

Union 2098

Union 2098

UNIO 2098

NOV - 6 1991

35/38E-8cd  
26809

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

WATER RESOURCES DEPT. (START CARD) #

(1) OWNER:  
Name City of LaGrande  
Address PO Box 670  
City LaGrande State OR Zip 97850

Well Number: 12th STEEM

(9) LOCATION OF WELL by legal description:  
County Union Latitude Longitude  
Township 3S Nor S. Range 38E E or W. WM.  
Section 8 SE 1/4 of SW 1/4  
Tax Lot 204 Lot Block Subdivision  
Street Address of Well (or nearest address) Twelfth St.  
LaGrande, OR

(2) TYPE OF WORK:  
 New Well  Deepen  Recondition  Abandon

(3) DRILL METHOD  
 Rotary Air  Rotary Mud  Cable  
 Other Reverse circulation rotary

(4) PROPOSED USE:  
 Domestic  Community  Industrial  Irrigation  
 Thermal  Injection  Other

(5) BORE HOLE CONSTRUCTION:  
Special Construction approval Yes No Depth of Completed Well 2434 ft.  
Explosives used  Yes  No Type Amount

Table with columns: HOLE Diameter, SEAL Material, Amount sacks or pounds. Rows show hole diameters from 20 to 10 and seal materials like cement grout and bent. mud.

How was seal placed: Method  A  B  C  D  E  
Backfill placed from 2434 ft. to 2436 ft. Material slough  
Gravel placed from ft. to ft. Size of gravel

(6) CASING/LINER: Table with columns: Diameter, From, To, Gauge, Steel, Plastic, Welded, Threaded. Shows casing and liner details.

Final location of sheets: 1135

(7) PERFORATIONS/SCREENS:  
 Perforations - Method Factory mill cut  
 Screens - Type V shape wire wrap Material 304ss

Table for perforations with columns: From, To, Slot size, Number, Diameter, Tele/pipe size, Casing, Liner. Includes note 'see attached pages for screen & perforation location & information'.

(8) WELL TESTS: Minimum testing time is 1 hour  
 Pump  Bailer  Air  Flowing Artesian  
Yield gal/min Drawdown Drill stem at Time  
1500 45 psi 4 hrS  
2100 27 psi 12 hrs  
2600 5 psi 48 hrs

Temperature of water 73 °F Depth Artesian Flow Found  
Was a water analysis done?  Yes By whom  
Did any strata contain water not suitable for intended use?  Too little  
 Salty  Muddy  Odor  Colored  Other  
Depth of strata:

(10) STATIC WATER LEVEL:  
ft. below land surface. Date 9/24/91  
Artesian pressure 72.5 lb. per square inch. Date

(11) WATER BEARING ZONES: Table with columns: From, To, Estimated Flow Rate, SWL. Shows zones from 1135 to 1706 ft.

(12) WELL LOG: Ground elevation approx. 2800

Table for well log with columns: Material, From, To, SWL. Content is 'see attached well log'.

Date started 3/7/91 Completed 10/3/91

(unbonded) Water Well Constructor Certification:  
I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon well constructor standards. Materials used and information reported above are true to my best knowledge and belief.  
Signed [Signature] WWC Number 1367 Date 10/29/91

(bonded) Water Well Constructor Certification: 9127  
I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon well constructor standards. This report is true to the best of my knowledge and belief.  
Signed [Signature] WWC Number 649 Date 10/29/91

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WATER RESOURCES DEPT  
DALLAM, OREGON

City of LaGrande  
Twelfth Street Well  
by Schneider Equipment, Inc.  
Start Card # 26809

From	To	
0	2	Gravel, Fill
2	8	Clay, blk w/gravel, soft
8	13	Clay, gray w/gravel, 4" minus, conglomerate
13	23	Gravel & clay, brn 6" minus, conglomerate
23	32	Gravel 2" minus w/some clay binder, brn
32	36	Gravel 4" minus & clay, brn, conglomerate
36	41	Gravel 2" minus & clay, brn w/some water
41	51	Gravel, brn course sand, clay, brn
51	106	Gravel, brn course sand, cemented
106	124	Gravel, brn course sand, slightly cemented
124	160	Gravel, brn sand w/clay binder
160	211	Gravel, gray sand, mud, loose
211	286	Clay, brn, sandy, some small gravel
286	348	Clay, brn, sandy w/small layer cemented sand
348	371	Clay, brn, claystone
371	393	Clay, brn, w/some small gravel
393	414	Clay, brn
414	433	Clay, sand, small gravel
433	495	Clay, brn, sandy, some grvl, lyrs of gray clay
495	581	Clay, gray, sandy, some gravel
581	610	Clay & claystone, blue, gritty
610	618	Clay, drk brn & gray, sticky
618	656	Clay, blue & gray, med w/some claystone
656	699	Clay, gray & lt gray, sticky w/claystone strks
699	711	Clay, gray & lt gray, some wood, claystone lyr
711	741	Clay, gray & brn with wood
741	762	Clay, blue, hard
762	811	Clay, gray, silty, soft
811	870	Clay, blue, sticky, firm
870	890	Clay, green & gray, w/some wood, some brown
890	910	Clay, blue, sticky, firm
910	911	Clay, gray, blue & brown
911	965	Clay, blue, sticky
965	992	Clay, blue & gray, med-soft
992	996	Clay, blue & gray, med-firm
996	1006	Clay, blue & gray, med
1006	1025	Clay, gray, med-soft
1025	1064	Clay, blue, sticky
1064	1081	Clay, blue, sticky, firm
1081	1100	Clay, gray & brn, med-soft
1100	1107	Clay & claystone, gray, hard
1107	1121	Claystone, gray, hard
1121	1127	Basalt (Andesite?), gray, hard, vesicular
1127	1138	Basalt, blk, hard
1138	1144	Basalt, black
1144	1153	Basalt, black, some fractures
1153	1171	Basalt, black, some claystone, blk layers

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City of LaGrande  
Twelfth Street Well  
by Schneider Equipment, Inc.  
Start Card # 26809

WATER RESOURCES DEPT.  
SALEM, OREGON

1171	1214	Basalt, blk & red, hard, some fractures
1214	1241	Basalt, blk, some green & red, hard, fractured
1241	1253	Clay, red layers, Basalt layers, blk, soft
1253	1263	Basalt, brwn & blk, ves, soft fractures
1263	1271	Basalt, blk, some red & gray, hard, little brkn
1271	1286	Clystn, brn & blk, sme cly brn w/Bslt blk, brn & rd ves
1286	1346	Basalt, blk ves, brn & grn & red, hard
1346	1355	Basalt & claystone layers, blk & gray
1355	1362	Clay, gray & green, soft
1362	1386	Bslt, blk, clystn, brn, rd, grn, ves, hrd, stf cly gry
1386	1436	Basalt, blk, red, brn, grn, some clay, hard
1436	1451	Bslt, blk, rd, brn, clystn, grn, sme cly gry, hd & sft
1451	1456	Bslt, blk, rd, brn, ves, fcted, clystn grn layers
1456	1476	Bslt, blk, rd, brn, ves, brkn, some hd cly, grn
1476	1485	Bslt, blk, rd, ves, bkn, hd, some cly lyrs, gry, sft
1485	1506	Bslt, blk, rd, ves, bkn, hd, some cly lyrs, red, sft
1506	1511	Clay, brown & red, soft
1511	1522	Bslt, rd, blk, ves, brkn, sme clystn lyrs, grn
1522	1528	Basalt, gray, red, & brown, hard
1528	1543	Basalt, gray, hard, some red & brown
1543	1554	Clay, red, soft
1554	1564	Basalt, black, hard
1564	1576	Basalt, red & black, w/clay, brown, med, ves
1576	1599	Basalt, black w/clay, multi-layered, med
1599	1605	Basalt, black w/some clay, brown
1605	1617	Basalt, black w/clay, red, med-soft
1617	1618	Basalt, black w/clay, red, med
1618	1630	Basalt, blk, fctd w/clay, blue-gray, med
1630	1637	Basalt, blk, brkn, ves w/some clystn, blue
1637	1680	Claystone & clay, green w/some pumice
1680	1706	Clay, green, soft, sticky
1706	1740	Clay & claystone, green
1740	1750	Cinder, red
1750	1778	Claystone & cinder, red
1778	1782	Basalt, blk, hard
1782	1798	Basalt, blk, frac
1798	1814	Claystone & cinder, red
1814	1818	Basalt, blk, frac
1818	1829	Basalt & claystone, med-soft, blk & green
1829	1840	Claystone, multi-colored, hard
1840	1848	Claystone, blue & basalt, brn & blk, weathered
1848	1887	Basalt, blk & red, frac, ves w/claystone, blue
1887	1890	Basalt, blk, frac, hard w/some claystone, blue
1890	1900	Basalt, blk & red, med-hd, w/some clystn, blue
1900	1910	Basalt, blk, frac, hard w/some claystone
1910	1937	Basalt, blk, frac, med-hd
1937	1980	Basalt, grey & brn, frac, hard
1980	1997	Basalt, red & grey, bkn, ves w/some clystn, blue

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1997	2009	Basalt, grey, frac, med-hd
2009	2028	Basalt, grey, frac, hard
2028	2033	Claystone, brn, blue, green, med-hd
2033	2039	Basalt, grey, frac, ves, med
2039	2054	Basalt, blk, frac, ves, med-hd w/claystone
2054	2064	Basalt, blk, frac, ves, med
2064	2087	Basalt, grey & brn, bkn, frac, ves, some clystn
2087	2146	Basalt, grey, frac, hard
2146	2155	Basalt, blk, red, brn, bkn, ves, some clystn, blu
2155	2160	Basalt, grey & red, frac, med hard
2160	2165	Basalt, red bkn, ves, med w/claystone, blue
2165	2177	Basalt, grey, frac, med-hd
2177	2179	Basalt, grey, some red, frac, ves, w/cs, blue
2179	2187	Basalt, grey, frac, hard
2187	2193	Basalt, grey & brn, ves, med, some cs, blue
2193	2229	Basalt, grey, frac, some ves, hard
2229	2244	Basalt, blk, med, bkn, ves & cs, blue
2244	2260	Basalt, grey, frac, hard
2260	2290	Basalt, brn, grey, red, bkn, ves & cs, blue
2290	2299	Basalt, grey, frac.
2299	2300	Basalt, grey, brn, red bkn, ves w/some cly, sft
2300	2305	Basalt, red & grey, ves, bkn
2305	2315	Basalt, grey, frac, hard
2315	2350	Basalt, grey & brn, frac, ves, med w/some cs
2350	2360	Basalt, grey, frac, hard, some cs
2360	2380	Basalt, red & grey, bkn, ves w/cs
2380	2394	Basalt, blk, frac
2394	2414	Basalt, grey & red, bkn, ves, med w/cs, blue
2414	2420	Basalt, red & grey, bkn, med
2420	2434	Basalt, grey, frac, hard
2434	2436	Basalt, grey, frac, med w/cs, blue

# UNIO 2098

CITY OF LAGRANDE  
 TWELTH STREET WELL  
 SC# 26809  
 CASING, LINER, PERFORATIONS & SCREENS

16" well head assembly from +3' to 4'  
 16" x .375 casing from 4' to 1135'  
 12" liner assembly from 1107' to 1706':

All blank & perf is .375 wall.  
 All perforated has 48-3/16 x 3  
 factory mill cut slots per foot.  
 All screens are .150 slot extra  
 heavy duty.

'J' receptor, K packer & bell red	1107.2	-	1112.8
blank	1112.8	-	1132.8
perf	1132.8	-	1142.8
screen	1142.8	-	1148.1
perf	1148.1	-	1233.3
screen	1233.3	-	1243.6
perf	1243.6	-	1268.9
blank	1268.9	-	1284.0
perf	1284.0	-	1299.0
screen	1299.0	-	1304.3
perf	1304.3	-	1324.4
screen	1324.4	-	1339.7
blank	1339.7	-	1389.5
perf	1389.5	-	1500.0
blank	1500.0	-	1515.5
perf	1515.5	-	1531.5
screen	1531.5	-	1541.8
perf	1541.8	-	1579.9
screen	1579.9	-	1610.5
perf	1610.5	-	1630.6
blank	1630.6	-	1706

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8" liner assembly from 1508' to 2434':

All blank and perf is  
.322 wall except 1548  
to 1588 is .250 wall.  
All perforated has 32-3/16  
x 3 factory mill cut slots  
per foot. All screens are  
.150 slot extra heavy duty

'J' receptor, K packer & bell red.	1508.4	-	1528.0
perf	1528.0	-	1548.0
blank	1548.0	-	1644.3
perf	1644.3	-	1668.8
blank	1668.8	-	1869.5
perf	1869.5	-	1969.8
screen	1969.8	-	1975.1
perf	1975.1	-	1995.1
screen	1995.1	-	2000.4
perf	2000.4	-	2020.5
screen	2020.5	-	2025.8
perf	2025.8	-	2045.7
screen	2045.7	-	2051.0
perf	2051.0	-	2091.1
screen	2091.1	-	2096.4
perf	2096.4	-	2126.5
screen	2126.5	-	2131.8
perf	2131.8	-	2151.8
screen	2151.8	-	2157.1
perf	2157.1	-	2177.0
screen	2177.0	-	2182.3
perf	2182.3	-	2202.3
screen	2202.3	-	2207.6
perf	2207.6	-	2247.7
screen	2247.7	-	2253.0
perf	2253.0	-	2403.0
screen	2403.0	-	2308.3
perf	2308.3	-	2388.5
screen	2388.5	-	2393.8
perf	2393.8	-	2429.5
blank	2429.5	-	2434

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 WATER RESOURCES DEPT.  
 SALEM, OREGON

WATER  
 RESOURCES  
 DEPARTMENT

May 3, 1991

Steve Schneider  
 Schneider Equipment, Inc.  
 21881 River Road NE  
 St. Paul, OR 97137

RE: City of LaGrande well construction

Dear Steve:

This letter is in response to your recent inquiry regarding the proposed sealing method for the City of LaGrande, "Twelfth St. Well", start card number 26809.

A review of the report indicates a 20" temporary casing to 40' and 18.5" borehole to 1135' with 16" casing installed from +1' to 1135'. The casing has centering guides every 20' and a stab shoe at the bottom for grout placement. You have also indicated that the targeted artesian aquifer is anticipated to have a shut-in pressure of approximately 70 lbs. per square inch.

The drill pipe was used to place cement grout at the bottom of the casing through the stab shoe and after placement of approximately 4 yards from 1135' to 770' the grout solidified and further pumping was not accomplished. You then installed a tremie in the annular space of the upper 4" oversized borehole, from land surface to 480' and will place grout from 480 to -5', remove the 20" surface pipe, and complete the seal to land surface.


Although the department normally prefers a continuous seal from the bottom of the casing (at least 5' into solid rock) to land surface for artesian wells, we will approve the above sealing method for this well.

If, in the future, the well construction fails or is determined to be inadequate, it must be repaired according to Oregon well construction standards. The use and maintenance of water wells are the responsibility of the owner.

If you need any further assistance, please call 378-8455 ext. 218.

Sincerely,

  
 Greg Beaman  
 Well Construction Supervisor

  
 Fred Lissner  
 Mgr. Groundwater Section



3850 Portland Rd NE  
 Salem, OR 97310  
 (503) 378-3739  
 FAX 378-8130

NOV - 6 1991

Oregon

WATER RESOURCES DEPT.  
SALEM, OREGON

WATER

RESOURCES

DEPARTMENT

September 6, 1991

Steve Schneider  
Schneider Equipment, Inc.  
21881 River Road N.E.  
St. Paul, OR 97137

RE: City of La Grande Twelfth Street Well - SC #26809

Dear Steve:

This letter is in response to our recent conversations regarding the above well.

I have attached a copy of your August 20, 1991 letter indicating the proposed completion plan as follows:

Sixteen inch (16") casing extending from land surface, set and sealed to 1135'. Twelve inch (12") liner and screen assembly from 1107' to 1706'.

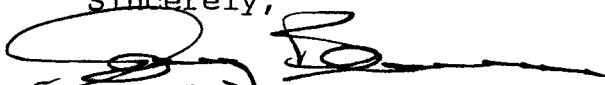
Completion to include installation of additional liner and screen assembly from at least 1698' using materials that will meet or exceed well construction standards. The well head will also be equipped with a valve and gauge as required by the well construction standards.

As I indicated, based upon the stratigraphic information you submitted and the letter (attached) from your hydrogeologist, Dick Gullixson, the above proposal for completion is approved.

If it is determined at some future date that the well, due to its construction, does not meet current standards, it will be necessary for you to return to the site to correct any well deficiencies.

If I can be of further assistance please call 378-8455-218.

Sincerely,

  
Greg Beaman  
Well Construction Supervisor

cc: Anderson, Perry & Associates

Dick Gullixson



3850 Portland Rd NE  
Salem, OR 97310  
(503) 378-3739  
FAX (503) 378-8130



WELL DRILLING  
IRRIGATION  
CONTROL SYSTEMS

UNIO 2098  
**SCHNEIDER  
EQUIPMENT, INC.  
AND DRILLING CO.**

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WATER RESOURCES DEPT  
WATER PUMPS  
ENGINEERED WATER SYSTEMS  
SALES AND SERVICE OREGON  
FAX (503) 633-2668

21881 River Road N.E. St. Paul, Oregon 97137 (503) 633-2666

August 20, 1991

Water Resources Department  
3850 Portland Road  
Salem, Oregon 97310

ATTN: Greg Beaman

Ref: City of La Grande Twelfth Street Well - SC #26809

Dear Greg;

The referenced well was drilled with mud rotary to 1135' and a 16" casing set and sealed (reference WRD 5/3/91 letter to Steve Schneider). Drilling continued with weighted mud rotary to 1706'. A 12" liner assembly was installed, the mud unloaded and the well developed. The well only flowed approximately 30 GPM. The yield would not significantly increase when the well was blown, creating a drawdown. Recovery was very slow. Partial shut-in exhibited a pressure over 20 psi. Because of leakage and small amount of flow, full shut-in pressure was not obtained. During developing, an attempt was made to force water into the well. The well accepted limited gallonage (e.g. approx. 20 gpm) until the backpressure gained to approximately 50 psi and then rapidly rose to over 100 psi without any significant additional acceptance.

The well is now being deepened by reverse circulation rotary (see log) and is flowing over 1500 gpm with a shut-in of over 70 psi. A small increase in flow was noticed during deepening of the first 100' with more significant increases in flow observed as deepening continued below 1900'.

Anderson-Perry & Associates (963-8309) are the project Engineers and have retained Dick Gullixson (938-3874) as a hydro-geologic consultant. They are in concurrence that the material exposed to date below the first basalt encountered are all of the same geologic unit. In addition, there is no verifiable evidence of significant dissimilar head, temperature or mineral content of the water within that geologic unit. Accordingly, it is desired to line the borehole below 1706' with a minimum 8' overlap of the existing 12" liner. The additional liner will meet or exceed water supply well construction standards. The well head will be

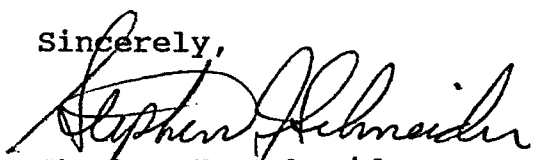
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ASTORIA OREGON

equipped with a valve and gauge as required by the standards.

Do you concur with our analysis and approach? Please let us know immediately if you foresee a problem or need to discuss further. Thank you for your prompt attention to this matter.

Sincerely,

  
Stephen J. Schneider  
Vice President-Drilling

Concurrence:

Anderson, Perry & Associates  
P.O. Box 1107  
La Grande, Or 97850



Dick Gullixson  
1003 Davis  
Milton Freewater, Or 97862



L09568.WRD  
SJS:bm

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SEP - 3 1991

WATER RESOURCES DEPT.  
1003 Davis Street  
Milton-Freewater, OR 97862  
August 28, 1991  
WATER RESOURCES DEPT.  
SALEM, OREGON

Water Resources Department  
3850 Portland Road  
Salem, OR 91310

ATTENTION: Greg Beaman

RE: City of LaGrande - 12th Street Well  
SC #26809  
Telecon Wednesday, 28 August 1991

Dear Greg:

The Schneider Drilling Company has prepared a position letter dated 20 August, describing the general construction features of the well. As you will see, the letter was routed first through Anderson & Perry and Associates, Inc. and signed off by Howard Perry. I received the letter on 27 August and signed off today. The construction sequence and the data reported is correct.

In the letter to you, I want to further clarify the stratigraphic sequence of formations.

0.0 to 211	Recent Alluvium
211 to 1121	Claystone (Pliestocene)
1121 to 1706	Andesite (either Mahogany or Craig Mountain (Miocene)

The 1706 foot depth is an end of contract depth feature, and is actually at a midpoint in a thick interbed from 1637 to 1740. Because of its thickness I am inclined to assign this claystone to the Glass Hill Basalt Formation.

Therefore:

1637 to 2436	Glass Hill Basalt Formations (Water bearing under high head)(Miocene)
--------------	--------------------------------------------------------------------------

On the telephone, I had said that the bottom section of the well was in the Grande Ronde formation. A review has changed my mind, because of the blue claystone in the bottom of the hole. At least this is not a known feature of the Grande Ronde Basalt.

The 16-inch surface casing is seated at depth 1135 or 14 feet into the Andesite rock and grouted in place. Thus, the surface casing is seated in the confining Andesite

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SALEM, OREGON

Formation. The thickness of rock assigned to the Andesite was not anticipated and is the principal reason for the drilling over runs. The casing and screens installed through the Andesite neither add nor detract from use of the well. These materials were not removed because of the risk of losing the well during removal.

In summary, the water bearing formation is the Glass Hill Basalts which are capped by Andesites (either Craig Mountain or Mahogany Mountain). All temperatures taken were at the collar of the hole.

The complete title of the Reference Publication is "Geology of the LaGrande Area, Oregon" dated 1980 by Geosciences Research Consultants, and Oregon Department of Geology and Mineral Resources. Special Paper No. 6. If I can provide any additional information please inquire.

Sincerely yours,

RICHARD L. GULLIXSON  
Engineering Geologist

Copies to: Anderson Perry and Assoc.