable water? Yes No Type of water? Method of sealing strata off	Name // /////////////////////////////////
Was well gravel packed? Yes No Size of gravel: vel placed from ft.	[Signed] (Water Well Contractor) (Water Well Contractor) Contractor's License No. 27.3 Date Sept 30, 1974
USE ADDITIONAL SE	HEETS IF NECESSARY) SP-45656-119

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Cross section of the Treasure Valley in the Parma area for the TVHP (Treasure Valley Hydrologic Project): Notes on Geology of the Parma area, Payette, Canyon and Owyhee Counties, Idaho

by Gregg Beukelman February 8, 1997 Department of Geosciences, Boise State University Boise, Idaho 83725 tele: 208-385-1631, fax 385-4061, email: gbeukelm@trex.idbsu.edu

Introduction

The report and enclosed data are a preliminary compilation of information along a transect extending NE-SW in the Parma area, to show the nature of the Late Cenozoic stratified sediments in the upper portion (~ 1000 feet) of the western Snake River Plain (Fig. 2). Included for each well along the transect are the well owner, Land Office Grid coordinates, surface elevation (± 10 feet), and diagrams of well construction and lithology. Lithology, taken from well drillers' reports on record at the Idaho Department of Water Resources and the U. S. Geological Survey, is plotted in detail where distinctive units of lithologic or hydrogeologic significance are well documented by the driller. Individual drillers' reports are attached to the report should the user wish more detail. Also included is a geologic cross section drawn to show correlatable distinctive lithologic and hydrogeologic boundaries encountered in each well. A 1:100,000 map of the area is included showing the route of the transect (A-A'), individual well owners and surface geology (taken from Othberg and Stanford, 1992).

Methods

The cross section included is a graphical presentation of subsurface lithologies based on water well drillers reports and data from a single deep exploration well (Highland L & L). Wells along a NE-SW transect were selected to ensure maximum section coverage and U. S. Geological Survey monitoring wells were included where possible. For each well included in the profile (1:24,000 horizontal) the stratigraphic section and well construction, as reported in the drillers logs, were plotted at a vertical scale of 1:1,200 (attached sheets). Correlations were made at this scale and all data digitized and reduced to produce the cross section in figure 2. Accuracy of all elevations is probably \pm 10 feet. Elevations of the contacts at the top of the lacustrine claystone (+1340-ft) and the underlying basalt (-1200-ft) are taken from a lithologic log accompanying the drillers report for the Highland L & L exploration well (Minus signs indicate elevation below sea level).

Structure

The structural nature of this area of the plain is inferred to be a normal fault-bounded graben. Faults are thought to be older inactive structures owing to their lack of surface expression and no offset of Pleistocene gravels and overlying Bonneville Flood deposits. Evidence for a major fault north of and adjacent to the Snake River is the rather monotonous

thickness of clay seen in the wells to the south. These sediments have been interpreted by Ekren and others (1981) to be Miocene Poison Creek Formation. Clays of this thickness are not encountered across the fault in the shallow wells to the north but occur only at much greater depth in the Highland L & L well, suggesting a minimum offset of 350 feet. Several other normal faults are interpreted based on offset of a very distinctive color boundary between overlying brown sediments and underlying blue sediments. One such fault occurring south of the Highland L & L well correlates with a similarly north facing normal fault that offsets basalt at depth (basalt at -1200-ft elevation in the Highland L & L well) as interpreted by Wood (1997). Based on the sediment color change boundary, the section appears to have no discernable dip (0.04° to the south between the Obendorf and City of Parma wells).

Stratigraphy

The sedimentary section contains Late Cenozoic fluvial and lacustrine deposits overlying a basement of basalt that varies in elevation along the profile from -1200-ft to -3200-ft. Surficial sediments include modern flood plain deposits, Bonneville Flood slack water fine sediments, gravel deposits of Pleistocene age, and older Tertiary age sediments. Much of the middle portion of the transect is mantled by silts and clays of Bonneville Flood slack water origin. These fine sediments commonly overlie terrace gravels including from youngest to oldest: Gravel of Boise Terrace, Gravel of the Bonneville Flood scoured Whitney Terrace, Gravel of Whitney Terrace, and Gravel of Deer Flat Terrace.

Beneath the surficial sediments occur a complex sequence of interfingering gravels, sands and clays which are interpreted to represent fluvial and shallow lacustrine deposits. This section contains an upper portion in which sediments are commonly some shade of brown and a deeper portion having sediments that are described as blue in drillers logs. The boundary between these color-defined units occurs at 2200-ft \pm 50 ft elevation and appears in all well logs. The nature of this type of boundary is not well understood but is believed to reflect differences in depositional environment. The blue colored sediments are thought to be an indication of a chemically reducing depositional environment characteristic of lake deposits. The brown colors are more likely caused by oxidation of iron-bearing minerals under unsaturated conditions. Thus, these sediments are thought to represent alluvial, fluvial, and lake margin deposits which would be more apt to be oxidized. A complication to this interpretation is the effect of recharge by oxygenated waters on reduced (blue) iron minerals. Groundwater that is high in dissolved iron can be associated with the oxidation of reduced iron minerals at a contact between oxidizing and reducing conditions. Evidence in the Parma area, such as the uniform elevation of the contact and its lack of any identifiable deflection in the Boise River or Snake River areas (which might be thought to be recharge sources), suggests that this brown-blue contact is the result of original diagenesis and not greatly affected by later recharge. Therefore, this oxidation/reduction contact may well be useful for geologic interpretation of depositional environments.

North of the major fault in the Snake River area, the deeper part of the sedimentary section is composed of ~ 3000 feet of lacustrine claystone having an upper contact at +1340-ft elevation as recorded in the Highland L & L well. The geometry of the upper contact of this claystone cannot be determined from this cross section as only one well (Highland L & L) penetrates it to any depth. This contact is overlain by the fluvial lacustrine section containing a



significant aquifer section about 1290 feet thick. From water levels in nearby wells (Fig. 2) it appears that its upper 250 feet may be unsaturated. The base of this section, containing sand aquifers, is the top of the pro-delta mudstone facies interpreted by Wood (1994).

Basalt forms a volcanic basement to the sedimentary section. The Highland L & L well penetrates the top of basalt at -1200-ft elevation. Elsewhere along the transect, the topography of the basalt upper contact, as interpreted by Wood (1997) from seismic reflection data, mimics the graben form of the basin. Elevations of the basalt surface range from -2200-ft near the ends of cross section to about -3200-ft beneath the Boise River.

Hydrogeology

The static water level in wells on this transect vary greatly having a range of 180 feet and no easily discernable trends with the exception of a decline in the proximity of the Boise River. Static level in wells completed in the thick Tertiary sediment section north of the Boise Valley range from 2300-ft to 2380-ft elevation. Southward, within the Boise Valley and north of the Boise River, the level drops to about 2200-ft. Between the Boise River and the Snake River static water levels range from 2290-ft to 2340-ft with a trend of decreasing elevation nearer the Boise River. Only one well south of the Snake River is included in the transect so no trend south of the river is evident but the one water level is similar to those north of the river.

Two wells included in this cross section are part of the U.S. Geological Survey monitoring well program. The Skogsburg well (NW1/4,SW1/4,S.35,T6N,R5W) has a static water level of 2308-ft elevation as measured 3/21/96. The drillers found water in a sand and clay layer at a depth of 220-240 ft below the surface but the well is fully cased to its bottom at 322 ft making it likely that most of the water produced by this well is coming from a sand layer at its bottom (2073-ft elevation). The second well included in the monitoring program is the Paulson well (SE1/4,NW1/4,S.10,T4N,R5W) which has a static water level of 2340-ft elevation as measured 3/21/96. The drillers of this well report water in sandy and gravel units at 108'-125', 160'-165', 180'-250', and 300'-306' below land surface. The borehole is cased from the surface to the bottom (2117-ft elevation) with perforations in the bottom three feet making it likely that the principal water producer is a coarse sandy gravel at the bottom six feet of the borehole.

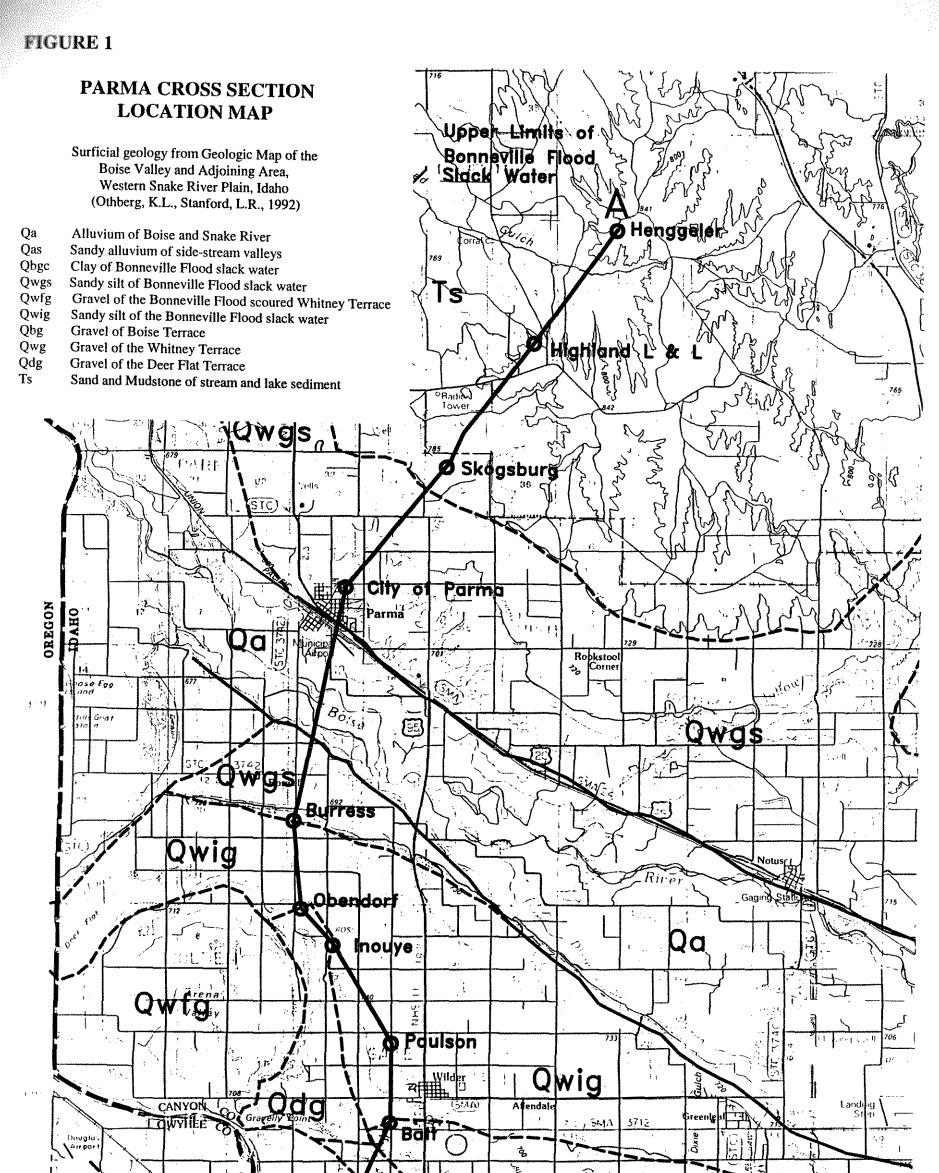
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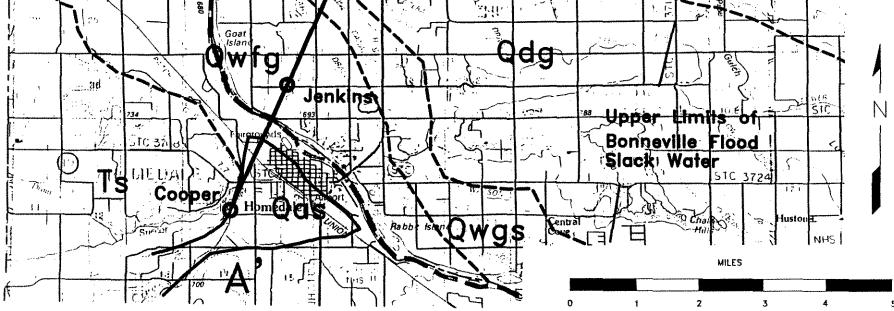
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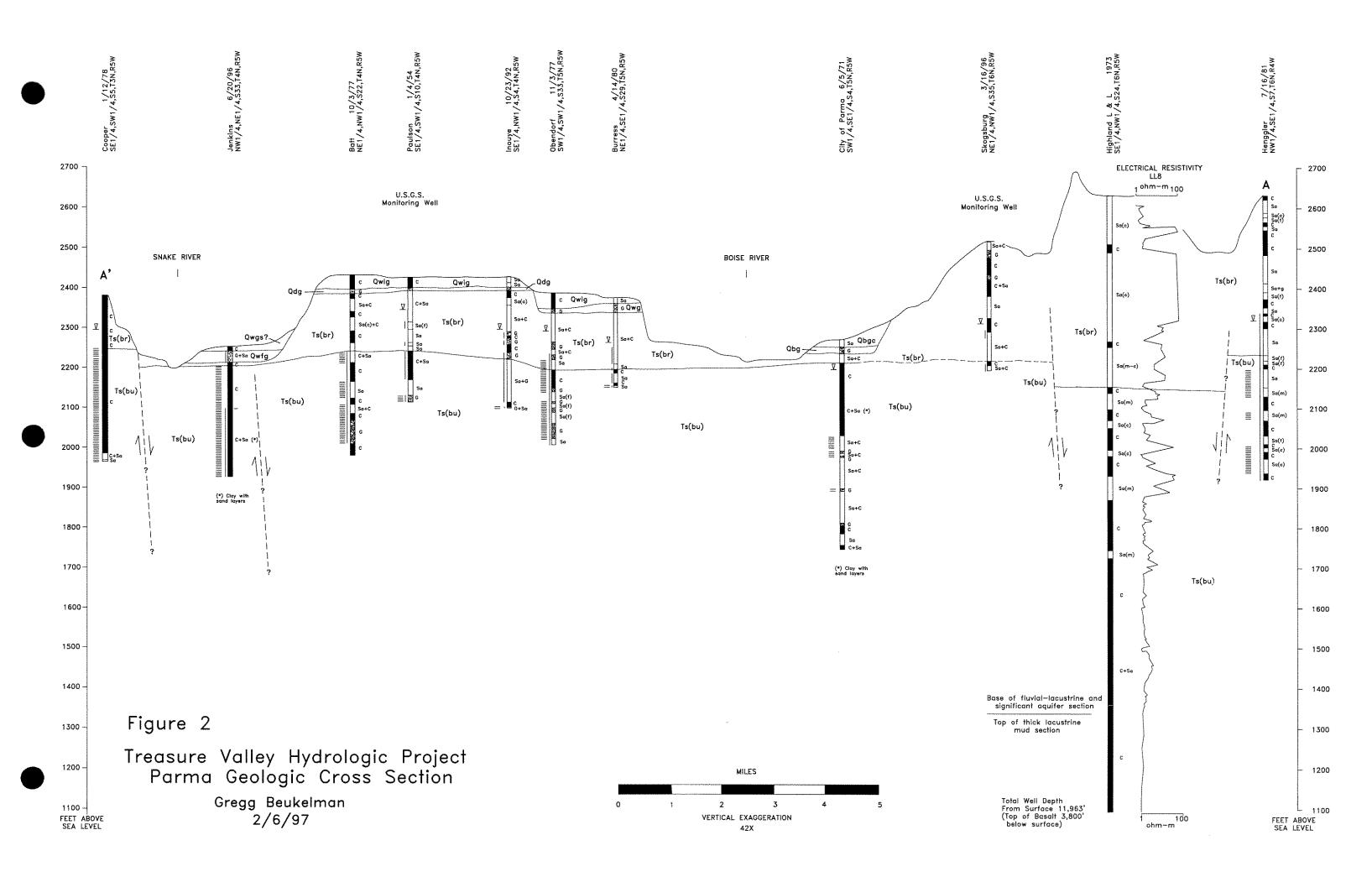
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- Wood, S.H., 1994, Seismic expression and geological significance of a lacustrine delta in Neogene deposits in the western Snake River Plain, Idaho: American Association of Petroleum Geologists Bulletin, v. 78, no. 1, p. 102-121.

Figures and enclosures

Figure 1	Map (1:100,000) showing cross section transect, wells used in cross section, and surficial geology.
Figure 2	Cross section of geology and hydrogeology across the western Snake River Plain in the Parma, Idaho area.
Figure 2a	Legend for cross section
Attached	Eight panels of wells used in cross section showing lithology and well construction.
Attached	Drillers reports of selected wells.







Cross section of the Treasure Valley in the Notus area for the TVHP (Treasure Valley Hydrologic Project): Notes on Geology of the Notus area, Gem, Payette, Canyon and Owyhee Counties, Idaho

by Gregg Beukelman February 18, 1997 Department of Geosciences, Boise State University Boise, Idaho 83725 tele: 208-385-1631, fax 385-4061, email: gbeukelm@trex.idbsu.edu

Introduction

The report and enclosed data are a preliminary compilation of information along a transect extending NE-SW from the Emmett Valley, southwest near the town of Notus and to the south of the Snake River (Fig. 1). The intent of this report is to show the nature of the Late Cenozoic stratified sediments in the upper portion of the western Snake River Plain (Fig. 2). Included for each well along the transect are the well owner, Land Office Grid coordinates, surface elevation (± 10 feet), and diagrams of well construction and lithology (attached). Lithologies, taken from well drillers' reports on record at the Idaho Department of Water Resources and the Boise office of the U. S. Geological Survey, are plotted in detail where distinctive units of lithologic or hydrogeologic significance are well documented by the driller. Individual drillers' reports are attached to the report should the user wish more detail. Also included is a geologic cross section drawn to show correlatable distinctive lithologic and hydrogeologic boundaries encountered in each well. A 1:100,000 map of the area Fig. 1) is included showing the route of the transect (A-A'), individual well owners and surface geology (taken from Othberg and Stanford, 1992).

Methods

The cross section included is a graphical presentation of subsurface lithologies based on water well drillers reports. Wells along a NE-SW transect were selected to ensure maximum section coverage and U. S. Geological Survey monitoring wells were included where possible. For each well included in the profile (1:24,000 horizontal) the stratigraphic section and well construction, as reported in the drillers logs, were plotted at a vertical scale of 1:1,200 (see attached sheets). Correlations were made at this scale and all data digitized and reduced to produce the cross section in figure 2. Accuracy of all elevations is probably \pm 10 feet. Elevations of the contacts at the top of the lacustrine claystone are interpreted from lithologic and electrical resistivity logs for the Oroco Oil Company Richardson #1 and Sundance Oil Company Caldwell Hunter Linning #1-30 deep exploration wells. The elevations for the top of the basement Miocene basalt are taken from a structural contour map of this contact (Wood, 1997).



Structure

The structural nature of this area of the plain is inferred to be a normal fault-bounded graben. Faults are thought to be older structures owing to their lack of surface expression and the absence of offset in Pleistocene gravels and overlying Bonneville Flood deposits. Evidence for a major north facing fault south of the Snake River is the rather monotonous thickness of clay seen in the Lineberger well. Nearby sediments having a similar appearance are mapped by Ekren and others (1981) as Miocene Poison Creek Formation. Thick clay units are not seen as similar elevations in the Asumendi well just across the river to the north suggesting a minimum offset of 400 feet. North of the Snake River, evidence suggests the presence of a five mile wide upthrown block (horst) based in elevations of the clay dominant section. This structure, as identified in the upper stratigraphy of the basin, correlates with a topographic high on the surface of the basement basalt (Wood, 1997). Several other normal faults, all having offsets less than 120 feet, are interpreted based on offset of a very distinctive color boundary between overlying brown sediments and underlying blue sediments. A south facing fault just north of the Lane well correlates spatially with a fault seen in the Miocene basalts but in the sediments appears to have an opposite sense of displacement. The north facing normal fault just north of the Gottesch well and along the southern margin of the Emmett Valley correlates well with the northwest extension of a similarly facing basement fault (Wood, 1997). Based on the sediment color change boundary, the section appears to have no discernable dip along the NE-SW oriented line of section (0.04° between the Frisby and Gottesch wells).

Stratigraphy

The sedimentary section contains Late Cenozoic fluvial and lacustrine deposits and an interbedded basalt unit overlying a basement of basalt that varies in elevation along the profile from -2000-ft to -3200-ft (Minus signs indicate elevation below sea level). Surficial deposits include modern flood plain deposits, Bonneville Flood slack water fine sediments, gravels of Pleistocene age, and older Tertiary age sediments. Low lying portions of the profile adjacent to the Boise and Snake River courses are mantled by sediments of Bonneville Flood slack water origin. There are typically silts and clays and commonly overlie terrace gravels including from youngest to oldest: Gravel of Boise Terrace, Gravel of Whitney Terrace, Gravel of the Wilder Terrace, and Gravel of Deer Flat Terrace. In the Emmett Valley a valley bottom gravel may be a modern alluvial deposit (Qal) of the Payette River or part of a older terrace with correlation to the Boise Terrace. A thin (approximately 10 feet) perched gravel occurring in the Gottesch well at 2390-ft elevation may also be a remnant of a Pleistocene terrace.

Beneath the surficial sediments is a complex sequence of interfingering lenses of gravels, sands, and clays which are interpreted to represent fluvial and shallow lacustrine deposits. This section contains an upper portion in which sediments are commonly some shade of brown, tan, or yellow and a deeper portion having sediments that are described as blue in drillers logs. The boundary between these color-defined units occurs at 2250-ft \pm 75 ft elevation and appears in most well logs. The brown-colored unit is up to 300 feet thick beneath the uplands north and south of the Boise River, but has apparently been mostly removed by erosion by the Boise River Valley beneath the lowlands. The nature of this type of boundary is not well understood but is believed to reflect differences in depositional environment. The blue colored sediments are

thought to be an indication of a chemically reducing depositional environment characteristic of lake deposits. The brown colors are more likely caused by oxidation of iron-bearing minerals under unsaturated conditions. Thus, these sediments are thought to represent alluvial, fluvial, and lake margin deposits which would be more apt to be oxidized. Alternatively, it is also possible that recharge by oxygenated waters percolating through reduced (blue) iron minerals may oxidize formerly blue-gray colored deposits. Groundwater that is high in dissolved iron can be associated with the oxidation of reduced iron minerals at a contact between oxidizing and reducing conditions. Evidence in the area of the transect, such as the uniform elevation of the contact and its lack of any identifiable deflection near either the Boise River or Snake River (areas which might be thought to be recharge sources), suggests that this brown-blue contact is the result of original diagenesis and not greatly affected by later recharge. Therefore, this oxidation/reduction contact may well be useful for geologic interpretation of depositional environments.

North of the major fault in the Snake River area, the deeper part of the sedimentary section is composed of about 2800 feet of lacustrine claystone. The upper contact of this section is at 620-ft or 815-ft elevations as interpreted from the electrical resistivity logs of the Richardson #1 and Caldwell Hunter Linning #1-30 deep exploration wells respectively. The geometry of the upper contact of this claystone cannot be determined from this cross section as only the deep exploration wells penetrate it. Included within the claystone section is an approximately 400 foot thick volcanic unit of interbedded basaltic flows and tuffs. This basalt can be seen on seismic reflection data (Lariat Exploration-BB2 line) and in the Caldwell Hunter Sinning #1-30 well where its top is penetrated at -1000-ft elevation. The claystone section is overlain by a fluvial-lacustrine section containing a significant aquifer section a minimum of 900 feet thick. Beneath the uplands north of the Snake River the base of this section, containing sand aquifers, is the top of the pro-delta mudstone facies interpreted by Wood (1997).

Basalt forms a volcanic basement to the sedimentary section. Although no wells along the transect penetrates the top of the basalt, seismic reflection data from the Lariat Exploration-BB2 line suggest that its upper contact is at about -2400-ft elevation in the area of the Pioneer Irrigation well. Elsewhere along the profile, the topography of the upper contact of the basalt, as interpreted by Wood (1997) from seismic reflection data, mimics the graben form of the basin with the exception of the topographic high between the Snake River and the Boise River. Elevations of the basalt surface range from -2000-ft near the southern end of the cross section to about -3200-ft farther to the northeast.

Hydrogeology

With two exceptions, the static water level in wells along this transect vary only 130 feet in elevation. One exception is the Asumendi well located adjacent to the Snake River having a static water level of 2190-ft and the other is the Hillard well in the highlands between the Boise River drainage and the Payette River drainage that has a water level of 2580-ft. The Woods well in the Emmett Valley was completed into a thick section of clay to an elevation of 1940-ft and is flowing artesian. Most of the wells between the Emmett Valley and the Boise River are completed in the alluvial, fluvial, and shallow lacustrine section and behave as unconfined of semiconfined. Between the Boise River flood plain and the Snake River the static water level is



rather consistent, ranging from 2390-ft to 2340-ft elevation with a trend of decreasing elevation nearer both water courses. Only one well south of the Snake River is included in the transect so no trend south of the river has been studied, but the one water level is about 125 feet lower than the others north of the river.

Five wells included in the cross section are part of the U. S. Geological Survey monitoring well program:

- The Pioneer Irrigation well (SE1/4, NW1/4, S22, T4N, R4W) has a static water level of 2340-ft as measured on 9/19/96. The well is cased for the upper 65 feet if its total 132 foot depth making it likely that water is from a sand at 2220-ft elevation. This sand unit is behaves as a semiconfined aquifer.
- The Clement well (SW1/4, NW1/4, S36, T5N, R4W) has a water level of 2340-ft as measured on 3/21/96 and the upper 125 feet of its total 146 foot depth is cased. A sand unit at 2228-ft is the likely source of the water and is acting as a semiconfined aquifer.
- The Copp well located in the NE1/4, NW1/4, S24, T5N, R4W is completed to a depth of 448 feet in the upper alluvial, fluvial, and lacustine sediments. Its static water level is at 2373-ft elevation and is cased a total of 420 feet with screened intervals that allow sand lenses to supply water.
- The Hanson Livestock Co. well (NW1/4, NE1/4, S16, T5N, R4W) is completed to a depth of 333 feet and is cased its entire depth. Perforations in the bottom 70 feet and a gravel pack likely allow for supply of water by a higher unit (2250-ft) which behaves as an unconfined aquifer.
- The Lane well (NE1/4, SW1/4, S35, T6N, R4W) penetrates the upper section of alluvial, fluvial, and lacustrine deposits to a depth of 362 feet. The sediments in the lowest 70 feet of the borehole are all water bearing but the well is cased its entire depth making it likely that the sand unit at 2265-ft elevation is the primary water source.

References

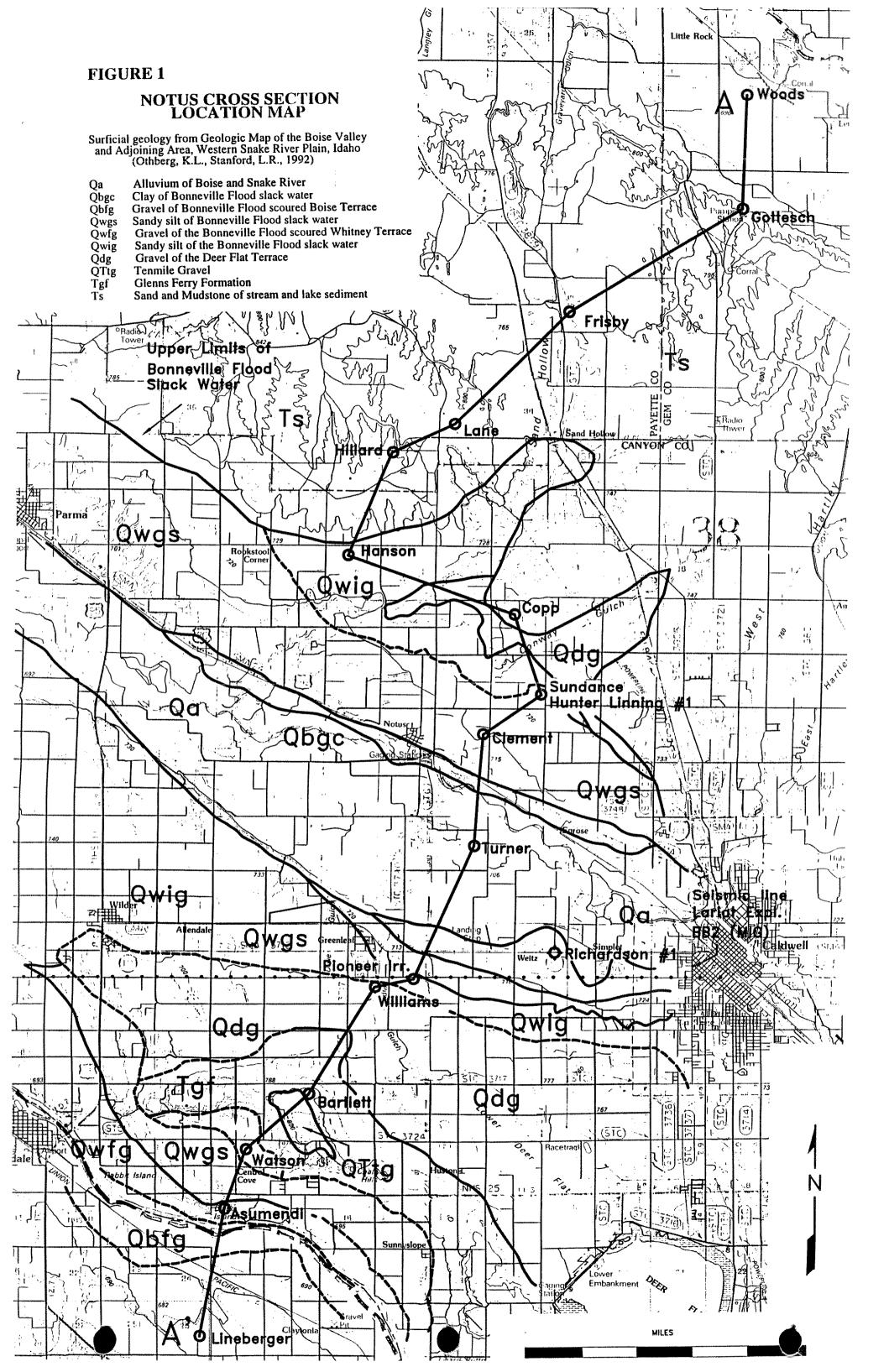
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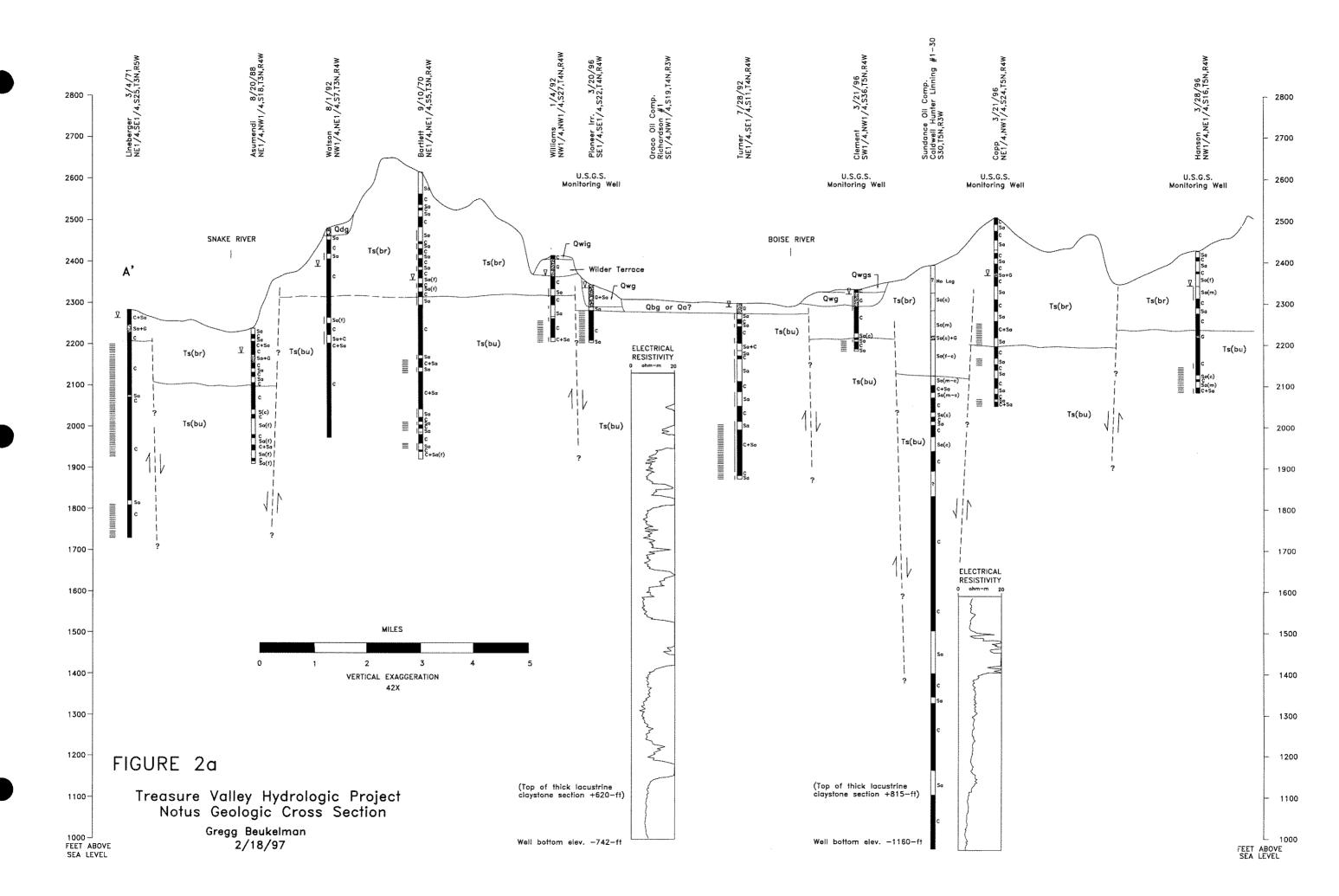
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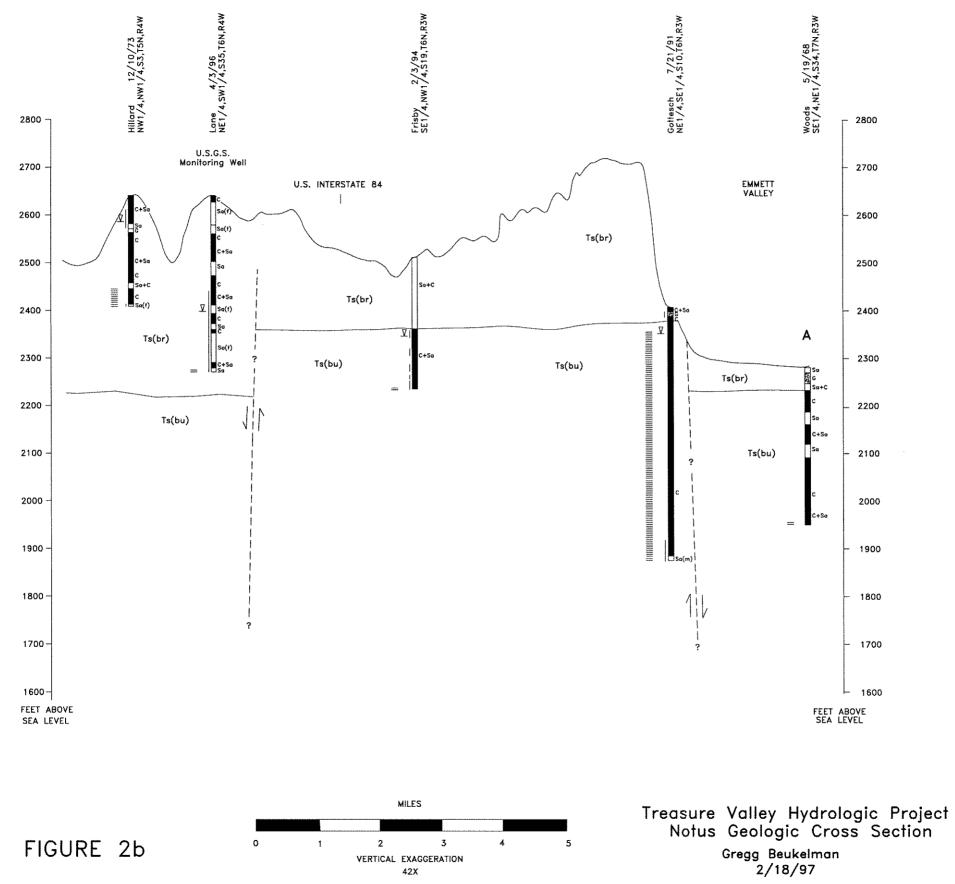
Wood, S.H., 1997, Structural contour map of the top of Miocene basalt basement rocks, western Snake River Plain, Idaho: Report for Idaho Department of Water Resources (2 sheets, 1:100,000).

Figures and enclosures

- Figure 1 Map (1:100,000) showing cross section transect, wells used in cross section, surficial geology, location of deep exploration wells, and seismic reflection line.
- Figure 2a & b Cross section of geology and hydrogeology across the western Snake River Plain in the Notus, Idaho area.
- Figure 2a Legend for cross section
- Attached Eleven panels of wells used in cross section showing lithology and well construction.
- Attached Drillers reports of selected wells.



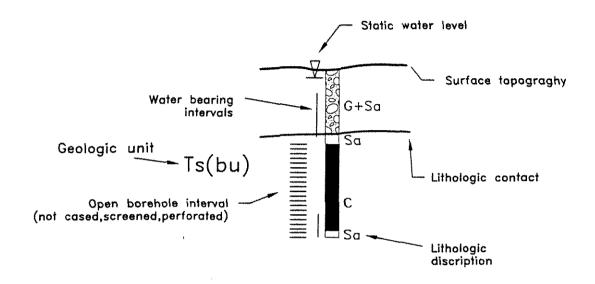




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CROSS SECTION LEGEND

Diagram of Typical Well Interval



GEOLOGIC Units (After Othberg and Stanford, 1992)

- Qa Alluvium of Boise and Snake River
- Qas Sandy alluvium of side-stream valleys
- Qbgc Clay of Bonneville Flood slack water
- Qwgs Sandy silt of Bonneville Flood slack water
- Qwfg Gravel of the Bonneville Flood scoured Whitney Terrace
- Qwig Sandy silt of the Bonneville Flood slack water
- Qbg Gravel of the Boise Terrace
- Qwg Gravel of the Whitney Terrace
- Tdg Gravel of the Deer Flat Terrace
- Ts Sand and Mudstone of stream and lake sediment

WELL LITHOLOGIC ABBREVIATIONS

G	Gravel
Sa(c,m,f)	Sand (coarse, medium, fine)
С	Clay

When two sediment sizes are combined (C+Sa) the first sediment is the most abundant.

Color modifiers: Brown (Br) and Blue (Bu) are included for Tertiary sediments

i	USE TYPEWRITER OR
1	BALL POINT PEN
۰.	omatery - estand-demonstration

Stat	te d	ab.	10
Department	of	Water	Rescurrence

WELL DRILLER'S REPORT

State law requires that this report be filed with the Director, Department of Water Resources within 30

days after the completion or					
1. WELLOWNER (Cooper)	7. W	ATER	LEVEI.	*** *********************************	- 7
Hame BaisE CASCANC				SC Teet below land surface	
Address HEHEDRE TOPHC	1	empera	lure "	F. Justiny 14615. 600 0	
Owner's Permit No.	Ċ	onn clie	ciosed-ir of by	Diversion Diversion Capital Play	i
2. NATURE OF WORK	8 V.	ELLT	ESTDA	TA	
🛠 New well 🛛 Deepened 🔲 Replacement	_] Pump		Bailer D Other	j
[] Abandoned (Jescribe method of abandoning)		ischarge		Draw Down Hours Pu	mped
					·
3. PROPOSED USE					
🖄 Domestic 🗋 Irrigation 🔲 Test 🛄 Other (specify type)	9.	LITHOL	.ogic L	.06	ĺ
Municipat Industrial Moste Disposal or Misction	Hole Diam.	De From	eth To	Matarial	Water Yes No
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				STICKY BROWNCERY BREAK CLAY JESKUS	-4
X Cable El Rotory Dug D Other		128	390	BLUCCLBY	
5. WELL CONSTRUCTION	ļ	250	405	SANDY BLUCCLAY	
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inches feet feet feet					
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Perforated? Ves SY No	<u> </u>	+	+		┼─┼─┤
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perforations feet feet	<u> </u>	1	1	<u> </u>	╉━╾┽╼╼┨
perforations feet feet feet		-	ļ		
feet feet	<u> </u>		<u> </u>		
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Manufacturer's name Model No.					<u>+</u>
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DiameterSlot size Set from feet to feet	-	+			
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Placed fromfeet tofeet	 	<u> </u>			
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C Puddling clay C Well cuttings Seeling procedure used C Sharry pit C Temperary surface casing	┣──	<u> </u>			
Overbore to seel depth	<u> </u>		!		
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Subdivision Name		Firm Ni	RT-1	ETZER WELL DRLI FUT	No. 23
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Lot Nu Block Ne	1				<u> </u>
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County DWIHCO				ind 2	
SE & Sal & Sec 5 T. P NA. R. 5 MW			(C)p	erster)	
	<u>.</u>				
FORWARD	THEY	VHITE	COPY T	O THE DEPARTMENT	

USE AUDITIONAL SHEETS IF NECESSARY

FORWARD THE WHITE COPY TO THE DEPARTMENT

L. WELL OWNER 7. WATER LEVEL Name Fred Batt (VII Are Non Co.) Address Bt., L. UI Lever, Idobs 2007 Owner's Permit No. C. J YY2 Owner's Permit No. C. J YY2 Owner's Permit No. C. J YY2 Image: Constraint of the standard of	wittlin 30 days after the complet	ion of	abando	nment	of the well.	<u>!</u>	
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Abstract NS_L_L_201147_L_(2001 11/2) Temperature	Name _ Fred Batt (Wilder Hop Co.)	S	atic wa	iter iev	elfeet below land	surface.	A
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Signed by (Firm Official)	Las Na Black Na	}			10566 K-Bar-T Drive	•	
County anyon	s box not box not		Addre	**	solse, Idaho 83745	Dete 1	0-12-
	County Canvon		Signe	iby (F	irm Official)	- the second	

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	IDAHO DEPARTMENT OF WATER RESOURCES Office Use Only WELL DRILLER'S REPORT
	Use Typewriter or Baltpoint Pen TwpRgeSec
	1. DRILLING PERMIT NO. 67 -96 - 1. 0394 - 032 11. WELL TESTS:
	2. OWNER: Rolan Tenkan
	K Address 26757 upper Plecent R.L
an a	City Los Idan Yett State ID Do 93/26 Water Temp. 60 Bottom hole temp. 60
a de la compañía de l	3. LOCATION OF WELL by legal description: Water Quality test or comments:
Arter and the second seco	12. LITHOLOGIC LOG: (Describe repairs or sbandonment)
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Variation (Construction) Lines (Construction) Variation (Construction)	
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·9-185 UNITED STATES (October 1950) DEPARTMENT OF THE INTERIOR GEOLOGICAL SURVEY WELL BCHEDULE 434128116551601 Date July 30 , 1953 Field No. 4NSW Record by R. P. S. & FEF 1-4-54 Office No. 10ed 10 Bource of data Driller & 160, Oks, Owner Edd, Location: State Ide hu County Canyon Map State Highway Deet SAN 1 SW 1 800. 10 T A NR 5 2. Owner: Dill Paulson Address Address Driller HE. HUSNOK 4500 Address Normp3 3. Topography Level Terrain 100 4. Elevation _____ ft. above below 3 5. Type: Dug, drilled) driven, bored, jetted Pyran AL WP. 6. Depth: Rept. 306 It. Morpe SCALL III. 7. Casing: Diam. 4 Mark Scall III. Depth 303 IS Tinish Mark For Dorf 8. Chief Acuitan DENE ኮ 5 8. Chief Aquifer _ ALET Others 9. Water level A.J. 3 It rept. 1- 4 19.54 above below which is J. Z. ft above surface at casina Power: Kind Horsepower 12 12. Use: Dom., Stock PS., RR., Ind., Irr., Obs. Adequacy, permanence 13. Quality Soff Taste, odor, color <u>Salfar</u> dor Subrie Vea Unfit for 14. Remarks: (Log, Analy) Etgh ATA-OPPATED STORED 100001 DATI: 08-28-83 WJM 1 4 11 1. SOVERNMENT PRINTING OFFICE 18-42801-1 6463

Bill Paulson Wildow FORM B-1 LOG OF WELL (FOR FIELD COPIES OF DRILLERS LOGS) NUMBER 4.15 (J-1064 STATE COUNTY LOCATION TSEC. DRILLERA, E. Hospok deonADDRESS SOURCE OF DATA PHILERS Low (APPEND CASING RECORD AND ADDITIONAL DATA ON NOTE SHEE DRILLER'S DESCRIPTION THICKNESS DEPTH Soil 4 Clay, avan っ 23 3. MUSU EDDA 7 101 Fine Muddus Juster 12 INDON 4-40 Ter mulet 180 Jandy: Sande 6 / w m 18 SL-1. blue silts and sand + water 2 2 208 and fine : running stass リッ 350 Sand Fine midd 7 289 Gusual & san 292 Gravel & Sand, Water 300 Sond Cornse Sou anove 306 PAGE 2 OF 2 PAGES

	1. WELL OWNER Name _ Kris Incuye Address _ 23605 Rodeo In, Parma, ID 83660 Drilling Parmit No 63-92-H-0928-000 Water Right Permit No	7. WATER LEVEL. Static water level <u>125</u> feet below land surface. Flowing? I Yes E No Artesian closed-in pressure <u>pail</u> Controlled by: Valve, I Cap I Plug Temperature <u>97</u> Quality Coorbe enteries of emperature spres below.
	2. NATURE OF WORK 2. Now well Deepened Replacement Abandoned (describe abandonment or modification Abandoned (describe abandonment or modification procedures such as liners, screen, materials, plug depths, etc. in lithologic log, section 9.)	WELL TEST DATA Drump Baller S Air Other Discharge 0.P.M. Pumping Larel Hnure Pumped 145 175 4
*	3. PROPOSED USE 10 Domestic Infigation Monitor industrial Stock Waste Disposal or Injection Other(specify type)	9. LITHOLOGIC LOG Bore Depth Dism. From To
	4. METHOD DRILLED DX Rotary SD Air D Auger D Reverse rolary Cable D Mud D Other (Deckhoe, hydraulio, etc.)	12* 0 6 Top soil X X 12* 6 16 Sandstone X X 12* 16 34 Sand & gravel X X 12* 16 34 Sand & gravel X X 12* 34 36 Brown clay X X 8* 36 54 Brown clay X X 8* 36 54 Down clay X X
	5. WELL CONSTRUCTION Casing schedule: 52 Steel Concrete Conter Thickness Diameter Prom To Prom Prom To Prom Prom To Prom Prom To Prom Prom	• 71 78 Brown clay Performance First and the set of the s
	Was casing drive shoe used? D Yes D No Was a packer or seal used? D Yes D No Perforated? D Yes D No How perforated? D Factory D Knife D Torch D Gun Size of perforation? Inches by Inches	# 123 137 Prom clay Prom cla
	perforations feet feet feet feet feet feet feet fee	200 207 Bloe snale register that a start a sta
23 3 44,	Diameter Slot size Set from let for for for Diameter Slot size Set from for to for Gravel packed? I Yes & No D Stae of gravel Placed from for the form	
	Surface seal depth 35 Material used in seal: Cement groot C Bentonite C Puddling clay at C Cement groot C Surface casing C Overbore to seal depth Method of folning casing: C Cemented between strate C Cemented between strate	
	Describe access port Sanitary well cap s. LOCATION OF WELL Sketch map location must agree with written location. Subdivision Name	10/20/92 minined 10/23/92 minined 10/23/
	Address of Wett Site Same as above	Address Parma, ID 83660 0me 11/23/92

M. T. CIN	
STAT. V	FIDAHO GENERAL GENERAL G-387
USE TYPEWRITE; OIL BALLPOINT PEN	
State in requires that this report be filed with	the Director, Department of Water Resources
within 30 days after the complet	7. WATER LEVEL
Name Ray Obendorf	Static water level 93_ feet below land surface.
Address Rt. L. Patnia, Idaho 8366	Flowing? U Yes 13 No G.P.M. flow
Owner's Permit No.	Artesian closed-in pressure P.s.i. Controlled by: D Valve 11 Cap D Plug
	8. WELL TEST DATA
2. NATURE OF WORK	
XX Nev well Deepened Replacement	Hump Bailer D Other Discharge G.P.M. Drawdown Heart Fumped
Abandonad (describe method of abandoning)	
3. PROPOSED USE	
Domestic 🗶 irrigation D Test D Other (specify type)	9. LITHOLOGIC LOG
Municipal Industrial Stock Watte Disposal	Hole Depth
er injection	Diam. From To Menorial Yor Na 73 0 15 Topsoil, Hardpan, Clay
Cable X3 Rotery Dug D Other	15 25 Brn. Clay, some Hardpan & Gravel 25 41 Brn. Clay
	41 44 Sand & C. avel 48 52 Brn. Lav
5. WELL CONSTRUCTION Diameter of hole inches Total depth feet	52 87 Fire Brn. Sand 87 93 Brn. Clay w/some Sand
Casing schedule: XX Steel Concrete Thiskness Dismoter Fram Te	99 104 Brn. Clay 194 122 Fine to Coarse Brn. Sand
.270 inches 16 inches + 2 feet 155 feet .270 inches 16 inches 245 feet 265 feet	122 140 Gravel w/some Clay
.270 inches 16 inches 335 feet 375 feet inches inches feet feet	149 132 BTD. Clay W/Gravel
inches inches feet Was casing drive shoe used? "yes DI No was	155134 Fine to Coarse Sand
Was a packer or seal used? C. Yes DI No Perforated? D Yes DI No	191 202 Blue Clay w/some Sand & Cravel 202 215 Blue Sand w/some Clay
How perforated? Factory Knite Torch Size of perforationinches by inches	215 219 Coarse Sand & Gravel
Namber Frem Te	222 233 Sand & Gravel w/some Clay
perforationsfeet	237 242 Pea Gravel
perforations feet feet	265 273 Gravel 273 273 Fine Sand w/some Gravel
Menufacturer's name <u>Roscoe Moss</u> Type <u>Model No.</u>	282 293 Grav's
Diameter 16 Stot size 80 Set from 155 feet to 245 feet Diameter 16 Stot size 80 Set from 265 feet to 355 feet Grant patient VIII Vee II No. Strand Feet to 355 feet to	1301 309 Gravel
Piaced from 35 feet to 375 feet	- 1320 342 Gravel
Surface seal depth 351 Material used in seel: Cament group DI Puddling clay	362 374 Fine to Med. Blue Sand
Sealing procedure used: Sturry pit D Temporary surface casing O Overbore to seal dept	
6. LOCATION OF WELL Sketch map location must agree with written location.	10.
	Work started 10-11-77 finished 11-3-77
Subdivision Name	- 11. DRILLERS CERTIFICATION
	- Firm Name Petr Cope Drilling Co. Inc. 213
Lot No Block No	Address Boise, Idaho 83705 Date 11-4-77 26
County Canyon	Signed by (Firm Official)
USE ADDITIONAL SHEETS IF NECESSARY -	FORWARD THE WHITE COPY JO THE DEPARTMENT

6-390 DRILLER S REPORT WELLOWNE BALL BOWE ow land surface. NZ VALGAND 8366NI ~{ 9H8 NATURE OF WOR WELDTEST DATA New Well - Mil 6 Southanty (mir) od of abar Abandonet 3. PROPOSED USE A Domenic self-ingations (IN Press Humicia D: Industrial (D) Sloce - I W at D) control in (D: Industrial (D) Sloce - I W at D) control in (secir) Ves No METHOD DRILLED Cable Contraction La Hydrialic a Hill WELL'CONSTRUCTION Casing schedules (LL Stells in PC) Thickness The U N.S. Str KITCHI Inches Cinchel 272 casing drive shoe used? We spectroof in Diada (Diada (Dertor tion Type Sold size Model NCS Diameter Slot size Set from Set from Gravel packed? Sold size Set from Gravel packed? Sold size Set from Placed from Surface seal depth 22 / Moterfall the first size / Content Set face seal depth 22 / Moterfall the first size / Content Set face seal depth 22 / Moterfall the first size / Content Set face seal depth 22 / Moterfall the first size / Content Set face seal depth 22 / Moterfall the first size / Content Set face seal depth 22 / Moterfall the first size / Content Set face seal depth 22 / Moterfall the first size / Content Set face seal depth 22 / Moterfall the first size / Content Set face seal depth 22 / Moterfall the first size / Content Set face seal depth 22 / Content size / Content Set face seal depth 22 / Content size / Co Method of Johning Calify 2 Municipal Webber 14.1.1 U Cemental Detwo MULLEY Describe access port A and a second DEDENCLERE CERTIFICATION 6. LOCATION OF WELLS And senting in a usal minute of the senting of the Sketch map location must agree N Subdivision Name w 17.356 : x Lot No. Block No. d by (Firm Official 3ACTE APRIX Hirth of COUNTY CANYON SMINL TEAT SECON NE 1 SE 1 Sec. 29 .T. 5 N/6. H. USE ADDITIONAL SHEETS IF NECESSARY **ORWARD THE WHITE**

DEPARTMENT OF IDAHOTELE DEPARTMENT OF WATER RESOURCE WELL DRILLER'S REPO Statement requires that the report of flad with the Director, Department Statement requires that the report of flad with the Director, Department

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As - Depth and As a second state of the second	Natural Constants of Y
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1 292 302 Clay 200 10	The Party of the P
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Property and the second s	
N.C.ISTA	a na an
	A* 15A* 1A7* Name N



REPORT OF WELL DRILLER State of Idaho

Department of Reclamation

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State law requires that this report shall be filed with the State Reclamation Engineer within 30 days after completion or abandonment of the well.

30641

Nome 11/12 // TARKII/	Size of drilled hole: <u>74"</u> Total depth of well: <u>400</u> Standing water	
	level below ground: 153' Temp.	
Address - RELAND Ke	Fahr. 60° Test delivery: 1100 g	pa.
Owner's Permit No. 2 D/of()	or cfs Pump? X Bail Size of pump and motor used to make test	; 1
NATURE OF WORK (check): Replacement well	10" Glank 12" Beall Jeans INTOR Length of time of test: 20 Hrs. Mi	
New well X Deepened Abandoned	Length of time of test: 20 Hrs. Mi	.n <u>.</u>
Water is to be used for: <u> RRIEATIEN</u>	Drawdown: <u>200</u> ft. Artesian precaure: ft above land surface. Give flow cfr	
METHOD OF CONSTRUCTION: Rotary X Cable	or gpm. Shutoff pressure:	
Dug Other	Controlled by: Valve Cap Plug	_ لب
(explain) Velded	No control Does well leak around can Yes No	sing?
to the second of the second the	DEPTH MATERIAL W	ATER
"Diam. from ft. to ft. "Diam. from ft. to ft. "Diam. from ft. to ft. Thickness of casing: //// Material:		
"Diam. from ft. to ft.	FEET FEET	- In-
"Diam. from ft. to ft.	4 33 CLOY Brown	-t-
Thickness of casing: 124 17 Haterial.	4 33 CLOY FIRMA 33 39 GRALES MED	
Steel 🔀 concrete 🗌 wood 🗌 other 🗌	39 51 CLAY BE	5
	ST 12 GADVEL MED	
(explain)	72 91 CLAY BC	
PERFORATED? Yes X No Type of perforator used: MILL CIT	YI ICS GEAUGI MED 105 120 ULAN Br	
	120 MAG GENNEL MED	<u> </u>
Size of perforations: 3/14. " by"	141 185 ELAY Br	
<u>Graduations from <u>Acc</u> ft. to <u>racit</u>.</u>	188 221 GRAVEL + SAMP P 221 245 CLAY DE	
verforations from ft. to ft.	245271 GARVEL+ CLAY	
rerforations from ft. to ft.	ITI 305 CLAY RECE	1-
Size of perforations: <u>3/4</u> . "by <u>3</u> " <u>chapterforations from //cc ft. to 39/ft.</u> perforations fromft. toft. perforations fromft. toft. perforations fromft. toft. WAS SCREEN INSTALLED? YesNo X	305 318 GALIEL MCO 1	·····
Manufacturer's nameModel No.	318 7.10 CLAV Br	<u>t</u>
Manufacturer's name TypeModel No. DiamSlot sizeSet fromft. toft DiamSlot sizeSet fromft. toft	371 381 CLAY BY	7
Diam. Slot size Set from ft. to ft	- 381 352 GRAVEL - SAND 4	F
CONSTRUCTION: Well gravel packed? Yes	342 Mec CLAY BLUE	t
No. size of gravel 3/4 MINUSGravel		<u> </u>
placed from <u>fi.</u> to <u>fc.</u> ft. Surface seal provided: Yes X No To what depth?		
/c_ft. Material used in seal: /C' 24"		
CASING	······································	<u> </u>
Jid any strata contain unusable water? les		<u> </u>
No. Z Type of water:		
strata off:		
		+
The second secon		+
Surface casing used? Yes X No.		
	· · · · · · · · · · · · · · · · · · ·	<u>}</u>
Locate well in section	· · · · · · · · · · · · · · · · · · ·	+
Excer Center		<u>+</u>
The Sector	/ · · · · · · · · · · · · · · · · · · ·	
	Work started: MAR 7 1967	<u> </u>
TIN DE	Work finished: <u>MAR 19 1967</u> Well Driller's Statement: This well wa	
Sec. 4	drilled under my supervision and this	report
1	is true to the best of my knowledge.	-
······	Name - file 711 Clause	
	Address: RT. 1504 1515 Powette	Ildel O
	Signed by: Jule Michland	
terrere	License No. 292 Date: Max 24	2-47
A COUNTY ARE ADDING		
	: 	
Use other side id	or additional remarks	

rm 233-7. STATE OF DFPARTMENT OF W WEIL DRILLE State law requires that this report be filed with within 30 n. ys after the complete	ATER RESOURCES R'S REPORT the Director, Department of Water Resources JUL 20 10%	
I. WELL OWNER	7. WATER LEVEL Western Regional Office	
Name dal lienzeler	Static water level feat below land surface.	
Address Rt. #1 -Fruitland, 145.80 (3010	Flowing? D Ye El the G.P.M. flow Artesian closed in messure p.s.i.	
Owner's Permit Nor	Controlled by: L' Valve 🗆 Cap 📋 Plug Temperature 9F, Quality	
2. NATURE OF WORK	8. WELL TEST DATA	
🖪 New well 🔹 Despenad 🔅 Replacement	· D Pump D Bailer D Air D Other	
D Abandoned (describe method of abandoning)	Discharge G.P.M. Pumping Level Hours Pumped	
an a the second and the second s	and a second	
3. PROPOSED USE	аналын алаан ал	
Domestic Definition Test Municipal	9. LITHOLOGIC LOG	
D Industrial D Stock D Waste Disposal or Injection	Hole Depth Water	
Other (specify type)	Diam. From To Material Yes No Zd ^m 0 10 Saudy Top Soci, Wht. Clay 6 Brin, Clay	
4. METHOD DRILLED	10 15 bru. Clay	
Rotary Alr Hydraulic Reverse rotary Coble Dug Other	35 45 grn. Sand W/Clay Streaks	
Cable Dug Dotter	45 55 Brn. Sand - Coarse 55 65 Brn. Sand -Cettin, Finer	
5. WELL CONSTRUCTION	65 75 Firm Brn. Clay 75 B5 Brn. Sand	
Casing schedule: *D Steel D Concrete D Other	85 95 Lt. Brn. SLitstone & Firm Clay	
250 inches 10 inches + 2 From 370To 250 inches 10 inches + 410 feet 430 feet	95 105 Firm Clay 105 115 Brn. Clay - Softer	•
.250 in thes 15 inches 550 feet 590 feet		
Was casing drive shoe used? 🛛 Yes 🛛 B. No Was a packer or seal used? 💭 Yes 🖓 No	195 205 Fine SIIty Brn. Sand 205 215 Brn. Sand w/Clay Streaks	
Perforsted? 🖸 Yes 🗳 No	215 235 Silty Brn, Sand	8
How perforated? D Factory D Knife D Torch Size of perforation inches by inches	235 245 Gray Sand w/Sma. Gravel (Thirty) 245 255 Silty Fine Sand to Medium	
Number From To perforations feet feet	255 275 Brn. Clay	
perforations feet feet	290 295 Brn. Clay	
Well screen installed? 22 Yes D No	295 309 Lt.Brn. & White Coarse Sand	:
Manufacturer's name koscoe Hoss 70 410 Type 10 38 Madel No. 470	325 335 BTD. Sand W/ Clay Streaks	•
Diameter 160 Slot size 80 Set from 505 feet to 525 feet	355 390 Lt.Brn.Sand - Medium to Coarse	•
Diamater : 6" Slot size ::::::::::::::::::::::::::::::::::::		
Placed from -30 feet to 705 feet Surface seal depth Material used in seat; C Cement grou	405 415 Brn. Sand-Med. To Coarse w/ triped gr.	N
Puddling clay 🛛 Well cuttings	425 435 Blue to BrL. Sand -Med. to Fine	, ;
Sealing procedure used:	435 471 srn.Satd - Fine, Medium, Coarse 471 495 Blu Clay W/ Silty Sand Strks. at end	
Method of joining casing: 🗇 Threaded 🛛 Welded 🗖 Solvent	495 (527 Fine to Med. Sand - Traces of Gravel	
Comented between strata	527 535 DK.Brn. & Blu Clay w/ fine Sand Stks.	1
Describe access port	10. Work started July 7, 1981 finished 7-16-81	1 1 1
6. LOCATION OF WELL	11. DRILLERS CERTIFICATION	N.
N Subdivision Name DEC 15 10m	Complied with at the time the rig was removed.	
W E Subdivision Name DEC 15 1982 Department of Water Resource	Firm Name P. U. Box 561	
w E E Water Resources	Address Meridian, ID. 83042 Date July 16,1981	
Lot No Bleck No	Signed by (Firm Official)	
County	Operations tatele times	•
NIL NSTE & Sec. 7. T. G. N.A.R. 4 EN.	PACK JONES	

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NE ARY THE WHITE COPY TO THE DEPARTMENT STATE OF IDAHO DEPARTMENT OF WATER RESOURCES

USE TIYPE OPTITION BAT: SAL

WELL DRILLER'S REPORT State law requires that this report be filed with the Director, Department of Water Resources

1. WELL OWNER	7. W	ATE	R LEV	'EL '	
Name bob Heasteler	c	tatie -	water	nunt fant halmer innett	,
	F	lowir	ig? 🖸	evel feet below land surfi I Yes El No G.P.M. flow	њ¢.
Address Bt, 41 - Fruitland, Id. 63-19		rtesia	in close	in pressure p.s.i.	
Owner's Permit No.		ontro	olled by mature	/: []Valve []Cap []Piug 0F. Quality	
	<u> </u> '		101015	The Muddity	
2. NATURE OF WORK	8. V	VELL	TEST	DATA	
New well Deepened Replacement) c) Pur	np	🗆 Baller 🛛 Air 🗆 Other	
Abandoned (describe method of abandoning)	Din	chi igr	G.P.M	Pumping Level	Hours Pamped
	-			····	
3. PROPOSED USE	-				
J. FRUIDAED DAE	[-			· · · · · · · · ·
Domestic Dirrigation D Test D Municipal	9. 1	.ITH	DLOGI	CLOG	
Industrial Stock Waste Disposal or Injection Other	Hole		oth .	t.f	Wate
	Diam. 1 23"			Material Fine to Hed. Blu Sand w/	Yes f
4. METHOD DRILLED		<u>555</u>	501	Blue Clay	
🗆 Rotary 🔲 Air 🗆 Hydraulic 💭 Reverse rotary	┣	561	>63	Lt.Blu Sand - Hed. to Co traces of pca gravel	arse 7/
Cable Dug Cother	} <u></u> }-	563	590	Blue Clay	
5. WELL CONSTRUCTION		590	600	Fine Blue Sand	
		600	610	Blue Clay Fine to Med. Sand w/Tr.	
Casing schedule: Steel Concrete Other Thickness Dismeter From To	· [610	619	Blue Clay	or uravel
Thickness Diameter From To inches feet feet		619 630	630	Coarse Blue Sand	
inches feet	ر ا+	645	668	Blu Clay w/ Sand Streaks * Coarse Blue Sand	(Fine to
inches inches feet	· ·	668	675	Dk.Blu Sand-Getting Fine	r w/ some
Was casing drive shoe used? Yes No		675 682	682	Lt. Blu Coarse Sand-10% Blue Clay	Pea Gravel
Was a packer or seal used? D Yes D No		695	1	Blue Clay w/Traces of Fi	ne Sand
Perforated? D Yes D No					
How perforated? Factory Knife Torch Size of perforation inches by inches	 +	<u> </u>	 		
Number From To					
perforations feet _			ļ	MERISIA	P I
perforations feet fee Well screen installed?∕∕₄ □ Yes □ No	•┣━─┿		h		₩
Well screen installed?/, C Yes D No					
Manufacturer's narge Type Model No Diameter Slot size Set fromfeet tofee Diameter Slot size Set fromfeet tofee	<u>-</u> +		 	<u>JUI 20 1. 1</u>	
DiameterSlot sizeSet fromfeet tofee	·[+			Department of Water Resource	
Diameter Slot size Set from feet to fee Gravel packed? Yes No Size of gravel	"[]		5 -	Western Regional Giffica	
Placed from feet to feet	1 1	랎	5 (b)	Elwers	
Surface seal depth Material used in seal: D Cement grou	- 1 - i	<u></u>	Ľ		
Puddling clay U Well cutting: Sealing procedure used: Slurry pit D Temp, surface casing	╵┝──┞		DEC		
Overbore to seal dept	┉╞───╆	Po-	020	15 1982	
Method of joining casing: D Threaded D Welded D Solvent Weld		₩ân[lient o	Water Resources	
Cemented between strata	┝━━┶		L	** 1/00010:03	
Describe access port	10.				7/1.1-
		Wo	rk star	ted finished	1/16/8/
6. LOCATION OF WELL	11.	DRI	LERS	CERTIFICATION	
Sketch map location must agree with written location.				that all minimum well construction	n standarde we
N		comp	lied wit	th at the time the rig was removed.	
Subdivision Name	-	Firm	Name	[213
w E				C.c.c Firm N	·· <u>·· / /</u>
······································		Addri	ess	Date	1/11/81
	.				,
Loi No Block No)	Sione	(pv +		
Loi No Block No		Signe	0 DY (F	irm Official)	
Loi No Block No		Signe		and (Operator)	

Cross section of the Treasure Valley in the Boise area, for the TVHP (Treasure Valley Hydrologic Project): Notes on Geology of the Boise area, Ada County, Idaho

by Gregg Beukelman June 31, 1997 Department of Geosciences, Boise State University Boise, Idaho 83725 tele: 208-385-1631, fax 385-4061, E-mail: gbeukelm@trex.idbsu.edu

Introduction

The report and enclosed data are a preliminary compilation of information along a transect extending NNE-SSW from Boise to south of the Snake River in the Swan Falls Dam area (Fig. 1). The intent of this report is to show the nature of the Late Cenozoic stratified sediments in the upper portion of the western Snake River Plain (Fig. 2). Included for each well along the transect are the well owner, Land Office Grid coordinates, date of well completion, and diagrams of well construction and lithology (attached). Lithologies, taken from well drillers' reports on record at the Idaho Department of Water Resources and the Boise office of the U. S. Geological Survey, are plotted in detail where distinctive units of lithologic or hydrogeologic significance are well documented by the driller. Individual drillers' reports are attached to the report should the user wish more detail. Also included is a geologic cross section drawn to show correlatable distinctive lithologic and hydrogeologic boundaries encountered in each well. A 1:100,000 map of the area Fig. 1) is included showing the route of the transect (A-A'), individual well owners, and surface geology (taken from: Othberg and Stanford (1992), Malde (1989), and Mitchell and Bennett (1979)).

Methods

The cross section included in this report is a graphical presentation of subsurface geology based on water well drillers reports, geophysical data of several of the wells (Squires and others, 1992), and additional available geophysical data (Liberty, 1996). Wells along the transect were selected to ensure maximum section coverage although coverage was complicated by a lack of wells in the area just north of the Snake River. For each well included in the profile (1:24,000 horizontal) the stratigraphic section and well construction, as reported in the drillers logs, were plotted at a vertical scale of 1:1,200 (see attached sheets). Correlations were made at this scale and all data digitized and reduced to produce the cross section in figures 2a and b. Accuracy of all elevations is probably ± 10 feet. The elevations reported here for the top of the basement Miocene basalt are taken from a structural contour map of this contact (Wood, 1997). Locations of several of the faults that offset Late Cenozoic sediments were interpreted from the contour map of Wood (1997) and from a seismic reflection image of the Boise area (Liberty, 1996).

Structure

The structural nature of this area of the western Snake River Plain is inferred to be a normal fault-bounded graben. The principle south-facing fault zone of the northern margin the western plain is to the north of this section but antithetic and synthetic faults within the area bound smaller intrabasinal grabens. Major extensional faults within the western Snake River Plain are thought to be older structures owing to their lack of surface expression and the absence of significant offset in Pleistocene gravels. Major offset of sedimentary rocks and underlying volcanics beneath Boise is evident on the seismic section of Liberty (1996) with offset on one such fault, the Eagle-West Boise fault, of approximately 650 ft. Numerous faults showing small offsets of Tenmile gravels are exposed in quarries south of the city (Squires and others, 1992). However, the small amount of offset on these faults cannot be easily identified in the subsurface at the scale of the accompanying cross section. Faults shown on the cross section just north of the Quaternary Snake River Group basalts are interpreted from the offset geologic and hydrogeologic boundaries within the sedimentary section. These offsets correlate with faults identified in the basement basalts (Wood, 1997).

Stratigraphy

The sedimentary section contains Late Cenozoic fluvial and lacustrine deposits and Quaternary basalts that overlie a basement of basalt. The basement varies in elevation along the profile north of the Quaternary Snake River Group basalts from +1700-ft to -3000-ft (Minus signs indicate elevation below sea level)(Wood, 1997). Surficial deposits include modern flood plain deposits, terrace gravels of Pleistocene age, gravels and finer sediments of early Pleistocene to late Pliocene age, an extensive field of Quaternary age basalts that lie south of the Boise River Valley, and older Tertiary age sediments. Remnants of terrace surfaces are underlain by gravel deposits along the Boise River and include from youngest to oldest: Gravel of Boise Terrace, Gravel of the Sunrise Terrace, and the Gravel of Gowen Terrace. All these terrace gravels are identified at elevations below the Gravels of Tenmile Creek. In the area of the transect, a intracanyon basalt flow mantles the Fivemile surface. Othberg and others (1995) report a whole-rock K-Ar age of 0.974±0.130 million years for the Fivemile basalt. A widespread surfical deposit of Pleistocene gravel, sand, silt, and clay overlies much of the Quaternary age basalt in the southern portion of the area.

Beneath the surficial sediments in the Boise Valley is a complex sequence of interfingering lenses of gravels, sands, and clays which are interpreted to represent fluvial and shallow lacustrine deposits. The complex geology of this important aquifer is poorly understood in any detail. Previous work by Squires (1992) has provided evidence of broad depositional systems with characteristic signatures including, a buried alluvial fan system in southeast Boise that grades westward into the river and lake sediments.

Squires (1992) pointed out the importance of color change in sediments, the Boise fan aquifer sediments being characteristically brown, and blue colors being reported for sediments more basinward. This section of this study contains an upper portion in which sediments are commonly some shade of brown, tan, or yellow and a deeper portion having sediments that are described as blue or grey in drillers logs. The boundary between these color-defined units occurs at 2320-ft \pm 80 ft elevation and appears in most well logs. The brown-colored unit is up to 800

feet thick beneath the uplands south of the Boise Valley with perhaps as much as 500 feet removed by erosion of the Boise River Valley. The nature of this type of boundary is not well understood but is believed to reflect differences in depositional environment. The blue colored sediments are thought to be an indication of a chemically reducing depositional environment characteristic of lake deposits. The brown colors are more likely caused by oxidation of ironbearing minerals under unsaturated conditions. Thus, these sediments are thought to represent alluvial, fluvial, and lake margin deposits which would be more apt to be oxidized. Alternatively, it is also possible that recharge by oxygenated waters percolating through reduced (blue) iron minerals may oxidize formerly blue-gray colored deposits. Groundwater that is high in dissolved iron can be associated with the oxidation of reduced iron minerals at a contact between oxidizing and reducing conditions. Therefore, caution should be used in using color change in the interpretation of depositional environments.

The southern portion of the transect is underlain by Quaternary basalt deposits that are intermittently covered by a mantle of sedimentary deposits (Caldwell-Nampa sediments of Mitchell and Bennett, 1997). The thickness of these basalts is not well known but maximum thickness encountered along this transect is approximately 600 feet (Swan Falls Farm). The base of these basalts show depth variations with two distinct low points. The more southern low point (elevation 2440-ft in the Swan Falls Farm well) may represent the location of the fourth stage of the ancestral Snake River canyon suggested by Malde (1991). The more northern of the low points, at an elevation of about 2280-ft. in the DeShazo well, lies within a NW-SE alignment of similarly thick accumulations of Quaternary basalts and may represent the eruption of these basalts into an eroded stream channel or into a fault-bounded topographic depression (Wood, personal communication).

Hydrogeology

The static water level in wells along this transect vary little within the lacustrine and fluvial sediments of the northern portion of the profile (north of the Collins well) but southward, the water table slopes toward the Snake River at about 0.1°. Wells completed through the basalts in the south of Boise Valley generally are good producers with large discharge volumes and little drawdown. These wells appear to be drawing water from porous intervals within the basalt such as cinder units as well as from the sediments beneath the basalts.

Wells completed into the fluvial and lacustrine sediments within the Boise Valley can be grouped geographically. The wells south of the Taggart St. well (Nicholson, Tenmile, and MAC) are all completed to a depth of about 2200-ft elevation. These wells are targeting an aquifer in thick sand units from elevations below about 2450-ft. The Taggart St. and Cassia St. wells to the north on the other hand, are completed to depths below 1800-ft elevation and are probably getting the majority of their water from a series of thin sand units below 2200-ft elevation.

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Figures and enclosures

Figures 1a and 1b Map (1:100,000) showing cross section transect and wells used in cross section.

Figures 2a and 2b Cross section of geology and hydrogeology across the western Snake River Plain to the Snake River from the Boise, Idaho area.

Figure 2c Legend for cross section

- Attached Twelve panels of wells used in cross section showing lithology and well construction.
- Attached Drillers reports of selected wells.