

Prepared for:

Cascade Corporation LLC

2201 NE 201st Avenue
Fairview, Oregon 97024

Well Decommissioning Report

Cascade Troutdale Gravel Aquifer

Prepared by:

Geosyntec 
consultants

engineers | scientists | innovators

621 SW Morrison Street, Suite 600
Portland, Oregon 97205

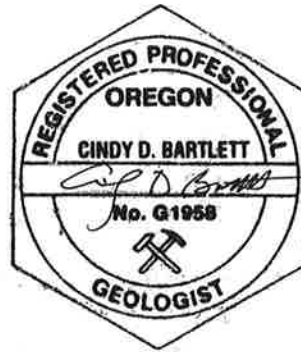
Project No.: PNG0561G

24 September 2015

**WELL DECOMMISSIONING REPORT
CASCADE CORPORATION
TROUTDALE GRAVEL AQUIFER REMEDY**

Prepared by:

Cindy Bartlett, R.G. Date
Geosyntec Consultants



Reviewed by:

Brent Miller

Brent Miller, P.E. Date
Geosyntec Consultants

TABLE OF CONTENTS

1.	INTRODUCTION.....	1
2.	WELL CONSTRUCTION SUMMARY	1
3.	DECOMMISSIONING METHODS	1
3.1	IN SITU DECOMMISSIONING	2
3.2	OVER-DRILL DECOMMISSIONING.....	3
3.3	WELL HEAD DECOMMISSIONING.....	2
3.4	WASTE MANAGEMENT	3
4.	REFERENCES.....	4

LIST OF TABLES

Table 1: Decommissioned TGA Well Specifications and Information

LIST OF FIGURES

Figure 1: Locations of TGA Wells Decommissioned March/April 2015

LIST OF APPENDICES

Appendix A: Well Construction Logs

Appendix B: OWRD Decommissioning Records

Appendix C: WasteXpress Soil Disposal Ticket

1. INTRODUCTION

Cascade Corporation's (Cascade) TGA remedy was implemented under Consent Order No. WMCSR-NWR-96-09, dated 3 April 1997, with the Oregon Department of Environmental Quality (DEQ; DEQ, 1997). DEQ approved closure of the TGA remedy in their Project Closure Memorandum dated 26 November 2014 (DEQ, 2014) and issued a Certificate of Completion on 21 January 2015 (DEQ, 2015).

This report documents decommissioning of thirteen Troutdale Gravel Aquifer (TGA) wells in March and April 2015. The scope of work and methods for decommissioning were provided in the Work Plan dated 24 February 2015 (Geosyntec Consultants, 2015). This Work Plan was approved by the DEQ in an email dated 16 March 2015 (DEQ, 2015b).

The decommissioned wells include: B-5, EX-1, MW-31s, MW-32s, MW-33s, MW-35s, MW-42, MW-43, MW-47a, MW-47b, MW-48a, MW-48b, and MW-49. Well locations are shown in Figure 1, and the wells were either located in the Cascade "off-site" remediation area with the address 2525 NE 201st Avenue or at the Cascade Corporation facility with the address 2201 NE 201st Avenue (EX-1 only). Five other monitoring wells, MW-45, MW-46, MW-47c, MW-48c, and B-6, located in the off-site area were not decommissioned. These five wells are installed in the confining unit 1 (CU1) that underlies the TGA, and they have been incorporated into the underlying Cascade Troutdale Sandstone Aquifer (TSA) remedy for potential future monitoring use.

2. WELL CONSTRUCTION SUMMARY

The thirteen wells decommissioned in 2015 were screened within the upper TGA sandy gravel subunit. These wells were originally constructed between 1993 and 2013. The wells were constructed of PVC well materials, except EX-1, which was wire wrapped steel. The wells ranged in depth from 14 to 29 feet below ground surface (bgs) with well diameters of 2 or 4 inches. One well was completed with a flush mount monument, two were within subsurface vaults, and ten were above ground completions. Well construction specifications are summarized in Table 1. Copies of original well logs are provided in Appendix A.

3. DECOMMISSIONING METHODS

Prior to decommissioning activities, a right of entry permit approval from the City of Gresham (MW-49) was confirmed (original obtained for installation of MW-49 in 2013), and each well location was cleared for below-grade utilities.

The wells and well vaults were cleared of above-ground bollards, pumps, meters, gauges, and pipes (if present) prior to decommissioning. Depowered electrical lines and the remaining conveyance line stub-outs were plugged, sealed, and capped before well decommissioning began.

The decommissioning was completed 30 March 2015 through 1 April 2015. Drilling services were provided by Cascade Drilling, an Oregon-licensed well driller, under the supervision of Geosyntec. The decommissioning work was implemented in accordance with Oregon Administrative Rules (OARs), Chapter 690, Division 240 (OAR 690-240), and included both in situ and over-drill decommissioning methods. Each well decommissioning was performed following Oregon Water Resource Department (OWRD) start card authorization (OAR-690-240-0385). Upon completion, well abandonment reports were submitted by the drillers to OWRD (OAR-690-240-0510(6)).

OWRD start card and well identification numbers, OWRD Final Order dates, and decommissioning methods and dates are listed for each well in Table 1. Copies of OWRD Final Orders, Well Abandonment Reports, and location maps are presented in Appendix B.

3.1 WELL HEAD DECOMMISSIONING

Above ground monuments with three bollards surrounding the monument were present at ten of the well locations. The concrete surrounding the monuments and bollards was broken up with a track hoe, and removed for disposal before the monuments and bollards were collected for metal recycling. The concrete surrounding the flush mount monument at MW-42 was broken up with the track hoe, and the casing and concrete were removed for disposal.

Two of the decommissioned wells, MW-49 and EX-1, were contained in subsurface vaults. The well vault for MW-49 was removed for recycling. The vault excavation was filled with gravel and capped with native soil. The base of the vault for EX-1 was grouted in place, filled with gravel, and a 6 inch layer of hot asphalt was used to cap the gravel and vault.

3.2 IN SITU DECOMMISSIONING

In situ well decommissioning was authorized by OWRD for two wells, EX-1 and MW-47a, which were backfilled in place (Figure 1). Backfill decommissioning was approved for these wells because volatile organic compounds (VOCs) were below detection limits in groundwater samples during the last sampling round. The backfill volumes were calculated and added in accordance with OAR rules, based on well depth and diameter information.

Bentonite chips were placed in an unhydrated state downhole and subsequently hydrated to meet the requirements of OAR-690-240-0475 (1)(d). The two wells were filled to the top of the well casing, the area around MW-47a was leveled to match the surface grade, and decommissioning materials and debris removed.

3.3 OVER-DRILL DECOMMISSIONING

Eleven TGA wells, B-5, MW-31s, MW-32s, MW-33s, MW-35s, MW-42, MW-43, MW47b, MW-48a, MW-48b, and MW-49, were decommissioned using over-drill methods in accordance with OAR-690-240-0510(1). Two wells, B-5 and MW-49, were decommissioned using a direct-push drilling rig due to restricted space and limited overhead clearance. The other nine wells were overdrilled using a truck-mounted hollow-stem auger with auger diameters of 8.25-inch or 10.25-inch. Drilling diameters were slightly greater than the original well borehole diameter for removal of the well casing, screen, sand filter pack, and seal materials. Each of the wells was overdrilled to a depth equal to or slightly greater than the wellbore total depth, except for B-5 (discussed below). Downhole equipment was decontaminated prior to overdrill decommissioning of each well using high pressure wash methods.

Following overdrilling, the boreholes were backfilled with either a high solids bentonite grout, bentonite chips, or a combination, from the total depth to within 2 feet of ground surface. The remaining 2 feet were topped with gravel and smoothed to match the surrounding grade.

During decommissioning of B-5, the casing was removed and the well was overdrilled to a depth of 8 feet. At the 8 foot depth the auger hit cobbles, which caused the drill rig to move around, such that the drilling was unable to penetrate any deeper. Cascade Drilling employees sealed the hole with hydrated bentonite chips and received verification from OWRD that the well was considered decommissioned.

3.4 WASTE MANAGEMENT

Concrete and steel decommission materials were transported to a licensed landfill for disposal and recycling by WasteXpress (Portland, OR).

Soil waste generated during well overdrilling was placed in a plastic lined soil bin. The soil was sampled and sent for analysis of VOCs. VOCs were not detected in two waste characterization samples, except one detection of MIBK at a concentration of 0.013 ug/kg, just over the detection limit of 0.012 ug/kg. MIBK is not a site-related VOC. DEQ issued a Contained-In determination on 7 July 2015 (DEQ, 2015c). The wastes were disposed of under permit with Waste Management, Inc. as non-hazardous special

waste. A copy of the final disposal permit was provided to DEQ upon permitted disposal completion (Appendix C).

Water collected during equipment decontamination was temporarily stored in an onsite holding tank and decanted into the existing TSA central treatment system (CTS) for treatment and permitted discharge.

4. REFERENCES

Geosyntec Consultants, 2015. TGA Well Decommissioning Work Plan Cascade Troutdale Gravel Aquifer Remedy, Fairview, Oregon ECSI No. 635

Oregon Department of Environmental Quality, 1997. Order on Consent, DEQ No. WMCSR-NWR-96-09. 2 April 1997.

Oregon Department of Environmental Quality, 2014. Project Closure Memorandum, Cascade Corporation File, ECSI #635. 26 November 2014.

Oregon Department of Environmental Quality, 2015. Order on Consent, DEQ No. WMCSR-NWR-96-09, Certification of Completion. 21 January 2015.

Oregon Department of Environmental Quality, 2015b. DEQ email communication to Geosyntec Consultants approving TGA Well Decommissioning. 16 March and 24 February 2015.

Oregon Department of Environmental Quality, 2015c. No Longer Contained-In Determination, Cascade Corporation Site, DEQ. 7 July 2015.

Oregon Water Resources Department. 2014. *Construction, Maintenance, Alteration, Conversion and Abandonment of Monitoring Wells, Geotechnical Holes and Other Holes in Oregon*. Water Resources Department. Well Construction Standards. OAR 690-240. 25 November 2014.

TABLE AND FIGURE

Table 1
Decommissioned TGA Well Specifications and Information
Cascade Corporation, Fairview, Oregon

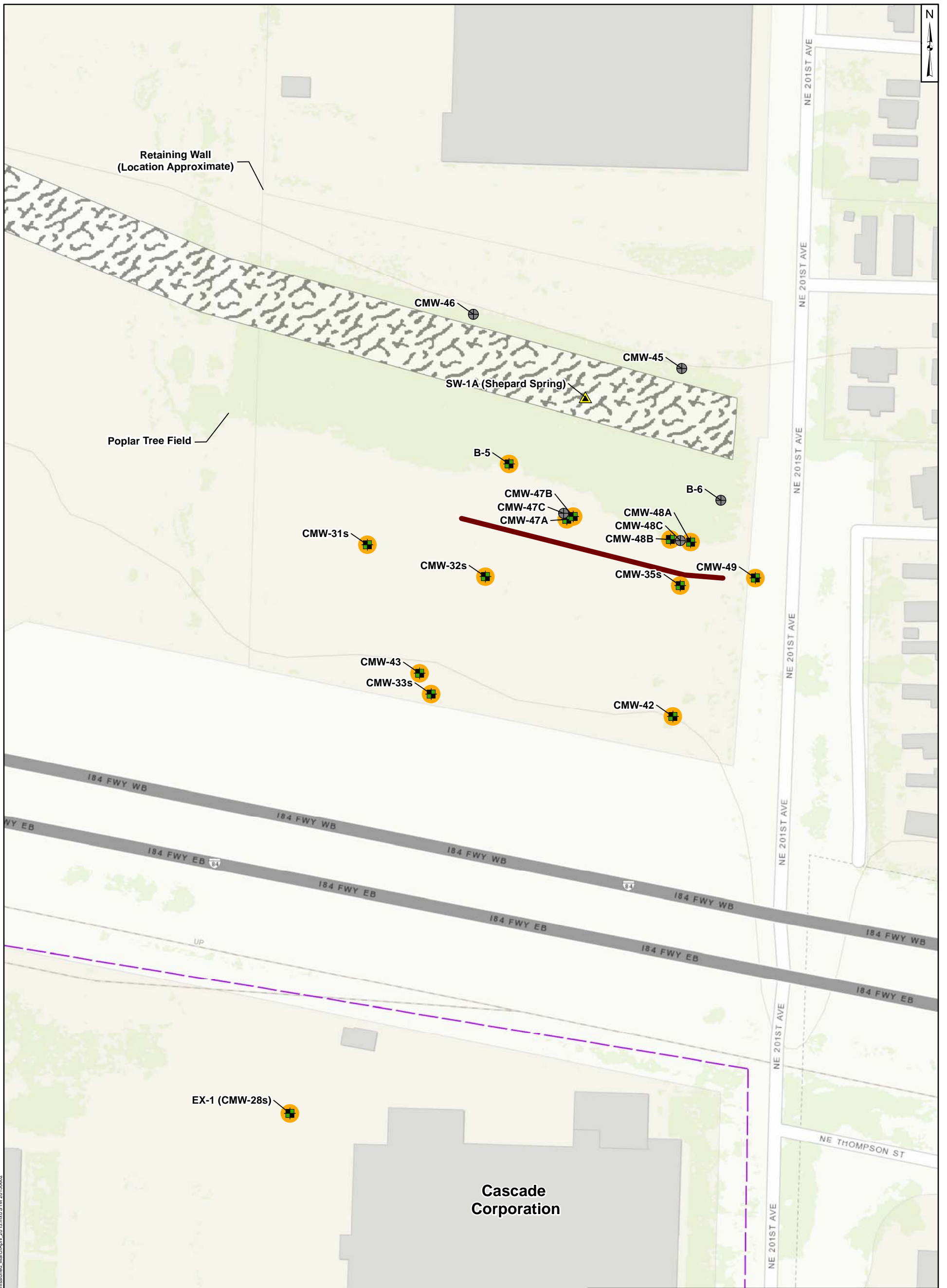
Well Identification	Tag I.D.	Location*	Original Start Card	Year Installed	Total Depth (feet bgs)	Screen Length (feet)	Boring Diameter (inches)	Well Diameter (inches)	Screen Material	Monument Type	Decommission Date	Decommissioning Method
B-5	-	2525	58110	1993	17	5	6	2	PVC	above ground + bollards	3/31/15	Overdrill
EX-1	-	2201	60363	1994	27.4	15	8	4	SS - V-wire screen	vault	4/1/15	Grout in place
MW-31s	-	2525	82031	1995	22	10	7	2	PVC	above ground + bollards	3/31/15	Overdrill
MW-32s	-	2525	82032	1995	18.9	10	7	2	PVC	above ground + bollards	3/31/15	Overdrill
MW-33s	-	2525	82033	1995	24.9	14	7	2	PVC	above ground + bollards	3/31/15	Overdrill
MW-35s	-	2525	82035	1995	17.6	9	7	2	PVC	above ground + bollards	3/30/15	Overdrill
MW-42	L43671	2525	134716	2001	29	10	10	4	PVC	flush monument	4/1/15	Overdrill
MW-43	L43844	2525	134971	2001	29	10	7	2	PVC	above ground + bollards	3/31/15	Overdrill
MW-47a	L105114	2525	1014712	2011	14	5	6	2	PVC	above ground + bollards	3/30/15	Grout in Place
MW-47b	L105113	2525	1014711	2011	20	5	6	2	PVC	above ground + bollards	4/1/15	Overdrill
MW-48a	L105124	2525	1014760	2011	14	5	6	2	PVC	above ground + bollards	3/30/15	Overdrill
MW-48b	L105123	2525	1014759	2011	18	2	6	2	PVC	above ground + bollards	3/30/15	Overdrill
MW-49	L110950	ROW next to 2525	1020816	2013	17	10	8	4	PVC	vault	3/31/15	Overdrill

*The location indicated is either the Cascade Corporation facility at 2201 NE 201st Ave, or the TGA "Off-site" remediation area, located at 2525 NE 201st Ave. The right-of-way (ROW) indicated is adjacent to the off-site remediation property.








bgs = below ground surface

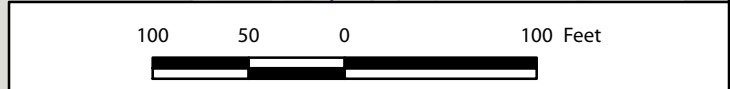
PVC = polyvinyl chloride

SS = stainless steel



Legend

-  CU1 Monitoring Well
-  Shepard Springs Sample
-  TGA Monitoring Well
-  Decommissioned TGA Well
-  CU1 Truncation
-  Bioremediation Treatment Wall
-  Cascade Corporation Property Boundary



Locations of TGA Wells Decommissioned March/April 2015
East Multnomah County
 East Multnomah County

Geosyntec
 consultants

S:\Barrera-01\Data\P\GIS\PNG0564 - Cascade\Projects\015\Fig01 - TGA Wells Decommissioned March/April 2015.mxd STW 20150602

APPENDIX A
Boring and Well Construction Logs

GS FORM:
CORE3 10/00

BOREHOLE LOG

DEPTH (ft)	MATERIAL DESCRIPTION	SYMBOLIC LOG	WELL LOG	WELL CONSTRUCTION MATERIAL	ELEVATION (ft)	SAMPLES				USCS Classification	COMMENTS
						NUMBER	TYPE	RECOVERY (%)	PID READING (ppm)		
0 - 5	Brown, loose, dry, sandy SILT mottled brown and light gray	[Symbolic Log Pattern]	[Well Log Pattern]	Well completed in a concrete vault (30"x30")						SM	
5 - 10	Brown, dense, moist, silty, sandy, well-graded GRAVELS and COBBLES, subrounded to rounded Cobbles 6"+ in size Brown, med. dense, moist, silty well-graded SAND with some subrounded, subangular gravel.	[Symbolic Log Pattern]	[Well Log Pattern]	Bentonite 3/8" chips - 2 bags, hydrated. 4-inch Sch 40 PVC				100	0.6	GM	
10 - 15	Grades to brown and gray, wet, with some consolidated sand lenses Brown and gray, very dense, moist to dry consolidated SANDSTONE with trace silt	[Symbolic Log Pattern]	[Well Log Pattern]	4-inch Sch 40 PVC 0.010" slotted well screen with 10/20 silica sand filter pack (7 bags).				100	0.2	SM	
15 - 20	Gray, dense, dry SILTSTONE	[Symbolic Log Pattern]	[Well Log Pattern]	Backfilled bottom of well with 1 bag hydrated bentonite chips				100		SANDSTONE	
20 - 21	End of boring - install monitoring well	[Symbolic Log Pattern]	[Well Log Pattern]							SILTSTONE	

BORING LOG W/WELL SONIC (PORTLAND) PNG0564G.GPJ SAN DIEGO GINT LIBRARY.GLB 9/19/13

CONTRACTOR Cascade Drilling **NORTHING**
EQUIPMENT Track Sonic (spider) **EASTING**
DRILL MTHD Sonic **ANGLE** Vertical
DIAMETER 8 inch **BEARING** -----
LOGGER B. Lary **REVIEWER** C. Bartlett **PRINTED** 09/19/13

REMARKS: Start Card: 1020816 Tag ID: L110950

COORDINATE SYSTEM:
SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

TGA MW-48b Well Log

LITHOLOGIC LOG – MW-48b

Project: Cascade Corporation, TGA Remedy

Well Location: 2525 NE 201st Avenue, Fairview, OR

Drilling Contractor: Boart Longyear, LLC

Ground Surf Elevation: 114.44 ft MSL

Drilling Method: Rotasonic truck-mounted rig

Top of PVC Elevation: 117.16 ft. MSL

Drill End Date: August 30, 2011

Logged by: S. Prowell, R.G.

DEPTH BELOW SURFACE (ft)	GRAIN SIZE SAMPLES				TOC (mg/kg)	SYMBOLIC LOG	SOIL DESCRIPTION	COMMENTS
	% GRAVEL	% SAND	% SILT	% CLAY				
0	NA	NA	NA	NA	NA	FILL	0.0 - 3.0 ft: Silt (ML), red-brown, dry loose. (Topsoil).	FILL 6-in. diam. borehole with continuous core to 21.0 ft
5						ML	3.0 - 6.8 ft: Silt (ML), light brown, dry to moist, stiff, laminar texture.	UPPER TGA SAND AND SILT
						GW-GM	6.8 - 8.6 ft: Well-Graded Gravel with Silt, Sand, and Cobbles (GW-GM), dark brown, moist, loose, 40% well-graded matrix, fine to coarse sand with silt, 60% fine to coarse gravel and cobbles to 4 in., subrounded to subangular basalt.	UPPER TGA GRAVEL
10						SW-SM	8.6 - 13.0 ft: Well-Graded Silty Sand with Silt (SW-SM), med. to dark brown, moist, becoming WET at 10 ft, loose to dense, 70% med. to coarse-grained sand, subrounded basalt and quartzite, 30% v. fine sand and silt.	LOWER TGA SAND AND SILT Groundwater encountered @ 10 ft.
15						SM-ML	13.0 - 15.0 ft: Silty Sand to Sandy Silt (SM-ML), light brown, wet, med. dense to stiff, some laminar silt horizons.	MW-48b water level @ 10.65 ft bgs on 11/8/2011.

NOTE: See page 2 of 2 for well construction information. See MW-48a lithologic log for grain size distribution data.

LITHOLOGIC LOG – MW-48b

Project: Cascade Corporation, TGA Remedy

Well Location: 2525 NE 201st Avenue, Fairview, OR

Drilling Contractor: Boart Longyear, LLC

Ground Surf Elevation: 114.44 ft MSL

Drilling Method: Rotasonic truck-mounted rig

Top of PVC Elevation: 117.16 ft. MSL

Drill End Date: August 30, 2011

Logged by: S. Prowell, R.G.

DEPTH BELOW SURFACE (ft)	GRAIN SIZE SAMPLES				TOC (mg/kg)	SYMBOLIC LOG	SOIL DESCRIPTION	COMMENTS
	% GRAVEL	% SAND	% SILT	% CLAY				
15	NA	NA	NA	NA	NA	SM	15.0 - 17.0 ft: Silty Sand with Gravel (SM) , med. brown, WET, loose. 17.0 - 21.0: Clayey Siltstone to Silty Claystone , light brown, moist, v. stiff, laminar, homogeneous, good core integrity.	Borehole diameter, depth to groundwater, rig response, etc. LOWER TGA SAND AND SILT <i>MW-48b screened from 15.2 to 17.2 ft bgs.</i> CU1 SILTSTONE AND CLAYSTONE (yellow-brown)
20						ML/CL		
25								6-in. diam. borehole with continuous core to 21.0 ft

Total Drill Depth: 21.0 ft bgs

Borehole Diameter: 6 inches

Total Well Depth: 17.2 ft bgs

Well Casing and Screen Material: 2-inch I.D. Schedule 40 flush-threaded PVC

Well Screen Slot Size: 0.02 inch

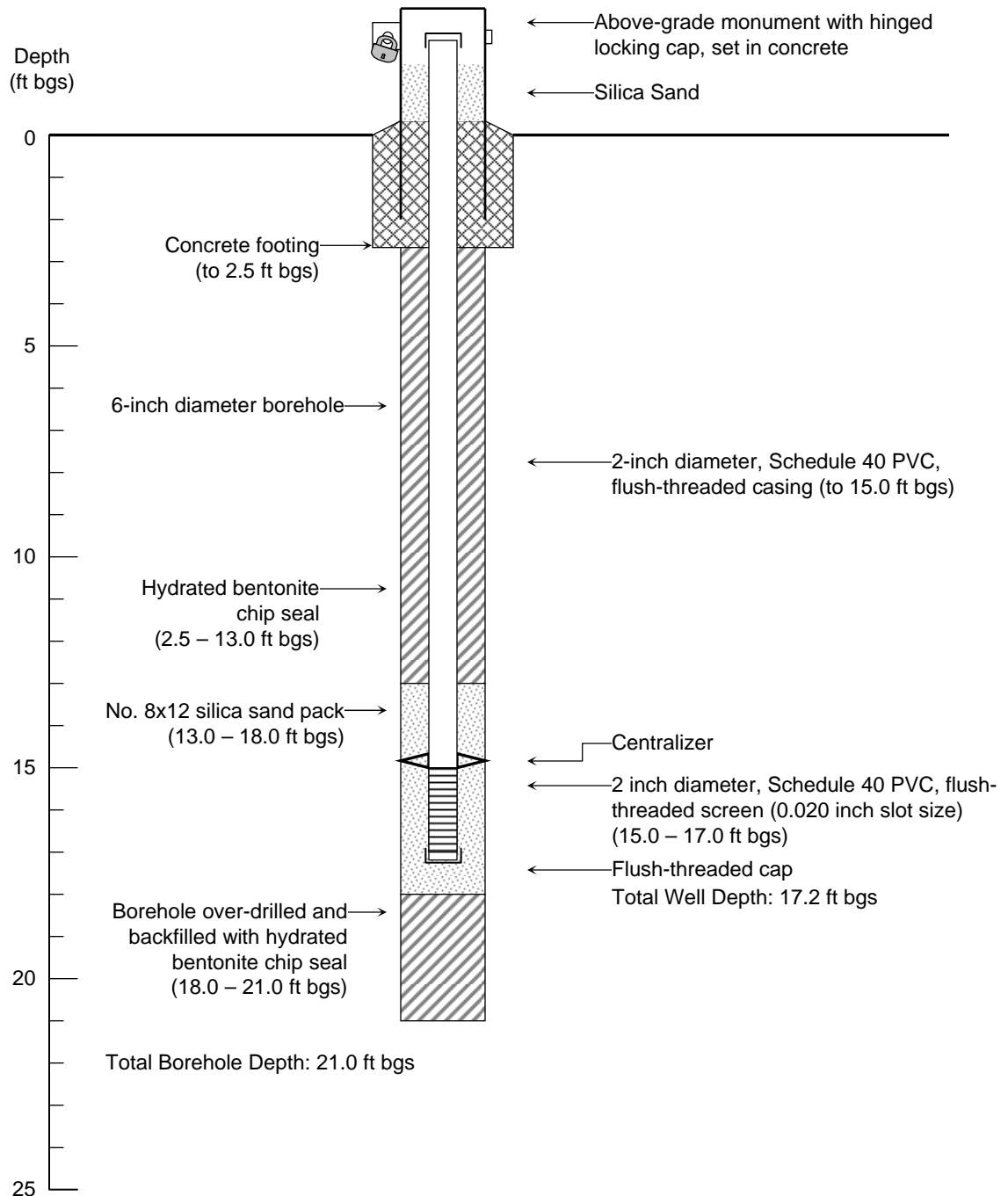
Well Screen Interval: 15.2 - 17.2 ft bgs

Filter Sand Pack Material & Size: 8 X 12 clean silica sand

Filter Sand Pack Interval: 13.0 - 18.0 ft bgs

Well Seal: Hydrated Bentonite Chips from 2.5 to 13.0 bgs

Overdrill backfill Seal: Hydrated Bentonite Chips from 18.0 to 21.0 ft bgs



Well Completion Date: 8/30/11
 Drilling Contractor/Method: Boart Longyear / Rotasonic
 Ground Surface Elevation: 114.44 ft MSL
 Top of Casing Elevation: 117.16 ft MSL

Prowell Environmental, Inc., Portland, Oregon.

MW-48b Well Details
 Cascade Corporation, TGA Remedy



STATE OF OREGON
MONITORING WELL REPORT

09-13-2011

WELL LABEL # L 105123

(as required by ORS 537.765 & OAR 690-240-0395)

START CARD # 1014759

(1) LAND OWNER Owner Well I.D. MW-48b

First Name _____ Last Name _____
Company CASCADE CORPORATION
Address 2201 NE 201ST AVE
City GRESHAM State OR Zip 97024

(2) TYPE OF WORK New Deepening Conversion
 Alteration (repair/recondition) Abandonment

(3) DRILL METHOD

Rotary Air Rotary Mud Cable Hollow Stem Auger Cable Mud
 Reverse Rotary Other sonic

(4) CONSTRUCTION

Depth of Completed Well 17.2 ft. Special Standard
Piezometer Well

MONUMENT/VAULT Above Ground
From 0 To 3

BORE HOLE
Diameter 6 From 0 To 12.2

CASING
Dia. 2 From 0 To 15
Gauge SCH 40 Wld Thrd
Material Steel Plastic

LINER
Dia. _____ From _____ To _____
Gauge _____ Wld Thrd
Material Steel Plastic

SEAL
From 2.5 To 13
Material Bentonite
Amount 3.00 S Grout weight _____

SCREEN
Casing/Liner _____ Material PVC
Diameter 2 From 15 To 18
Slot Size .020 15 17

FILTER
From 13 To 18 Material SAND Size of pack 8/12

(5) WELL TESTS

Pump Bailer Air Flowing Artesian

Yield gal/min	Drawdown	Drill stem/Pump depth	Duration (hr)

Temperature 53 °F Lab analysis Yes By _____

Supervising Geologist/Engineer _____

Water quality concerns? Yes (describe below)

From	To	Description	Amount	Units

(6) LOCATION OF WELL (legal description)

County Multnomah Twp 1.00 N N/S Range 3.00 E E/W WM
Sec 29 SE 1/4 of the NE 1/4 Tax Lot 1
Tax Map Number _____ Lot _____
Lat _____ " or _____ DMS or DD
Long _____ " or _____ DMS or DD
 Street address of well Nearest address

2525 NE 201ST AVE GRESHAM

(7) STATIC WATER LEVEL

Existing Well / Predeepening	Date	SWL(psi)	+ SWL(ft)
Completed Well	<u>08-30-2011</u>		<u>10</u>

Flowing Artesian? Dry Hole?
WATER BEARING ZONES Depth water was first found

SWL Date	From	To	Est Flow	SWL(psi)	+ SWL(ft)

(8) WELL LOG

Material	From	To	Ground Elevation
FILL	0	3	
GRAVEL COBBLES BOULDERS siltstone	3	8.6.10	
SILTY SAND AND GRAVEL sandy gravel	8.6.10	18.6	
COARSE SAND	18.6	19.13	
SILTY GRAVEL Light Brown siltstone	19.13	19.15	
SET STONE silty gravel	19.15	18.17	
Light Brown siltstone	17	21	

RECEIVED

OCT 07 2011

WATER RESOURCES DEPT
SALEM, OREGON

Date Started 08-30-2011 Completed 08-30-2011

(unbonded) Monitor Well Constructor Certification

I certify that the work I performed on the construction, deepening, alteration, or abandonment of this well is in compliance with Oregon monitoring well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.

License Number 10574 Date 09-13-2011

Electronically Submitted

Signed JEFFREY L. KARCHER (E-filed)

(bonded) Monitor Well Constructor Certification

I accept responsibility for the construction, deepening, 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 monitoring well construction standards. This report is true to the best of my knowledge and belief.

License Number 10306 Date 09-13-2011

Electronically Submitted

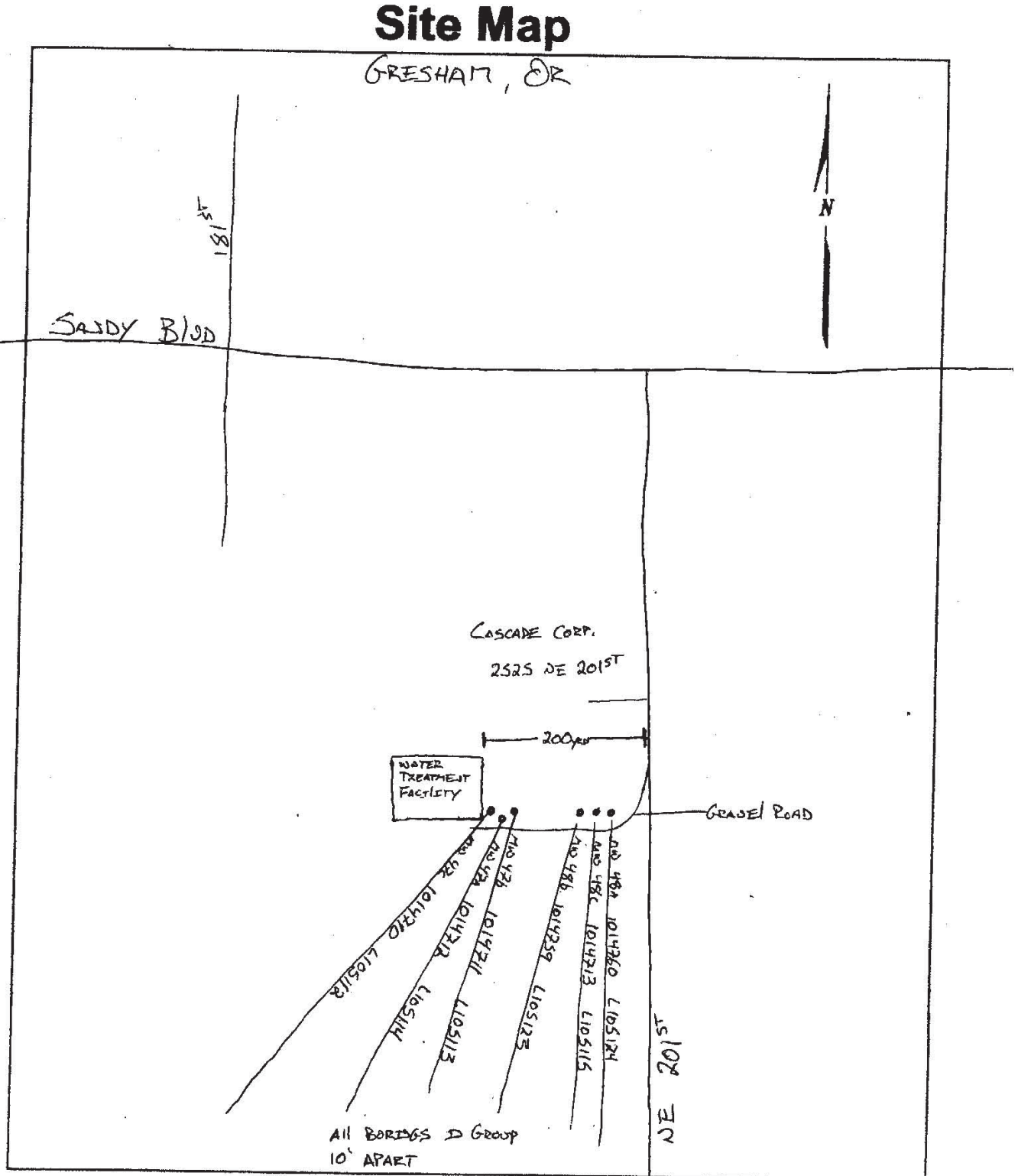
Signed JTRENT CASTNER (E-filed)

Contact Info (optional)

ORIGINAL - WATER RESOURCES DEPARTMENT

THIS REPORT MUST BE SUBMITTED TO THE WATER RESOURCES DEPARTMENT WITHIN 30 DAYS OF COMPLETION OF WORK

Map of well



TGA MW-48a Well Log

LITHOLOGIC LOG – MW-48a

Project: Cascade Corporation, TGA Remedy

Well Location: 2525 NE 201st Avenue, Fairview, OR

Drilling Contractor: Boart Longyear, LLC

Ground Surf Elevation: 113.38 ft MSL

Drilling Method: Rotasonic truck-mounted rig

Top of PVC Elevation: 116.35 ft. MSL

Drill End Date: August 31, 2011

Logged by: S. Prowell, R.G.

DEPTH BELOW SURFACE (ft)	GRAIN SIZE SAMPLES				TOC (mg/kg)	SYMBOLIC LOG	SOIL DESCRIPTION	COMMENTS
	% GRAVEL	% SAND	% SILT	% CLAY				
0						FILL	0.0 - 3.0 ft: 3/4-minus Gravel (GW) underlain by Silt (ML), med. brown to 1.5 ft; light brown with orange oxidized mottling to 3.0 ft, dry, soft (FILL).	FILL 6-in. diam. borehole with continuous core to 25.0 ft
5						SM	3.0 - 7.5 ft: Silty Sand (SM), light brown, some orange oxidation, dry, dense to locally friable.	UPPER TGA SAND AND SILT
10	55	32	12	2	550	GW-GM	7.5 - 9.0 ft: Well-Graded Gravel with Silt, Sand, and Cobbles (GW-GM), gray to med-brown; to 8.0 ft is dry, loose, 40% matrix of fine sand, some silt, coarse gravel and cobbles to 3 in., subrounded to rounded basalt and quartzite, trace rhyolite and gneiss. From 8.0 to 9.0 ft, moist, dense, partially to strongly cemented, well-graded gravel to 1/2 in., rounded basalt, quartz, quartzite, 40% matrix, coarse sand, some silt.	UPPER TGA GRAVEL
	2	84	12	3.0	<200			LOWER TGA SAND AND SILT Groundwater encountered @ 9 ft.
	10	79	9	2	<200	SW-SM	9.0 - 13.2 ft: Well-Graded Sand with Silt (SW-SM), dark brown to dark gray brown, WET, loose to dense, med. to coarse sand, basalt and quartz/quartzite, subrounded, some silt.	MW-48a screened from 8.0 to 13.0 ft bgs.
	2	88	8	2	<200			MW-48a water level @ 9.70 ft bgs on 11/8/2011.
	0	71	18	11	320	SM	13.2 - 16.0 ft: Silty Sand (SM), med. brown, orange mottling below 14.5 ft, WET, coarse sand, subrounded quartz, quartzite, basalt. Silt lense from 13.2 to 13.5 ft.	
15	0	84	13	4	400			

NOTE: See page 2 of 2 for well construction and physical sample analysis information.
Grain size percentages rounded to nearest whole number. See Apex Amended Laboratory Report No. A11I238, 1/30/12.

LITHOLOGIC LOG – MW-48a

Sheet 2 of 2

Project: Cascade Corporation, TGA Remedy

Well Location: 2525 NE 201st Avenue, Fairview, OR

Drilling Contractor: Boart Longyear, LLC

Ground Surf Elevation: 113.38 ft MSL

Drilling Method: Rotasonic truck-mounted rig

Top of PVC Elevation: 116.35 ft. MSL

Drill End Date: August 31, 2011

Logged by: S. Prowell, R.G.

DEPTH BELOW SURFACE (ft)	GRAIN SIZE SAMPLES				TOC (mg/kg)	SYMBOLIC LOG	SOIL DESCRIPTION	COMMENTS
	% GRAVEL	% SAND	% SILT	% CLAY				
15							13.2 - 16.0 ft: Silty Sand (SM) , cont'd.	LOWER TGA SAND AND SILT
	0	72	17	11	230			
						ML	16.0 - 18.0 ft: Sandy Siltstone with Clay , light brown to tan, localized orange coloration, moist, v. stiff, laminar texture, homogeneous, good core integrity.	6-in. diam. borehole with continuous core to 25.0 ft
	0	35	42	23	280			CU1 SILTSTONE AND CLAYSTONE (yellow-brown)
						CL	18.0 - 19.5 ft: Silty Claystone , light brown to tan, moist, v. stiff, same as above, good core integrity, gradational contact.	
	0	3	33	64	1100			
20						ML	19.5 - 20.0 ft: Clayey Siltstone , light brown to tan, moist, v. stiff, good core integrity, gradational contact.	
	0	3	57	40	630			
						ML	20.0 - 23.0 ft: Clayey Siltstone , color change to blue-gray, moist, hard, texture change to massive non-laminar, homogeneous, good core integrity.	CU1 SILTSTONE AND CLAYSTONE (blue-gray to dark brn)
	0	1	53	45	860			
						ML		
	0	1	62	37	720			
						CL	23.0 - 25.0 ft: Claystone with Silt , change to dark brown color, moist, v. hard, massive, homogeneous, good core integrity.	
	0	7	29	65	3300			
25								
	0	11	27	62	2700			

Total Drill Depth: 25.0 ft bgs

Borehole Diameter: 6 inches

Total Well Depth: 13.0 ft bgs

Well Casing and Screen Material: 2-inch I.D. Schedule 40 flush-threaded PVC

Well Screen Slot Size: 0.02 inch

Well Screen Interval: 8.0 - 13.0 ft bgs

Filter Sand Pack Material & Size: 8 X 12 clean silica sand

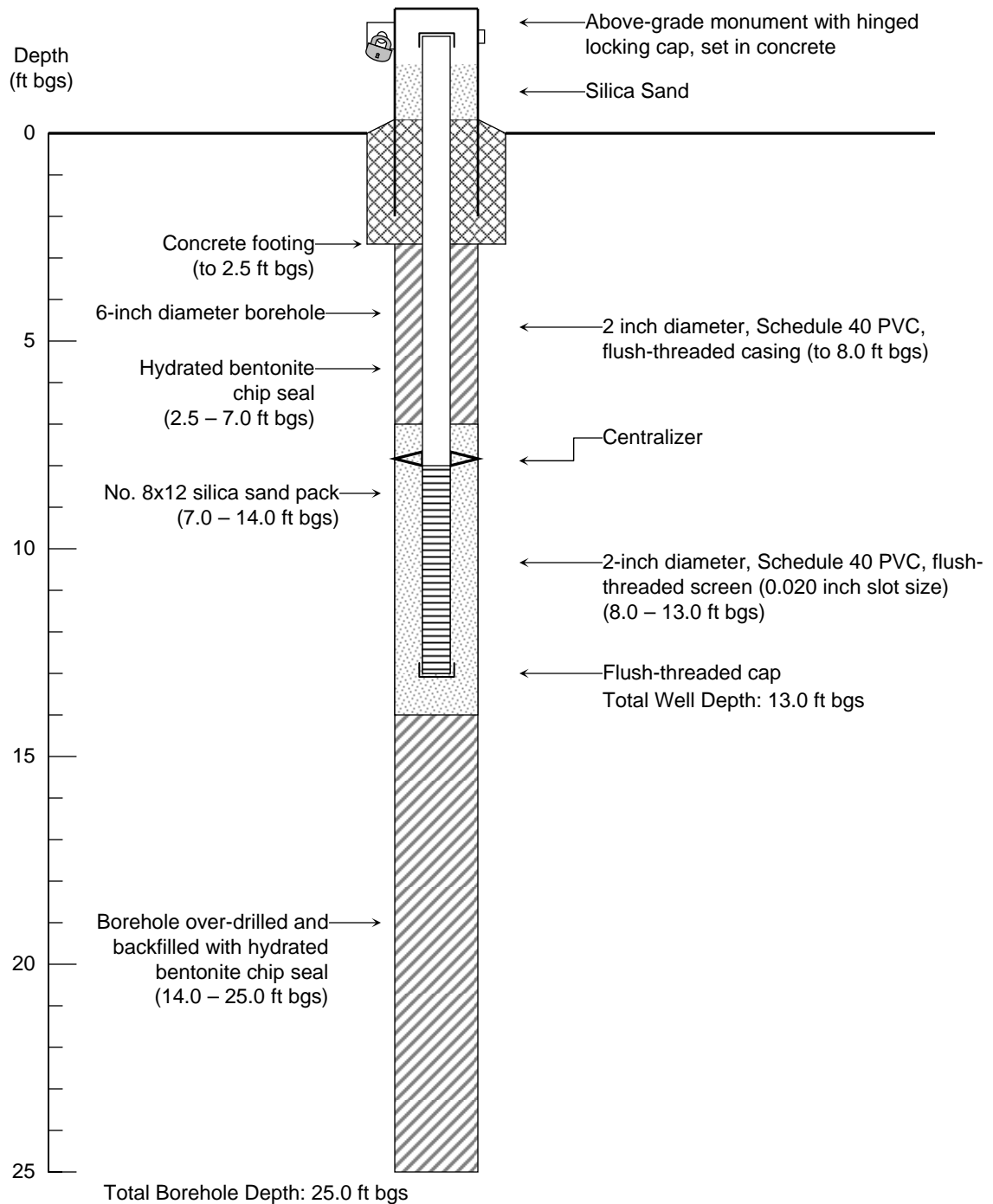
Filter Sand Pack Interval: 7.0 - 14.0 ft bgs

Well Seal: Hydrated Bentonite Chips from 2.5 to 7.0 ft bgs

Overdrill backfill Seal: Hydrated Bentonite Chips from 14.0 to 25.0 ft bgs

NOTES:

Grain size analytical method = ASTM D 422; Total organic carbon (TOC) analytical method = SM 5310 MOD by Apex Laboratory. TOC analysis of rock material is guide only. Gravel and sand fractions may not be representative, as sample prep. tamping may reduce grain size for those fractions. Calculated silt and clay fractions are more representative for above rock materials.



Well Completion Date: 8/31/11
 Drilling Contractor/Method: Boart Longyear / Rotasonic
 Ground Surface Elevation: 113.38 ft MSL
 Top of Casing Elevation: 116.35 ft MSL

Prowell Environmental, Inc., Portland, Oregon.

MW-48a Well Details
 Cascade Corporation, TGA Remedy

09-13-2011

AMENDED
9.30.11



STATE OF OREGON
MONITORING WELL REPORT

(as required by ORS 537.765 & OAR 690-240-0395)

WELL LABEL # L 105124

START CARD # 1014760

(1) LAND OWNER Owner Well ID. MW-48a

First Name _____ Last Name _____
Company CASCADE CORPORATION
Address 2201 NE 201ST AVE
City GRESHAM State OR Zip 97024

(2) TYPE OF WORK New Deepening Conversion
 Alteration (repair/recondition) Abandonment

(3) DRILL METHOD

Rotary Air Rotary Mud Cable Hollow Stem Auger Cable Mud
 Reverse Rotary Other sonic

(4) CONSTRUCTION

Depth of Completed Well 13 ft. Special Standard

MONUMENT/VAULT Above Ground
From 0 To 3

BORE HOLE
Diameter 6 From 0 To 13

CASING
Dia. 2 From 0 To 8
Gauge SCH 40 Wld Thrd
Material Steel Plastic

LINER
Dia. _____ From _____ To _____
Gauge _____ Wld Thrd
Material Steel Plastic

SEAL
From 2.5 To 7
Material Bentonite
Amount 3.00 S Grout weight _____

SCREEN
Casing/Liner _____ Material PVC
Diameter 2 From 8 To 13
Slot Size .020 8 13

FILTER
From 7 To 14 Material SAND Size of pack 8/12

(5) WELL TESTS

Pump Bailer Air Flowing Artesian
Yield gal/min Drawdown Drill stem/Pump depth Duration (hr)

Temperature 53 °F Lab analysis Yes By _____

Supervising Geologist/Engineer _____

Water quality concerns? Yes (describe below)
From To Description Amount Units

(6) LOCATION OF WELL (legal description)

County Multnomah Twp 1.00 N N/S Range 3.00 E E/W WM
Sec 29 SE 1/4 of the NE 1/4 Tax Lot 1
Tax Map Number _____ Lot _____
Lat _____ " or _____ DMS or DD
Long _____ " or _____ DMS or DD
 Street address of well Nearest address

2525 NE 201ST AVE GRESHAM

(7) STATIC WATER LEVEL

Date SWL(psi) + SWL(ft)
Existing Well / Predeepening _____
Completed Well 08-31-2011 _____ 10

Flowing Artesian? Dry Hole?
WATER BEARING ZONES Depth water was first found

SWL Date	From	To	Est Flow	SWL(psi)	+ SWL(ft)

(8) WELL LOG

Material	Ground Elevation	
	From	To
FILL	0	3
GRAVEL COBBLES BOULDERS silt stone	3	8.7
SLTY SAND W/GRAVEL cemented	8.7	10.7
MED COARSE SAND cemented	10.9	13.2
Sandy silt	12.2	16
Light Brown silt stone	16	20
Blue Gray claystone	20	25

RECEIVED
OCT 07 2011
WATER RESOURCES DEPT
SALEM, OREGON

Date Started 08-31-2011 Completed 08-31-2011

(unbonded) Monitor Well Constructor Certification

I certify that the work I performed on the construction, deepening, alteration, or abandonment of this well is in compliance with Oregon monitoring well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.

License Number 10574 Date 09-13-2011

Electronically Submitted

Signed JEFFREY L. KARCHER (E-filed)

(bonded) Monitor Well Constructor Certification

I accept responsibility for the construction, deepening, 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 monitoring well construction standards. This report is true to the best of my knowledge and belief.

License Number 10306 Date 09-13-2011

Electronically Submitted

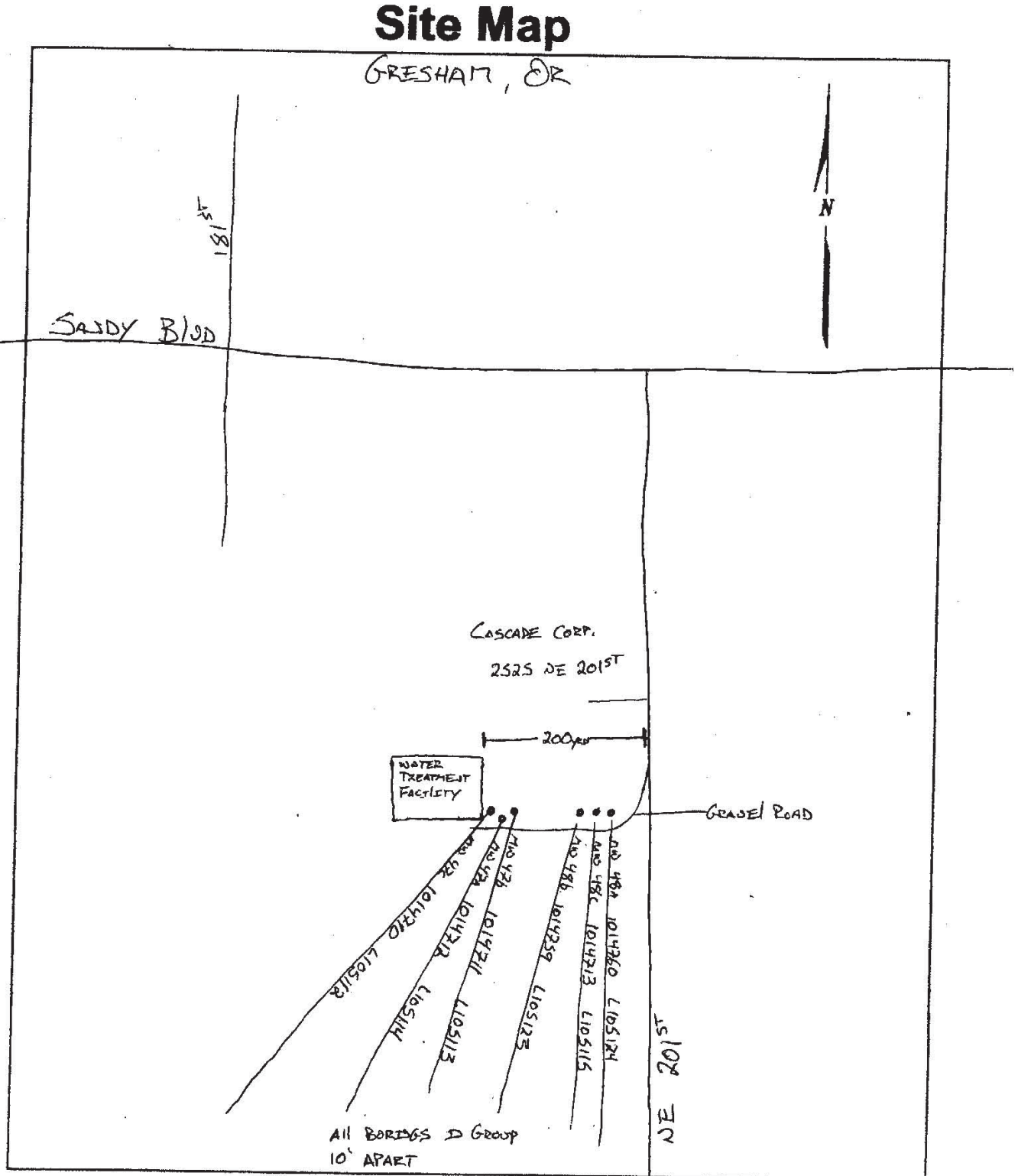
Signed J TREN T CASTNER (E-filed)

Contact Info (optional)

ORIGINAL - WATER RESOURCES DEPARTMENT

THIS REPORT MUST BE SUBMITTED TO THE WATER RESOURCES DEPARTMENT WITHIN 30 DAYS OF COMPLETION OF WORK

Map of well



TGA MW-47b Well Log

LITHOLOGIC LOG – MW-47b

Sheet 1 of 2

Project: Cascade Corporation, TGA Remedy

Well Location: 2525 NE 201st Avenue, Fairview, OR

Drilling Contractor: Boart Longyear, LLC

Ground Surf Elevation: 117.24 ft. MSL

Drilling Method: Rotasonic truck-mounted rig

Top of PVC Elevation: 120.16 ft. MSL

Drill End Date: August 29, 2011

Logged by: S. Prowell, R.G.

DEPTH BELOW SURFACE (ft)	GRAIN SIZE SAMPLES				TOC (mg/kg)	SYMBOLIC LOG	SOIL DESCRIPTION	COMMENTS
	% GRAVEL	% SAND	% SILT	% CLAY				
0	NA	NA	NA	NA	NA	FILL	0.0 - 2.0 ft: 3/4-minus gravel and silt with sand, dry, loose (FILL).	FILL 6-in. diam. borehole with continuous core to 26.3 ft
5						GW-GM	2.0 - 8.0 ft: Well-Graded Gravel with Silt, Sand, Cobbles, and Boulders (GW-GM) , gray to med-brown, dry to moist, loose. Basaltic boulders up to 2.5 ft, dense, unweathered, non-vesicular, gravel coarse, cobbles to 3-inches, subangular to subrounded.	UPPER TGA GRAVEL
10						SM	8.0 - 10.0 ft: Silty Sand with Gravel (SM) , red-brown, dry to moist, stiff, partially-cemented, fine to med-grained sand, subangular medium gravel.	LOWER TGA SAND
15						SP	10.0 - 14.5 ft: Poorly-Graded Sand (SP) , med. brown, moist, changing to WET at 13 ft, loose, med- to coarse-grained.	Groundwater encountered @ 13 ft bgs
						SW-SM	14.5 - 15.0 ft: Well-Graded Sand with Silt and Gravel (SW-SM) , med. brown, WET, partially-cemented, med-dense, some fine gravel.	MW-47b water level @ 13.13 ft bgs on 11/8/2011.

NOTE: See page 2 of 2 for well construction and physical sample analysis information. See MW-47c lithologic log for grain size distribution data.

LITHOLOGIC LOG – MW-47b

Sheet 2 of 2

Project: Cascade Corporation, TGA Remedy

Well Location: 2525 NE 201st Avenue, Fairview, OR

Drilling Contractor: Boart Longyear, LLC

Ground Surf Elevation: 117.24 ft. MSL

Drilling Method: Rotasonic truck-mounted rig

Top of PVC Elevation: 120.16 ft. MSL

Drill End Date: August 29, 2011

Logged by: S. Prowell, R.G.

DEPTH BELOW SURFACE (ft)	GRAIN SIZE SAMPLES				TOC (mg/kg)	SYMBOLIC LOG	SOIL DESCRIPTION	COMMENTS
	% GRAVEL	% SAND	% SILT	% CLAY				
15	NA	NA	NA	NA	NA	SW-SM	15.0 - 20.0 ft: Well-Graded Sand with Silt (SW-SM) , light brown, moist to WET, ranging from partially-cemented and dense to loose; some laminar silt horizons.	Borehole diameter, depth to groundwater, rig response, etc. LOWER TGA SAND AND SILT <i>MW-47b screened from 16.4 to 19.4 ft bgs.</i> 6-in. diam. borehole with continuous core to 26.3 ft
20						ML-CL	20.0 - 23.0 ft: Siltstone and Claystone , light yellow-brown, moist, v. stiff to hard, laminar, homogeneous, good core integrity.	CU1 SILTSTONE AND CLAYSTONE (yellow-brown)
25						CL-ML	23.0 - 26.3 ft: Claystone and Siltstone , blue-gray, moist, v. hard, massive, homogeneous, good core integrity.	CU1 CLAYSTONE and SILTSTONE (blue-gray)

Total Drill Depth: 19.4 ft bgs

Borehole Diameter: 6 inches

Total Well Depth: 26.3 ft bgs

Well Casing and Screen Material: 2-inch I.D. Schedule 40 flush-threaded PVC

Well Screen Slot Size: 0.01 inch

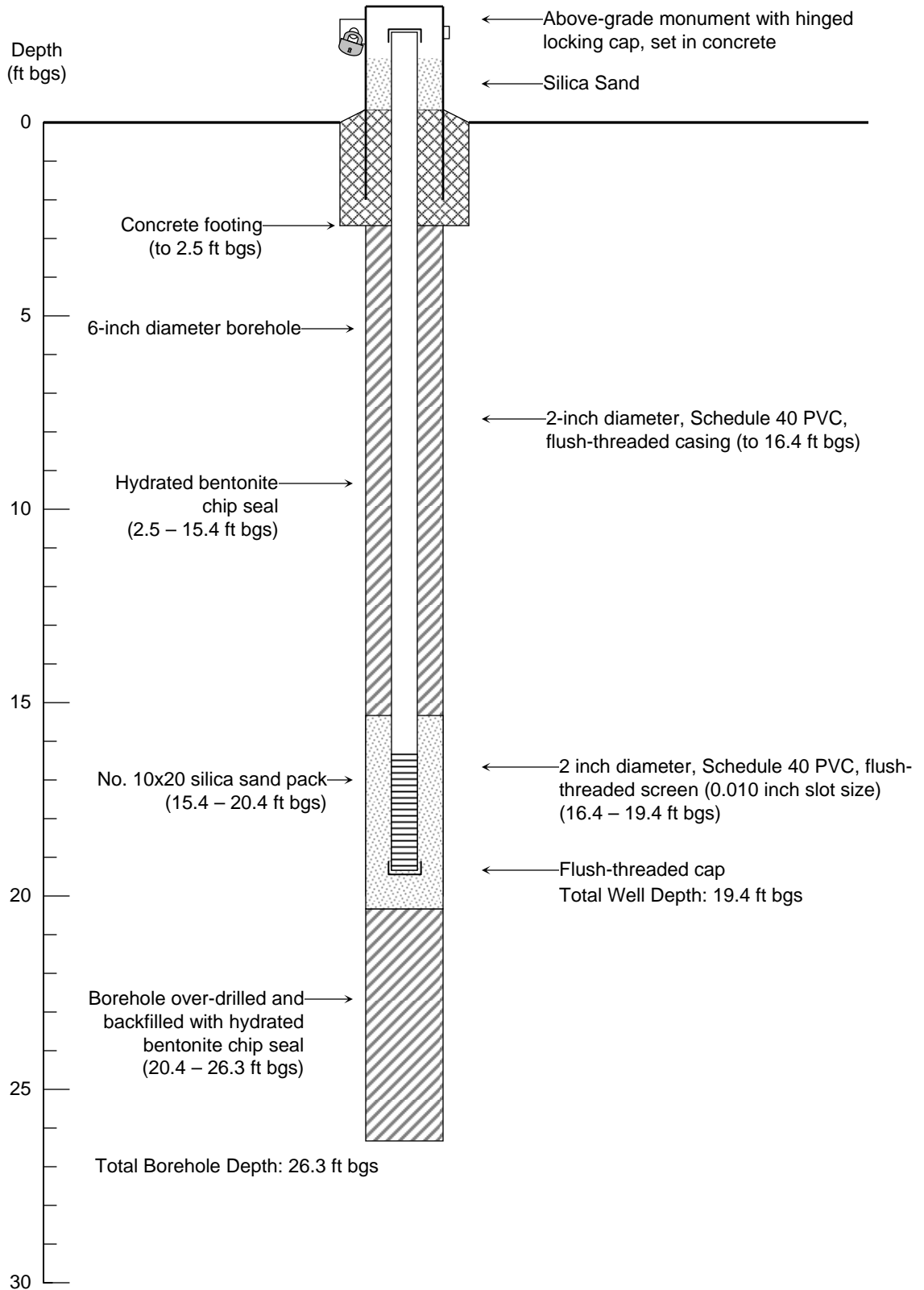
Well Screen Interval: 16.4 - 19.4 ft bgs

Filter Sand Pack Material & Size: 10 X 20 clean silica sand

Filter Sand Pack Interval: 15.4 - 20.4 ft bgs

Well Seal: Hydrated Bentonite Chips from 2.5 to 15.4 ft bgs

Overdrill backfill Seal: Hydrated Bentonite Chips from 20.4 to 26.3 ft bgs

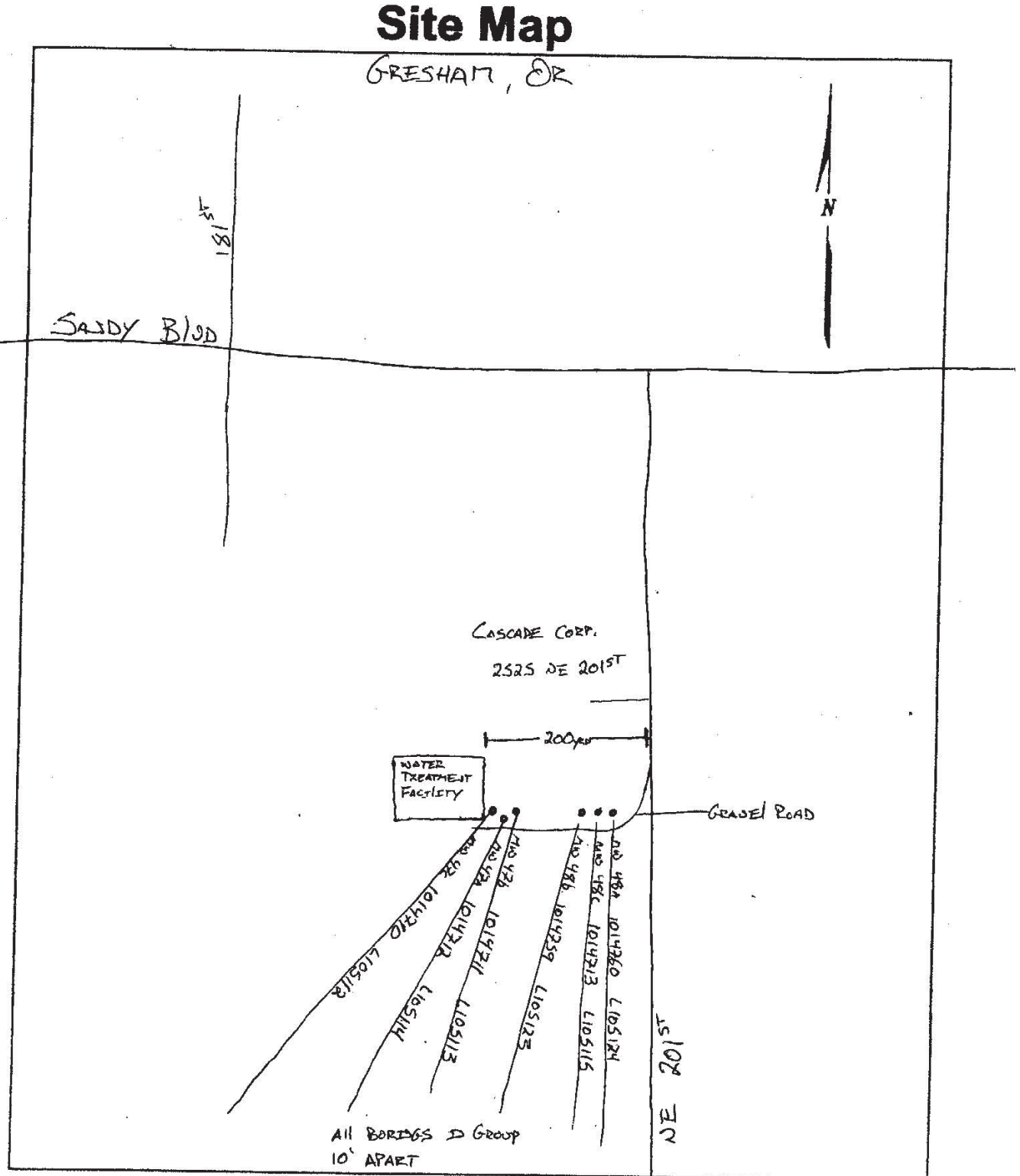


Well Completion Date: 8/29/11
 Drilling Contractor/Method: Boart Longyear / Rotasonic
 Ground Surface Elevation: 117.24 ft MSL
 Top of Casing Elevation: 120.16 ft MSL

Prowell Environmental, Inc., Portland, Oregon.

MW-47b Well Details
 Cascade Corporation, TGA Remedy

Map of well



TGA MW-47a Well Log

LITHOLOGIC LOG – MW-47a

Sheet 1 of 2

Project: Cascade Corporation, TGA Remedy

Well Location: 2525 NE 201st Avenue, Fairview, OR

Drilling Contractor: Boart Longyear, LLC

Ground Surf Elevation: 117.32 ft MSL

Drilling Method: Rotasonic truck-mounted rig

Top of PVC Elevation: 120.33 ft MSL

Drill End Date: August 30, 2011

Logged by: S. Prowell, R.G.

DEPTH BELOW SURFACE (ft)	GRAIN SIZE SAMPLES				TOC (mg/kg)	SYMBOLIC LOG	SOIL DESCRIPTION	COMMENTS
	% GRAVEL	% SAND	% SILT	% CLAY				
0	NA	NA	NA	NA	NA	FILL	<p>0.0 - 3.0 ft: Silty Gravel (GM) 3/4-minus fill, grading to Silt (ML), med. brown, dry (FILL).</p>	<p>FILL</p> <p>6-in. diam. borehole with continuous core to 20.0 ft</p>
5						BOULDERS with SM	<p>3.0 - 7.5 ft: BOULDERS (90%), gray, dense, unweathered, non-vesicular, basalt up to 3.5 ft (with rock flour due to drill action), <5% coarse gravel, <10% silty sand matrix (SM) between boulders at 6.5 ft.</p>	<p>UPPER TGA GRAVEL</p>
10						SM	<p>7.5 - 11.5 ft: Silty Sand with Gravel (SM), red-brown, moist, varies from loose to dense and partially-cemented, fine to med-grained sand, some gravel (15%) up to 1.5 inch.</p> <p>Sand size increases with depth; becomes loose.</p>	<p>LOWER TGA SAND</p> <p>MW-47a screened from 9.1 to 14.1 ft bgs.</p>
15						SP	<p>11.5 - 14.6 ft: Poorly-Graded Sand (SP), med. brown, moist, changing to WET at 13 ft, loose, predominantly coarse-grained, trace gravel.</p>	<p>Groundwater encountered @ 13 ft bgs</p> <p>MW-47a water level @ 13.05 ft bgs on 11/8/2011.</p>
						ML-SM	<p>14.6 - 19.5 ft: Sandy Silt to Silty Sand (ML-SM), light brown, moist to wet, trace gravel, varies from soft to v. stiff and partially-cemented, laminar texture.</p>	

NOTES: See page 2 of 2 for well construction information. See MW-47c lithologic log for grain size distribution data.

LITHOLOGIC LOG – MW-47a

Project: Cascade Corporation, TGA Remedy

Well Location: 2525 NE 201st Avenue, Fairview, OR

Drilling Contractor: Boart Longyear, LLC

Ground Surf Elevation: 117.32 ft MSL

Drilling Method: Rotasonic truck-mounted rig

Top of PVC Elevation: 120.33 ft MSL

Drill End Date: August 30, 2011

Logged by: S. Prowell, R.G.

DEPTH BELOW SURFACE (ft)	GRAIN SIZE SAMPLES				TOC (mg/kg)	SYMBOLIC LOG	SOIL DESCRIPTION	COMMENTS
	% GRAVEL	% SAND	% SILT	% CLAY				
15	NA	NA	NA	NA	NA	ML-SM	14.6 - 19.5 ft: Sandy Silt to Silty Sand (ML-SM) , light brown, moist to wet, trace gravel, varies from soft to v. stiff and partially-cemented, laminar texture.	LOWER TGA SAND AND SILT 6-in. diam. borehole with continuous core to 20.0 ft
20						ML-CL	19.5 - 20.0 ft: Siltstone and Claystone , light yellow-brown, moist, v. hard, low plasticity, homogeneous, in-tact core	CU 1 SILTSTONE AND CLAYSTONE (yellow-brown)
25								

Total Drill Depth: 20.0 ft bgs

Borehole Diameter: 6 inches

Total Well Depth: 14.5 ft bgs

Well Casing and Screen Material: 2-inch I.D. Schedule 40 flush-threaded PVC

Well Screen Slot Size: 0.02 inch

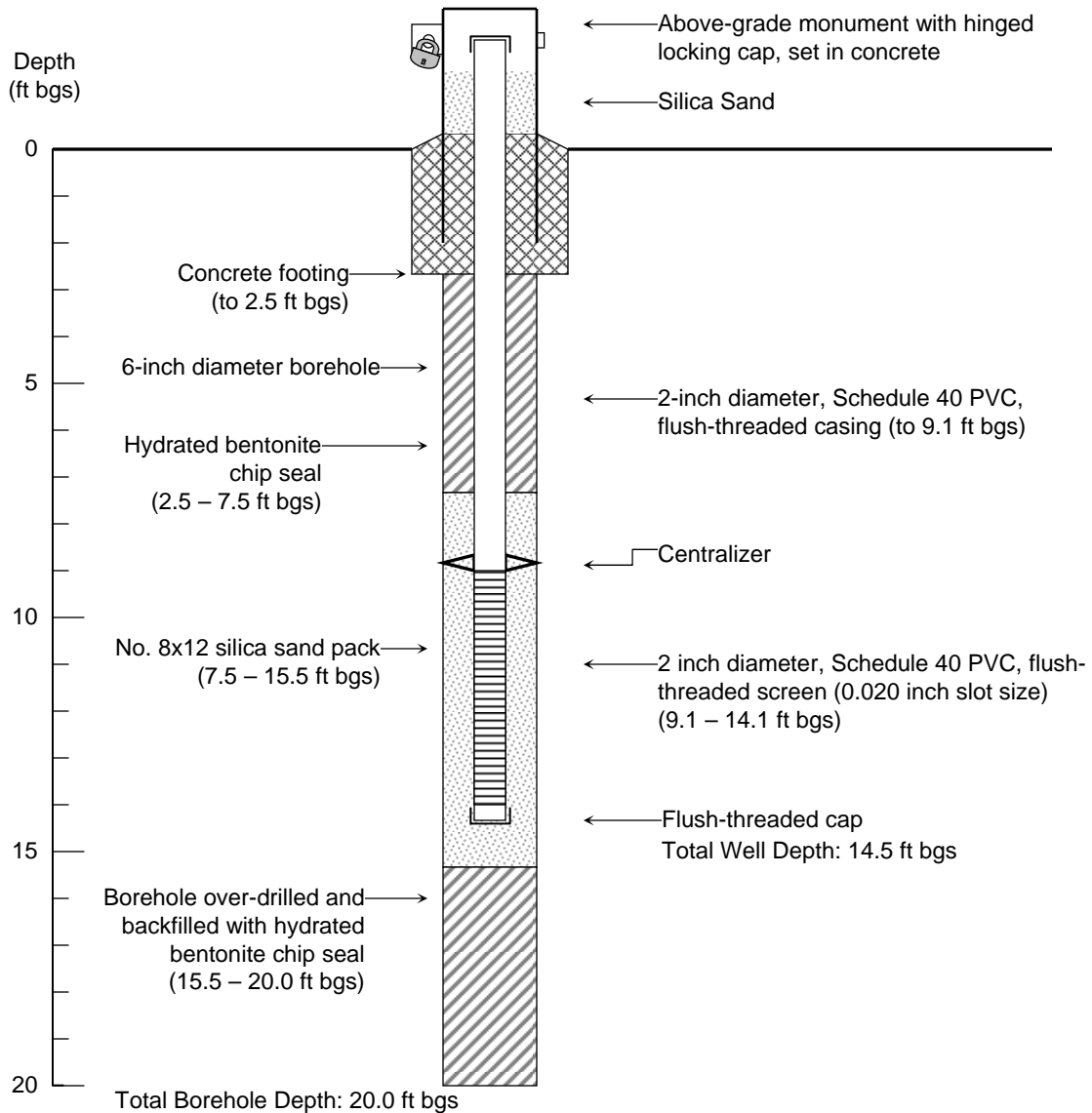
Well Screen Interval: 9.1 - 14.1 ft bgs

Filter Sand Pack Material & Size: 8 X 12 clean silica sand

Filter Sand Pack Interval: 7.5 - 15.5 ft bgs

Well Seal: Hydrated Bentonite Chips from 2.5 to 7.5 ft bgs

Overdrill backfill Seal: Hydrated Bentonite Chips from 15.5 to 20.0 ft bgs

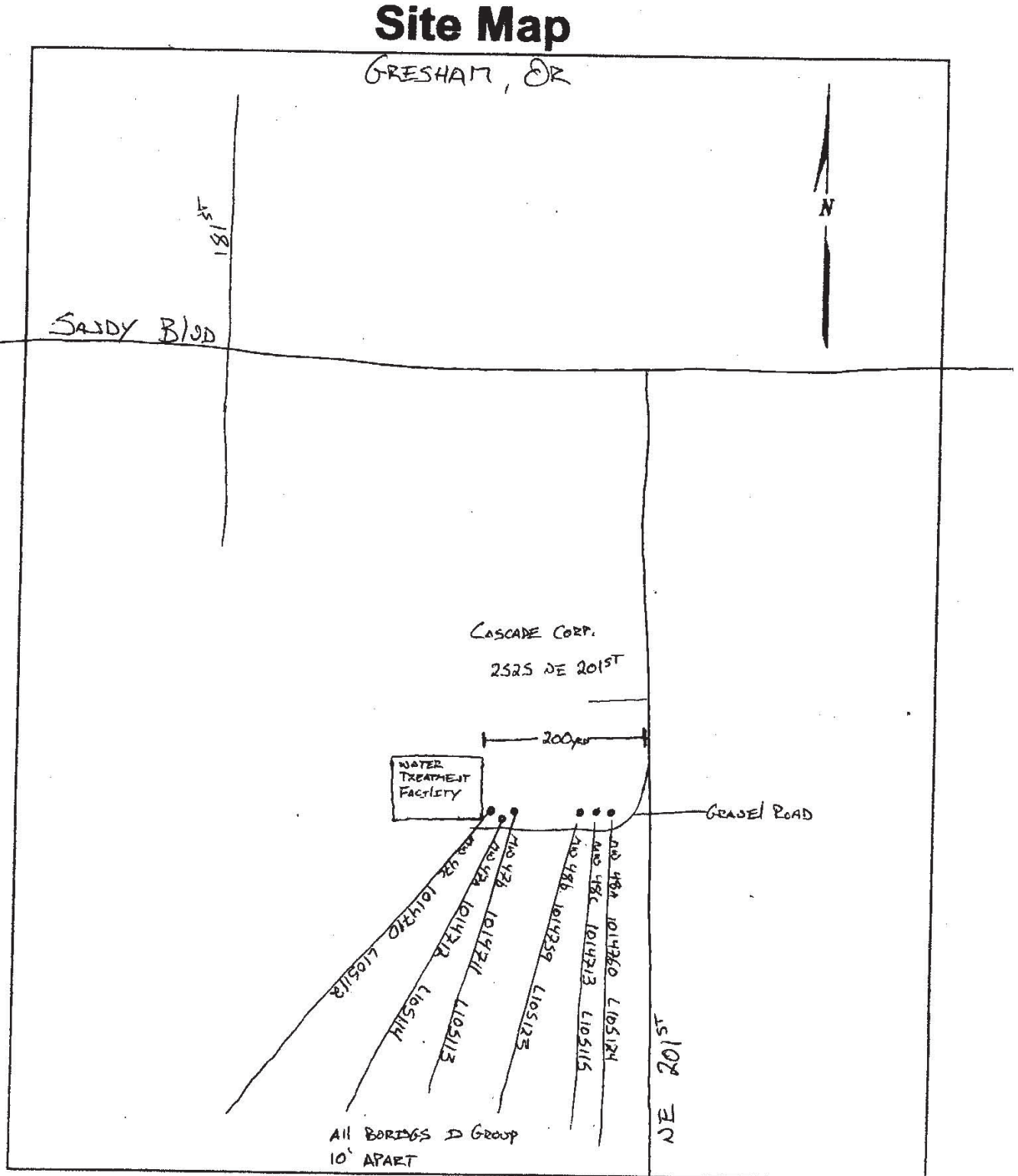


Well Completion Date: 8/30/11
 Drilling Contractor/Method: Boart Longyear / Rotasonic
 Ground Surface Elevation: 117.32 ft MSL
 Top of Casing Elevation: 120.33 ft MSL

Prowell Environmental, Inc., Portland, Oregon.

MW-47a Well Details
 Cascade Corporation, TGA Remedy

Map of well



TGA MW-43 Well Log

LOG OF EXPLORATORY BORING

PROJECT NAME Cascade Corporation, TGA Remedy
LOCATION Fairview, Oregon
DRILLED BY Geo-Tech Explorations, Inc.
DRILL METHOD Air Rotary
LOGGED BY Craig D. Fanshier, RG

BORING NO. MW-43
PAGE 1 OF 2
GROUND ELEV. 126.21
TOTAL DEPTH 32.7'
DATE COMPLETED 4/27/01

SAMPLE NUMBER	SAMPLE TYPE	BLOWS PER 6 INCHES (RECOVERY)	GROUND WATER LEVEL	DEPTH IN FEET	SAMPLES	WELL DETAILS	LITHO-LOGIC COLUMN	LITHOLOGIC DESCRIPTION
SS-1	SS							0 to 1.0 foot: SILT (ML), dark brown (10YR 3/8); 90 percent low plastic fines; 5 percent very fine sand; 5 percent fine gravel; damp. (TOPSOIL) 1.0 to 5.0 feet: SILTY GRAVEL (GM), dark brown (10YR 3/8); 20 percent silt (low plasticity); 30 percent fine to medium sand, angular (F:M:C=1:5:2); 50 percent fine rounded gravel; very dense; damp.
SS2-2	SS	50/2"		5				5.0 to 11.0 feet: SANDY GRAVEL (GP); olive brown; <5 percent fines; 40 percent fine to medium sand (mostly 0.2 to 0.7 mm), subrounded; 60 percent fine to coarse gravel (F:M:C=1:5:2); very dense; damp. @ 7.5 to 8.8 feet: small basaltic boulder (1 to 1.3-inch diameter) causes drive casing too kick off to the side.
GR-3 SS2-4	Grab SS	40 50/0"		10				11.0 to 11.5 feet: GRAVELLY SANDY (GP); olive brown; 5 to 75 percent fine to angular sand; 25 to 35 percent fine subrounded gravel; very dense; damp. 11.5 to 13.0 feet: SANDY GRAVEL (GP); dark olive brown (2.5Y 3/3); 25 to 35 percent fine sand; 65 to 75 percent fine to medium gravel; dense; moist. 13.0 to 15.0 feet: SANDY GRAVEL (GP); <5 percent fines; 40 percent fine to medium sand (mostly 0.2 to 0.7 mm), subrounded; 60 percent fine to coarse gravel (F:M:C=1:5:2); very dense; moist.
SS2-5 SS1	SS	50/0 50/3" 50/5"	▽	15				15.0 to 20.0 feet: SANDY GRAVEL (GP); 5 percent non to low plasticity fines; 35 percent fine to medium sand (mostly 0.2 to 0.7 mm), subrounded; 60 percent fine gravel; very dense; wet. Note: Groundwater encountered at 15 feet during drilling. Very little (<0.5 gpm) produced from air rotary discharge at 17 to 19 feet.

REMARKS

Drilled with 7 inch O.D. threaded casing (5- and 10-foot lengths). Soil samples collected with 1.5-inch split barrel sampler (SS1) and 4-inch split-barrel sampler (SS2) driven with a 300-pound wireline hammer or from grab samples (GR) of cuttings discharged from the cyclone. Core collected with Longyear PQ triple tube core system (CC). F:M:C = ratio of fine to medium to coarse grain size.

NATURAL RESOURCE MANAGEMENT GROUP

LOG OF EXPLORATORY BORING

PROJECT NAME Cascade Corporation, TGA Remedy
LOCATION Fairview, Oregon
DRILLED BY Geo-Tech Explorations, Inc.
DRILL METHOD Air Rotary
LOGGED BY Craig D. Fanshier, RG

BORING NO. MW-43
PAGE 2 OF 2
GROUND ELEV. 126.21
TOTAL DEPTH 32.7'
DATE COMPLETED 4/27/01

SAMPLE NUMBER	SAMPLE TYPE	BLOWS PER 6 INCHES (RECOVERY)	GROUND WATER LEVEL	DEPTH IN FEET	SAMPLES	WELL DETAILS	LITHOLOGIC COLUMN	LITHOLOGIC DESCRIPTION
SS1-7	SS	50/3"						20.0 to 23.0 feet: GRAVELLY SAND (SP) ; very dark grayish brown (2.5Y 3/2) with yellowish brown fines; approximately 5 percent medium to low plasticity fines; 70 percent fine to medium (0.1-2.0 mm), subangular, poorly sorted sand, sand slightly cemented or compacted; 25 percent fine (approximately 3/8 to 1/2 inch) rounded gravels; wet; very dense.
SS1-8	SS	35 50/4"		25				23.0 to 25.5 feet: SILTY SAND (SM) ; olive brown (2.5Y 4/3); 20 to 25 percent low plasticity fines; 40 to 50 percent fine subangular sand (sand is composed of sandstone fragments, basaltic grains and quartz grains); 25 percent fine rounded gravel; wet.
SS1-9	SS	40						25.5 to 27.5 feet: SANDSTONE ; dark brown (10Y 3/8); 5 percent low plasticity fines; 95 percent medium fine to medium (0.2 to 0.6 mm), subangular sand; soft, weakly cemented; wet.
CC-10	CC	RQD= 100%						Note: sandstone at 27.0 and 28.0 feet is damp to dry. @ 26.3 to 27.0 feet: grain size analysis classified as SM. 27.5 to 30.0 feet: SILTSTONE ; light to dark olive brown (2.5Y 3/4-4/4) with mottling; 70 to 80 percent silt; 20 to 30 percent very fine sand; hard; damp. @ 29.1 feet: changes to dark olive gray (5Y 3/2). Possible paleohorizon, small areas (0.5 mm) are dark gray to black. @ 29.0 to 29.4 feet: grain size analysis classified as ML. 30.0 to 32.7 feet: CLAYSTONE ; dark greenish gray to olive gray, 70 to 80 percent low plasticity fines, cubic soil ped fractures; 20 to 30 percent very fine sand; hard; damp. Bottom of boring = 32.7 feet.
				30				
				35				
				40				

REMARKS

Drilled with 7 inch O.D. threaded casing (5- and 10-foot lengths). Soil samples collected with 1.5-inch split barrel sampler (SS1) and 4-inch split-barrel sampler (SS2) driven with a 300-pound wireline hammer or from grab samples (GR) of cuttings discharged from the cyclone. Core collected with Longyear PQ triple tube core system (CC). F:M:C = ratio of fine to medium to coarse grain size.

NATURAL RESOURCE MANAGEMENT GROUP

WELL CONSTRUCTION DETAILS

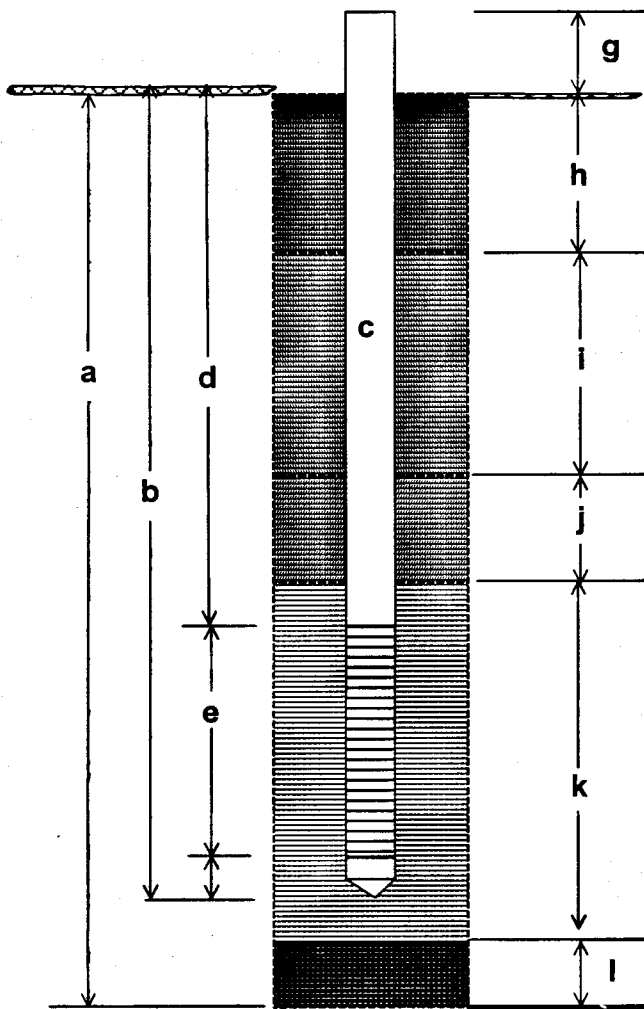
Natural Resource Management Group

3025 SW Canby Street, Portland, OR 97219 (503) 293-3895

Well Number: **MW-43**

Project Location Cascade Corp, TGA Remedy
Project Name Portland, Oregon
Project Number NRMG # 2001E-52.01
Start Card Number 134971
WRD Well Number L43844
Well Construction Geo-Tech Explorations, Inc.
Contractor Joe Staloch

Top of casing elev. 128.79 ft msl
Ground surface elev. 126.21 ft msl
Datum MSL 1929 NVGD
Installation Date 4/27/01
Construction Inspector Craig D. Fanshier, R.G.
Site Coordinates Northings: 1498643.73
 Eastings: 689295.33



Centralizers At bottom and top of screen

Other comments

Exploratory Boring

a Total depth 32.7 ft bgs
 Borehole diameter 7-inches
 Drilling method Air rotary, Ingersol Rand T3W with downhole hammer

Well Construction Materials

Material Schedule 40 PVC, factory wrapped
 Joints Flush threaded joints with o-rings

Well Construction Specifications

b Total casing length 30.66 feet long (2 to 28.6 ft bgs)
c Well and casing diameter 2-inches
d Depth to top of perforations 18.3 ft bgs
e Perforated length 9.7 ft
 Perforated interval 18.3 to 28.0 ft bgs
 Perforation type machine slotted
 Perforation slot size 20-slot (0.020 inches)
f Sump length 0.6 foot (28.0 to 28.6 ft bgs)
g Stick-up 2.6 ft bgs
h Surface seal Concrete 0 to 1 feet bgs
i Backfill
 Backfill material None
 Volume used na
j Well Seal
 Seal material 1 to 15.5 ft bgs
 Volume used 3/4-inch bentonite chips
 7-50# bags
k Gravel Pack
 Gravel pack material 15.5 to 29.0 ft bgs
 Volume used 8-12 graded Colorado Silica Sand™
 6-50# bags
l Bottom Seal
 Backfill material 29.0 to 32.7 ft bgs
 Volume used 3/4-inch bentonite chips
 1.5-50# bags

STATE OF OREGON
MONITORING WELL REPORT
 (as required by ORS 537.765 & OAR 690-240-095)

MULT 63887

L 43844
 Start Card # 134971

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

(1) OWNER/PROJECT: WELL NO. MW-43
 Name Cascade Corporation
 Address PO Box 20187
 City Portland State OR Zip 97220

(6) LOCATION OF WELL By legal description
 Well Location: County Multnomah
 Township 1 (N or S) Range 30 (E or W) Section 29
 1. NE 1/4 of SE 1/4 of above section.
 2. Either Street address of well location 2201 NE 201st Ave, Troutdale
 or Tax lot number of well location 2300

(2) TYPE OF WORK:
 New construction Alteration (Repair/Recondition)
 Conversion Deepening Abandonment

3. ATTACH MAP WITH LOCATION IDENTIFIED. Map shall include approximate scale and north arrow.

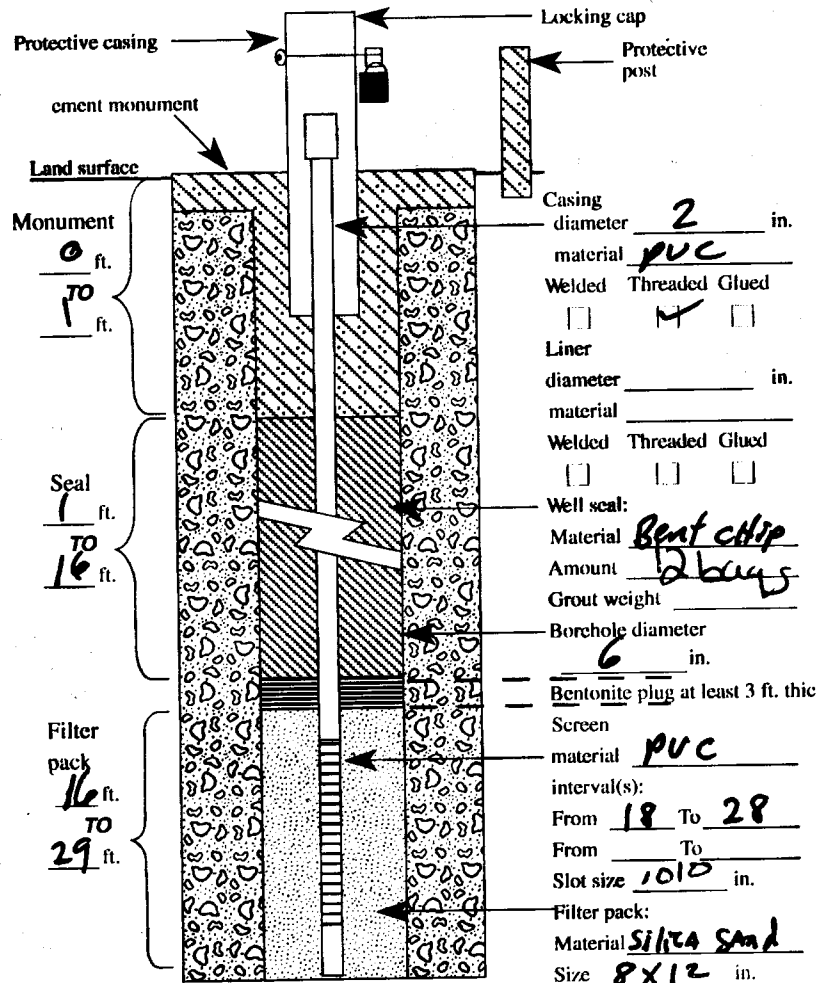
(3) DRILLING METHOD
 Rotary Air Rotary Mud Cable
 Hollow Stem Auger Other _____

(7) STATIC WATER LEVEL:
12 Ft. below land surface. Date 4/27/01
 Artesian Pressure _____ lb/sq. in. Date _____

(4) BORE HOLE CONSTRUCTION
 Special Standards Yes No Depth of completed well 29 ft.

(8) WATER BEARING ZONES:
 Depth at which water was first found 12

From	To	Est. Flow Rate	SWL
<u>12</u>	<u>32</u>	<u>1/2 gpm</u>	<u>12.3</u>



(9) WELL LOG: Ground elevation _____

Material	From	To	SWL
<u>Grass</u>			
<u>Brn silt & gravel</u>	<u>0</u>	<u>10</u>	
<u>Brn sand & gravel 1/2</u>	<u>10</u>	<u>23</u>	<u>12.3</u>
<u>Brn silt & gravel</u>	<u>23</u>	<u>25</u>	
<u>Brn sandstone</u>	<u>25</u>	<u>30</u>	
<u>Gray clay Stone</u>	<u>30</u>	<u>32</u>	
<u>Abandoned bottom of hole with 15g of Bent. chips</u>			
RECEIVED			
MAY 24 2001			
WATER RESOURCES DEPT. SALEM, OREGON			

Date started 4.26.01 Completed 4.27.01

(5) WELL TEST:
 Pump Bailer Air Flowing Artesian
 Permeability _____ Yield _____ GPM
 Conductivity _____ PH _____
 Temperature of water 51 °F/C Depth artesian flow found _____ ft.
 Was water analysis done? Yes No
 By whom? _____
 Depth of strata to be analyzed. From _____ ft. to _____ ft.
 Remarks: _____
 Name of supervising Geologist/Engineer _____

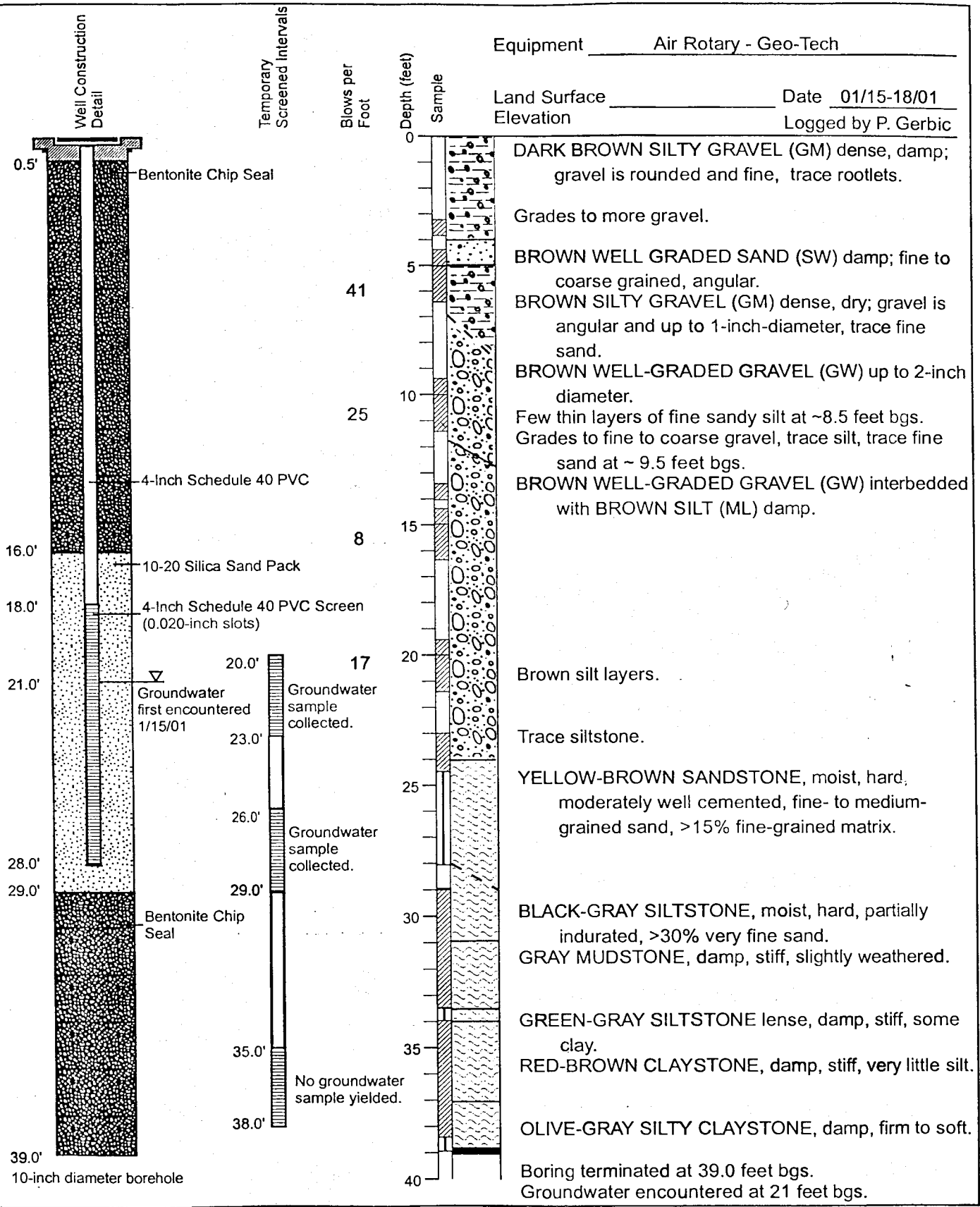
(unbonded) Monitor Well Constructor Certification:
 I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon well construction standards. Materials used and information reported above are true to the best knowledge and belief.
 MWC Number 10479
 Signed _____ Date 4.27.01

(bonded) Monitor Well Constructor Certification:
 I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon well construction standards. This report is true to the best of my knowledge and belief.
 MWC Number 10011
 Signed _____ Date 5/23/01

TGA MW-42 Well Log

Equipment Air Rotary - Geo-Tech

Land Surface _____ Date 01/15-18/01
Elevation _____ Logged by P. Gerbic



Monitoring Well MW-42 Log and Construction Detail

Cascade Corporation - TGA Remedy
Fairview, Oregon

CDM Camp Dresser & McKee Inc.

Figure
3

PROJECT NO.	DRAWN	DATE	APPROVED	REVISED	DATE
32502lg.cdr	PJS	03/09/01			

20155-32502-Task 1

STATE OF OREGON
MONITORING WELL REPORT
 (as required by ORS 537.765 & OAR 690-240-095)

L 43671

Start Card # 134716

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

(1) OWNER/PROJECT: WELL NO. MW-42
 Name Cascade Corporation
 Address 2201 NE 201st Ave
 City Fairview State OR Zip 97024

(6) LOCATION OF WELL By legal description
 Well Location: County Multnomah
 Township 1 (North S) Range 3 (East W) Section 29
 1. NW 1/4 of NE 1/4 of above section.
 2. Either Street address of well location 2201 NE 201st

(2) TYPE OF WORK:
 New construction Alteration (Repair/Recondition)
 Conversion Deepening Abandonment

or Tax lot number of well location 1000
 3. ATTACH MAP WITH LOCATION IDENTIFIED. Map shall include approximate scale and north arrow.

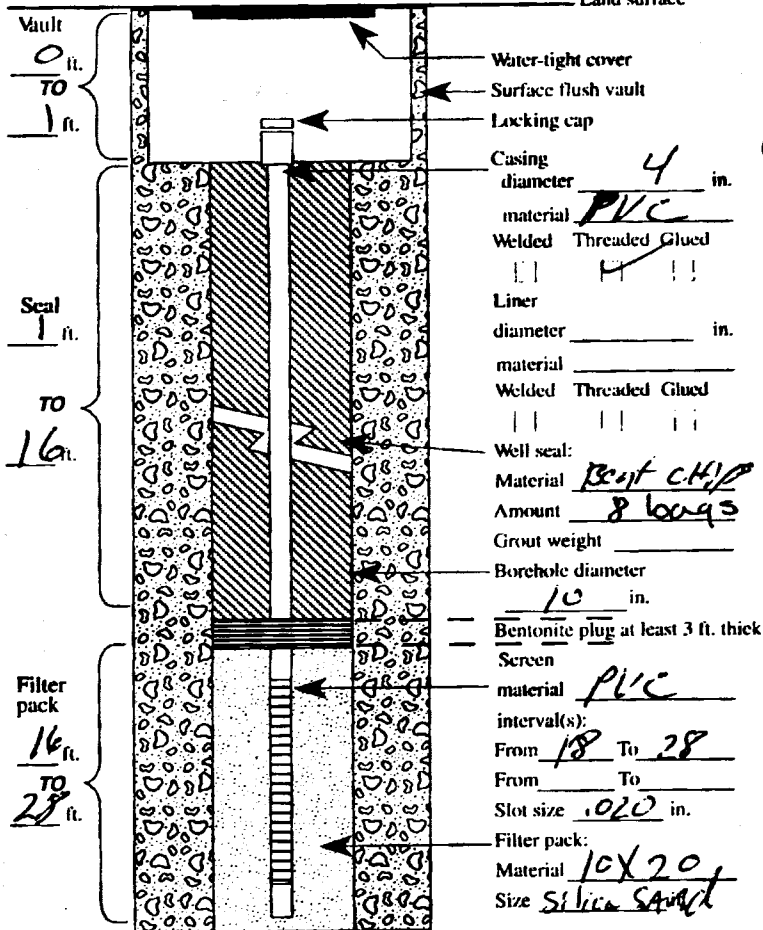
(3) DRILLING METHOD
 Rotary Air Rotary Mud Cable
 Hollow Stem Auger Other

(7) STATIC WATER LEVEL:
20 Ft. below land surface. Date 1-16-1
 Artesian Pressure _____ lb/sq. in. Date _____

(4) BORE HOLE CONSTRUCTION
 Special Standards Yes No Depth of completed well 28 ft.
 Land surface

(8) WATER BEARING ZONES:
 Depth at which water was first found 20

From	To	Est. Flow Rate	SWL
<u>20</u>	<u>33</u>	<u>1/2 gpm</u>	<u>20</u>



(9) WELLLOG: Ground elevation _____

Material	From	To	SWL
<u>Brn silt & Gravel</u>	<u>0</u>	<u>5</u>	
<u>Brn sand & Gravel</u>	<u>5</u>	<u>23</u>	<u>20'</u>
<u>cemented gravels</u>	<u>23</u>	<u>24</u>	
<u>Sandstone &</u>	<u>24</u>	<u>33</u>	
<u>brn clay</u>	<u>33</u>	<u>34</u>	
<u>Aqua Blue clay</u>	<u>34</u>	<u>36</u>	
<u>Brn clay</u>	<u>36</u>	<u>39</u>	

BACK Fill to 28' with Bent chips
2 bags

RECEIVED

FEB 14 2001

WATER RESOURCES DEPT.
 SALEM, OREGON

Date started 1-15-1 Completed 1-19-1

(5) WELL TEST:
 Pump Bailer Air Flowing Artesian
 Permeability _____ Yield _____ GPM
 Conductivity _____ PH _____
 Temperature of water 51 °F/C Depth artesian flow found _____ ft.
 Was water analysis done? Yes No
 By whom? CDM
 Depth of strata to be analyzed. From _____ ft. to _____ ft.
 Remarks: _____

(unbonded) Monitor Well Constructor Certification:
 I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon well construction standards. Materials used and information reported above are true to the best knowledge and belief.
 Signed [Signature] MWC Number 1047
 Date 1-19-1

(bonded) Monitor Well Constructor Certification:
 I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon well construction standards. This report is true to the best of my knowledge and belief.
 Signed [Signature] MWC Number 1001
 Date 1-20-12

Name of supervising Geologist/Engineer _____

TGA MW-35s Well Log

LOG OF EXPLORATORY BORING

PROJECT NAME Cascade Corporation
 LOCATION Troutdale, Oregon
 DRILLED BY Staco Well Services
 DRILL METHOD Air Rotary - Failing Speedstar 30K
 LOGGED BY A. St. John

BORING NO. MW-35S
 PAGE 1 OF 2
 GROUND ELEV. 118.50'
 TOTAL DEPTH 24.80'
 DATE COMPLETED 08/17/95

SAMPLE METHOD AND NUMBER	RECOVERY PERCENT FID (ppm)	BLOWS PER 6 INCHES	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	WELL DETAILS	LITHOLOGIC COLUMN	LITHOLOGIC DESCRIPTION
G-1	0							0 to 2.5 feet: SILT (ML); yellowish brown (10YR 5/6-5/8); low plasticity fines; dry; trace roots. (TOPSOIL)
G-2	0							2.5 to 7.0 feet: SANDY GRAVEL (GW); yellowish brown (10YR 5/6-5/8); 70 percent fine to coarse gravel, subangular, primarily mafic; 30 percent fine to coarse sand; 5 percent yellowish brown (10YR 5/6) fines; dry. (TROUTDALE GRAVEL AQUIFER)
G-3	0			5				
G-4	0							7.0 to 10.0 feet: SAND WITH SILT (SP-SM); yellowish brown (10YR 5/6); 85 percent fine sand; 5 to 10 percent nonplastic fines; 5 percent fine gravel, subangular; dry. (TROUTDALE GRAVEL AQUIFER)
G-5	0			10				
G-6	0	8	▼ 8/17/95 13:57					10.0 to 12.5 feet: CLAYEY GRAVEL (GC); yellowish brown (10YR 5/6-5/8); 50 to 60 percent fine gravel, subangular to well rounded, mafic; 20 to 25 percent fine to coarse sand; 20 to 25 percent light yellowish brown (10YR 6/4) medium plasticity fines; damp. (TROUTDALE GRAVEL AQUIFER)
G-7	0	30	▽ 8/17/95 10:53	15				
G-8	0	50						12.5 to 17.5 feet: SANDY GRAVEL WITH CLAY (GP-GC); brown (10YR 5/3-4/3); 50 percent fine gravel, subangular to subrounded; 20 to 25 percent light yellowish brown fines; moist; sand and fines coat gravel fragments. (TROUTDALE GRAVEL AQUIFER)
								17.5 to 23.8 feet: SILTSTONE (SLT); pale brown (10YR 6/3); low to medium plasticity; hard; dry; massive; homogeneous. (CONFINING UNIT-1) SUA1A - 8/2/00
				20				



EMCON

REMARKS

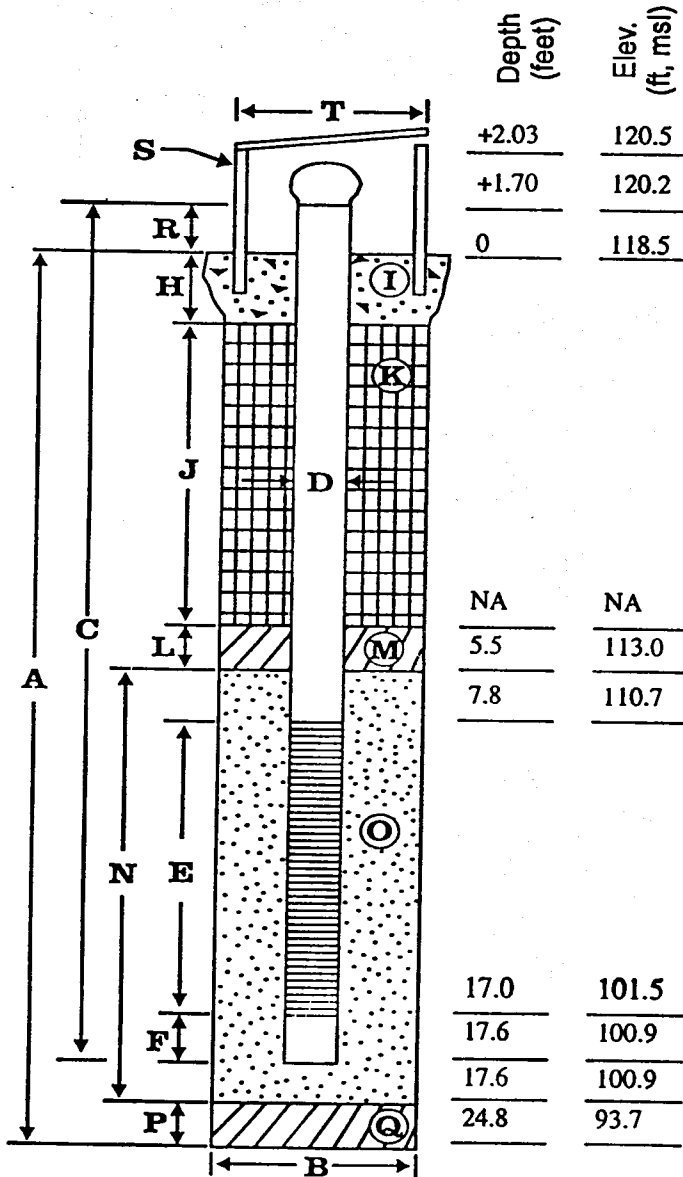
(1) Grab samples (G) collected at 1.0-foot-intervals from the cyclone of the drill rig. Split barrel samples (SB) collected by driving a 2-inch-diameter sampler over a 1.5-foot-interval using a 300 pound hammer with a 30-inch stroke. (2) 7-inch-diameter hole was drilled with a down-hole hammer and threaded casing was driven. (3) Top of PVC casing elevation = 120.20 feet msl. (4) White triangle = approximate depth at which water was encountered during drilling. Black triangle = static water level in completed wells. (5) Organic vapor readings collected with a flame ionization detector calibrated with 98 percent methane.



WELL DETAILS

Project Number: 40683-003.012/7
 Client Name: Cascade Corporation
 Project Name: TGA Control Trench
 Location: Troutdale, Oregon
 Driller: Staco Well Services

Boring/Well No.: MW-35S
 Top of Casing Elev.: 120.20
 Ground Surface Elev.: 118.50
 Installation Date: 8/17/95
 Permit/Start Card No.: _____



EXPLORATORY BORING

A. Total depth: 24.8 ft.
 B. Diameter 7 in.
 Drilling method: Air Rotary

WELL CONSTRUCTION

C. Well casing length: 19.3 ft.
 Well casing material: PVC
 D. Well casing diameter: 2 in.
 E. Well screen length: 9.2 ft.
 Well screen type: machined slots
 Well screen slot size: 0.020
 F. Well sump/end cap length: 0.6 ft.
 G. Well casing height (stickup): +1.7 ft.
 H. Surface seal thickness: 2 ft.
 I. Surface seal material: Concrete
 J. Annular seal thickness: 3.5 ft.
 K. Annular seal material: 3/4-inch bentonite chips
 L. Filter pack seal thickness: NA ft.
 M. Filter pack seal material: NA
 N. Sand pack thickness: 12.0 ft.
 O. Sand pack material: CSSI 8-12 silica sand
 P. Bottom material thickness: 7.3 ft.
 Q. Bottom material: bentonite chips
 R. Well casing hgt (stickup): 1.70 ft.
 S. Protective casing material: Steel
 Well centralizer depths: 17.1 ft.
 T. Protective casing diameter: 6 in.

NOTES:

Installed by: Anna St. John
 Reviewed by: Celin Teodoru
 Date: 1/30/96

MULT
 4985

01M/038/29AD
 Start Card # 82035

(1) OWNER/PROJECT: WELL NO. MW-355
 Name Cascade Corporation
 Address PO Box 20187
 City Portland State OR Zip 97220

(6) LOCATION OF WELL By legal description
 Well location Multnomah
 Township IN (N or S) Range 3E (E or W) Section 29
 1. SE 1/4 of NE 1/4 of above section.
 2. Street address of well location 2201 NE 201st
 Troutdale, OR
 3. Tax lot number of well location 1000
 4. ATTACH MAP WITH LOCATION IDENTIFIED.

(2) TYPE OF WORK:
 New construction Repair Recondition
 Conversion Deepening Abandonment

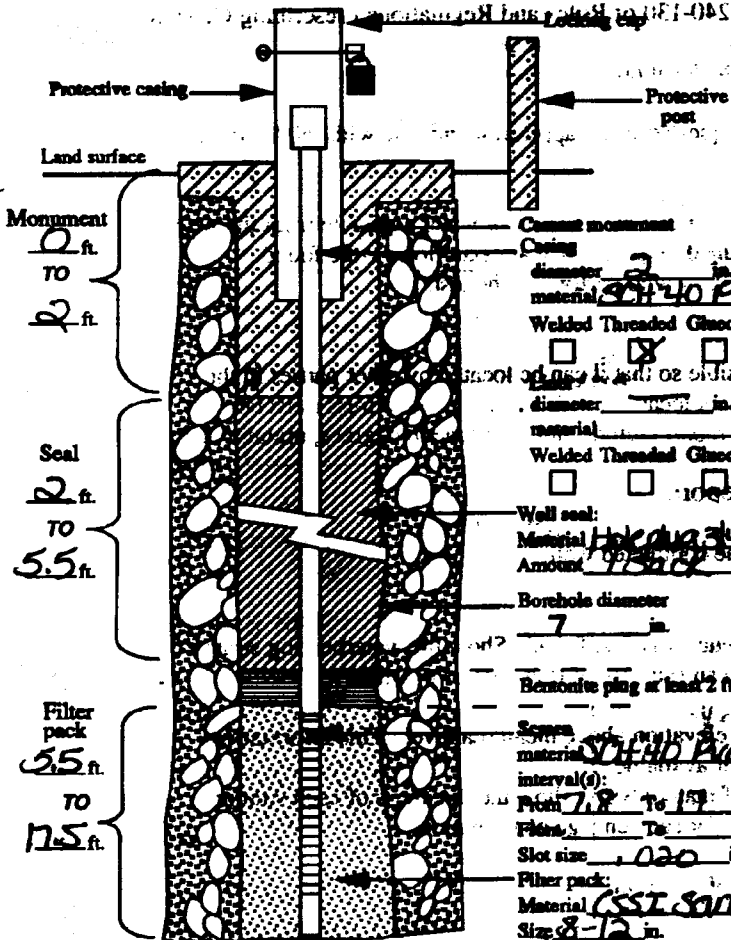
(3) DRILLING METHOD
 Rotary Air Rotary Mud Cable
 Hollow Stem Auger Other

(7) STATIC WATER LEVEL:
 10.64 ft. below land surface. Date: 8/17/95
 Artesian Pressure ft/sq. in. Date:

(4) BORE HOLE CONSTRUCTION
 Special Standards Yes No
 Yes No
 Depth of completed well 17.6

(8) WATER BEARING ZONES:
 Depth at which water was first found 10.64

Interval	Material	Flow Rate	SWL
10.64	21	2.4 gpm	10.64



(9) WELL LOG: Ground elevation

Material	From	To	SWL
Silt (ml)	0	2.5	
Sandy gravel (gp)	2.5	7	
Sand (sp)	7	8	
Sandy gravel (gp)	8	10	
Clayey gravel (gc)	10	12.5	
Sandy gravel (gp)	12.5	17.5	
Silt (ml)	17.5	21	
Claystone pale brown	21	23.8	
Claystone greenish	23.8	24.8	
Gravel		24.8	

RECEIVED
 SEP 19 1995
 WATER RESOURCES DEPT.
 SALEM, OREGON
 RECEIVED
 JAN - 9 1996
 WATER RESOURCES DEPT.
 SALEM, OREGON

(5) WELL TEST: N/A
 Pump Bailor Air Flowing Artesian
 Permeability _____ Yield _____ GPM
 Conductivity _____ PH _____
 Temperature of water 57 °F Depth artesian flow found _____ ft.
 Was water analysis done? Yes No
 By whom? _____
 Depth of strata to be analyzed. From _____ ft. to _____ ft.
 Remarks: _____
 Name of supervising Geologist/Engineer Anna St. John

(bonded) Monitor Well Constructor Certification:
 I certify that the work performed on the construction, alteration, or abandonment of this well is in compliance with Oregon well construction standards. Materials used and information reported above are true to the best knowledge and belief.
 Signed Steve G. Zimmerman MWC Number 10380 Date 8/17/95
 (bonded) Monitor Well Constructor Certification:
 I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon well construction standards. This report is true to the best of my knowledge and belief.
 Signed John R. Stolt MWC Number 10096 Date 9-18-95

TGA MW-33s Well Log

LOG OF EXPLORATORY BORING

PROJECT NAME Cascade Corporation
LOCATION Troutdale, Oregon
DRILLED BY Staco Well Services
DRILL METHOD Air Rotary - Failing Speedstar 30K
LOGGED BY A. St. John

BORING NO. MW-33S
PAGE 1 OF 2
GROUND ELEV. 127.10'
TOTAL DEPTH 26.20'
DATE COMPLETED 08/16/95

SAMPLE METHOD AND NUMBER	RECOVERY PERCENT FID (ppm)	BLOWS PER 6 INCHES	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	WELL DETAILS	LITHOLOGIC COLUMN	LITHOLOGIC DESCRIPTION
G-1	-- 0							0 to 3.0 feet: SILT (ML) ; brown (7.5YR 5/3) to strong brown (7.5YR 4/6); 70 percent low plasticity fines; 30 percent fine sand; multicolored; dry. (TOPSOIL)
G-2	-- 0							3.0 to 7.5 feet: SANDY GRAVEL WITH SILT (GW-GM) ; dark brown (7.5YR 3/2); 60 percent fine to coarse gravel, subangular to rounded, primarily mafic; 25 percent fine to coarse sand, multicolored; 15 percent light yellowish brown (10YR 6/4) fines; dry. (TROUTDALE GRAVEL AQUIFER)
G-3	-- 0			5				
G-4	-- 0							7.5 to 16.0 feet: SANDY GRAVEL (GP) ; gray (10YR 5/1); 60 percent fine gravel, subangular to rounded, mafic; 40 percent fine to coarse sand, micaceous, multicolored; dry. (TROUTDALE GRAVEL AQUIFER) @ 10.0 to 12.5 feet: increase in percentage of sand; dry.
G-5	-- 0			10				
G-6	-- 0		8/16/95 8:11					16.0 to 24.7 feet: GRAVELLY SAND WITH SILT (SW-SM) ; dark grayish brown (2.5Y 4/2); 50 to 55 percent fine to coarse sand, micaceous, multicolored; 35 percent fine gravel, primarily mafic, trace quartzite; 10 percent nonplastic light yellowish brown (10YR 6/4) fines; wet. (TROUTDALE GRAVEL AQUIFER) @ 17.5 to 20.0 feet: increase in percentage of
G-7	-- 0			15				
G-8	-- 0		8/15/95 13:50					
				20				



EMCON

REMARKS

(1) Grab samples (G) collected at 1.0-foot-intervals from the cyclone of the drill rig. Split barrel samples (SB) collected by driving a 2-inch-diameter sampler over a 1.5-foot-interval using a 300 pound hammer with a 30-inch stroke. (2) 7-inch-diameter hole was drilled with a down-hole hammer and threaded casing was driven. (3) Top of PVC casing elevation = 128.64 feet msl. (4) White triangle = approximate depth at which water was encountered during drilling. Black triangle = static water level in completed wells. (5) Organic vapor readings collected with a flame ionization detector calibrated with 98 percent methane.

LOG OF EXPLORATORY BORING

PROJECT NAME Cascade Corporation
LOCATION Troutdale, Oregon
DRILLED BY Staco Well Services
DRILL METHOD Air Rotary - Falling Speedstar 30K
LOGGED BY A. St. John

BORING NO. MW-33S
PAGE 2 OF 2
GROUND ELEV. 127.10'
TOTAL DEPTH 26.20'
DATE COMPLETED 08/16/95

SAMPLE METHOD AND NUMBER	RECOVERY PERCENT FID (ppm)	BLOWS PER 6 INCHES	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	WELL DETAILS	LITHOLOGIC COLUMN	LITHOLOGIC DESCRIPTION
G-9	-- 0							gravel. 16.0 to 24.7 feet: GRAVELLY SAND WITH SILT (SW-SM) ; continued. @ 20.0 to 24.7 feet: hard drilling.
G-10	-- 0		8/15/95 14:28					@ 23.0 feet: increase in percentage of fines.
SB-11	100	27		25				24.7 to 26.2 feet: SANDY SILTSTONE (SLT) ; grayish brown (10YR 5/2) to brown (10YR 5/3); low to medium plasticity fines; 10 percent fine sand, micaceous; hard; dry to damp. (CONFINING UNIT 1) Total depth drilled = 26.2 feet. Total depth sampled = 26.2 feet. WELL COMPLETION DETAILS: + 1.54 to 10.0 feet: 2-inch-diameter, flush-threaded (with o-rings), Schedule 40 PVC blank riser pipe. 10.0 to 24.3 feet: 2-inch-diameter, flush-threaded, Schedule 40 PVC well screen with 0.020-inch machined slots. 24.3 to 24.9 feet: 2-inch-diameter, flush-threaded, Schedule 40 sump. 0 to 2.0 feet: Above-ground security casing set in 2 x 2 foot concrete pad. 2.0 to 7.4 feet: Holeplug 3/4 bentonite chips hydrated with potable water. 7.4 to 24.9 feet: CSSI 8 - 12 washed silica sand. 24.9 to 26.2 feet: Holeplug 3/4 bentonite chips.
SB-12	--	44						
SB-13	100	53						
	-- 100							
				30				
				35				
				40				

REMARKS

(1) Grab samples (G) collected at 1.0-foot-intervals from the cyclone of the drill rig. Split barrel samples (SB) collected by driving a 2-inch-diameter sampler over a 1.5-foot-interval using a 300 pound hammer with a 30-inch stroke. (2) 7-inch-diameter hole was drilled with a down-hole hammer and threaded casing was driven. (3) Top of PVC casing elevation = 128.64 feet msl. (4) White triangle = approximate depth at which water was encountered during drilling. Black triangle = static water level in completed wells. (5) Organic vapor readings collected with a flame ionization detector calibrated with 98 percent methane.



EMCON

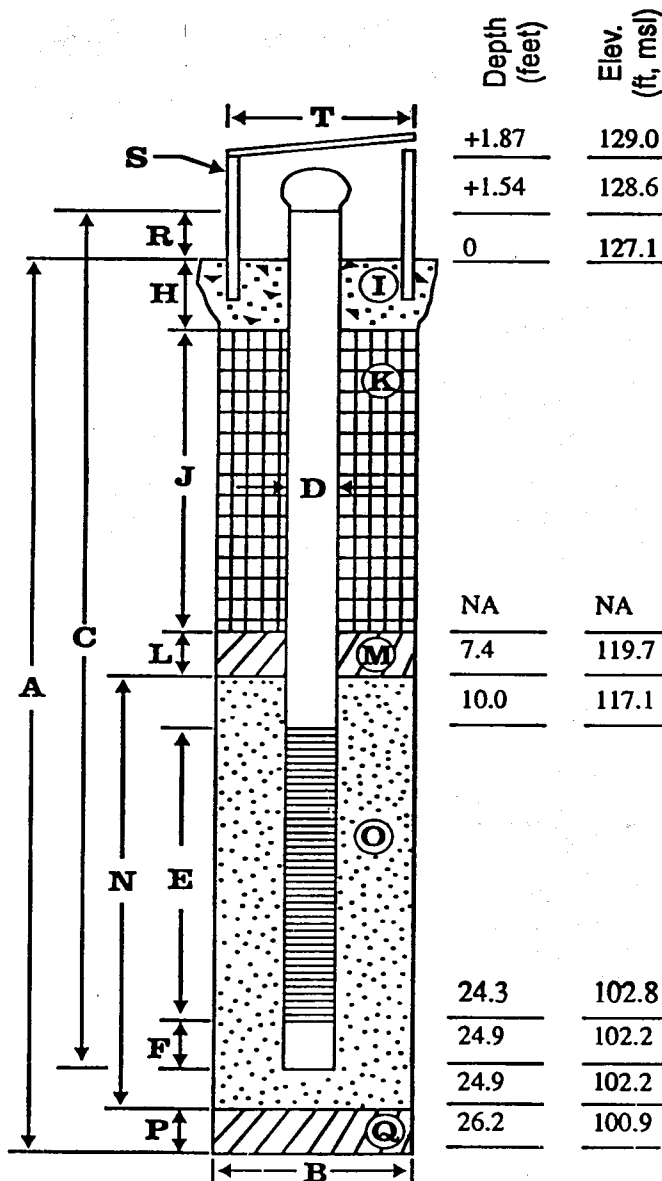
40683-003.012(7).CASGR.L65/sa:1.12/06/95...CASGR



WELL DETAILS

Project Number: 40683-003.012/7
 Client Name: Cascade Corporation
 Project Name: TGA Control Trench
 Location: Troutdale, Oregon
 Driller: Staco Well Services

Boring/Well No.: MW-33S
 Top of Casing Elev.: 128.64
 Ground Surface Elev.: 127.10
 Installation Date: 8/16/95
 Permit/Start Card No.: _____



EXPLORATORY BORING

A. Total depth: 26.20 ft.
 B. Diameter: 7 in.
 Drilling method: Air Rotary

WELL CONSTRUCTION

C. Well casing length: 26.44 ft.
 Well casing material: PVC
 D. Well casing diameter: 2 in.
 E. Well screen length: 14.3 ft.
 Well screen type: machined slots
 Well screen slot size: 0.020
 F. Well sump/end cap length: 0.6 ft.
 G. Well casing height (stickup): 1.54 ft.
 H. Surface seal thickness: 2 ft.
 I. Surface seal material: Concrete
 J. Annular seal thickness: 5.4 ft.
 K. Annular seal material: 3/4-inch bentonite chips
 L. Filter pack seal thickness: NA ft.
 M. Filter pack seal material: NA
 N. Sand pack thickness: 17.5 ft.
 O. Sand pack material: CSSI 8-12 silica sand
 P. Bottom material thickness: 1.3 ft.
 Q. Bottom material: bentonite chips
 R. Well casing hgt (stickup): 1.73 ft.
 S. Protective casing material: Steel
 Well centralizer depths: 24.3 ft.
 T. Protective casing diameter: 6 in.

NOTES:

Installed by: Anna St. John
 Reviewed by: Celia Teodora
 Date: 1/30/96

MULT
 4983

01N1035129AD
 Start Card # 82033

OWNER/PROJECT: WELL NO. MW-338
 Cascade Corporation
 PO Box 20187
 Portland OR 97200

(6) LOCATION OF WELL By legal description
 Willamette County Multnomah
 Township IN (N or S) Range SE (E or W) Section 29
 1. SE 1/4 of NE 1/4 of above section
 2. Street address of well location 201 NE 201st
 3. Tax lot number of well location 1000
 4. ATTACH MAP WITH LOCATION IDENTIFIED.

(2) TYPE OF WORK:
 New construction Repair Recondition
 Conversion Deepening Abandonment

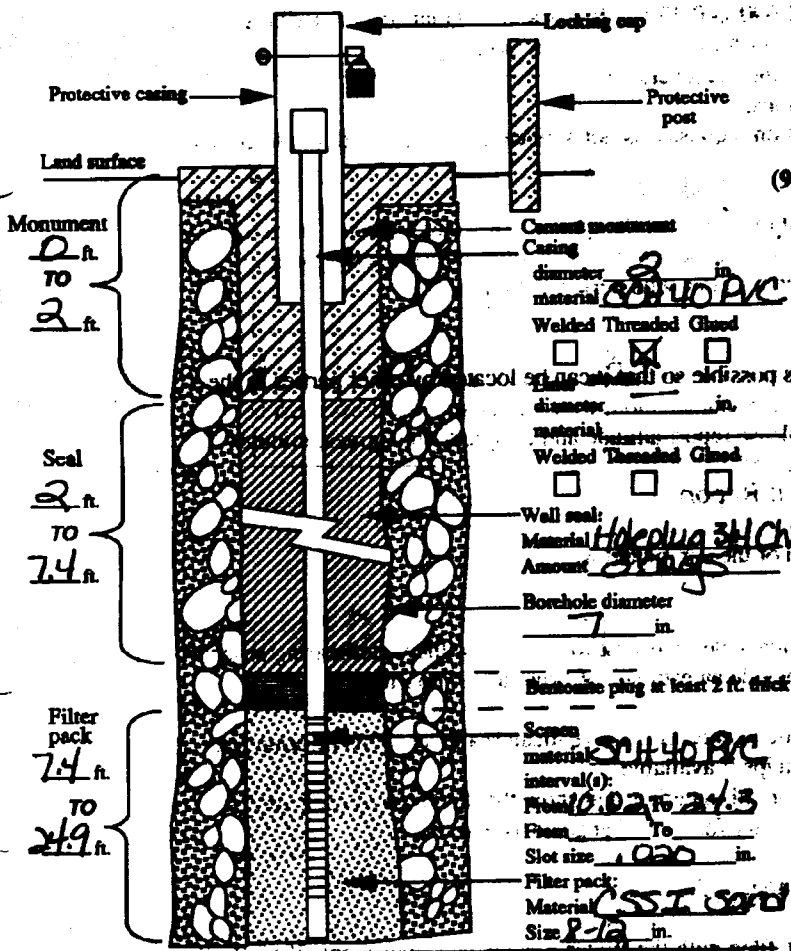
(3) DRILLING METHOD
 Rotary Air Rotary Mud Cable
 Hollow Stem Auger Other

(7) STATIC WATER LEVEL:
 11.93 ft. below land surface Date 8-11-95
 Artesian Pressure _____ lb/sq. in.

(4) BORE HOLE CONSTRUCTION
 Special Standards Yes No
 Depth of completed well 24.9

(8) WATER BEARING ZONES:
 Depth at which water was first found 11.93

Flow	To	Exp. Flow Rate	SWL
11.93	24.7	1 gpm	11.93



(9) WELL LOG: Ground elevation _____

Material	From	To	SWL
Silt (m)	0	3	
Silty gravel (GM)	3	7.5	
Sandy gravel (SA)	7.5	11.93	11.93
With silt		24.7	
Sandy siltstone	24.7	24.9	

RECEIVED RECEIVED
 SEP 19 1995
 WATER RESOURCES DEPT. SALEM, OREGON
 Date started 8/15/95 Completed 8/16/95

(5) WELL TEST: N/A
 Pump Bailor Air Flowing Artesian
 Permeability _____ Yield _____ GPM
 Conductivity _____ PH _____
 Temperature of water 57.0 °C Depth artesian flow found _____ ft.
 Was water analysis done? Yes No
 By whom? _____
 Depth of strata to be analyzed. From _____ ft. to _____ ft.
 Remarks: _____
 Name of supervising Geologist/Engineer Anna St. John

I certify that the work performed on this construction, alteration, or abandonment of this well is in compliance with Oregon well construction standards. Materials used and information reported above are true to the best knowledge and belief.
 Signed: [Signature] MWC Number 70320 Date 8/29/95
 (bonded) Monitor Well Constructor Certification:
 I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon well construction standards. This report is true to the best of my knowledge and belief.
 Signed: [Signature] MWC Number 10076 Date 9-18-95

TGA MW-32s Well Log

LOG OF EXPLORATORY BORING

PROJECT NAME Cascade Corporation
 LOCATION Troutdale, Oregon
 DRILLED BY Staco Well Services
 DRILL METHOD Air Rotary
 LOGGED BY A. St. John

BORING NO. MW-32S
 PAGE 1 OF 2
 GROUND ELEV. 122.00'
 TOTAL DEPTH 24.00'
 DATE COMPLETED 08/18/95

SAMPLE METHOD AND NUMBER	RECOVERY PERCENT FID (ppm)	BLOWS PER 6 INCHES	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	WELL DETAILS	LITHOLOGIC COLUMN	LITHOLOGIC DESCRIPTION
G-1	-- 0							0 to 3.0 feet: SILT (ML), dark yellowish brown (10YR 4/4); low plasticity; dry; trace roots and fine gravel. (TOPSOIL)
G-2	-- 0							3.0 to 14.0 feet: SANDY GRAVEL WITH SILT (GW-GM); very dark grayish brown (10YR 3/2); 70 to 75 percent fine to coarse gravel, angular to subrounded; 15 to 20 percent fine to coarse sand; 10 to 15 percent nonplastic fines; damp; clast-supported. (TROUTDALE GRAVEL AQUIFER)
G-3	-- 0			5				
G-4	-- 0							
G-5	-- 0			10				
G-6	-- 0		▼ 8/18/95 10:05 TGA					
G-7	-- 0		▽ 8/17/95 15:54	15				14.0 to 19.0 feet: SANDSTONE (SS); gray to brownish gray (10YR 3/1 to 4/3); fine to medium, subangular, tuffaceous, quartzose; moist to wet. (TROUTDALE GRAVEL AQUIFER) @ 16.0 feet: water in the hole.
SB-8	NR	18						19.0 to 24.0 feet: CLAYEY SILTSTONE (SLT); pale brown (10YR 6/3); medium plasticity; hard;
SB-9	--	50						
SB-10	100 -- 100	> 50						

REMARKS

(1) Grab samples (G) collected at 1.0-foot-intervals from the cyclone of the drill rig. Split barrel samples (SB) collected by driving a 2-inch-diameter sampler over a 1.5-foot-interval using a 300 pound hammer with a 30-inch stroke. (2) 7-inch-diameter hole was drilled with a down-hole hammer and threaded casing was driven. (3) Top of PVC casing elevation = 123.59 feet msl. (4) White triangle = approximate depth at which water was encountered during drilling. Black triangle = static water level in completed wells. (5) Organic vapor readings collected with a flame ionization detector calibrated with 98 percent methane.



EMCON

LOG OF EXPLORATORY BORING

PROJECT NAME Cascade Corporation
LOCATION Troutdale, Oregon
DRILLED BY Staco Well Services
DRILL METHOD Air Rotary
LOGGED BY A. St. John

BORING NO. MW-32S
PAGE 2 OF 2
GROUND ELEV. 122.00'
TOTAL DEPTH 24.00'
DATE COMPLETED 08/18/95

SAMPLE METHOD AND NUMBER	RECOVERY PERCENT FID (ppm)	BLOWS PER 6 INCHES	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	WELL DETAILS	LITHOLOGIC COLUMN	LITHOLOGIC DESCRIPTION
				25				fragments are damp. @ 19.0 feet: hole not producing water.
				30				Total depth drilled = 24.0 feet. Total depth sampled = 19.0 feet. WELL COMPLETION DETAILS: + 1.59 to 8.9 feet: 2-inch-diameter, flush-threaded (with o-rings), Schedule 40 PVC blank riser pipe. 8.9 to 18.3 feet: 2-inch-diameter, flush-threaded, Schedule 40 PVC well screen with 0.020-inch machined slots. 18.3 to 18.9 feet: 2-inch-diameter, flush-threaded, Schedule 40 sump. 18.4 feet: Stainless steel centralizer. 0 to 2.0 feet: Above-ground security casing set in 2 x 2 foot concrete pad. 2.0 to 7.5 feet: Holeplug 3/4 bentonite chips hydrated with potable water. 7.5 to 18.9 feet: CSSI 8 - 12 washed silica sand. 18.9 to 24.0 feet: Holeplug 3/4 bentonite chips.
				35				
				40				



EMCON

REMARKS

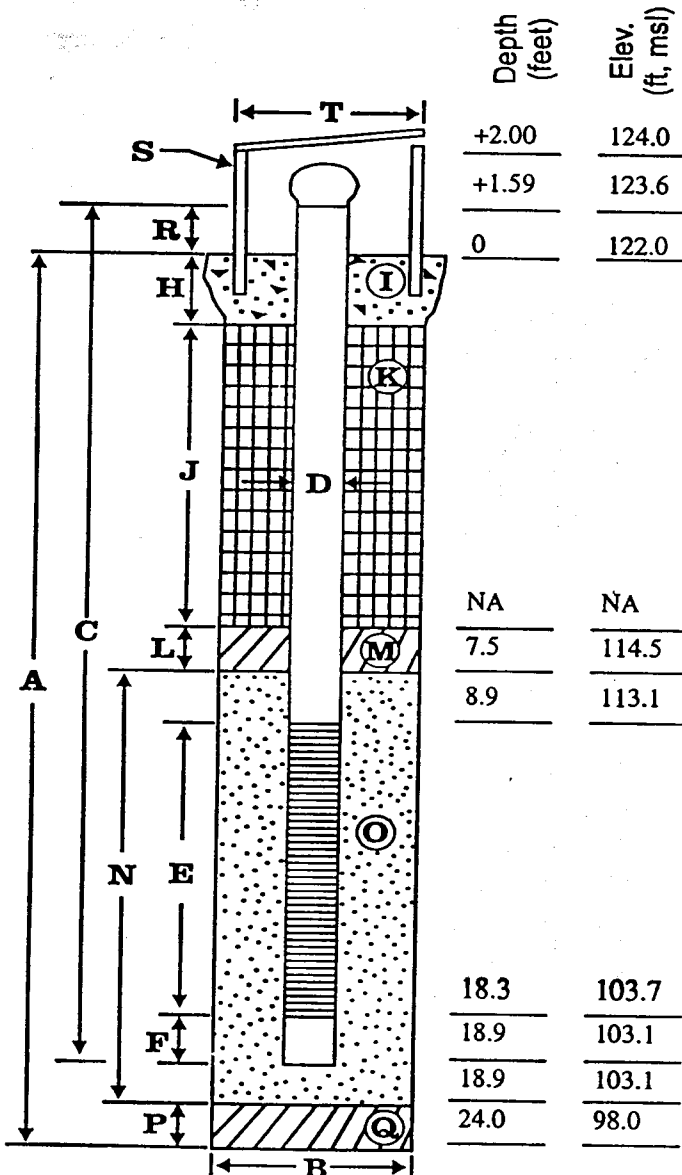
(1) Grab samples (G) collected at 1.0-foot-intervals from the cyclone of the drill rig. Split barrel samples (SB) collected by driving a 2-inch-diameter sampler over a 1.5-foot-interval using a 300 pound hammer with a 30-inch stroke. (2) 7-inch-diameter hole was drilled with a down-hole hammer and threaded casing was driven. (3) Top of PVC casing elevation = 123.59 feet msl. (4) White triangle = approximate depth at which water was encountered during drilling. Black triangle = static water level in completed wells. (5) Organic vapor readings collected with a flame ionization detector calibrated with 98 percent methane.



WELL DETAILS

Project Number: 40683-003.0127
 Client Name: Cascade Corporation
 Project Name: TGA Control Trench
 Location: Troutdale, Oregon
 Driller: Staco Well Services

Boring/Well No.: MW-32S
 Top of Casing Elev.: 123.59
 Ground Surface Elev.: 122.00
 Installation Date: 8/18/95
 Permit/Start Card No.: _____



EXPLORATORY BORING

A. Total depth: 24.00 ft.
 B. Diameter: 7 in.
 Drilling method: Air Rotary

WELL CONSTRUCTION

C. Well casing length: 20.49 ft.
 Well casing material: PVC
 D. Well casing diameter: 2 in.
 E. Well screen length: 9.4 ft.
 Well screen type: machined slots
 Well screen slot size: 0.020
 F. Well sump/end cap length: 0.6 ft.
 G. Well casing height (stickup): 1.59 ft.
 H. Surface seal thickness: 2 ft.
 I. Surface seal material: Concrete
 J. Annular seal thickness: 5.5 ft.
 K. Annular seal material: 3/4-inch bentonite chips
 L. Filter pack seal thickness: NA ft.
 M. Filter pack seal material: NA
 N. Sand pack thickness: 11.4 ft.
 O. Sand pack material: CSSI 8-12 silica sand
 P. Bottom material thickness: 5.1 ft.
 Q. Bottom material: bentonite chips
 R. Well casing hgt (stickup): 1.59 ft.
 S. Protective casing material: Steel
 Well centralizer depths: 18.4 ft.
 T. Protective casing diameter: 6 in.

NOTES:

Installed by: Anna St. John
 Reviewed by: Calin Podora
 Date: 1/30/96

MULT
4982

01N/03E/29AD
 Start Card # 82032

(1) OWNER/PROJECT: WELL NO. MW-325
 Name Cascade Corporation
 Address P.O. Box 20187
 City Portland State OR Zip 97220

(6) LOCATION OF WELL By legal description
 Well Location: County Multnomah
 Township 1N (N or S) Range 3E (E or W) Section 29
 1. SE 1/4 of NE 1/4 of above section
 2. Street address of well location 3801 NE 201st
 3. Tax lot number of well location 1000
 4. ATTACH MAP WITH LOCATION IDENTIFIED.

(2) TYPE OF WORK:
 New construction Repair Recondition
 Conversion Deepening Abandonment

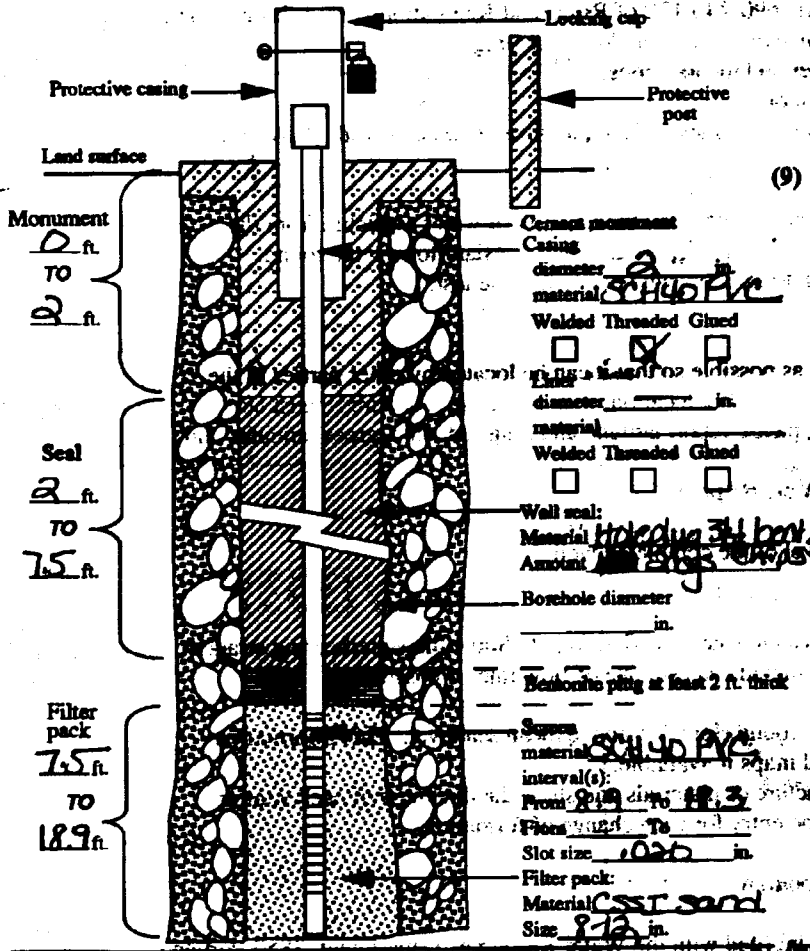
(3) DRILLING METHOD
 Rotary Air Rotary Mud Cable
 Hollow Stem Auger Other _____

(7) STATIC WATER LEVEL:
11.67 ft. below land surface Date 8/18/95
 Artesian Pressure _____ ft./sq. in. Date _____

(4) BORE HOLE CONSTRUCTION
 Special Standards Yes No
 Depth of completed well 18.9 ft.

(8) WATER BEARING ZONES:
 Depth at which water was first found: 14

Depth	Flow Rate	SWL
<u>14</u>	<u>< 1 gpm</u>	<u>11.67</u>



(9) WELL LOG: Ground elevation _____

Material	From	To	SWL
<u>Silt (m)</u>	<u>0</u>	<u>3</u>	
<u>Sandy gravel (gw)</u>	<u>3</u>	<u>14</u>	
<u>Sand (SP)</u>	<u>14</u>	<u>16</u>	
<u>Sandy clay (cl)</u>	<u>16</u>	<u>19</u>	
<u>Clayey siltstone</u>	<u>19</u>	<u>24</u>	

RECEIVED
RECEIVED
 JAN - 1996
 SEP 1 1995
 WATER RESOURCES DEPT.
 SALEM, OREGON

(5) WELL TEST: N/A
 Pump Bailor Air Flowing Artesian
 Permeability _____ Yield _____ GPM
 Conductivity _____ PH _____
 Temperature of water 57 °F Depth artesian flow found _____ ft.
 Was water analysis done? Yes No

(Unbonded) Monitor Well Constructor Certification:
 I certify that the work performed on the construction, alteration, or abandonment of this well is in compliance with Oregon well construction standards. Materials used and information reported above are true to the best knowledge and belief.
 Signed John G. Zimmerman MWC Number 10220
 Date 8/19/95

By whom? _____
 Depth of strata to be analyzed. From _____ ft. to _____ ft.
 Remarks: _____
 Name of supervising Geologist/Engineer Anna St. John

(bonded) Monitor Well Constructor Certification:
 I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon well construction standards. This report is true to the best of my knowledge and belief.
 Signed John R. Stolt MWC Number 10096
 Date 9-18-95

TGA MW-31s Well Log

LOG OF EXPLORATORY BORING

PROJECT NAME **Cascade Corporation**
 LOCATION **Troutdale, Oregon**
 DRILLED BY **Staco Well Services**
 DRILL METHOD **Air Rotary**
 LOGGED BY **A. St. John**

BORING NO. **MW-31S**
 PAGE **1 OF 2**
 GROUND ELEV. **122.00'**
 TOTAL DEPTH **24.00'**
 DATE COMPLETED **08/17/95**

SAMPLE METHOD AND NUMBER	RECOVERY PERCENT FID (ppm)	BLOWS PER 6 INCHES	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	WELL DETAILS	LITHOLOGIC COLUMN	LITHOLOGIC DESCRIPTION
G-1	-- 0							0 to 3.0 feet: SILT (ML); brown (7.5YR 5/3) to strong brown (7.5YR 4/6); low to medium plasticity fines; dry; trace coarse sand; trace roots. (TOPSOIL)
G-2	-- 0							3.0 to 5.0 feet: SILTY SAND (SM); dark brown (7.5YR 3/2); 70 percent fine to coarse (70:20:10) sand, primarily mafic; 20 percent low plasticity fines; 10 percent fine gravel, subrounded; dry.
G-3	-- 0			5				5.0 to 14.0 feet: SANDY GRAVEL WITH SILT (GW-GM); very dark grayish brown (10YR 3/2); 65 to 70 percent fine to coarse gravel, subangular to subrounded, primarily mafic; 15 to 20 percent fine to coarse (50:30:20) sand, micaceous; 5 to 10 percent nonplastic fines; dry; massive; clast supported. (TROUTDALE GRAVEL AQUIFER) @ 6.5 feet: drilling through cobble or boulder. @ 10.0 feet: cuttings are moist.
G-4	-- 0							
G-5	-- 0			10				
G-6	-- 0		▼ 8/17/95 09:13					14.0 to 22.0 feet: GRAVELLY SAND WITH SILT (SP-SM); light olive brown (2.5Y 5/3-5/4); 75 percent fine to medium sand, primarily quartz; 20 percent fine gravel, subrounded; 10 to 15 percent medium plasticity fines coating gravel; moist to wet. (TROUTDALE GRAVEL AQUIFER) @ 17.5 feet: fines increase to 20 percent.
SB-7	NR			15				
SB-8	--							
SB-9	NR	> 50						
G-10	-- 0							



EMCON

REMARKS

(1) Greb samples (G) collected at 1.0-foot-intervals from the cyclone of the drill rig. Split barrel samples (SB) collected by driving a 2-inch-diameter sampler over a 1.5-foot-interval using a 300 pound hammer with a 30-inch stroke. (2) 7-inch-diameter hole was drilled with a down-hole hammer and threaded casing was driven. (3) Top of PVC casing elevation = 123.73 feet msl. (4) White triangle = approximate depth at which water was encountered during drilling. Black triangle = static water level in completed wells. (5) Organic vapor readings collected with a flame ionization detector calibrated with 98 percent methane.

LOG OF EXPLORATORY BORING

PROJECT NAME Cascade Corporation
LOCATION Troutdale, Oregon
DRILLED BY Staco Well Services
DRILL METHOD Air Rotary
LOGGED BY A. St. John

BORING NO. MW-31S
PAGE 2 OF 2
GROUND ELEV. 122.00'
TOTAL DEPTH 24.00'
DATE COMPLETED 08/17/95

SAMPLE METHOD AND NUMBER	RECOVERY PERCENT FID (ppm)	BLOWS PER 6 INCHES	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	WELL DETAILS	LITHOLOGIC COLUMN	LITHOLOGIC DESCRIPTION
SB-11	100	26						14.0 to 22.0 feet: GRAVELLY SAND WITH SILT (SP-SM); continued. - CUI @ 22 ft in Sump 4 - Trench
SB-12	--	50						
SB-13	100	36						
	--							Total depth drilled = 24.0 feet. Total depth sampled = 21.5 feet. WELL COMPLETION DETAILS: +1.73 to 11.9 feet: 2-inch-diameter, flush-threaded (with o-rings), Schedule 40 PVC blank riser pipe. 11.9 to 21.1 feet: 2-inch-diameter, flush-threaded, Schedule 40 PVC well screen with 0.020-inch machined slots. 21.1 to 21.7 feet: 2-inch-diameter, flush-threaded, Schedule 40 sump. 21.2 feet: Stainless steel centralizer. 0 to 2.0 feet: Above-ground security casing set in 2 x 2 foot concrete pad. 2.0 to 10.5 feet: Holeplug 3/4 bentonite chips hydrated with potable water. 10.5 to 21.7 feet: CSSI 8 - 12 washed silica sand. 21.7 to 24.0 feet: Holeplug 3/4 bentonite chips.
	100		TGA CUI ▽ 8/16/95 17:08	25				
	--			30				
				35				
				40				



EMCON

REMARKS

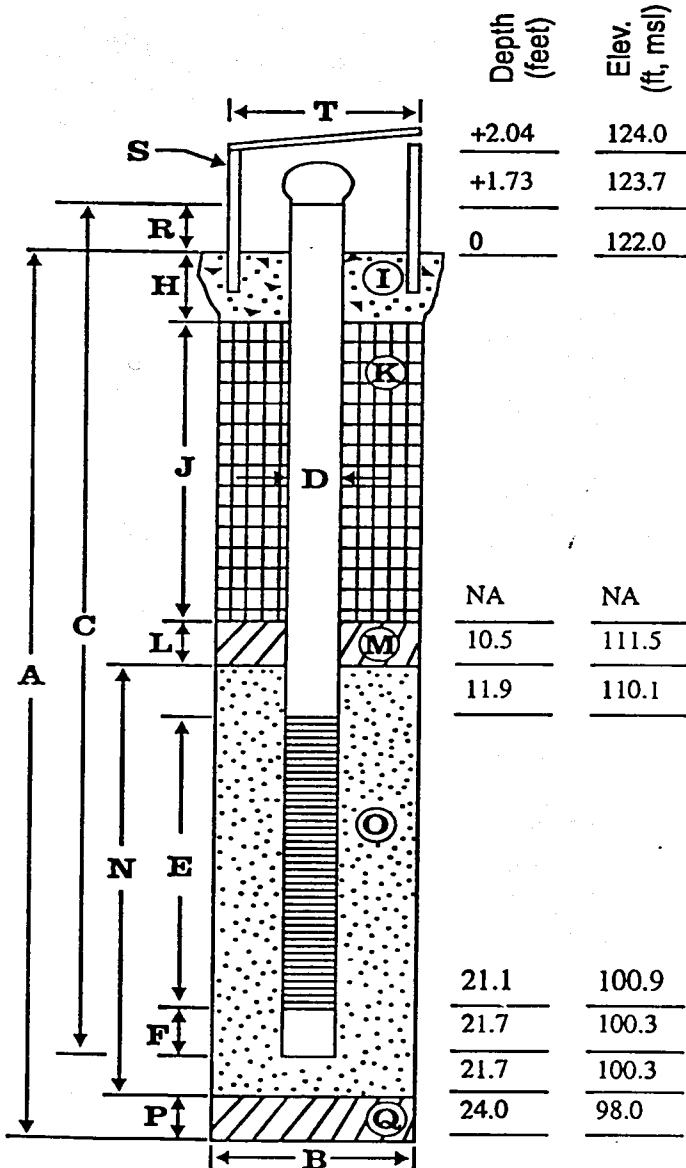
(1) Grab samples (G) collected at 1.0-foot-intervals from the cyclone of the drill rig. Split barrel samples (SB) collected by driving a 2-inch-diameter sampler over a 1.5-foot-interval using a 300 pound hammer with a 30-inch stroke. (2) 7-inch-diameter hole was drilled with a down-hole hammer and threaded casing was driven. (3) Top of PVC casing elevation = 123.73 feet msl. (4) White triangle = approximate depth at which water was encountered during drilling. Black triangle = static water level in completed wells. (5) Organic vapor readings collected with a flame ionization detector calibrated with 98 percent methana.



WELL DETAILS

Project Number: 40683-003.012/7
 Client Name: Cascade Corporation
 Project Name: TGA Control Trench
 Location: Troutdale, Oregon
 Driller: Staco Well Services

Boring/Well No.: MW-31S
 Top of Casing Elev.: 123.73
 Ground Surface Elev.: 122.00
 Installation Date: 8/17/95
 Permit/Start Card No.: _____



EXPLORATORY BORING

A. Total depth: 24.00 ft.
 B. Diameter 7 in.
 Drilling method: Air Rotary

WELL CONSTRUCTION

C. Well casing length: 23.43 ft.
 Well casing material: PVC
 D. Well casing diameter: 2 in.
 E. Well screen length: 9.2 ft.
 Well screen type: machined slots
 Well screen slot size: 0.020
 F. Well sump/end cap length: 0.6 ft.
 G. Well casing height (stickup): 1.73 ft.
 H. Surface seal thickness: 2 ft.
 I. Surface seal material: Concrete
 J. Annular seal thickness: 8.5 ft.
 K. Annular seal material: 3/4-inch bentonite chips
 L. Filter pack seal thickness: NA ft.
 M. Filter pack seal material: NA
 N. Sand pack thickness: 11.2 ft.
 O. Sand pack material: CSSI 8-12 silica sand
 P. Bottom material thickness: 2.3 ft.
 Q. Bottom material: bentonite chips
 R. Well casing hgt (stickup): 1.73 ft.
 S. Protective casing material: Steel
 Well centralizer depths: 21.2 ft.
 T. Protective casing diameter: 6 in.

NOTES:

Installed by: Anna St. John
 Reviewed by: Calin Teodoru
 Date: 1/29/96

MULT
 4981

01N1035129AD

Start Card # 82031

(1) OWNER/PROJECT: WELL NO. MW-315
 Name Cascade Corporation
 Address PO Box 20187
 City Portland State OR Zip 97226

(6) LOCATION OF WELL By legal description
 Well Location County Multnomah
 Township 1N (N or S) Range 3E (E or W) Section 39
 1. SE 1/4 of NE 1/4 of above section.
 2. Street address of well location 8501 NE 201st
Troutdale, OR
 3. Tax lot number of well location 7000
 4. ATTACH MAP WITH LOCATION IDENTIFIED.

(2) TYPE OF WORK:
 New construction Repair Recondition
 Conversion Deepening Abandonment

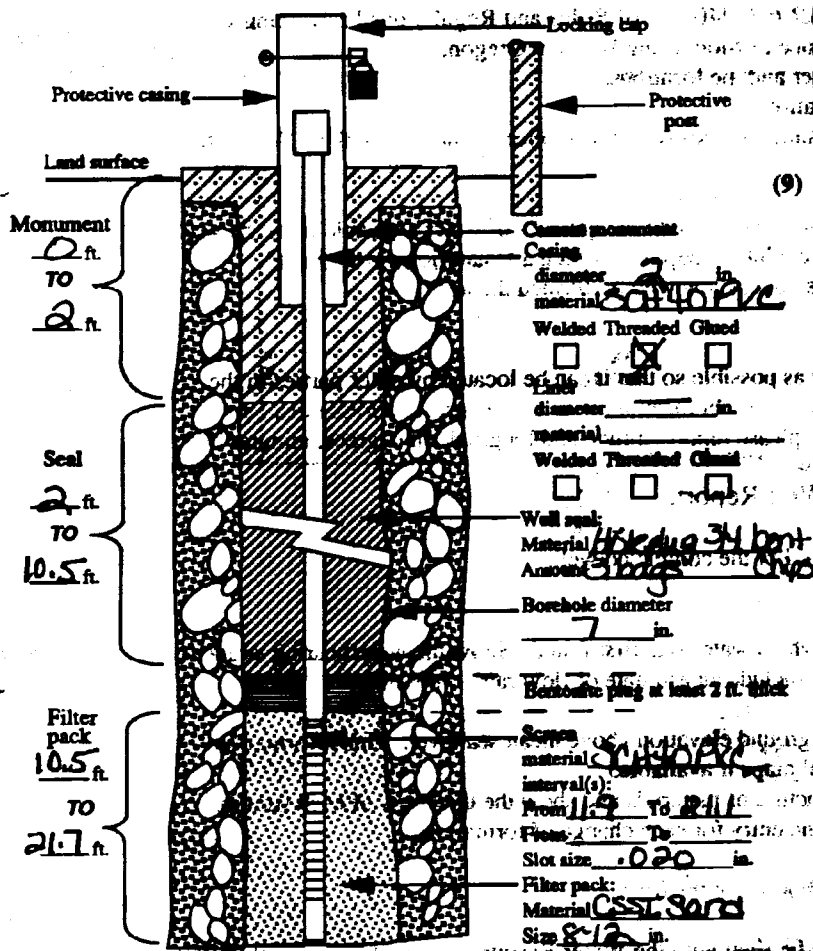
(3) DRILLING METHOD
 Rotary Air Rotary Mud Cable
 Hollow Stem Auger Other _____

(7) STATIC WATER LEVEL:
12.52 Ft. below land surface Date 8/17/95
 Artesian Pressure _____ lbs/sq. in. Date _____

(4) BORE HOLE CONSTRUCTION
 Special Standards Yes No Depth of completed well 21.7 ft.

(8) WATER BEARING ZONES:
 Depth at which water first found _____

Zone	To	Est. Flow Rate	SWL
14	22	4.9 gpm	12.52



(9) WELL LOG: Ground elevation _____

Material	From	To	SWL
Silt (cm)	0	3	
Silty sand (cm)	3	5	
Sandy gravel (cm)	5	14	
Sand (cm)	14	22	12.52
Sand (cm)	22	24	
Sandy clay (cm)	24		

RECEIVED

SEP 19 1995

WATER RESOURCES DEPT.
 SALEM, OREGON

RECEIVED

JAN 9 1996

WATER RESOURCES DEPT.
 SALEM, OREGON

Date started 8/16/95 Completed 8/17/95

(5) WELL TEST: N/A
 Pump Bailer Air Flowing Artesian
 Permeability _____ Yield _____ GPM
 Conductivity _____ PH _____
 Temperature of water 57 °F Depth artesian flow found _____ ft.
 Was water analysis done? Yes No
 By whom? _____
 Depth of strata to be analyzed. From _____ ft. to _____ ft.
 Remarks: _____
 Name of supervising Geologist/Engineer Anna St. John

I certify that the work performed on the construction, operation, or abandonment of this well is in compliance with Oregon well construction standards. Materials used and information reported above are true to the best knowledge and belief.

Signed Steve G. Zimmerman Date 8/21/95

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

Signed John R. Stolt Date 9-18-95 MWC Number 10096

TGA EX-1 Well Log

EX-1 use to be MW-28s

LOG OF EXPLORATORY BORING

EX-1

PROJECT NAME **CASCADE CORPORATION**
 LOCATION **Troutdale, Oregon**
 DRILLED BY **Tacoma Pump and Drilling**
 DRILL METHOD **Air Rotary**
 LOGGED BY **Karin Haderly**

BORING NO. **MW-28S**
 PAGE **1 OF 2**
 REFERENCE ELEV. **142.57'**
 TOTAL DEPTH **27.40'**
 DATE COMPLETED **9/16/94**

SAMPLE NUMBER SAMPLE TYPE	RECOVERY PERCENT	BLOW COUNTS	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	WELL DETAILS	LITHOLOGIC COLUMN	LITHOLOGIC DESCRIPTION
				0				0-0.3 feet: ASPHALT.
Grab				5				0.3-17.5 feet: WELL GRADED GRAVEL WITH SILT (GW-GM), dark gray with brownish coating of silt, subrounded to well rounded gravels, predominantly basalt, trace quartzite, some non-plastic fines, few fine to coarse sand, damp to wet with depth. (UNCONSOLIDATED GRAVEL)
Grab				10				
Grab				15				
			∇ 17.0' 9/16/94	20				17.5-24.0 feet: WELL GRADED GRAVEL WITH SAND (GW), dark gray, rounded to subrounded gravels, predominantly basalt with trace quartzite, little well graded sand, trace fines, wet. (TROUTDALE GRAVEL AQUIFER)
Grab				25				24.0-27.4 feet: SANDY GRAVEL (GW), dark gray brown, fine to coarse subrounded to rounded gravels, some fine to coarse sand, trace fines, wet.
Grab				30				Bottom of boring at 27.4 feet below ground surface.
				35				WELL COMPLETION DETAILS: 0 to 10.4 feet: 4-inch-diameter, stainless steel blank casing. 10.4 to 25.0 feet: 4-inch-diameter, stainless steel screen with 0.010-inch continuous V-wire screen. 25.0 to 25.4 feet: 4-inch-diameter stainless steel sump. 0 to 2.0 feet: Concrete.
				40				

REMARKS

1) Top of stainless steel casing elevation = 142.10' NGVD. 3) Reference elevation is ground elevation.



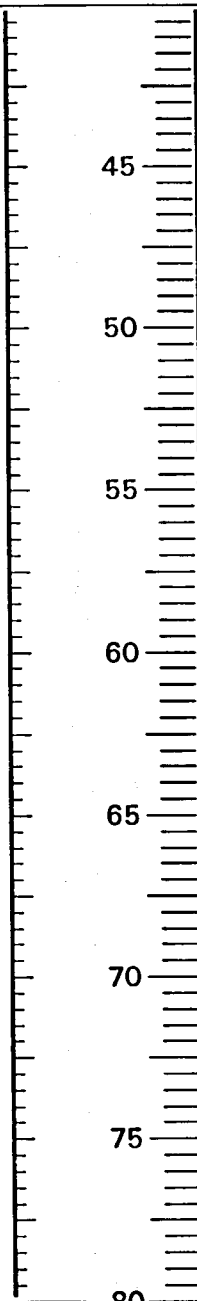
EMCON

LOG OF EXPLORATORY BORING

EX-1

PROJECT NAME **CASCADE CORPORATION**
 LOCATION **Troutdale, Oregon**
 DRILLED BY **Tacoma Pump and Drilling**
 DRILL METHOD **Air Rotary**
 LOGGED BY **Karin Haderly**

BORING NO. **MW-28S**
 PAGE **2 OF 2**
 REFERENCE ELEV. **142.57'**
 TOTAL DEPTH **27.40'**
 DATE COMPLETED **9/16/94**

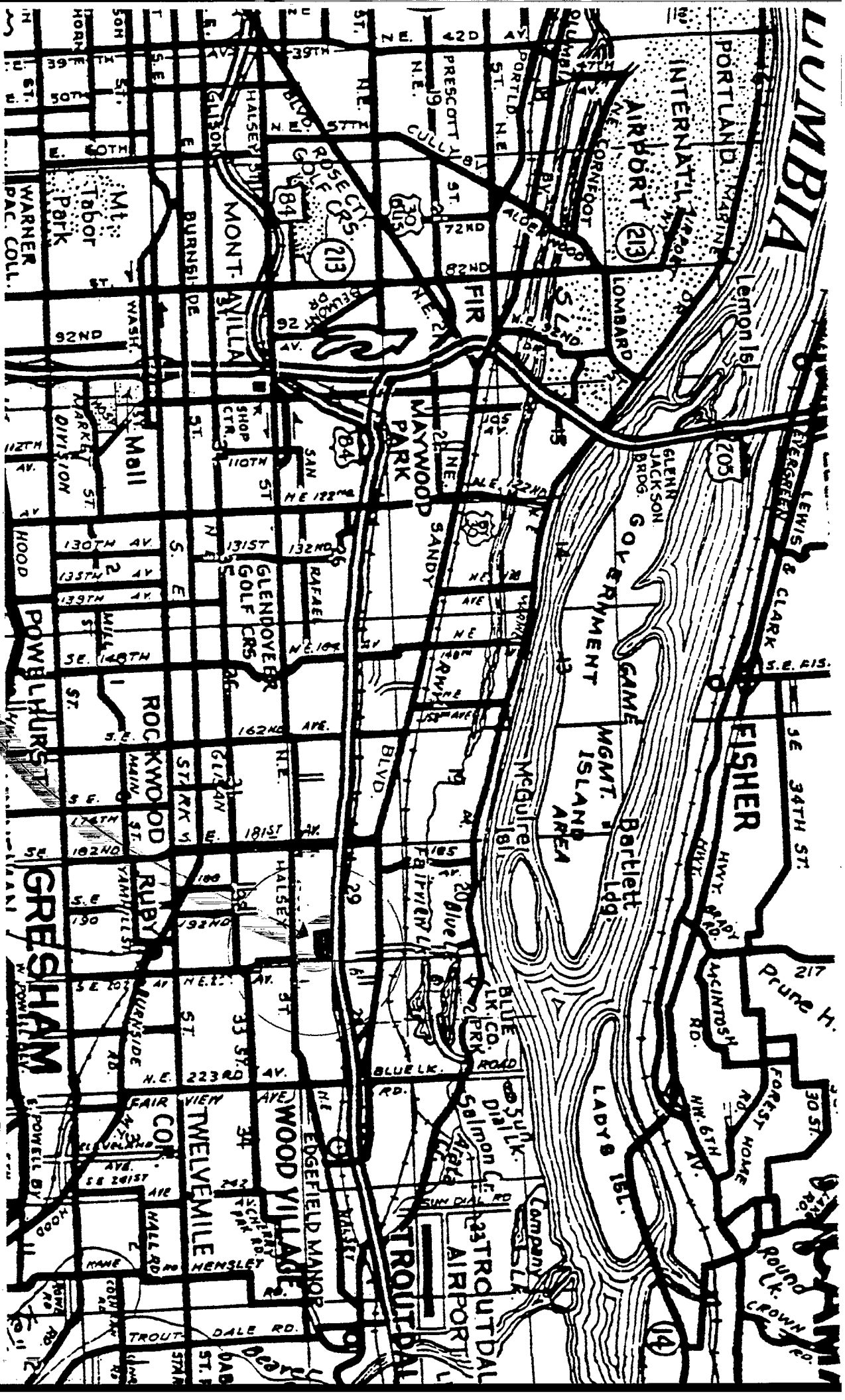
SAMPLE NUMBER	RECOVERY PERCENT	BLOW COUNTS	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	WELL DETAILS	LITHO LOGIC COLUMN	LITHOLOGIC DESCRIPTION	
				<div style="display: flex; align-items: center;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg);"> 45 50 55 60 65 70 75 80 </div>  </div>					2.0 to 8.3 feet: Bentonite chips hydrated with potable water. 8.3 to 27.4 feet: 8x12 Colorado silica sand. 10.4 & 25.0 feet: Stainless steel centralizers.

REMARKS

1) Top of stainless steel casing elevation = 142.10' NGVD. 3) Reference elevation is ground elevation.



EMCON



CASCADE CORPORATION
 2201 NE. 201ST AVE
 TRAUTDALE, OREGON



RECEIVED

JAN 20 1995

WATER RESOURCES
 SALEM, OREGON

NORTH

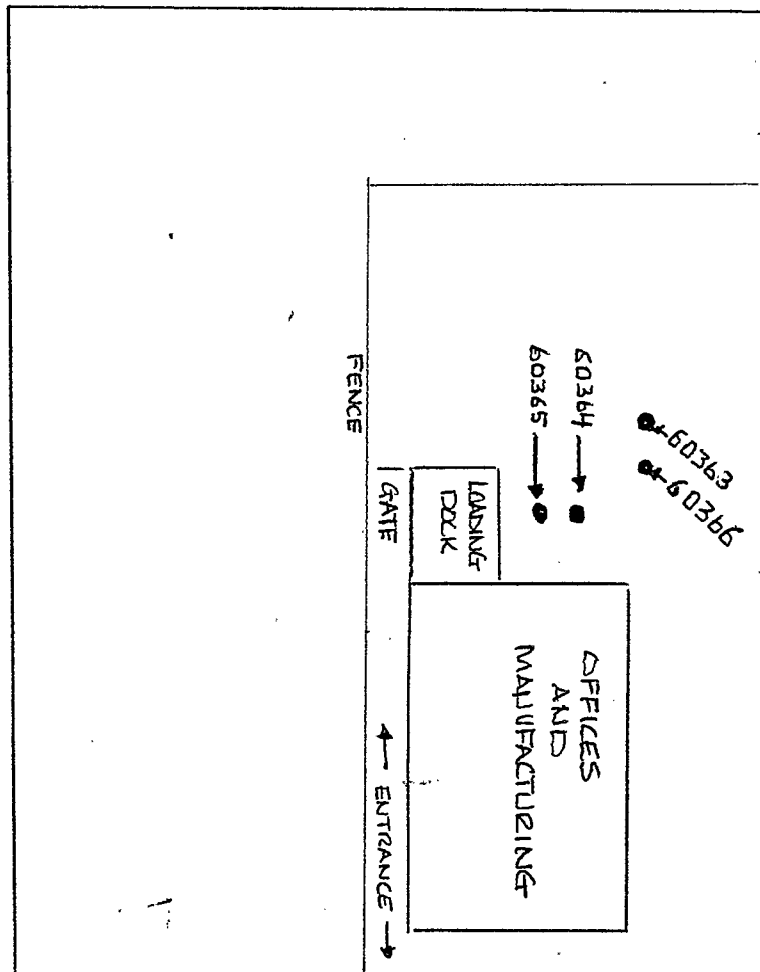
SANDY BLD.

I-84

RECEIVED
JAN 20 1995
WATER H
SALEM, OREGON

- 1. WELL ID# 60363
DEPTH 28 FT.
- 2. WELL ID# 60364
DEPTH 48.5 FT.
- 3. WELL ID# 60365
DEPTH 27 FT.
- 4. WELL ID# 60366
DEPTH 48 FT.

CASCADE CORPORATION
2201 NE 201ST AVE
TROUTDALE, OREGON



201ST AVE

NORTH

HALSEY STREET

TGA B-5 Well Log

LOG OF EXPLORATORY BORING

PROJECT NAME **Cascade RI/FS**
 LOCATION **Troutdale, Oregon**
 DRILLED BY **Staco Well Services**
 DRILL METHOD **Air Rotary - TUBEX**
 LOGGED BY **Greg Eiche**

BORING NO. **B-5**
 PAGE **1 OF 2**
 119.7 — GROUND ELEV. **116.10'**
 (Jan '00 RESURVEY) TOTAL DEPTH **17.00'**
 DATE COMPLETED **09/09/93**

SAMPLE NUMBER	SAMPLE TYPE	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	LITHOLOGIC COLUMN	PIEZOMETER DETAILS	LITHOLOGIC DESCRIPTION
							0 to 4.5 feet: SILTY SAND (SM), light brown, some gravel, dry. (TOPSOIL)
							@ 2.0 feet: boulder.
1	C		5				4.5 to 8.0 feet: GRAVEL (GP), black to brown with white grains, fine, subrounded. Predominantly basalt and quartzite. (TROUTDALE GRAVEL AQUIFER)
		9/13/93					
2	C						8.0 to 14.0 feet: SAND (SP), grayish brown, medium to coarse, subangular to subrounded. Predominantly sandstone fragments with trace red and amber grains.
3	C		10				@ 10.0 feet: color change to dark olive gray, trace fine gravel.
							@ 13.0 feet: increasing gravel content.
4	C		15				14.0 to 15.0 feet: GRAVELLY SAND (SP), dark olive gray, medium to coarse, fine gravel.
							15.0 to 16.5 feet: SANDY GRAVEL (GP), olive gray, fine, medium to coarse sand. Predominantly sandstone with some siltstone.
	TGA CUT SUI A	9/9/93					16.5 to 17.0 feet: SILTSTONE, pale yellow, some medium to coarse sand. (CONFINING UNIT 1)
							Total depth drilled = 17.0 feet. Total depth sampled = 17.0 feet.
							See Page 2 of 2 for Piezometer Completion Details.

REMARKS

(1) Boring was drilled with a 6-inch diameter TUBEX bit and casing. (2) Samples were collected with a fine mesh sieve from drill cuttings at cyclone discharge. (3) Water was added to borehole during drilling. (4) Boring backfilled to surface with bentonite chips which were hydrated with potable water from driller's support truck. (5) Top of casing elevation = 118.56 ft. MSL.



LOG OF EXPLORATORY BORING

PROJECT NAME Cascade RI/FS
 LOCATION Troutdale, Oregon
 DRILLED BY Staco Well Services
 DRILL METHOD Air Rotary - TUBEX
 LOGGED BY Greg Eiche

BORING NO. B- 5
 PAGE 2 OF 2
 GROUND ELEV. 116.10'
 TOTAL DEPTH 17.00'
 DATE COMPLETED 09/09/93

119.7
 (Jan '00
 Resurvey)

SAMPLE NUMBER	SAMPLE TYPE	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	LITHOLOGIC COLUMN	PIEZOMETER DETAILS	LITHOLOGIC DESCRIPTION
			25				<p>PIEZOMETER COMPLETION DETAILS: +2.4 to 12.0 feet: Schedule 40 PVC blank casing. 12.0 to 17.0 feet: Schedule 40 PVC screen with 0.020-inch machined slots.</p> <p>0 to 0.5 foot: Concrete. 0.5 to 10.5 feet: Hydrated bentonite chips. 10.5 to 17.0 feet: 8 - 12 Colorado Silica Sand.</p>
			30				
			35				
			40				

REMARKS

(1) Boring was drilled with a 6-inch diameter TUBEX bit and casing. (2) Samples were collected with a fine mesh sieve from drill cuttings at cyclone discharge. (3) Water was added to borehole during drilling. (4) Boring backfilled to surface with bentonite chips which were hydrated with potable water from driller's support truck. (5) Top of casing elevation = 118.56 ft. MSL.



STATE OF OREGON
MONITORING WELL REPORT
 (as required by ORS 537.765 & OAR 690-240-095)

MULT
 54767

N/A
 Start Card # 58110

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

(1) OWNER/PROJECT: WELL NO. B-5
 Name Cascade Corporation
 Address PO box 20187
 City Portland State OR Zip 97220

(6) LOCATION OF WELL By legal description
 Well Location: County Multnomah
 Township 1N (N or S) Range 3E (E or W) Section 29
 1. NE 1/4 of SE 1/4 of above section.
 2. Either Street address of well location 2 blks south of sandy blvd on 201st
 or Tax lot number of well location 35

(2) TYPE OF WORK:
 New construction Alteration (Repair/Recondition)
 Conversion Deepening Abandonment

3. ATTACH MAP WITH LOCATION IDENTIFIED. Map shall include approximate scale and north arrow.

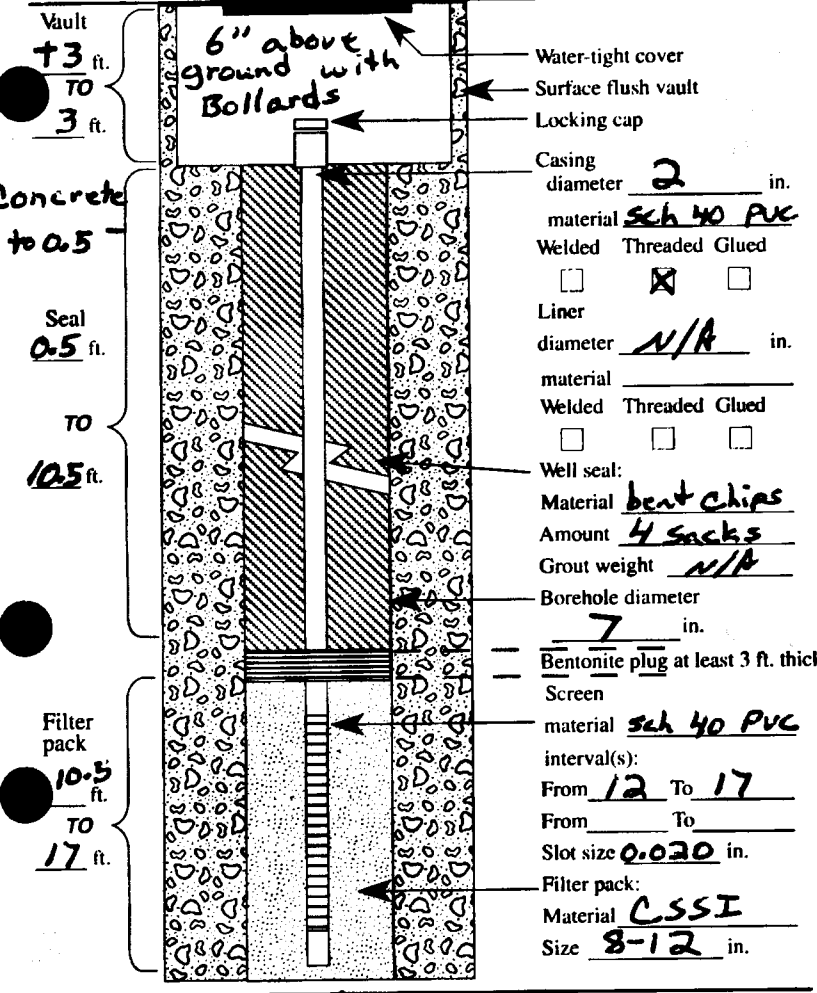
(3) DRILLING METHOD
 Rotary Air Rotary Mud Cable
 Hollow Stem Auger Other _____

(7) STATIC WATER LEVEL:
9 Ft. below land surface. Date 9-13-93
 Artesian Pressure _____ lb/sq. in. Date _____

(4) BORE HOLE CONSTRUCTION
 Special Standards Yes No Depth of completed well 17 ft. Land surface _____

(8) WATER BEARING ZONES:
 Depth at which water was first found 9

From	To	Est. Flow Rate	SWL
9	17	N/A	9



(9) WELLLOG: Ground elevation 116.10'

Material	From	To	SWL
Silly sand H brown	0	4.5	
gravel blk/brown	4.5	8	
Sand grayish brown	8	14	9
gravelly sand drk	14		
olive gray		15	
Sandy gravel olive gray	15	16.5	
Siltstone pale yellow	16.5	17	

RECEIVED

FEB 17 1998

WATER RESOURCES DIV.
 SALEM, OREGON

Date started 9-9-93 Completed 9-9-93

(5) WELL TEST: N/A
 Pump Bailer Air Flowing Artesian
 Permeability _____ Yield _____ GPM
 Conductivity _____ PH _____
 Temperature of water 56 °F/C Depth artesian flow found _____ ft.
 Was water analysis done? Yes No
 By whom? _____
 Depth of strata to be analyzed. From _____ ft. to _____ ft.
 Remarks: _____

(unbonded) Monitor Well Constructor Certification:
 I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon well construction standards. Materials used and information reported above are true to the best knowledge and belief.
 MWC Number 1030
 Signed Curtis Allen Date _____

(bonded) Monitor Well Constructor Certification:
 I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon well construction standards. This report is true to the best of my knowledge and belief.
Curtis Allen MWC Number 1009

APPENDIX B
OWRD Decommissioning Records

STATE OF OREGON
MONITORING WELL REPORT

(as required by ORS 537.765 & OAR 690-240-0395)

6/8/2015

WELL I.D. LABEL# L

START CARD # 1025864

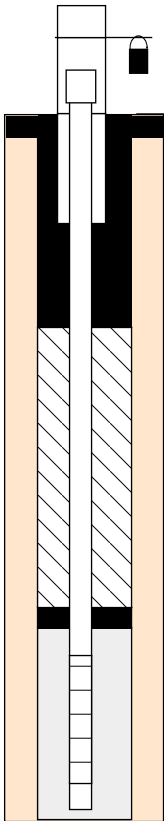
(1) LAND OWNER Owner Well I.D. B-5

First Name Last Name
Company SANDY BLVD DEVELOPMENT ASSOC/CASCADE CORP
Address PO BOX 20187
City PORTLAND State OR Zip 97294

(2) TYPE OF WORK
New Deepening Conversion
Alteration (repair/recondition) Abandonment

(3) DRILL METHOD
Rotary Air Rotary Mud Cable Hollow Stem Auger Cable Mud
Reverse Rotary Other

(4) CONSTRUCTION
Piezometer Well
Depth of Completed Well 22.00 ft. Special Standard
MONUMENT/VAULT Above Ground
From 0 To 1.5
BORE HOLE
Diameter 8.5 From 0 To 8
CASING
Dia. From To
Gauge Wld Thrd
Material Steel Plastic
LINER
Dia. From To
Gauge Wld Thrd
Material Steel Plastic
SEAL
From 0 To 2
Material Concrete
Amount 3 Sacks Grout weight
SCREEN
Casing/Liner Material
Diameter From To
Slot Size
FILTER
From To Material Size of pack



(6) LOCATION OF WELL (legal description)

County MULTNOMAH Twp 1.00 N N/S Range 3.00 E E/W WM
Sec 29 NE 1/4 of the SE 1/4 Tax Lot 1005
Tax Map Number Lot
Lat " or DMS or DD
Long " or DMS or DD
Street address of well Nearest address
2525 NE 201ST AVE
GRESHAM, OR 97024

(7) STATIC WATER LEVEL

Table with columns: Date, SWL(psi), + SWL(ft). Includes rows for Existing Well / Predeepening and Completed Well. Also includes a table for WATER BEARING ZONES with columns: SWL Date, From, To, Est Flow, SWL(psi), + SWL(ft).

(8) WELL LOG

Table with columns: Material, From, To, Ground Elevation. Includes entries for Restore surface and Overdrill and Backfill.

Date Started 3/31/2015 Completed 3/31/2015

(unbonded) Monitor Well Constructor Certification

I certify that the work I performed on the construction, deepening, alteration, or abandonment of this well is in compliance with Oregon monitoring well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.

License Number 1786 Date 6/5/2015
Password : (if filing electronically)
Signed JOSEPH R STALOCH (E-filed)

(bonded) Monitor Well Constructor Certification

I accept responsibility for the construction, deepening, 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 monitoring well construction standards. This report is true to the best of my knowledge and belief.

License Number 10443 Date 6/8/2015
Password : (if filing electronically)
Signed RYAN R GALBRETH (E-filed)
Contact Info (optional) Cascade Drilling LP

(5) WELL TESTS

Table with columns: Pump, Bailer, Air, Flowing Artesian, Yield gal/min, Drawdown, Drill stem/Pump depth, Duration (hr).

Temperature 56 °F Lab analysis Yes By

Supervising Geologist/Engineer

Water quality concerns? Yes (describe below)

Table with columns: From, To, Description, Amount, Units.

MONITORING WELL REPORT - Map with location identified must be attached and shall include an approximate scale and north arrow

MULT 119709

6/8/2015

Map of Hole



STATE OF OREGON
MONITORING WELL REPORT

(as required by ORS 537.765 & OAR 690-240-0395)

6/8/2015

WELL I.D. LABEL# L

START CARD # 1025858

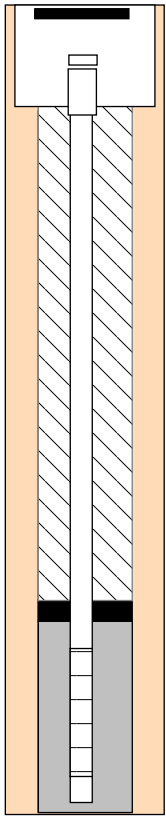
(1) LAND OWNER Owner Well I.D. EX-1

First Name Last Name
Company SANDY BLVD DEVELOPMENT ASSOC/CASCADE CORP
Address PO BOX 20187
City PORTLAND State OR Zip 97294

(2) TYPE OF WORK
New Deepening Conversion
Alteration (repair/recondition) Abandonment

(3) DRILL METHOD
Rotary Air Rotary Mud Cable Hollow Stem Auger Cable Mud
Reverse Rotary Other GROUT IN PLACE

(4) CONSTRUCTION
Piezometer Well
Depth of Completed Well 28.00 ft. Special Standard



MONUMENT/VAULT Below Ground
From 0 To 1

BORE HOLE
Diameter 4 From 0 To 28

CASING
Dia. From To
Gauge Wld Thrd
Material Steel Plastic

LINER
Dia. From To
Gauge Wld Thrd
Material Steel Plastic

SEAL
From 0 To 2
Material Concrete
Amount 3 Sacks Grout weight

SCREEN
Casing/Liner Material
Diameter From To
Slot Size

FILTER
From To Material Size of pack

(5) WELL TESTS

Table with columns: Pump, Bailer, Air, Flowing Artesian, Yield gal/min, Drawdown, Drill stem/Pump depth, Duration (hr)

Temperature 56 °F Lab analysis Yes By

Supervising Geologist/Engineer

Water quality concerns? Yes (describe below)

Table with columns: From, To, Description, Amount, Units

(6) LOCATION OF WELL (legal description)

County MULTNOMAH Twp 1.00 N N/S Range 3.00 E E/W WM
Sec 29 NE 1/4 of the SE 1/4 Tax Lot 2300
Tax Map Number Lot
Lat ' ' or DMS or DD
Long ' ' or DMS or DD
Street address of well Nearest address
2525 NE 201ST AVE
GRESHAM, OR 97024

(7) STATIC WATER LEVEL

Table with columns: Date, SWL(psi), + SWL(ft)
Existing Well / Predeepening 4/1/2015 9
Completed Well

Table with columns: SWL Date, From, To, Est Flow, SWL(psi), + SWL(ft)
WATER BEARING ZONES
Flowing Artesian? Dry Hole?
Depth water was first found

(8) WELL LOG

Table with columns: Material, From, To, Ground Elevation

Date Started 4/1/2015 Completed 4/1/2015

(unbonded) Monitor Well Constructor Certification

I certify that the work I performed on the construction, deepening, alteration, or abandonment of this well is in compliance with Oregon monitoring well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.

License Number 1786 Date 6/5/2015
Password : (if filing electronically)
Signed JOSEPH R STALOCH (E-filed)

(bonded) Monitor Well Constructor Certification

I accept responsibility for the construction, deepening, 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 monitoring well construction standards. This report is true to the best of my knowledge and belief.

License Number 10443 Date 6/8/2015
Password : (if filing electronically)
Signed RYAN R GALBRETH (E-filed)
Contact Info (optional) Cascade Drilling LP

MONITORING WELL REPORT - Map with location identified must be attached and shall include an approximate scale and north arrow

MULT 119698

6/8/2015

Map of Hole



6/8/2015

Map of Hole



Oregon

Kate Brown, Governor

Water Resources Department

North Mall Office Building
725 Summer St NE, Suite A
Salem, OR 97301
Phone (503) 986-0900
Fax (503) 986-0904
www.wrd.state.or.us

March 26, 2015

RYAN GALBRETH MWC #10443
CASCADE DRILLING INC
13600 SE AMBLER ROAD
CLACKAMAS, OREGON 97015

FINAL ORDER

Dear Mr. Galbreth:


The Special Standards Request Form you submitted for owner: Cascade Corporation, Start Card Numbers 1025858 (EX-1) and 1025859 (MW-47a) is hereby approved for the following: You may abandon these monitoring wells utilizing the method described in OAR 690-240-0510(2). ***If you are going to use bentonite grout to abandon the wells, then it may only be used to abandon the portion of the monitoring wells that are below the static water level. Above the static water level another approved sealing material must be used.***

Your Special Standards Request to abandon Start Card Numbers 1025860 (MW-47b), 1025861 (MW-48a), 1025862 (MW-48b), 1025863 (MW-49), 1025864 (B-5), 1025865 (MW-31s), 1025866 (MW-32s), 1025867 (MW-33s), 1025868 (MW-35s), 1025869 (MW-42) and 1025870 (MW-43) is unfortunately denied due to the documented presence of groundwater contamination. All casing, screen, annular sealing material, drill cuttings, debris and filter pack must be removed prior to sealing. This abandonment method will help prevent the vertical migration of contaminants. A copy of your Special Standards Request Form is enclosed. All other standards must be adhered to.

The Well Construction Standards serve to protect ground water resources. By approving and issuing this special construction standard the Oregon Water Resources Department is not representing that a well, constructed in accordance with this condition will maintain structural integrity or that it meets engineering standards. The well constructor/or landowner is responsible for ensuring that a well is constructed in a manner that protects ground water resources as required under Oregon Administrative Rules 690-200 through 690-240.

If you have any questions regarding this letter, I may be contacted at (503) 986-0852, or by e-mail at Joel.W.Jeffery@wrd.state.or.us.

Sincerely,



Joel Jeffery, Coordinator
Well Construction Program
Well Construction and Compliance Section

enclosure;

cc: NW Region Well Inspector
File

This is a final order in other than a contested case. This order is subject to judicial review under ORS 183.484. Any petition for judicial review must be filed within the 60 day time period specified by ORS 183.484(2). Pursuant to ORS 536.075 and OAR 137-004-0080 you may either petition for judicial review or petition the Director for reconsideration of this order. A petition for reconsideration may be granted or denied by the director, and if no action is taken within 60 days following the date the petition was filed, the petition shall be deemed denied.

STATE OF OREGON
MONITORING WELL REPORT

(as required by ORS 537.765 & OAR 690-240-0395)

6/8/2015

WELL I.D. LABEL# L

START CARD # 1025865

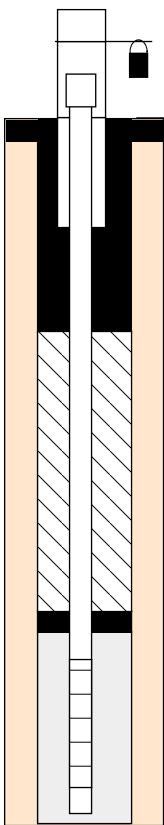
(1) LAND OWNER Owner Well I.D. MW-31S

First Name Last Name
Company SANDY BLVD DEVELOPMENT ASSOC/CASCADE CORP
Address PO BOX 20187
City PORTLAND State OR Zip 97294

(2) TYPE OF WORK
New Deepening Conversion
Alteration (repair/recondition) Abandonment

(3) DRILL METHOD
Rotary Air Rotary Mud Cable Hollow Stem Auger Cable Mud
Reverse Rotary Other

(4) CONSTRUCTION
Depth of Completed Well 22.00 ft.
Piezometer Well
Special Standard



MONUMENT/VAULT Above Ground
From 3 To 3

BORE HOLE
Diameter 9.5 From 0 To 22

CASING
Dia. From To
Gauge Wld Thrd
Material Steel Plastic

LINER
Dia. From To
Gauge Wld Thrd
Material Steel Plastic

SEAL
From 0 To 2
Material Concrete
Amount 3 Sacks Grout weight

SCREEN
Casing/Liner Material
Diameter From To
Slot Size

FILTER
From To Material Size of pack

(5) WELL TESTS

Table with columns: Pump, Bailer, Air, Flowing Artesian, Yield gal/min, Drawdown, Drill stem/Pump depth, Duration (hr)

Temperature 56 °F Lab analysis Yes By

Supervising Geologist/Engineer

Water quality concerns? Yes (describe below)

Table with columns: From, To, Description, Amount, Units

(6) LOCATION OF WELL (legal description)

County MULTNOMAH Twp 1.00 N N/S Range 3.00 E E/W WM
Sec 29 NE 1/4 of the SE 1/4 Tax Lot 1005
Tax Map Number Lot
Lat " or DMS or DD
Long " or DMS or DD
Street address of well Nearest address
2525 NE 201ST AVE
GRESHAM, OR 97024

(7) STATIC WATER LEVEL

Table with columns: Date, SWL(psi), + SWL(ft)
Existing Well / Predeepening 3/31/2015 9
Completed Well

Flowing Artesian? Dry Hole?
WATER BEARING ZONES
Depth water was first found

Table with columns: SWL Date, From, To, Est Flow, SWL(psi), + SWL(ft)

(8) WELL LOG

Table with columns: Material, From, To, Ground Elevation

Date Started 3/31/2015 Completed 3/31/2015

(unbonded) Monitor Well Constructor Certification

I certify that the work I performed on the construction, deepening, alteration, or abandonment of this well is in compliance with Oregon monitoring well construction standards.

License Number 1786 Date 6/5/2015
Password: (if filing electronically)
Signed JOSEPH R STALOCH (E-filed)

(bonded) Monitor Well Constructor Certification

I accept responsibility for the construction, deepening, alteration, or abandonment work performed on this well during the construction dates reported above.

License Number 10443 Date 6/8/2015
Password: (if filing electronically)
Signed RYAN R GALBRETH (E-filed)
Contact Info (optional) Cascade Drilling LP

MONITORING WELL REPORT - Map with location identified must be attached and shall include an approximate scale and north arrow

MULT 119708

6/8/2015

Map of Hole



STATE OF OREGON
MONITORING WELL REPORT

(as required by ORS 537.765 & OAR 690-240-0395)

6/8/2015

WELL I.D. LABEL# L

START CARD # 1025866

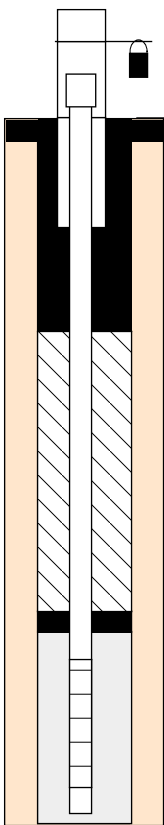
(1) LAND OWNER Owner Well I.D. MW-32S

First Name Last Name
Company SANDY BLVD DEVELOPMENT ASSOC/CASCADE CORP
Address PO BOX 20187
City PORTLAND State OR Zip 97294

(2) TYPE OF WORK
New Deepening Conversion
Alteration (repair/recondition) Abandonment

(3) DRILL METHOD
Rotary Air Rotary Mud Cable Hollow Stem Auger Cable Mud
Reverse Rotary Other

(4) CONSTRUCTION
Depth of Completed Well 19.00 ft.
Piezometer Well Special Standard



MONUMENT/VAULT Above Ground
From 3 To 3

BORE HOLE
Diameter 9.5 From 0 To 19

CASING
Dia. From To
Gauge Wld Thrd
Material Steel Plastic

LINER
Dia. From To
Gauge Wld Thrd
Material Steel Plastic

SEAL
From 0 To 2
Material Concrete
Amount 3 Sacks Grout weight

SCREEN
Casing/Liner Material
Diameter From To
Slot Size

FILTER
From To Material Size of pack

(5) WELL TESTS

Table with columns: Pump/Bailer/Air/Flowing Artesian, Yield gal/min, Drawdown, Drill stem/Pump depth, Duration (hr)

Temperature 54 °F Lab analysis Yes By

Supervising Geologist/Engineer

Water quality concerns? Yes (describe below)

Table with columns: From, To, Description, Amount, Units

(6) LOCATION OF WELL (legal description)

County MULTNOMAH Twp 1.00 N N/S Range 3.00 E E/W WM
Sec 29 NE 1/4 of the SE 1/4 Tax Lot 1005
Tax Map Number Lot
Lat Long
Street address of well Nearest address
2525 NE 201ST AVE
GRESHAM, OR 97024

(7) STATIC WATER LEVEL

Table with columns: Date, SWL(psi), + SWL(ft)
Existing Well / Predeepening 3/31/2015 9
Completed Well

Table with columns: SWL Date, From, To, Est Flow, SWL(psi), + SWL(ft)
WATER BEARING ZONES
Flowing Artesian? Dry Hole?
Depth water was first found

(8) WELL LOG

Table with columns: Material, From, To, Ground Elevation
Restore surface 0 2
Overdrill and Backfill 2 19

Date Started 3/31/2015 Completed 3/31/2015

(unbonded) Monitor Well Constructor Certification

I certify that the work I performed on the construction, deepening, alteration, or abandonment of this well is in compliance with Oregon monitoring well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.

License Number 1786 Date 6/5/2015
Password: (if filing electronically)
Signed JOSEPH R STALOCH (E-filed)

(bonded) Monitor Well Constructor Certification

I accept responsibility for the construction, deepening, 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 monitoring well construction standards. This report is true to the best of my knowledge and belief.

License Number 10443 Date 6/8/2015
Password: (if filing electronically)
Signed RYAN R GALBRETH (E-filed)
Contact Info (optional) Cascade Drilling LP

MONITORING WELL REPORT - Map with location identified must be attached and shall include an approximate scale and north arrow

MULT 119707

6/8/2015

Map of Hole



STATE OF OREGON
MONITORING WELL REPORT

(as required by ORS 537.765 & OAR 690-240-0395)

6/8/2015

WELL I.D. LABEL# L

START CARD # 1025867

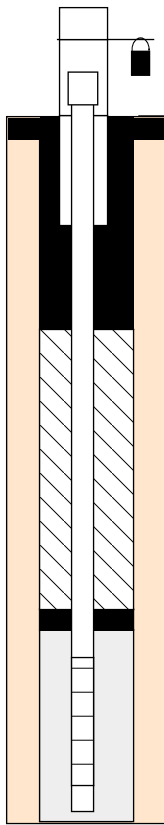
(1) LAND OWNER Owner Well I.D. CMW-33S

First Name Last Name
Company SANDY BLVD DEVELOPMENT ASSOC/CASCADE CORP
Address PO BOX 20187
City PORTLAND State OR Zip 97294

(2) TYPE OF WORK
New Deepening Conversion
Alteration (repair/recondition) Abandonment

(3) DRILL METHOD
Rotary Air Rotary Mud Cable Hollow Stem Auger Cable Mud
Reverse Rotary Other

(4) CONSTRUCTION
Piezometer Well
Depth of Completed Well 25.00 ft. Special Standard



MONUMENT/VAULT Above Ground
From 3 To 3

BORE HOLE
Diameter 9.5 From 0 To 25

CASING
Dia. From To
Gauge Wld Thrd
Material Steel Plastic

LINER
Dia. From To
Gauge Wld Thrd
Material Steel Plastic

SEAL
From 0 To 2
Material Concrete
Amount 3 Sacks Grout weight

SCREEN
Casing/Liner Material
Diameter From To
Slot Size

FILTER
From To Material Size of pack

(5) WELL TESTS

Table with columns: Pump, Bailer, Air, Flowing Artesian, Yield gal/min, Drawdown, Drill stem/Pump depth, Duration (hr)

Temperature 56 °F Lab analysis Yes By

Supervising Geologist/Engineer

Water quality concerns? Yes (describe below)

Table with columns: From, To, Description, Amount, Units

(6) LOCATION OF WELL (legal description)

County MULTNOMAH Twp 1.00 N N/S Range 3.00 E E/W WM
Sec 29 NE 1/4 of the SE 1/4 Tax Lot 1005
Tax Map Number Lot
Lat ' ' or DMS or DD
Long ' ' or DMS or DD
Street address of well Nearest address
2525 NE 201ST AVE
GRESHAM, OR 97024

(7) STATIC WATER LEVEL

Table with columns: Date, SWL(psi), + SWL(ft)
Existing Well / Predeepening 3/31/2015 9
Completed Well

WATER BEARING ZONES
Flowing Artesian? Dry Hole?
Depth water was first found
SWL Date From To Est Flow SWL(psi) + SWL(ft)

(8) WELL LOG

Table with columns: Material, From, To, Ground Elevation

Date Started 3/31/2015 Completed 3/31/2015

(unbonded) Monitor Well Constructor Certification

I certify that the work I performed on the construction, deepening, alteration, or abandonment of this well is in compliance with Oregon monitoring well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.

License Number 1786 Date 6/5/2015
Password : (if filing electronically)
Signed JOSEPH R STALOCH (E-filed)

(bonded) Monitor Well Constructor Certification

I accept responsibility for the construction, deepening, 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 monitoring well construction standards. This report is true to the best of my knowledge and belief.

License Number 10443 Date 6/8/2015
Password : (if filing electronically)
Signed RYAN R GALBRETH (E-filed)
Contact Info (optional) Cascade Drilling LP

MONITORING WELL REPORT - Map with location identified must be attached and shall include an approximate scale and north arrow

MULT 119706

6/8/2015

Map of Hole



STATE OF OREGON
MONITORING WELL REPORT

(as required by ORS 537.765 & OAR 690-240-0395)

6/8/2015

WELL I.D. LABEL# L

START CARD # 1025868

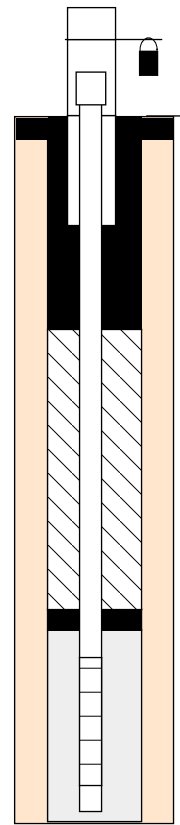
(1) LAND OWNER Owner Well I.D. MW-35S

First Name Last Name
Company SANDY BLVD DEVELOPMENT ASSOC/CASCADE CORP
Address PO BOX 20187
City PORTLAND State OR Zip 97294

(2) TYPE OF WORK
New Deepening Conversion
Alteration (repair/recondition) Abandonment

(3) DRILL METHOD
Rotary Air Rotary Mud Cable Hollow Stem Auger Cable Mud
Reverse Rotary Other

(4) CONSTRUCTION
Depth of Completed Well 17.00 ft.
Piezometer Well
Special Standard



MONUMENT/VAULT Above Ground
From 3 To 3

BORE HOLE
Diameter 9.5 From 0 To 17

CASING
Dia. From To
Gauge Wld Thrd
Material Steel Plastic

LINER
Dia. From To
Gauge Wld Thrd
Material Steel Plastic

SEAL
From 0 To 2
Material Concrete
Amount 3 Sacks Grout weight

SCREEN
Casing/Liner Material
Diameter From To
Slot Size

FILTER
From To Material Size of pack

(5) WELL TESTS

Table with columns: Pump/Bailer/Air/Flowing Artesian, Yield gal/min, Drawdown, Drill stem/Pump depth, Duration (hr)

Temperature 56 °F Lab analysis Yes By

Supervising Geologist/Engineer

Table with columns: From, To, Description, Amount, Units

(6) LOCATION OF WELL (legal description)

County MULTNOMAH Twp 1.00 N N/S Range 3.00 E E/W WM
Sec 29 SE 1/4 of the NE 1/4 Tax Lot 1005
Tax Map Number Lot
Lat ' ' or DMS or DD
Long ' ' or DMS or DD
Street address of well Nearest address
2525 NE 201ST AVE
GRESHAM, OR 97024

(7) STATIC WATER LEVEL

Table with columns: Date, SWL(psi), + SWL(ft)
Existing Well / Predeepening 3/30/2015 9
Completed Well

WATER BEARING ZONES
Depth water was first found
SWL Date From To Est Flow SWL(psi) + SWL(ft)

(8) WELL LOG

Table with columns: Material, From, To, Ground Elevation

Date Started 3/30/2015 Completed 3/30/2015

(unbonded) Monitor Well Constructor Certification

I certify that the work I performed on the construction, deepening, alteration, or abandonment of this well is in compliance with Oregon monitoring well construction standards.

License Number 1786 Date 6/5/2015
Password: (if filing electronically)
Signed JOSEPH R STALOCH (E-filed)

(bonded) Monitor Well Constructor Certification

I accept responsibility for the construction, deepening, alteration, or abandonment work performed on this well during the construction dates reported above.

License Number 10443 Date 6/8/2015
Password: (if filing electronically)
Signed RYAN R GALBRETH (E-filed)
Contact Info (optional) Cascade Drilling LP

MONITORING WELL REPORT - Map with location identified must be attached and shall include an approximate scale and north arrow

MULT 119705

6/8/2015

Map of Hole



STATE OF OREGON
MONITORING WELL REPORT

(as required by ORS 537.765 & OAR 690-240-0395)

6/8/2015

WELL I.D. LABEL# L 45671

START CARD # 1025869

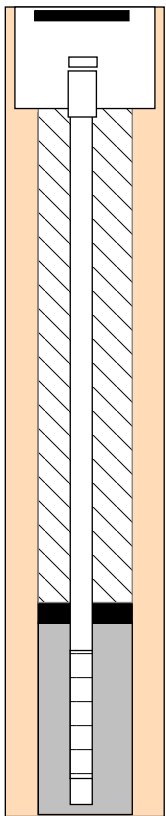
(1) LAND OWNER Owner Well I.D. MW-42

First Name Last Name
Company SANDY BLVD DEVELOPMENT ASSOC/CASCADE CORP
Address PO BOX 20187
City PORTLAND State OR Zip 97294

(2) TYPE OF WORK
New Deepening Conversion
Alteration (repair/recondition) Abandonment

(3) DRILL METHOD
Rotary Air Rotary Mud Cable Hollow Stem Auger Cable Mud
Reverse Rotary Other

(4) CONSTRUCTION
Piezometer Well
Depth of Completed Well 28.00 ft. Special Standard



MONUMENT/VAULT Below Ground
From 0 To 1

BORE HOLE
Diameter 11.5 From 0 To 28

CASING
Dia. From To
Gauge Wld Thrd
Material Steel Plastic

LINER
Dia. From To
Gauge Wld Thrd
Material Steel Plastic

SEAL
From 0 To 2
Material Concrete
Amount 3 Sacks Grout weight

SCREEN
Casing/Liner Material
Diameter From To
Slot Size

FILTER
From To Material Size of pack

(5) WELL TESTS

Table with columns: Pump, Bailer, Air, Flowing Artesian, Yield gal/min, Drawdown, Drill stem/Pump depth, Duration (hr)

Temperature 56 °F Lab analysis Yes By

Supervising Geologist/Engineer

Water quality concerns? Yes (describe below)

Table with columns: From, To, Description, Amount, Units

(6) LOCATION OF WELL (legal description)

County MULTNOMAH Twp 1.00 N N/S Range 3.00 E E/W WM
Sec 29 NE 1/4 of the SE 1/4 Tax Lot 1005
Tax Map Number Lot
Lat ' ' or DMS or DD
Long ' ' or DMS or DD
Street address of well Nearest address
2525 NE 201ST AVE
GRESHAM, OR 97024

(7) STATIC WATER LEVEL

Table with columns: Date, SWL(psi), + SWL(ft)
Existing Well / Predeepening 4/1/2015 9
Completed Well

WATER BEARING ZONES
Flowing Artesian? Dry Hole?
Depth water was first found
SWL Date From To Est Flow SWL(psi) + SWL(ft)

(8) WELL LOG

Table with columns: Material, From, To, Ground Elevation

Date Started 4/1/2015 Completed 4/1/2015

(unbonded) Monitor Well Constructor Certification

I certify that the work I performed on the construction, deepening, alteration, or abandonment of this well is in compliance with Oregon monitoring well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.

License Number 1786 Date 6/5/2015
Password : (if filing electronically)
Signed JOSEPH R STALOCH (E-filed)

(bonded) Monitor Well Constructor Certification

I accept responsibility for the construction, deepening, 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 monitoring well construction standards. This report is true to the best of my knowledge and belief.

License Number 10443 Date 6/8/2015
Password : (if filing electronically)
Signed RYAN R GALBRETH (E-filed)
Contact Info (optional) Cascade Drilling LP

MONITORING WELL REPORT - Map with location identified must be attached and shall include an approximate scale and north arrow

MULT 119704

6/8/2015

Map of Hole



STATE OF OREGON
MONITORING WELL REPORT

(as required by ORS 537.765 & OAR 690-240-0395)

6/8/2015

WELL I.D. LABEL# L43844

START CARD # 1025870

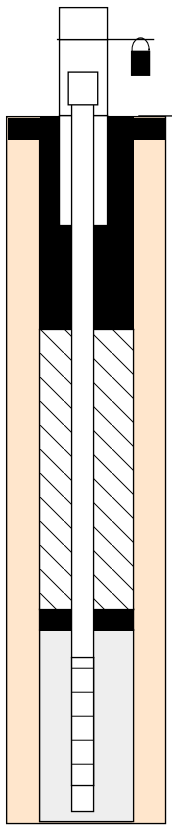
(1) LAND OWNER Owner Well I.D. CMW-43

First Name Last Name
Company SANDY BLVD DEVELOPMENT ASSOC/CASCADE CORP
Address PO BOX 20187
City PORTLAND State OR Zip 97294

(2) TYPE OF WORK
New Deepening Conversion
Alteration (repair/recondition) Abandonment

(3) DRILL METHOD
Rotary Air Rotary Mud Cable Hollow Stem Auger Cable Mud
Reverse Rotary Other

(4) CONSTRUCTION
Depth of Completed Well 29.00 ft.
Piezometer Well
Special Standard



MONUMENT/VAULT Above Ground
From 3 To 3

BORE HOLE
Diameter 9.5 From 0 To 29

CASING
Dia. From To
Gauge Wld Thrd
Material Steel Plastic

LINER
Dia. From To
Gauge Wld Thrd
Material Steel Plastic

SEAL
From 0 To 2
Material Concrete
Amount 3 Sacks Grout weight

SCREEN
Casing/Liner Material
Diameter From To
Slot Size

FILTER
From To Material Size of pack

(5) WELL TESTS

Table with columns: Pump, Bailer, Air, Flowing Artesian, Yield gal/min, Drawdown, Drill stem/Pump depth, Duration (hr)

Temperature 56 °F Lab analysis Yes By

Supervising Geologist/Engineer

Water quality concerns? Yes (describe below)

Table with columns: From, To, Description, Amount, Units

(6) LOCATION OF WELL (legal description)

County MULTNOMAH Twp 1.00 N N/S Range 3.00 E E/W WM
Sec 29 NE 1/4 of the SE 1/4 Tax Lot 1005
Tax Map Number Lot
Lat ' " or DMS or DD
Long ' " or DMS or DD
Street address of well Nearest address
2525 NE 201ST AVE
GRESHAM, OR 97024

(7) STATIC WATER LEVEL

Table with columns: Date, SWL(psi), + SWL(ft)
Existing Well / Predeepening 3/31/2015 9
Completed Well

WATER BEARING ZONES
Flowing Artesian? Dry Hole?
Depth water was first found
SWL Date From To Est Flow SWL(psi) + SWL(ft)

(8) WELL LOG

Table with columns: Material, From, To, Ground Elevation

Date Started 3/31/2015 Completed 3/31/2015

(unbonded) Monitor Well Constructor Certification

I certify that the work I performed on the construction, deepening, alteration, or abandonment of this well is in compliance with Oregon monitoring well construction standards.

License Number 1786 Date 6/5/2015
Password: (if filing electronically)
Signed JOSEPH R STALOCH (E-filed)

(bonded) Monitor Well Constructor Certification

I accept responsibility for the construction, deepening, alteration, or abandonment work performed on this well during the construction dates reported above.

License Number 10443 Date 6/8/2015
Password: (if filing electronically)
Signed RYAN R GALBRETH (E-filed)
Contact Info (optional) Cascade Drilling LP

STATE OF OREGON
MONITORING WELL REPORT

(as required by ORS 537.765 & OAR 690-240-0395)

6/8/2015

WELL I.D. LABEL# L 105114

START CARD # 1025859

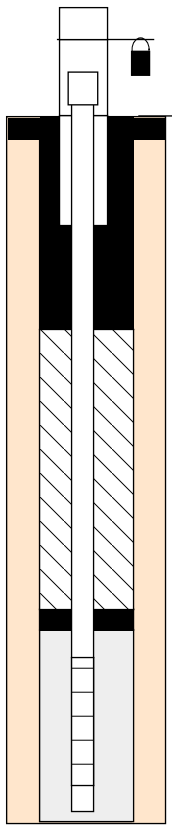
(1) LAND OWNER Owner Well I.D. MW-47A

First Name Last Name
Company SANDY BLVD DEVELOPMENT ASSOC/CASCADE CORP
Address PO BOX 20187
City PORTLAND State OR Zip 97294

(2) TYPE OF WORK
New Deepening Conversion
Alteration (repair/recondition) Abandonment

(3) DRILL METHOD
Rotary Air Rotary Mud Cable Hollow Stem Auger Cable Mud
Reverse Rotary Other CHIP IN PLACE

(4) CONSTRUCTION
Piezometer Well
Depth of Completed Well 15.00 ft. Special Standard
MONUMENT/VAULT Above Ground
BORE HOLE Diameter 2 From 0 To 15
CASING Dia. From To
Gauge Wld Thrd
Material Steel Plastic
LINER Dia. From To
Gauge Wld Thrd
Material Steel Plastic
SEAL From 0 To 2
Material Concrete
Amount 3 Sacks Grout weight
SCREEN Casing/Liner Material
Diameter From To
Slot Size
FILTER From To Material Size of pack



(6) LOCATION OF WELL (legal description)

County MULTNOMAH Twp 1.00 N N/S Range 3.00 E E/W WM
Sec 29 SE 1/4 of the NE 1/4 Tax Lot 2300
Tax Map Number Lot
Lat ' ' or DMS or DD
Long ' ' or DMS or DD
Street address of well Nearest address
2525 NE 201ST AVE
GRESHAM, OR 97024

(7) STATIC WATER LEVEL

Table with columns: Date, SWL(psi), + SWL(ft). Includes rows for Existing Well / Predeepening and Completed Well. Also includes a table for WATER BEARING ZONES with columns: SWL Date, From, To, Est Flow, SWL(psi), + SWL(ft).

(8) WELL LOG

Table with columns: Material, From, To, Ground Elevation. Includes entries for Restore surface and Chip in place.

Date Started 3/30/2015 Completed 3/30/2015

(unbonded) Monitor Well Constructor Certification

I certify that the work I performed on the construction, deepening, alteration, or abandonment of this well is in compliance with Oregon monitoring well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.

License Number 1786 Date 6/5/2015
Password : (if filing electronically)
Signed JOSEPH R STALOCH (E-filed)

(bonded) Monitor Well Constructor Certification

I accept responsibility for the construction, deepening, 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 monitoring well construction standards. This report is true to the best of my knowledge and belief.

License Number 10443 Date 6/8/2015
Password : (if filing electronically)
Signed RYAN R GALBRETH (E-filed)
Contact Info (optional) Cascade Drilling LP

(5) WELL TESTS

Table with columns: Pump, Bailer, Air, Flowing Artesian, Yield gal/min, Drawdown, Drill stem/Pump depth, Duration (hr).

Temperature 56 °F Lab analysis Yes By

Supervising Geologist/Engineer

Water quality concerns? Yes (describe below)

Table with columns: From, To, Description, Amount, Units.

MONITORING WELL REPORT - Map with location identified must be attached and shall include an approximate scale and north arrow

MULT 119702

6/8/2015

Map of Hole



6/8/2015

Map of Hole



Oregon

Kate Brown, Governor

Water Resources Department

North Mall Office Building
725 Summer St NE, Suite A
Salem, OR 97301
Phone (503) 986-0900
Fax (503) 986-0904
www.wrd.state.or.us

March 26, 2015

RYAN GALBRETH MWC #10443
CASCADE DRILLING INC
13600 SE AMBLER ROAD
CLACKAMAS, OREGON 97015

FINAL ORDER

Dear Mr. Galbreth:


The Special Standards Request Form you submitted for owner: Cascade Corporation, Start Card Numbers 1025858 (EX-1) and 1025859 (MW-47a) is hereby approved for the following: You may abandon these monitoring wells utilizing the method described in OAR 690-240-0510(2). ***If you are going to use bentonite grout to abandon the wells, then it may only be used to abandon the portion of the monitoring wells that are below the static water level. Above the static water level another approved sealing material must be used.***

Your Special Standards Request to abandon Start Card Numbers 1025860 (MW-47b), 1025861 (MW-48a), 1025862 (MW-48b), 1025863 (MW-49), 1025864 (B-5), 1025865 (MW-31s), 1025866 (MW-32s), 1025867 (MW-33s), 1025868 (MW-35s), 1025869 (MW-42) and 1025870 (MW-43) is unfortunately denied due to the documented presence of groundwater contamination. All casing, screen, annular sealing material, drill cuttings, debris and filter pack must be removed prior to sealing. This abandonment method will help prevent the vertical migration of contaminants. A copy of your Special Standards Request Form is enclosed. All other standards must be adhered to.

The Well Construction Standards serve to protect ground water resources. By approving and issuing this special construction standard the Oregon Water Resources Department is not representing that a well, constructed in accordance with this condition will maintain structural integrity or that it meets engineering standards. The well constructor/or landowner is responsible for ensuring that a well is constructed in a manner that protects ground water resources as required under Oregon Administrative Rules 690-200 through 690-240.

If you have any questions regarding this letter, I may be contacted at (503) 986-0852, or by e-mail at Joel.W.Jeffery@wrd.state.or.us.

Sincerely,



Joel Jeffery, Coordinator
Well Construction Program
Well Construction and Compliance Section

enclosure;

cc: NW Region Well Inspector
File

This is a final order in other than a contested case. This order is subject to judicial review under ORS 183.484. Any petition for judicial review must be filed within the 60 day time period specified by ORS 183.484(2). Pursuant to ORS 536.075 and OAR 137-004-0080 you may either petition for judicial review or petition the Director for reconsideration of this order. A petition for reconsideration may be granted or denied by the director, and if no action is taken within 60 days following the date the petition was filed, the petition shall be deemed denied.

STATE OF OREGON
MONITORING WELL REPORT

(as required by ORS 537.765 & OAR 690-240-0395)

6/8/2015

WELL I.D. LABEL# L 105113

START CARD # 1025860

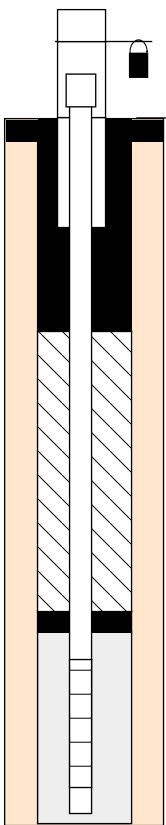
(1) LAND OWNER Owner Well I.D. MW-47B

First Name Last Name
Company SANDY BLVD DEVELOPMENT ASSOC/CASCADE CORP
Address PO BOX 20187
City PORTLAND State OR Zip 97294

(2) TYPE OF WORK
New Deepening Conversion
Alteration (repair/recondition) Abandonment

(3) DRILL METHOD
Rotary Air Rotary Mud Cable Hollow Stem Auger Cable Mud
Reverse Rotary Other

(4) CONSTRUCTION
Depth of Completed Well 19.50 ft.
Piezometer Well
Special Standard



MONUMENT/VAULT Above Ground
From 3 To 3

BORE HOLE
Diameter 9.5 From 0 To 19.5

CASING
Dia. From To
Gauge Wld Thrd
Material Steel Plastic

LINER
Dia. From To
Gauge Wld Thrd
Material Steel Plastic

SEAL
From 0 To 2
Material Concrete
Amount 3 Sacks Grout weight

SCREEN
Casing/Liner Material
Diameter From To
Slot Size

FILTER
From To Material Size of pack

(5) WELL TESTS

Table with columns: Pump/Bailer/Air/Flowing Artesian, Yield gal/min, Drawdown, Drill stem/Pump depth, Duration (hr)

Temperature 56 °F Lab analysis Yes By

Supervising Geologist/Engineer

Water quality concerns? Yes (describe below)

Table with columns: From, To, Description, Amount, Units

(6) LOCATION OF WELL (legal description)

County MULTNOMAH Twp 1.00 N N/S Range 3.00 E E/W WM
Sec 29 SW 1/4 of the NE 1/4 Tax Lot 1005
Tax Map Number Lot
Lat ' " or DMS or DD
Long ' " or DMS or DD
Street address of well Nearest address
2525 NE 201ST AVE
GRESHAM, OR 97024

(7) STATIC WATER LEVEL

Table with columns: Date, SWL(psi), + SWL(ft)
Existing Well / Predeepening 4/1/2015 9
Completed Well

WATER BEARING ZONES
Flowing Artesian? Dry Hole?
Depth water was first found
SWL Date From To Est Flow SWL(psi) + SWL(ft)

(8) WELL LOG

Table with columns: Material, From, To, Ground Elevation

Date Started 4/1/2015 Completed 4/1/2015

(unbonded) Monitor Well Constructor Certification

I certify that the work I performed on the construction, deepening, alteration, or abandonment of this well is in compliance with Oregon monitoring well construction standards.

License Number 1786 Date 6/5/2015
Password: (if filing electronically)
Signed JOSEPH R STALOCH (E-filed)

(bonded) Monitor Well Constructor Certification

I accept responsibility for the construction, deepening, alteration, or abandonment work performed on this well during the construction dates reported above.

License Number 10443 Date 6/8/2015
Password: (if filing electronically)
Signed RYAN R GALBRETH (E-filed)
Contact Info (optional) Cascade Drilling LP

MONITORING WELL REPORT - Map with location identified must be attached and shall include an approximate scale and north arrow

MULT 119701

6/8/2015

Map of Hole



STATE OF OREGON
MONITORING WELL REPORT

(as required by ORS 537.765 & OAR 690-240-0395)

6/8/2015

WELL I.D. LABEL# L 105124

START CARD # 1025861

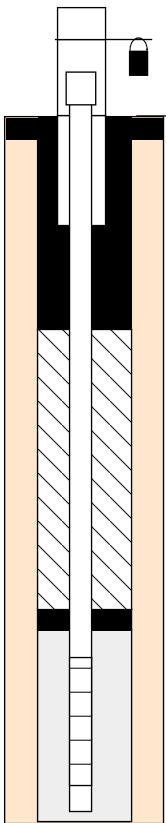
(1) LAND OWNER Owner Well I.D. MW-48A

First Name Last Name
Company SANDY BLVD DEVELOPMENT ASSOC/CASCADE CORP
Address PO BOX 20187
City PORTLAND State OR Zip 97294

(2) TYPE OF WORK
New Deepening Conversion
Alteration (repair/recondition) Abandonment

(3) DRILL METHOD
Rotary Air Rotary Mud Cable Hollow Stem Auger Cable Mud
Reverse Rotary Other

(4) CONSTRUCTION
Piezometer Well
Depth of Completed Well 13.00 ft. Special Standard



MONUMENT/VAULT Above Ground
From 3 To 3

BORE HOLE
Diameter 9.5 From 0 To 13

CASING
Dia. From To
Gauge Wld Thrd
Material Steel Plastic

LINER
Dia. From To
Gauge Wld Thrd
Material Steel Plastic

SEAL
From 0 To 2
Material Concrete
Amount 3 Sacks Grout weight

SCREEN
Casing/Liner Material
Diameter From To
Slot Size

FILTER
From To Material Size of pack

(5) WELL TESTS

Table with columns: Pump/Bailer/Air/Flowing Artesian, Yield gal/min, Drawdown, Drill stem/Pump depth, Duration (hr)

Temperature 56 °F Lab analysis Yes By

Supervising Geologist/Engineer

Water quality concerns? Yes (describe below)

Table with columns: From, To, Description, Amount, Units

(6) LOCATION OF WELL (legal description)

County MULTNOMAH Twp 1.00 N N/S Range 3.00 E E/W WM
Sec 29 SE 1/4 of the NE 1/4 Tax Lot 1005
Tax Map Number Lot
Lat DMS or DD
Long DMS or DD
Street address of well Nearest address
2525 NE 201ST AVE
GRESHAM, OR 97024

(7) STATIC WATER LEVEL

Table with columns: Date, SWL(psi), + SWL(ft)
Existing Well / Predeepening 3/30/2015 9
Completed Well

WATER BEARING ZONES
Flowing Artesian? Dry Hole?
Depth water was first found
SWL Date From To Est Flow SWL(psi) + SWL(ft)

(8) WELL LOG

Table with columns: Material, From, To, Ground Elevation

Date Started 3/30/2015 Completed 3/30/2015

(unbonded) Monitor Well Constructor Certification

I certify that the work I performed on the construction, deepening, alteration, or abandonment of this well is in compliance with Oregon monitoring well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.

License Number 1786 Date 6/5/2015
Password: (if filing electronically)
Signed JOSEPH R STALOCH (E-filed)

(bonded) Monitor Well Constructor Certification

I accept responsibility for the construction, deepening, 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 monitoring well construction standards. This report is true to the best of my knowledge and belief.

License Number 10443 Date 6/8/2015
Password: (if filing electronically)
Signed RYAN R GALBRETH (E-filed)
Contact Info (optional) Cascade Drilling LP

MONITORING WELL REPORT - Map with location identified must be attached and shall include an approximate scale and north arrow

MULT 119700

6/8/2015

Map of Hole



STATE OF OREGON
MONITORING WELL REPORT

(as required by ORS 537.765 & OAR 690-240-0395)

6/8/2015

WELL I.D. LABEL# L 105123

START CARD # 1025862

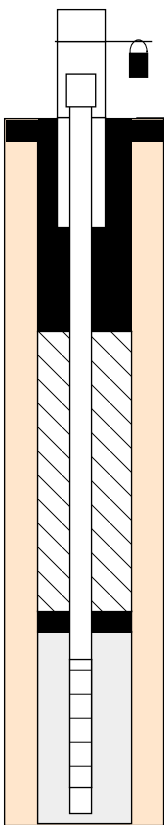
(1) LAND OWNER Owner Well I.D. MW-48B

First Name Last Name
Company SANDY BLVD DEVELOPMENT ASSOC/CASCADE CORP
Address PO BOX 20187
City PORTLAND State OR Zip 97294

(2) TYPE OF WORK
New Deepening Conversion
Alteration (repair/recondition) Abandonment

(3) DRILL METHOD
Rotary Air Rotary Mud Cable Hollow Stem Auger Cable Mud
Reverse Rotary Other

(4) CONSTRUCTION
Piezometer Well
Depth of Completed Well 17.00 ft. Special Standard



MONUMENT/VAULT Above Ground
From 3 To 3

BORE HOLE
Diameter 9.5 From 0 To 17

CASING
Dia. From To
Gauge Wld Thrd
Material Steel Plastic

LINER
Dia. From To
Gauge Wld Thrd
Material Steel Plastic

SEAL
From 0 To 2
Material Concrete
Amount 3 Sacks Grout weight

SCREEN
Casing/Liner Material
Diameter From To
Slot Size

FILTER
From To Material Size of pack

(5) WELL TESTS

Table with columns: Pump/Bailer/Air/Flowing Artesian, Yield gal/min, Drawdown, Drill stem/Pump depth, Duration (hr)

Temperature 56 °F Lab analysis Yes By

Supervising Geologist/Engineer

Water quality concerns? Yes (describe below)

Table with columns: From, To, Description, Amount, Units

(6) LOCATION OF WELL (legal description)

County MULTNOMAH Twp 1.00 N N/S Range 3.00 E E/W WM
Sec 29 SE 1/4 of the NE 1/4 Tax Lot 1005
Tax Map Number Lot
Lat ' " or DMS or DD
Long ' " or DMS or DD
Street address of well Nearest address
2525 NE 201ST AVE
GRESHAM, OR 97024

(7) STATIC WATER LEVEL

Table with columns: Date, SWL(psi), + SWL(ft)
Existing Well / Predeepening 3/30/2015 9
Completed Well

WATER BEARING ZONES
Flowing Artesian? Dry Hole?
Depth water was first found
SWL Date From To Est Flow SWL(psi) + SWL(ft)

(8) WELL LOG

Table with columns: Material, From, To, Ground Elevation

Date Started 3/30/2015 Completed 3/30/2015

(unbonded) Monitor Well Constructor Certification

I certify that the work I performed on the construction, deepening, alteration, or abandonment of this well is in compliance with Oregon monitoring well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.

License Number 1786 Date 6/5/2015
Password : (if filing electronically)
Signed JOSEPH R STALOCH (E-filed)

(bonded) Monitor Well Constructor Certification

I accept responsibility for the construction, deepening, 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 monitoring well construction standards. This report is true to the best of my knowledge and belief.

License Number 10443 Date 6/8/2015
Password : (if filing electronically)
Signed RYAN R GALBRETH (E-filed)
Contact Info (optional) Cascade Drilling LP

MONITORING WELL REPORT - Map with location identified must be attached and shall include an approximate scale and north arrow

MULT 119699

6/8/2015

Map of Hole



STATE OF OREGON
MONITORING WELL REPORT

(as required by ORS 537.765 & OAR 690-240-0395)

6/8/2015

WELL I.D. LABEL# L

START CARD # 1025863

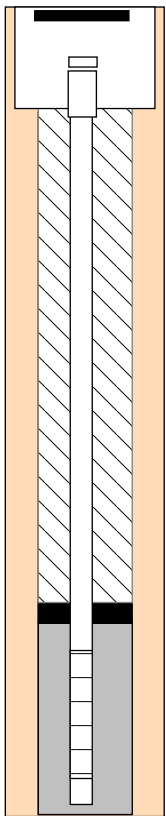
(1) LAND OWNER Owner Well I.D. MW-49

First Name Last Name
Company SANDY BLVD DEVELOPMENT ASSOC/CASCADE CORP
Address PO BOX 20187
City PORTLAND State OR Zip 97294

(2) TYPE OF WORK
New Deepening Conversion
Alteration (repair/recondition) Abandonment

(3) DRILL METHOD
Rotary Air Rotary Mud Cable Hollow Stem Auger Cable Mud
Reverse Rotary Other

(4) CONSTRUCTION
Piezometer Well
Depth of Completed Well 16.50 ft. Special Standard



MONUMENT/VAULT Below Ground
From 0 To 1.5

BORE HOLE
Diameter 8.5 From 0 To 16.5

CASING
Dia. From To
Gauge Wld Thrd
Material Steel Plastic

LINER
Dia. From To
Gauge Wld Thrd
Material Steel Plastic

SEAL
From 0 To 2
Material Concrete
Amount 3 Sacks Grout weight

SCREEN
Casing/Liner Material
Diameter From To
Slot Size

FILTER
From To Material Size of pack

(5) WELL TESTS

Table with columns: Pump, Bailer, Air, Flowing Artesian, Yield gal/min, Drawdown, Drill stem/Pump depth, Duration (hr)

Temperature 56 °F Lab analysis Yes By

Supervising Geologist/Engineer

Water quality concerns? Yes (describe below)

Table with columns: From, To, Description, Amount, Units

(6) LOCATION OF WELL (legal description)

County MULTNOMAH Twp 1.00 N N/S Range 3.00 E E/W WM
Sec 29 NE 1/4 of the SE 1/4 Tax Lot 1005
Tax Map Number Lot
Lat DMS or DD
Long DMS or DD
Street address of well Nearest address
2525 NE 201ST AVE
GRESHAM, OR 97024

(7) STATIC WATER LEVEL

Table with columns: Date, SWL(psi), + SWL(ft)
Existing Well / Predeepening 3/31/2015 9
Completed Well

Table with columns: SWL Date, From, To, Est Flow, SWL(psi), + SWL(ft)
WATER BEARING ZONES
Flowing Artesian? Dry Hole?
Depth water was first found

(8) WELL LOG

Table with columns: Material, From, To, Ground Elevation
Restore surface 0 2
Overdrill and Backfill 2 16.5

Date Started 3/31/2015 Completed 3/31/2015

(unbonded) Monitor Well Constructor Certification

I certify that the work I performed on the construction, deepening, alteration, or abandonment of this well is in compliance with Oregon monitoring well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.

License Number 1786 Date 6/5/2015
Password: (if filing electronically)
Signed JOSEPH R STALOCH (E-filed)

(bonded) Monitor Well Constructor Certification

I accept responsibility for the construction, deepening, 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 monitoring well construction standards. This report is true to the best of my knowledge and belief.

License Number 10443 Date 6/8/2015
Password: (if filing electronically)
Signed RYAN R GALBRETH (E-filed)
Contact Info (optional) Cascade Drilling LP

MONITORING WELL REPORT - Map with location identified must be attached and shall include an approximate scale and north arrow

MULT 119710

6/8/2015

Map of Hole



APPENDIX C
WasteXpress Soil Disposal Ticket

Hillsboro Landfill
3205 SE MINTER BRIDGE RD,
HILLSBORO, OR, 97123-5350
Ph: (503) 640-9427

Reprint Ticket # 1380645

Customer Name WASTEXPRESS
Ticket Date 07/20/2015
Payment Type Credit Account
Manual Ticket#
Hauling Ticket#
Route
StateWasteCode
Manifest na
Destination
PO#
Profile 118921OR(IMPACTED SOIL)
Generator 1753716 OR-CASCADE CORP ECSI

Carrier SandH
Vehicle# 55 Volume
Container
Driver rick
Check#
Billing# 0001576
Gen EPA ID
Grid

Time	Scale	Operator	Inbound	Gross	36380 lb
In 07/20/15 07:51:10 AM	Inbound 2	sdm		Tare	32720 lb
Out 07/20/15 08:03:35 AM	Outbound	jdb		Net	3660 lb
				Tons	1.83