Prowell Environmental, Inc.

Phone: 503/452-0972

2216 SW Sunset Boulevard, Portland, OR 97239

Fax: 503/452-1427

E-mail: sprowell@ix.netcom.com

January 21, 2013

Mr. Joel Strafelda
Union Pacific Railroad Company
1400 Douglas Street
STOP 1030
Omaha, Nebraska 68179-1030

Re: Decommissioning Records for Cascade Corporation Wells Located on Union Pacific Railroad Company Property, Fairview, Oregon
(TGA Remedy wells MW-8i, MW-8s, MW-9i, MW-9s, MW-10i, MW-10s)
UPRR ROE Permit issued July 26, 2012; Audit # 264031; Folder # 0274255

Dear Mr. Strafelda,

This letter provides documentation on the final decommissioning of six wells previously installed by Cascade Corporation on property owned by the Union Pacific Railroad Company (UPRR). The wells were decommissioned on August 9 and 10, 2012, in response to successful cleanup progress on Cascade's state-regulated groundwater remediation projects.

The six wells decommissioned on UPRR property include Troutdale Gravel Aquifer (TGA) wells MW-8i, MW-8s, MW-9i, MW-9s, MW-10i, and MW-10s, at locations shown in Figure 1. The decommissionings were approved by the Oregon Department of Environmental Quality (DEQ) in its letter dated October 6, 2009 and email dated August 11, 2011, due to non-detectable concentrations of regulated volatile organic compounds in groundwater at each well location. The decommissionings were performed by Western States Soil and Conservation, Inc. (an Oregon licensed driller) using overdrill and in situ pressure grout methods in accordance with Oregon Administrative Rules, Chapter 690, Division 240, consistent with the Oregon Water Resource Department's (OWRD's) Final Orders. Please find attached DEQ's approval letter and email, OWRD well decommissioning reports, OWRD's Final Orders, original well installation logs, and final laboratory reports, for your records.

There remain three active Cascade wells on UPRR property, which will continue to be in use for the foreseeable future. These are Troutdale Sandstone Aquifer wells MW-8(dg), MW-10(ds), and MW-10(dg), as shown in Figure 2.

We appreciate your assistance through this process. Don't hesitate to call if you have any questions.

Sincerely,

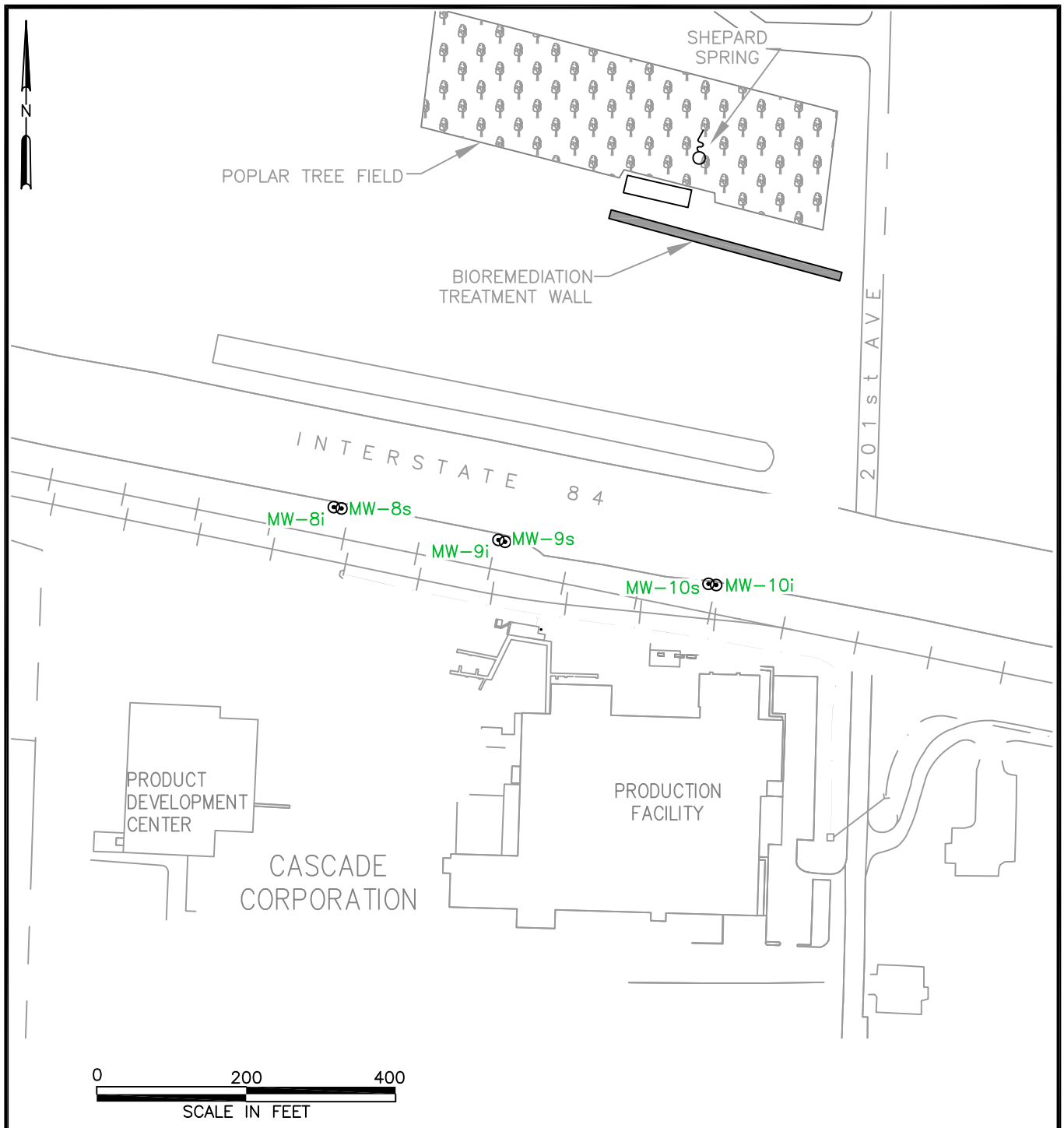
Sarah Prowell, R.G.
Prowell Environmental, Inc.

cc: Mr. John Cushing, Cascade Corporation
Mr. Robert Williams, Oregon Department of Environmental Quality

Attachments:

Figure 1. Wells Decommissioned On UPRR Right-of-Way
Figure 2. Well Locations
Table 1. VOC Groundwater Analytical Results Wells Decommissioned on UPRR Property
Table 2. Wells Decommissioned on UPRR Property

DEQ Well Decommissioning Approvals
MW-8i Decommissioning Records
MW-8s Decommissioning Records
MW-9i Decommissioning Records
MW-9s Decommissioning Records
MW-10i Decommissioning Records
MW-10s Decommissioning Records



NOTE:
ABOVE WELLS LOCATED ON UNION PACIFIC RAILROAD RIGHT-OF-WAY, PER AGREEMENT DATED JULY 5, 2012.
AUDIT NO. 264031
FOLDER NO. 0274255

Figure 1
Wells Decommissioned
On UPRR Right-of-Way
Cascade Corporation – TGA Remedy

Y:\Prowell Environmental\Cascade\TGA Well Decommissioning\2012 Rpt\UPRR Fig1.dwg 12/7/12

UPRR-CASCADE CORPORATION
FOLDER No. 2742.55

Sec. 29, T. 1 N., R. 3 E., W.M.

NOTE:
All Elevations Base On US Coastal And Geodetic Survey Datum 1983.

NORTH

"BW" LINE

"BP" LINE

"XRR" LINE

Perm. Ease. 21'-44'

Access Control & R/W Lines

WORK AREA

MP 12

Interstate-84

MW-13S

MW-8 CLUSTER (MW-8S,I,D,G)

MW-9 CLUSTER (MW-9S,I)

MW-10 CLUSTER (MW-10S,D,G,I)

Union Pacific tracks in Yellow Highlight

Wells boxed in RED have been decommissioned; Wells circled in GREEN remain in place.

Figure 2 - Well Locations

N.E. 181ST AVE. - 223RD AVE. SEC. COLUMBIA RIVER HIGHWAY MULTNOMAH COUNTY			
FEDERAL HIGHWAY ADMINISTRATION		PROJECT NUMBER	SHEET NO.
REGION 10	OREGON DIVISION		5

17-DEC-1993 07:12

BRIDGE DETAILS CHECKED....

Table 1
VOC Groundwater Analytical Results
Wells Decommissioned on UPRR Property
Cascade Corporation

Well Name	Sample Date	PCE		TCE		cDCE		VC	
		(µg/L)	L	(µg/L)	L	(µg/L)	L	(µg/L)	L
MW-8i	08/11/09	0.5	U	0.5	U	0.5	U	0.5	U
MW-8s	08/20/07	0.5	U	0.5	U	0.5	U	0.5	U
MW-9i	08/02/11	0.5	U	0.5	U	0.5	U	0.5	U
MW-9s	08/28/07	0.5	U	4.4		1.5		0.5	U
MW-10i	01/07/10	0.5	U	0.5	U	0.5	U	0.5	U
MW-10s	08/28/07	0.5	U	0.5	U	0.5	U	0.5	U

Total Wells: 6

NOTES:

PCE = tetrachloroethene; TCE = trichloroethene; cDCE = cis-1,2-dichloroethene; VC = vinyl chloride.

µg/L = micrograms per liter; L = laboratory qualifier; U = compound was analyzed for, but not detected at, the given detection limit.

Table 2
Wells Decommissioned on UPRR Property
Cascade Corporation

Well Information					Decommissioning Information			
Well Name	**Subunit**	**OWRD Well I.D.**	**MULT Well I.D.**	**Start Card I.D.**	**Decommission Date**	**Decommission Method / Driller**	**OWRD Final Order Date**	**Start Card I.D.**
MW-8i	Lower TGA	NA	NA	NA	8/10/12	In situ (bent. grout) / Western States	6/5/12	1016407
MW-8s	Upper TGA	NA	NA	NA	8/10/12	In situ (bent. grout) / Western States	5/7/12	1016414
MW-9i	Lower TGA	NA	NA	NA	8/9/12	In situ (bent. grout) / Western States	6/5/12	1016408
MW-9s	Upper TGA	NA	NA	NA	8/9/12	Overdrill (bent. grout) / Western States	NA	1016409
MW-10i	Lower TGA	NA	NA	NA	8/9/12	In situ (bent. grout) / Western States	5/7/12	1016415
MW-10s	Upper TGA	NA	NA	NA	8/9/12	In situ (bent. grout) / Western States	5/7/12	1016416
Total Wells:	**6**							

NOTES:

OWRD = Oregon Water Resource Department.

NA = Well log or well identification numbers Not Available (i.e., not found in OWRD online database, per September 2009 search).

Decommissioning performced in accordance with OAR 690-240-010.

In situ decommissioning performed under OWRD Final Order variance approval.

NA = not applicable; Final Order variance approvals not required for overdrilling decommissioning.

DEQ Well Decommissioning Approvals

Oregon
Theodore Kulongoski, Governor

Department of Environmental Quality
Northwest Region-Eastside Office
1550 NW Eastman Parkway, Suite 290
Gresham, OR 97030-3832
(503) 667-8414
FAX (503)674-5148

October 6, 2009

received
10/8/09

Mr. John Cushing
Cascade Corporation
2201 NE 201st Avenue
Fairview OR 97024

Cascade Corporation's TGA Remedy
RE: Approval for Well Decommissioning, Cascade Corporation Site, DEQ File ECSI #635

Dear Mr. Cushing:

The Department of Environmental Quality (DEQ) has reviewed the email submittal of wells proposed for decommissioning presented submitted by your consultant, Prowell Environmental, on October 5, 2009. The email included a list of 50 wells that have either previously been approved for decommissioning by DEQ or clearly meet the well decommissioning criteria that have been developed for this site. The email also included maps showing locations of the wells and tables with well construction details.

see email attached

DEQ agrees with the documentation for decommissioning the 50 wells and your identified next step to contact the Oregon Water Resource Department to determine other requirements they may have for well decommissioning. I understand that once you have sufficient information you will prepare bid specifications and proceed to select a contractor for the decommissioning. Based on discussion today during our project meeting, you anticipate beginning the decommissioning work before the end of 2009.

Once the decommissioning work is completed, please provide DEQ with a summary of the work for the site file. If you need any further information you can contact me at 503-667-8414 x55008 or by email at kent.mavis.d@deq.state.or.us .

Sincerely,

Mavis D. Kent

Mavis D. Kent
DEQ Project Manager

pc: Sarah Prowell; Bruce Gilles, DEQ-NWR

From: Sarah Prowell
To: Mavis Kent (KENT.Mavis.D@deq.state.or.us);
cc: John Cushing (jcushing@cascorp.com);
Subject: TGA Master Well Decommissioning Information
Date: Monday, October 05, 2009 4:07:00 PM
Attachments: TGA Master Well Decom Figures.pdf
TGA Master Well Decom Tables.pdf

Mavis,

FYI, please find attached figures and tables regarding the 50 Cascade Corp. TGA remedy wells that have now accumulated for decommissioning. I have a call in to Chris Byrd, Oregon Water Resource Department, to notify him of the plans to decommission and to seek his input. Please let me know if you have any questions regarding the attached information.

Thanks. Sarah

Sarah Prowell, R.G.
Prowell Environmental, Inc.
2216 SW Sunset Blvd.
Portland, Oregon 97239
Phone: 503/452-0972
Fax: 503/452-1427
sprowell@ix.netcom.com

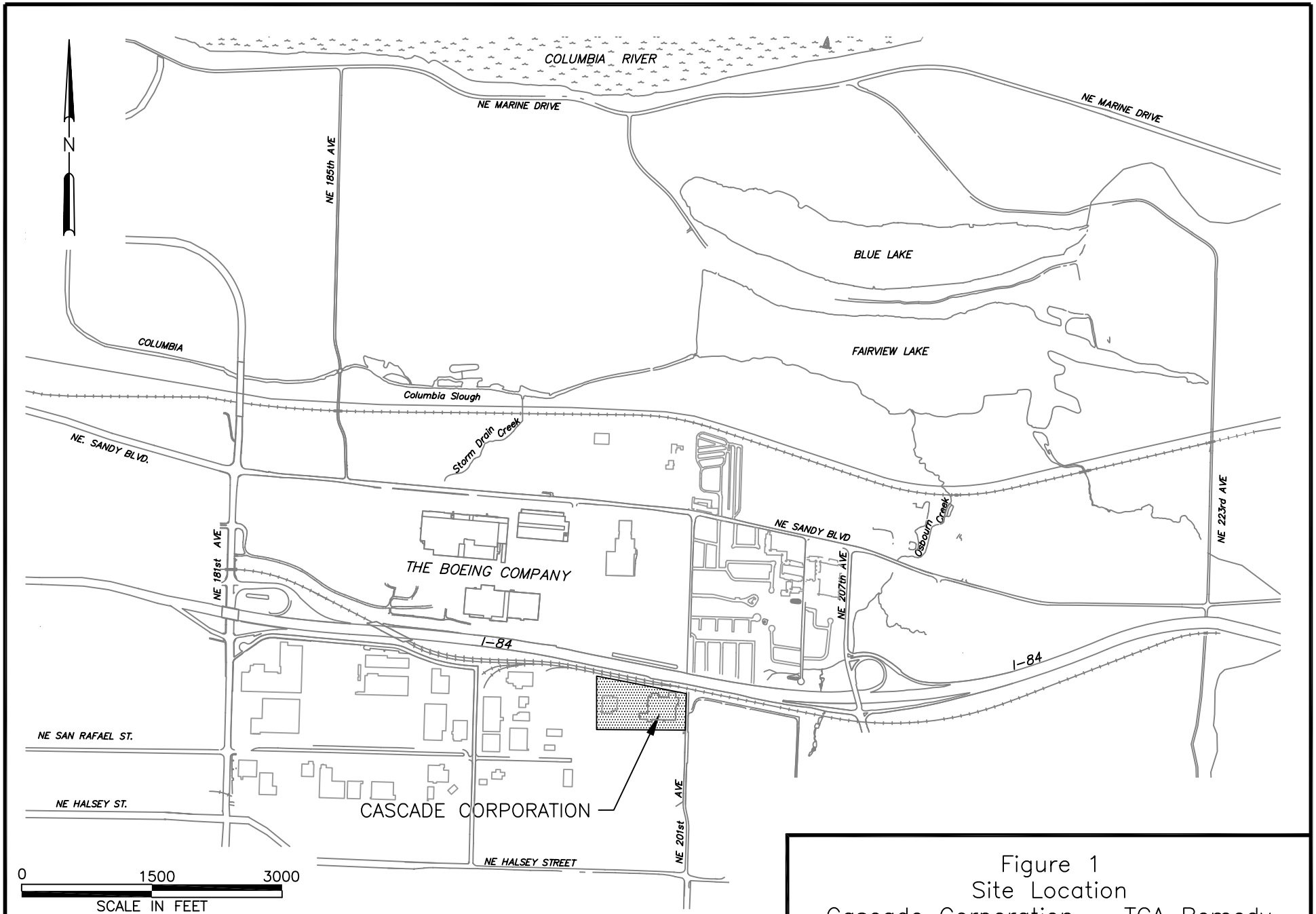


Figure 1
Site Location
Cascade Corporation – TGA Remedy

Y:\Prowell Environmental\Cascade\TGA Well Decommissioning\2009 Work Plan\Fig1.dwg 9/29/09

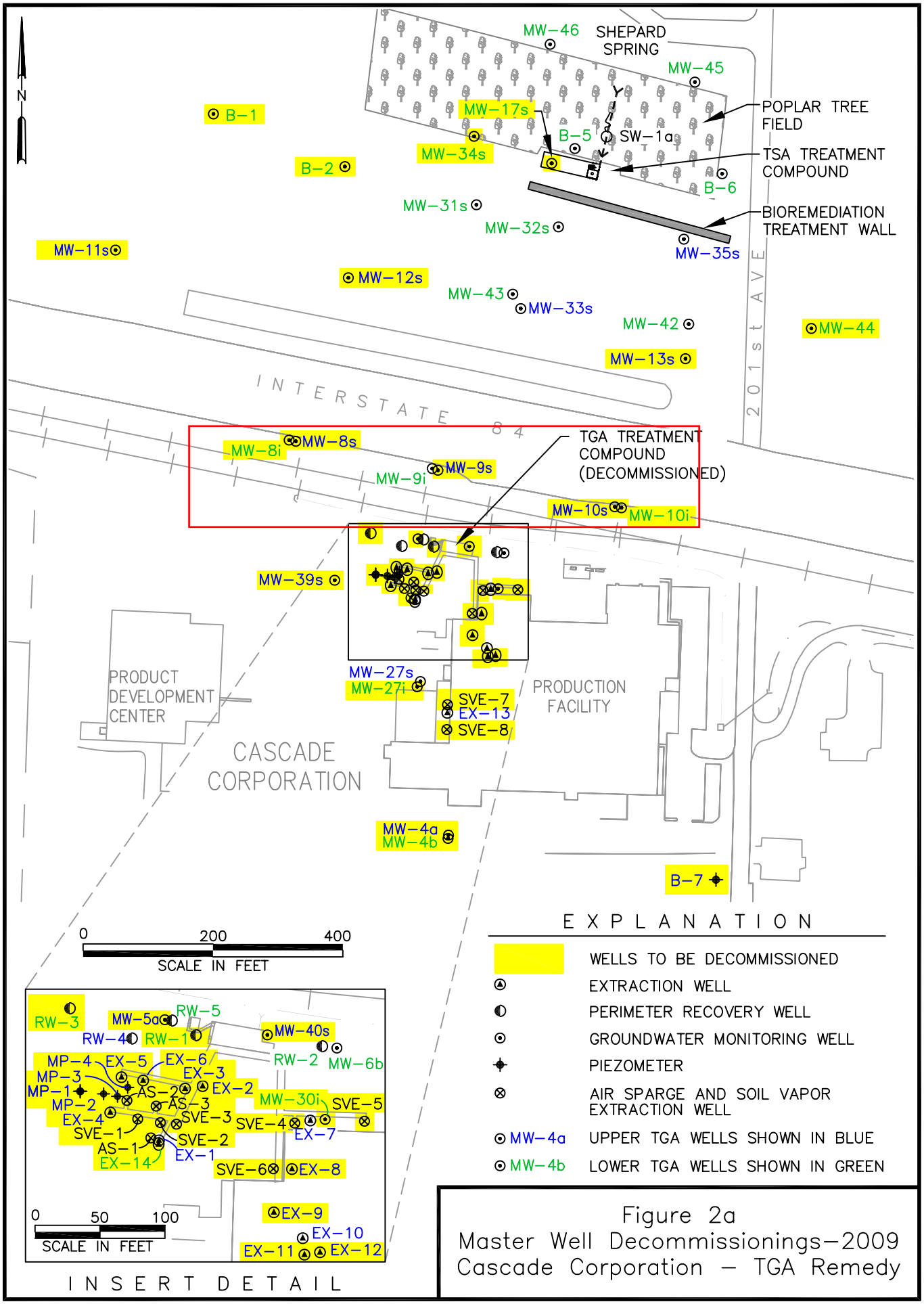


Figure 2a
Master Well Decommissionings–2009
Cascade Corporation – TGA Remedy

Y:\Prowell Environmental\Cascade\TGA Well Decommissioning\2009 Work Plan\Fig2a.dwg 9/29/09

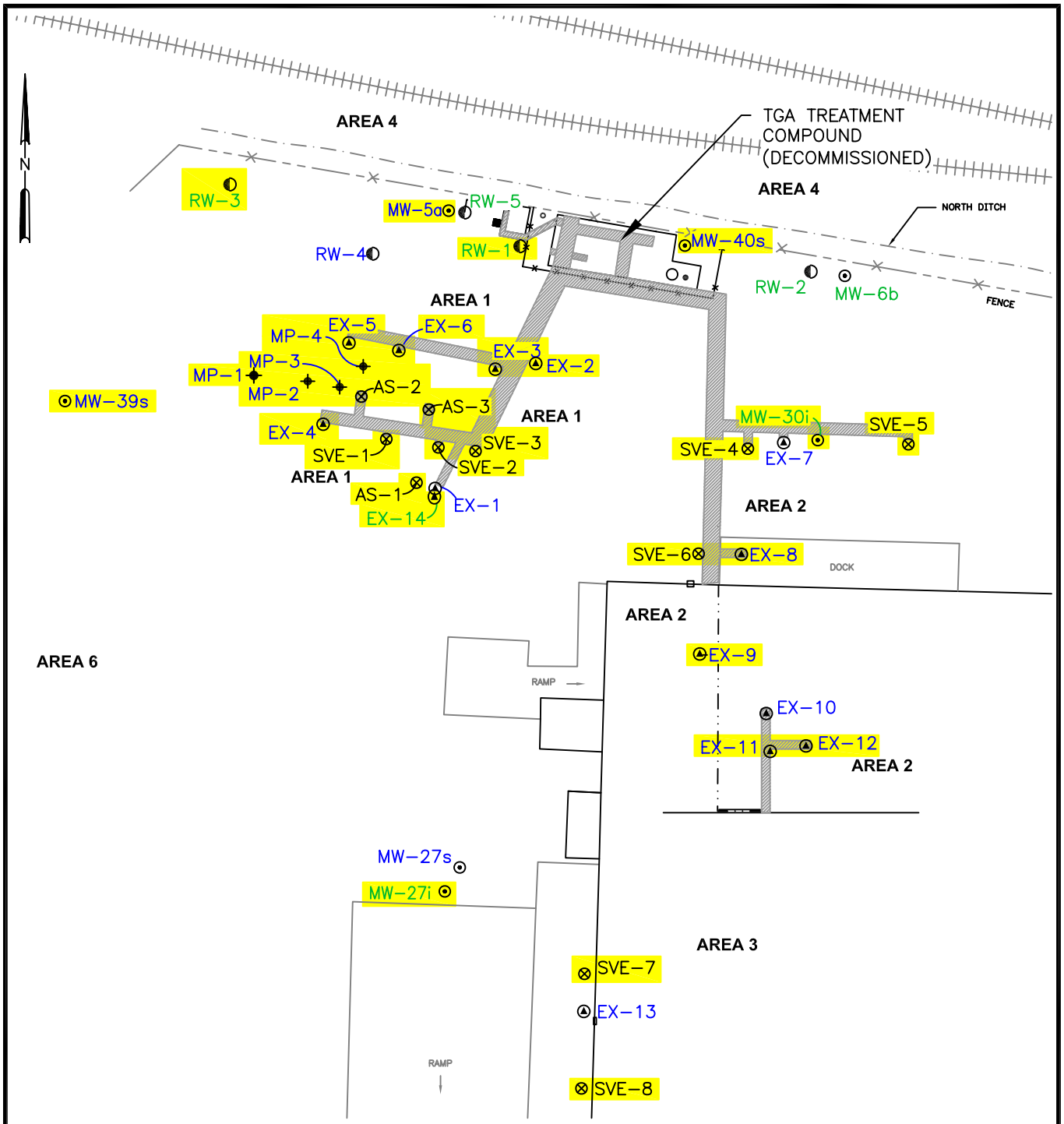


Figure 2b
On-Site Source Area
Well Decommissionings – 2009
Cascade Corporation – TGA Remedy

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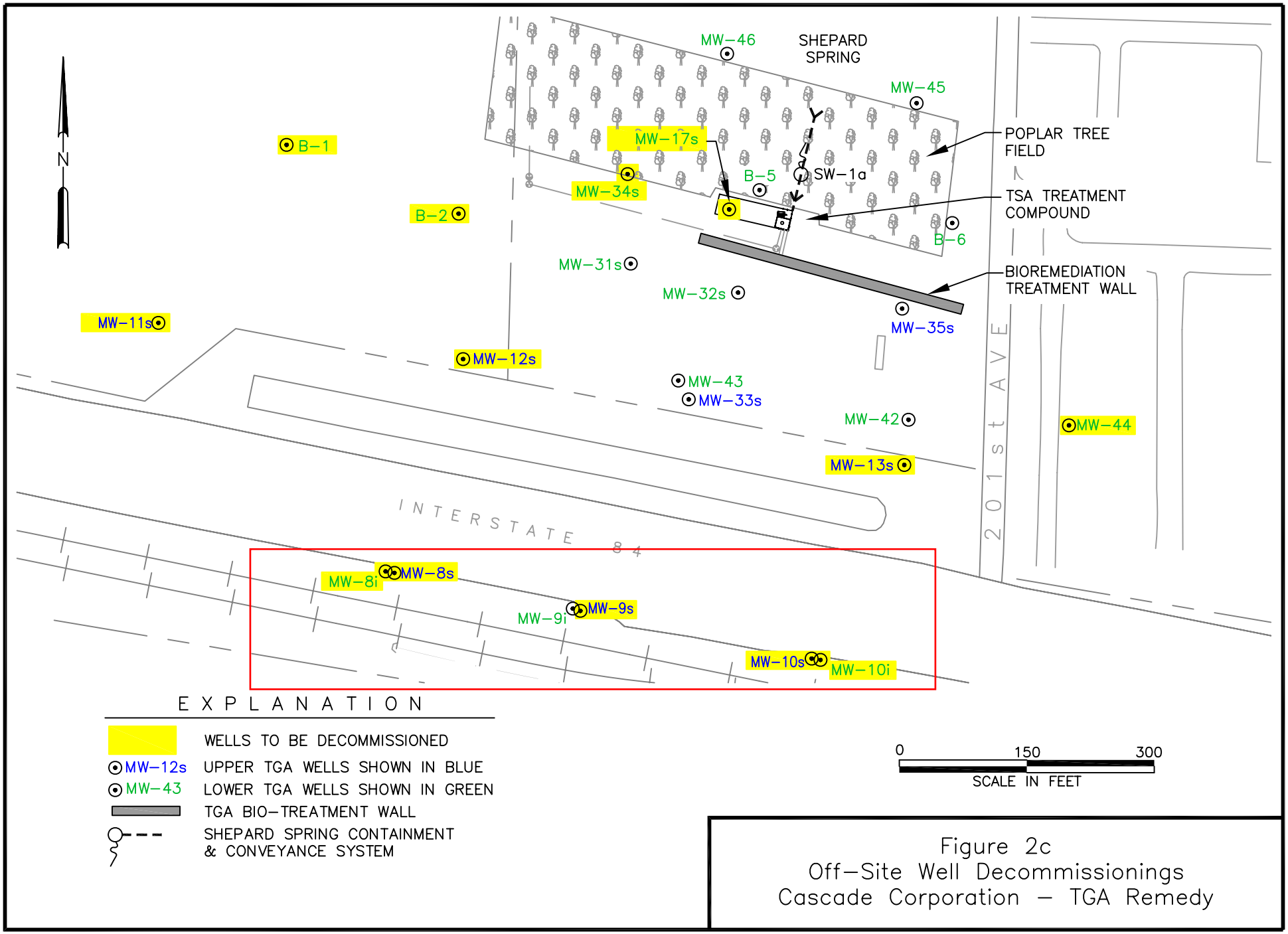


Figure 2c
Off-Site Well Decommissionings
Cascade Corporation – TGA Remedy

Y:\Prowell Environmental\Cascade\TGA Well Decommissioning\2009 Work Plan\Fig2c.dwg 9/29/09

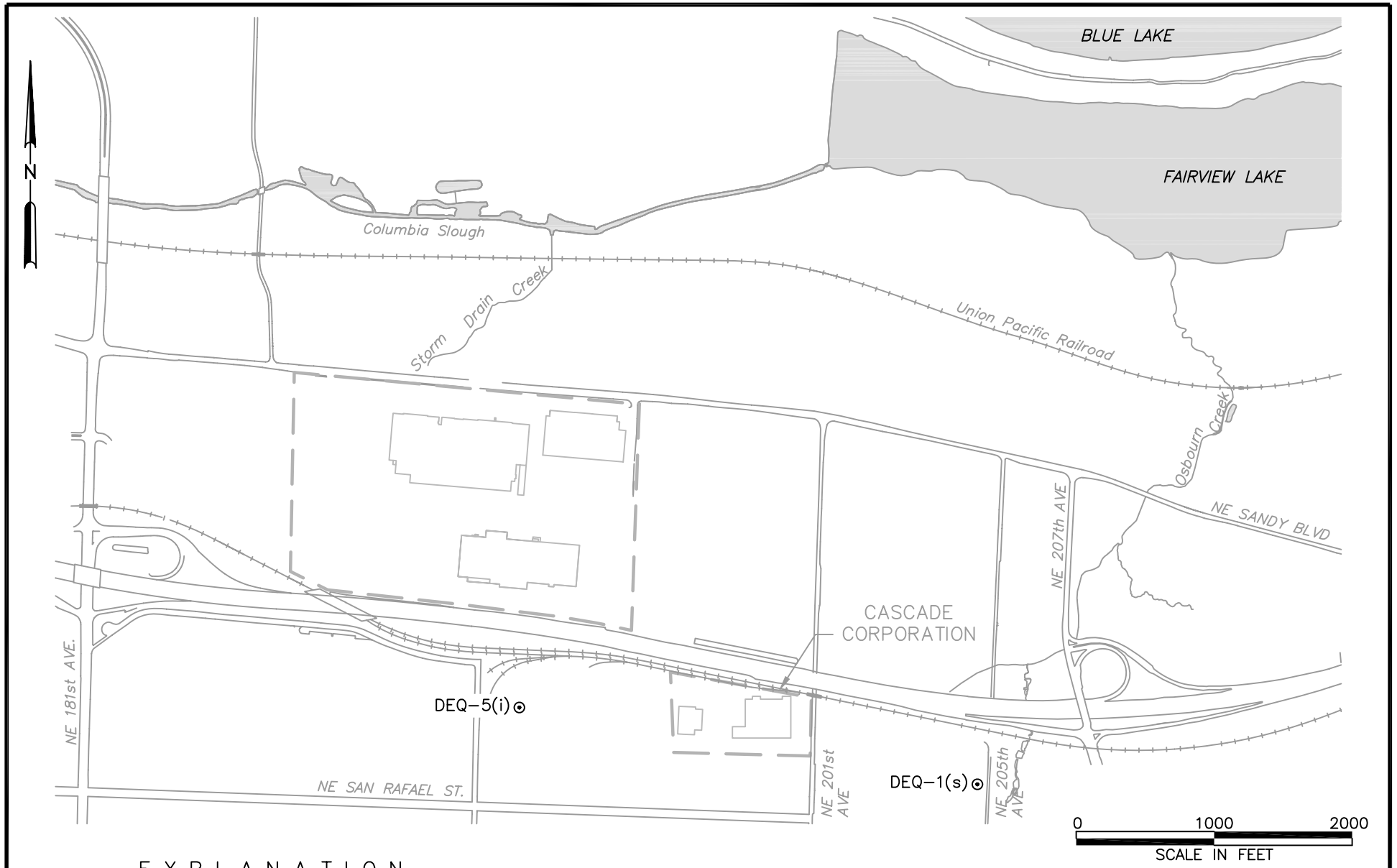
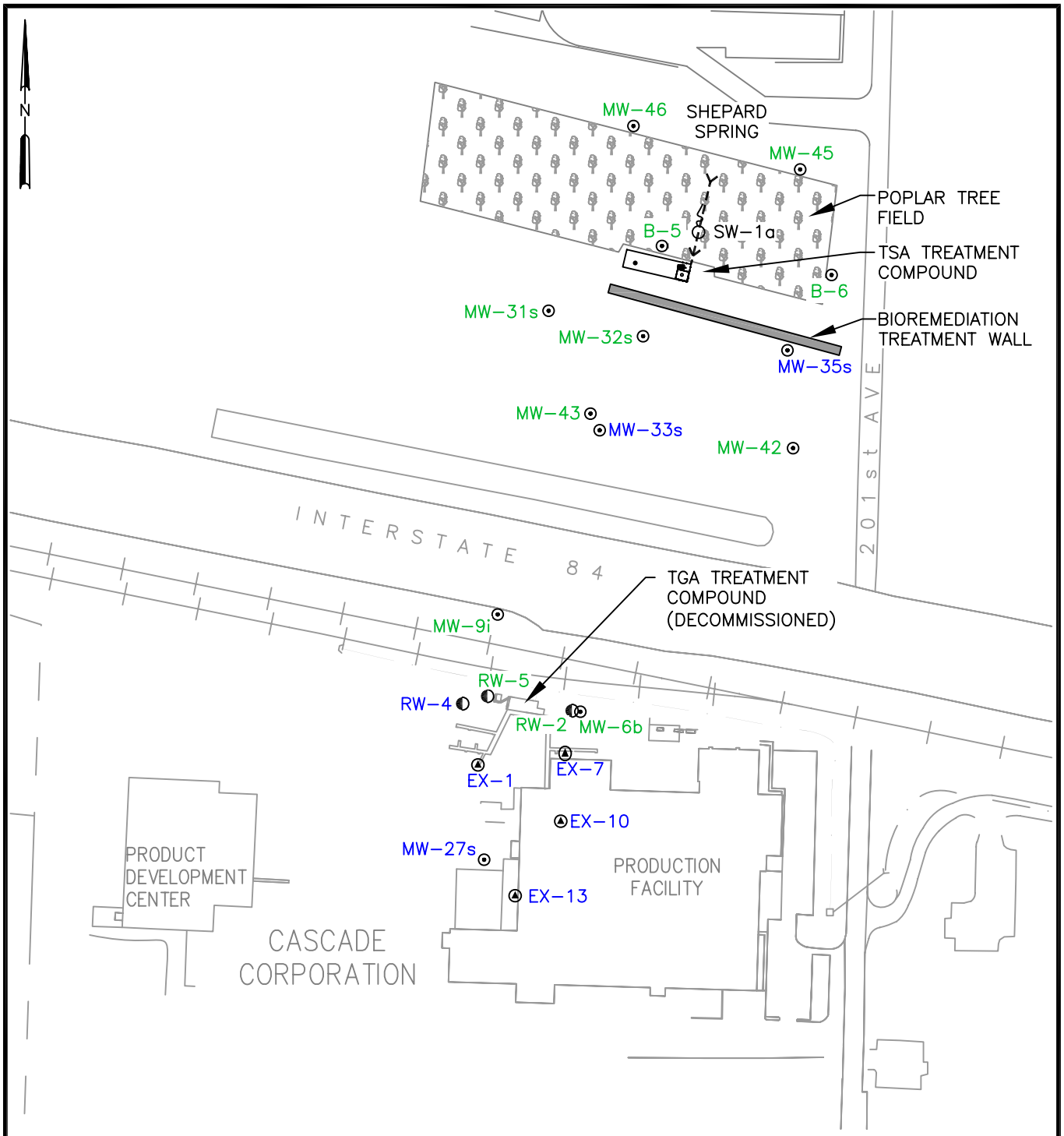


Figure 3
Regional Well Decommissionings – 2009
Cascade Corporation – TGA Remedy

Y:\Prowell Environmental\Cascade\TGA Well Decommissioning\2009 Work Plan\Fig3.dwg 9/29/09



E X P L A N A T I O N

▲	EXTRACTION WELL
◐	PERIMETER RECOVERY WELL
⊙	MONITORING WELL
⊙ MW-33s	UPPER TGA WELLS SHOWN IN BLUE
⊙ MW-43	LOWER TGA WELLS SHOWN IN GREEN

0 200 400
SCALE IN FEET

NOTE: WELLS TO BE DECOMMISSIONED ARE NOT SHOWN.

Figure 4
Remedy Features and Well Locations
Cascade Corporation – TGA Remedy

Y:\Prowell Environmental\Cascade\TGA Well Decommissioning\2009 Work Plan\Fig4.dwg 9/29/09

Table 1
Master List of TGA Wells for Decommissioning - By Area
Cascade Corporation - TGA Remedy

Well Location	Well Name	TGA Subunit	Well Description
Regional / Background			
Regional	DEQ-1s	Upper	Piezometer / Monitor Well
Regional	DEQ-5i	Lower	Piezometer / Monitor Well
On-site / Upgradient Background			
On-site	B-7	Lower	Piezometer / Monitor Well
On-site	MW-4a	Upper	Monitor Well
On-site	MW-4b	Lower	Monitor Well
On-site / Area 1 (and 6)			
Area 1	AS-1	Upper	Air Sparge "Geotechnical Hole"
Area 1	AS-2	Upper	Air Sparge "Geotechnical Hole"
Area 1	AS-3	Upper	Air Sparge "Geotechnical Hole"
Area 1	EX-2	Upper	Extraction Well
Area 1	EX-3	Upper	Extraction Well
Area 1	EX-4	Upper	Extraction Well
Area 1	EX-5	Upper	Extraction Well
Area 1	EX-6	Upper	Extraction Well
Area 1	EX-14	Lower	Extraction Well
Area 1	MP-1	Upper	Nested Piezometer
Area 1	MP-2	Upper	Nested Piezometer
Area 1	MP-3	Upper	Nested Piezometer
Area 1	MP-4	Upper	Nested Piezometer
Area 6	MW-39s	Upper	Monitor Well
Area 1	SVE-1	Unsaturated	Soil Vapor Extraction Well
Area 1	SVE-2	Unsaturated	Soil Vapor Extraction Well
Area 1	SVE-3	Unsaturated	Soil Vapor Extraction Well
On-site / Area 2			
Area 2	EX-8	Upper	Extraction Well
Area 2	EX-9	Upper	Monitor Well
Area 2	EX-11	Upper	Extraction Well
Area 2	EX-12	Upper	Extraction Well
Area 2	MW-30i	Lower	Monitor Well
Area 2	SVE-4	Unsaturated	Soil Vapor Extraction Well
Area 2	SVE-5	Unsaturated	Soil Vapor Extraction Well
Area 2	SVE-6	Unsaturated	Soil Vapor Extraction Well
On-site / Area 3			
Area 3	MW-27i	Lower	Monitor Well
Area 3	SVE-7	Unsaturated	Soil Vapor Extraction Well
Area 3	SVE-8	Unsaturated	Soil Vapor Extraction Well

Table 1
Master List of TGA Wells for Decommissioning - By Area
Cascade Corporation - TGA Remedy

Well Location	Well Name	TGA Subunit	Well Description
On-site / Area 4			
Area 4	MW-5a	Upper	Monitor Well
Area 4	MW-40s	Perched	Monitor Well
Area 4	RW-1	Lower	Perimeter Recovery Well
Area 4	RW-3	Lower	Perimeter Recovery Well
Off-site / South of I-84			
UPRR	MW-8s	Upper	Monitor Well
UPRR	MW-8i	Lower	Monitor Well
UPRR	MW-9s	Upper	Monitor Well
UPRR	MW-10s	Upper	Monitor Well
UPRR	MW-10i	Lower	Monitor Well
Off-site / North of I-84			
Boyd Coffee	B-1	Lower	Monitor Well
Boyd Coffee	B-2	Lower	Monitor Well
Boyd Coffee	MW-11s	Upper	Monitor Well
Boyd Coffee	MW-12s	Upper	Monitor Well
ODOT	MW-13s	Upper	Monitor Well
Cascade Offsite	MW-34s	Upper	Monitor Well
ODOT	MW-44	Lower	Monitor Well
Cascade Offsite	MW-17s	Lower	Monitor Well
Total Wells:	**50**		

NOTE:
UPRR = Union Pacific Railroad property; ODOT = Oregon Department of Transportation property.

Table 2
Date of TGA Well Disuse or Decommission Approval
Cascade Corporation - TGA Remedy

Well Name	Date of Discontinued Use or Decommissioning Approval	
SVE-4	Before 1998	Discontinued use prior to final remedy startup in 1998
SVE-5	Before 1998	Discontinued use prior to final remedy startup in 1998
SVE-6	Before 1998	Discontinued use prior to final remedy startup in 1998
SVE-7	Before 1998	Discontinued use prior to final remedy startup in 1998
SVE-8	Before 1998	Discontinued use prior to final remedy startup in 1998
AS-1	3/1/1999	Discontinued air sparge test use after 3/1/1999
AS-2	3/1/1999	Discontinued air sparge test use after 3/1/1999
AS-3	3/1/1999	Discontinued air sparge test use after 3/1/1999
SVE-1	11/12/2002	Discontinued use after 11/12/2002
SVE-2	11/12/2002	Discontinued use after 11/12/2002
SVE-3	11/12/2002	Discontinued use after 11/12/2002
MP-2	3/31/2009	Discontinued water level monitor use, per DEQ's 3/31/03 letter approval.
MP-3	3/31/2009	Discontinued water level monitor use, per DEQ's 3/31/03 letter approval.
MP-4	3/31/2009	Discontinued water level monitor use, per DEQ's 3/31/03 letter approval.
DEQ-1s	8/4/2004	Discontinued water level m monitoring use after 8/4/2004
DEQ-5i	8/4/2004	Discontinued water level m monitoring use after 8/4/2004
B-1	3/22/2007	Approved for decommissioning, per DEQ's 3/22/07 email.
MW-11s	3/22/2007	Approved for decommissioning, per DEQ's 3/22/07 email.
MW-27i	3/22/2007	Approved for decommissioning, per DEQ's 3/22/07 email.
MW-40s	3/22/2007	Approved for decommissioning, per DEQ's 3/22/07 email.
B-7	10/17/2007	Approved for decommissioning, per DEQ's 10/17/07 email.
EX-14	10/17/2007	Approved for decommissioning, per DEQ's 10/17/07 email.
MW-5a	10/17/2007	Approved for decommissioning, per DEQ's 10/17/07 email.
MW-8s	10/17/2007	Approved for decommissioning, per DEQ's 10/17/07 email.
MW-9s	10/17/2007	Approved for decommissioning, per DEQ's 10/17/07 email.
MW-10s	10/17/2007	Approved for decommissioning, per DEQ's 10/17/07 email.
EX-2	7/29/2009	Approved for decommissioning, per DEQ's 7/29/09 email.
EX-3	7/29/2009	Approved for decommissioning, per DEQ's 7/29/09 email.
EX-4	7/29/2009	Approved for decommissioning, per DEQ's 7/29/09 email.
EX-5	7/29/2009	Approved for decommissioning, per DEQ's 7/29/09 email.
EX-6	7/29/2009	Approved for decommissioning, per DEQ's 7/29/09 email.
EX-8	7/29/2009	Approved for decommissioning, per DEQ's 7/29/09 email.
EX-9	7/29/2009	Approved for decommissioning, per DEQ's 7/29/09 email.
EX-11	7/29/2009	Approved for decommissioning, per DEQ's 7/29/09 email.
EX-12	7/29/2009	Approved for decommissioning, per DEQ's 7/29/09 email.
MP-1	7/29/2009	Approved for decommissioning, per DEQ's 7/29/09 email.

Table 2
Date of TGA Well Disuse or Decommission Approval
Cascade Corporation - TGA Remedy

MW-4a	7/29/2009	Approved for decommissioning, per DEQ's 7/29/09 email.
MW-4b	7/29/2009	Approved for decommissioning, per DEQ's 7/29/09 email.
MW-30i	7/29/2009	Approved for decommissioning, per DEQ's 7/29/09 email.
MW-39s	7/29/2009	Approved for decommissioning, per DEQ's 7/29/09 email.
RW-1	7/29/2009	Approved for decommissioning, per DEQ's 7/29/09 email.
RW-3	7/29/2009	Approved for decommissioning, per DEQ's 7/29/09 email.
B-2	9/24/2009	Approved for decommissioning, per DEQ's 9/24/09 email.
MW-8i	9/24/2009	Approved for decommissioning, per DEQ's 9/24/09 email.
MW-10i	9/24/2009	Approved for decommissioning, per DEQ's 9/24/09 email.
MW-12s	9/24/2009	Approved for decommissioning, per DEQ's 9/24/09 email.
MW-13s	9/24/2009	Approved for decommissioning, per DEQ's 9/24/09 email.
MW-17s	9/24/2009	Approved for decommissioning, per DEQ's 9/24/09 email.
MW-34s	9/24/2009	Approved for decommissioning, per DEQ's 9/28/09 email.
MW-44	9/24/2009	Approved for decommissioning, per DEQ's 9/24/09 email.

Total Wells: **50**

NOTE:

UPRR = Union Pacific Railroad property; ODOT = Oregon Department of Transportation property.

Table 3
TGA Well Construction Summary
For Wells to be Decommissioned
Cascade Corporation - TGA Remedy

Well	Unit	Completed Date	OWRD Well I.D.	MULT Well I.D.	Start Card I.D.	Total Well Depth (ft, bgs)	Borehole Diam. (inches)	Casing Diam. (inches)	A or B[a]	Ground Surface Elevation (ft, MSL)	Top of Well Casing Elevation (ft, MSL)	Boring Depth (ft, bgs)	Screen Slot Size (inches)	Screen Interval (ft, bgs)	Screen Material	Lith Log	Well Log	OWRD Log
AS-1 (MW-28i)	L	9/21/94	NA	4416	60366	48.6	12 / 8	1.25	B	142.6	142.33	48.6	0.010	33.5-48.1	SS	X	X	X[b]
AS-2	U	12/2/97	NA	NA	NA	26	9	1.25	B	142.6	Approx. 142.3	26.3	0.020	23-26	S 40 PVC	X	X	X[b]
AS-3	U	11/18/97	NA	NA	NA	25	7	1.25	B	142.6	Approx. 142.3	25	0.020	23-25	S 40 PVC	X	X	X[b]
B-1	L	9/8/93	NA	54768	58108	20	6	2	A	120.1	119.90	21	0.020	15-20	S 40 PVC	X	X	X
B-2	L	9/2/93	NA	3746	58107	25.5	8	2	A	121.6	124.02	58	0.020	20.5-25.5	S 40 PVC	X	X	X
B-7	U	9/13/93	NA	54769	58106	16	7	2	A	151.9	154.10	16	0.020	11-16	S 40 PVC	NA	NA	X
DEQ-1s	U	10/22/90	NA	NA	NA	37.2	6	2	A	151.2	150.93	39.7	0.020	16.2-36.2	S 80 PVC	X	X	NA
DEQ-5i	L	4/2/93	NA	3435	41654	103.5	6	2	B	156.0	156.92	104.5	0.020	83-103	S 80 PVC	X	X	X
EX-2	U	12/5/97	L20776	55108	105492	27	10	4	B	141.7	141.07	28	0.020	7-27	SS	X	X	X
EX-3	U	12/5/97	L17176	55114	105521	27.5	10	4	B	141.8	141.40	28.5	0.020	7.5-27.5	SS	X	X	X
EX-4	U	12/4/97	L20773	55111	105489	26	10	4	B	143.0	142.78	27	0.020	6-26	SS	X	X	X
EX-5	U	12/4/97	L20774	55110	105490	27	10	4	B	142.5	142.25	28	0.020	7-27	SS	X	X	X
EX-6	U	12/4/97	L20775	55109	105491	27	10	4	B	142.5	141.80	28	0.020	7-27	SS	X	X	X
EX-8 (C-118)	U	6/5/95	NA	NA	NA	25.8	6	2	B	145.9	145.50	26	0.020	5.5-25.5	SS	X	X	NA
EX-9 (C-117v)	U	6/4/95	NA	NA	NA	25.3	6	2	B	145.8	145.67	25.3	0.020	5-25	SS	X	X	NA
EX-11 (C-114v)	U	12/27/94	NA	4591	32061	25.5	5.75	2	B	145.9	145.77	25.5	0.020	5.3-25.1	SS	X	X	X
EX-12 (C-116v)	U	12/29/94	NA	4593	32063	25.6	5.75	2	B	145.9	145.77	25.6	0.020	5.4-25.2	SS	X	X	X
EX-14	L	5/2/01	L43845	63886	134972	61.7	10.75 / 5	4	B	142.9	142.16	65.4	0.020	29.7-59.7	S 40 PVC	X	X	X
MP-1[c]	U	12/2/97	NA	55122	N/A	25	12	1.25	B	143.0	142.63, 142.52, 142.64	16.5, 20.5, 26	0.020	15-16, 19-20, 24-25	S 40 PVC	X	X	X
MP-2[c]	U	12/2/97	NA	55126	N/A	25	12	1.25	B	143.0	142.46, 142.41, 142.31	16.5, 20.5, 26.5	0.020	15-16, 19-20, 24-25	S 40 PVC	X	X	X
MP-3[c]	U	12/2/97	NA	55127	N/A	25	12	1.25	B	143.0	142.14, 142.17, 142.26	16.5, 20.5, 26.2	0.020	15-16, 19-20, 24-25	S 40 PVC	X	X	X

Table 3
TGA Well Construction Summary
For Wells to be Decommissioned
Cascade Corporation - TGA Remedy

Well	Unit	Completed Date	OWRD Well I.D.	MULT Well I.D.	Start Card I.D.	Total Well Depth (ft, bgs)	Borehole Diam. (inches)	Casing Diam. (inches)	A or B[a]	Ground Surface Elevation (ft, MSL)	Top of Well Casing Elevation (ft, MSL)	Boring Depth (ft, bgs)	Screen Slot Size (inches)	Screen Interval (ft, bgs)	Screen Material	Lith Log	Well Log	OWRD Log
MP-4[c]	U	12/2/97		55121	N/A	25	12?	1.25	B	143.0	141.70, 141.75, 141.75	16.5, 20.5, 26.2	0.020	15-16, 19-20, 24-25	S 40 PVC	X	X	X
MW-4a	U	10/13/88	NA	NA	NA	20.7	6	2	B	148.1	147.83	20.7	Unknown	6-19.5	PVC	X	X	**NA**
MW-4b	L	10/12/88	NA	NA	NA	49	8 / 6	2	B	148.0	147.71	51	Unknown	34-48	PVC	X	X	**NA**
MW-5a	U	10/19/88	NA	NA	NA	26	6	2	B	140.9	140.18	27	Unknown	11-26	PVC	X	X	**NA**
MW-8s	U	4/14/90	NA	NA	NA	26.6	10 / 8	2	B	136.9	136.27	27	0.020	16-26	S 40 PVC	X	X	**NA**
MW-8i	L	5/4/90	NA	NA	NA	46.6	10 / 8	2	B	136.9	136.24	50.5	0.020	36-46	S 40 PVC	X	X	**NA**
MW-9s	U	4/20/90	NA	NA	NA	22.6	10	2	B	136.4	135.29	23	0.020	12-22	S 40 PVC	X	X	**NA**
MW-10s	U	5/1/90	NA	NA	NA	20.6	10 / 8	2	B	136.1	135.45	21.2	0.020	10-20	S 40 PVC	X	X	**NA**
MW-10i	L	4/26/90	NA	NA	NA	45.6	10 / 8	2	B	135.9	135.45	50	0.020	35-45	S 40 PVC	X	X	**NA**
MW-11s	U	11/30/90	NA	NA	NA	27	6	2	A	130.2	132.30	38	0.020	11-26	S 40 PVC	X	X	**NA**
MW-12s	U	11/16/90	NA	NA	NA	26	6	4	A	126.0	128.14	50.5	0.020	9-24	S 40 PVC	X	X	**NA**
MW-13s	U	11/15/90	NA	NA	NA	26	8	2.5	A	128.2	130.06	34	0.020	9-24	S 80 PVC	X	X	**NA**
MW-17s	L	5/6/92	NA	3112	41570	22.4	12 / 8	4	A	119.1	121.56	23	0.020	8.9-18.9	S 40 PVC	X	X	X
MW-27i	L	9/19/94	NA	NA	NA	48	12 / 8	4	B	144.0	143.02	48.4	0.020	33.1-47.4	S 40 PVC	X	X	**NA**
MW-30i	L	6/27/95	NA	5143	77926	46	12 / 8	4	A	142.1	141.77	46.2	0.020	25-45	SS	X	X	X
MW-34s	L	8/16/95	NA	4984	82034	17.5	7	2	A	117.6	119.41	17.5	0.020	7.4-16.9	S 40 PVC	X	X	X
MW-39s	U	12/1/97	L20771	55113	105487	19	7	2	B	146.0	145.36	19.2	0.020	8.5-18.5	S 40 PVC	X	X	X
MW-40s	U	12/3/97	L20772	55112	105488	26.5	10	4	B	141.0	140.26	27	0.020	5.5-25.5	SS	X	X	X
MW-44	L	7/12/01	L43843	64485	134970	31	7	2	B	120.6	120.33	32.2	0.020	19.6-29.6	S 40 PVC	X	X	X
RW-1	L	1/28/91	NA	120	25465	47	12	6	B	140.9	138.24	54	0.035	19.1-44.9	SS	X	X	X
RW-3	L	3/20/92	NA	3017	36671	56	11	6	B	139.0	141.83	59.5	0.020	20-30 30-55	SS	X	X	X
SVE-1	U	2/3/94		52165	59785	11	6	2	B	142.5	142.26	16	0.010	5.5-10.5	S 40 PVC	X	X	X
SVE-2	U	2/4/94		52164	59786	11	6	2	B	142.2	141.93	16	0.010	5.5-10.5	S 40 PVC	X	X	X
SVE-3	U	2/1/94		52163	59787	11	6	2	B	142.2	141.89	14.5	0.010	5.5-10.5	S 40 PVC	X	X	X

Table 3
TGA Well Construction Summary
For Wells to be Decommissioned
Cascade Corporation - TGA Remedy

Well	Unit	Completed Date	OWRD Well I.D.	MULT Well I.D.	Start Card I.D.	Total Well Depth (ft, bgs)	Borehole Diam. (inches)	Casing Diam. (inches)	A or B[a]	Ground Surface Elevation (ft, MSL)	Top of Well Casing Elevation (ft, MSL)	Boring Depth (ft, bgs)	Screen Slot Size (inches)	Screen Interval (ft, bgs)	Screen Material	Lith Log	Well Log	OWRD Log
SVE-4	U	2/24/94		52167	59792	11	10 / 6	2	B	142.3	141.97	48	0.010	4.5-9.5	S 40 PVC	X	X	X
SVE-5	U	2/16/94		52146	59793	17.5	10	2	B	141.9	141.69	50	0.010	7-17	S 40 PVC	X	X	X
SVE-6	U	3/1/94		**NA**	**NA**	10	6	2	B	142.5	142.25	23.7	0.010	4.5-9.5	S 40 PVC	X	X	**NA**
SVE-7	U	3/28/94		52168	59783	8	6	2	B	145.5	145.23	19	0.010	2.2-7.2	S 40 PVC	X	X	X
SVE-8	U	3/23/94		52170	59781	8	10 / 6	2	B	145.7	145.43	50.25	0.010	3-8	S 40 PVC	X	X	X

NOTES:

[a]A= well completion is above-grade; B= well completion is flush-mount.

[b]Air sparge wells AS-1, AS-2, and AS-3 were identifed as "Geotechnical Holes", per OWRD rules. AS-1 was constructed in decommissioned well MW-28i; Start Card # and MULT # are for original monitor well MW-28i.

[c] MP-1 through MP-4 are 1.25 inch diameter nested piezometers (with screen mid-points at apparoximately 16.5, 20.5, 26 ft bgs).

[d] SVE-1 through SVE-8 are soil vapor extraction wells with screens above the groundwater table.

With the exceptions footnooted above, the tabled wells include former TGA remedy extraction or monitoring wells.

ft, MSL = feet w/respect to mean sea level; ft, bgs = feet below ground surface; SS = stainless steel;

NA = Well log and/or well identifiction numbers Not Available (i.e., not found during September 2009 search of Oregon Water Resource Department online database search).

From:	WILLIAMS Robert K
To:	"Sarah Prowell";
cc:	Charles Andrews; John Cushing;
	GILLES Bruce A;
Subject:	Cascade TGA Proposals
Date:	Thursday, August 11, 2011 5:14:49 PM

Sarah,

I have reviewed the July 28, 2011 memos proposing TGA off-site drilling for flux evaluation and on-site well ramp down. see memo attached

The new off-site wells for flux evaluation are approved. When placing the seal for the new wells I recommend adding water to the bentonite in the well bore to be sure the bentonite is well hydrated. Soil moisture may be low this time of year and you want to be sure the bentonite swells adequately to create a good seal.

The TGA onsite well ramp down is also approved however I would like to preserve the well EX-1. Although it is close this well does not meet the decommissioning criteria as vinyl chloride has remained consistently above MCLs for the last three monitoring events. I propose that we reduce the monitoring frequency of this well to once every two years so we can have a follow-up measurement to confirm cleanup.

I understand that the TSA well MW-19ds was not proposed for decommissioning but information on this well was presented for comparison with TGA wells and cleanup levels.

Please keep me informed of the field schedule.

Bob

Robert Williams
Oregon Department of Environmental Quality
2020 SW Fourth Ave., suite 400
Portland, Oregon 97201-4987
503-229-6802
williams.robert.k@deq.state.or.us

MEMORANDUM

To: Mr. Robert Williams, R.G.
Department of Environmental Quality
2020 SW Fourth Ave., Suite 400
Portland, OR 97201-4987

Sarah Prowell, R.G.
Prowell Environmental, Inc.
Phone: 503/452-0972
E-mail: sprowell@ix.netcom.com

Date: July 28, 2011

RE: Proposed TGA On-site Ramp Down
Cascade Corporation's TGA Remedy

Introduction

This memorandum, submitted on behalf of Cascade Corporation, describes ramp down actions for the on-site Troutdale Gravel Aquifer (TGA) Remedy area. This memorandum is a companion document to the *Proposed Off-site Drilling and VOC Flux Evaluation memorandum* dated July 28, 2011, which addresses work in the vicinity of the TGA erosional truncation. These proposals are part of the TGA remedy pre-closure phase and are designed to streamline the monitoring well network in areas where remedy goals have been achieved and to further evaluate an off-site area where volatile organic compounds (VOCs) historically migrated downward into the TSA.

The following text includes a brief summary of TGA treatment history and goals, an overview of on-site remedy performance, an assessment of Remedial Action Objectives (RAOs) attainment, and a proposal for on-site ramp-down well decommissionings.

On-site Treatment History and Remedial Goals

On-site TGA remedial actions have been implemented since the late 1980's to remove, contain, and biologically degrade chlorinated VOCs in the subsurface. They have included:

- Industrial well and underground storage tank (UST) decommissionings
- Source area soil removal actions
- On-site perimeter pumping, plume containment, and treatment
- Source area vapor, DNAPL, and groundwater extraction and treatment
- Full scale source area bioremediation injections, and
- Follow-up polishing bioremediation injections.

These on-site actions have removed and degraded VOCs in the subsurface to levels that attain remedy goals delineated as RAOs in the Department of Environmental Quality's (DEQ's) *TGA Record of Decision*

(ROD)[1]. A primary measurement of RAO attainment is the reduction of VOC concentrations below remedy cleanup levels. Groundwater cleanup levels were identified in the *TGA ROD* and are summarized below for the VOC Constituents of Concern (COC), tetrachloroethene (PCE), trichloroethene (TCE), *cis*-1,2-dichloroethene (cDCE), and vinyl chloride (VC):

TGA Groundwater VOC Cleanup Levels (MCLs)	
PCE	5.0 μg/L
TCE	5.0 μg/L
cDCE	70 μg/L
VC	2.0 μg/L

On-site Groundwater Restoration Overview

Nine TGA remedy wells are located on-site (EX-1, EX-7, EX-10, EX-13, MW-6b, MW-27s, RW-2, RW-4, and RW-5) and one is located north/adjacent to the on-site area (MW-9i), as shown in Figure 1. Of these ten wells, eight were sampled in the February 2011 semiannual round[2], with VOC concentrations that were non-detectable or below cleanup levels in all samples except for one VC detection in EX-1, as summarized below. TCE and VC concentrations in February 2011 are shown in Figures 2 and 3.

TGA On-site Groundwater VOCs -Feb. 2011			
	No. On-site Wells/Samples	No. Below MCL	No. Above MCL
PCE	8/8	8	0
TCE	8/8	8	0
cDCE	8/8	8	0
VC	8/8	7	1

During 2010, a total of 32 on-site well samples were collected, including samples from each of the ten on-site wells. VOC concentrations were non-detectable or below cleanup levels for all VOC COCs except one TCE detection above 5 μg/L in RW-4 in February 2010 and one VC detection above 2 μg/L in EX-1 in November 2010, as listed on the table below.

[1] *TGA Record of Decision*, DEQ, December 1996.

[2] Per the remedy monitoring schedule in Table 2-2, *2010 Year-End Semiannual Performance Report*, February 2011.

TGA On-site Groundwater VOCs in 2010			
	No. On-site Wells/Samples	No. Below MCL	No. Above MCL
PCE	10/32	32	0
TCE	10/32	31	1
cDCE	10/32	32	0
VC	10/32	31	1

Analytical results for February 2010 through February 2011 are shown in Table 1. These data confirm several years of compliant and near-compliant on-site water quality following full-scale and polishing bioremediation treatment that has been applied since 2004.

Source Area Five-Year Groundwater Restoration

VOC groundwater concentrations for each of the on-site wells during the last five years are listed on Table 2. These data demonstrate that TGA restoration has been substantially achieved beneath the on-site remedy area. The results are discussed below in order of former source location.

Former Source Area 1. Source Area 1 is located west of the facility building, where waste coolant was historically stored in two former USTs. One well remains in Area 1 (EX-1), while all other Area 1 wells have been decommissioned due to stable, compliant groundwater restoration in this area.

PCE, TCE, and cDCE concentrations in EX-1 have remained consistently below cleanup levels in each of the 14 samples collected since August 2006, while VC levels fluctuated slightly above and below the cleanup level. This well is the only on-site location where VC currently remains above the cleanup level. An excess quantity of emulsified oil bioremediation substrate was injected into Area 1 in 2006 to provide a long term, low mobility, treatment and sorptive medium, likely contributing to the localized distribution of VC near EX-1. The presence of non-detectable to compliant VC levels at downgradient locations reflects conditions protective of off-site TGA groundwater quality.

Former Source Area 2. Area 2 is located near the northwest corner of the facility building, where degreasing activities historically occurred. Two wells remain in Area 2, including EX-10, inside the facility building, and EX-7, near the north loading dock. All other Area 2 wells have been decommissioned due to stable, compliant restoration following 2006 full-scale bioremediation treatment.

In well EX-10, PCE, TCE, and cDCE concentrations have remained non-detectable or detectable at compliant levels since August 2006. VC has also remained at compliant levels in 13 of the 17 sampling events since August 2006. In downgradient well EX-7, PCE, cDCE, and VC concentrations have remained consistently below compliant levels throughout the last five years.

TCE in EX-7 has also remained at compliant levels in 12 of the 15 samples collected in the last five years, with TCE consistently below the detection limit in all five samples collected since February 2010. EX-10

and EX-7 received polishing bioremediation treatment beginning in 2008 and 2009, respectively, to provide additional remedial assurance.

Former Source Area 3. PCE was historically the primary VOC contaminant in this area and was treated through emulsified oil injections into EX-13 in 2004. After that time, parent compounds PCE and TCE degraded to daughter products VC, ethene, and ethane. Residual VCs were subsequently treated with biopolishing substrate injections to stimulate complete degradation to ethene and ethane. As a result, VC concentrations declined further and have remained below the detection limit in six of the seven samples collected since February 2009.

In nearby well MW-27s, TCE, cDCE, and VC have remained consistently below the cleanup levels for the last five years. PCE concentrations in MW-27s fluctuated slightly above and below the cleanup level in 2006 and 2007 and have subsequently remained at compliant levels.

Former Source Area 4. This area includes the North Ditch and nearby vicinity and is located near the northern perimeter of the facility. The North Ditch historically received contaminants via storm water runoff. Wells RW-2 and MW-6b are located north of Source Area 2 and wells RW-4 and RW-5 are located north of Source Area 1. These wells received polishing bioremediation treatment beginning in 2008 by introducing mobile and then low-mobility treatment substrates to further expedite final restoration in this vicinity. Well MW-9i is located north of the North Ditch and has not received bioremediation treatment.

PCE concentrations have remained compliant in four of the five wells noted above, with compliant levels in RW-4 since August 2007; cDCE has remained near or below the cleanup level during the last five years in each of the wells, with the exception of two detections above the cleanup level at MW-9i in 2008; VC has remained non-detectable in most samples collected in these wells during the last five years; and TCE concentrations have varied for each of the wells during the last five years, but have remained below the cleanup level in over 60 percent of the Area 4 groundwater samples collected during this period. Average TCE concentrations for these wells have steadily declined since 2006 (5.9 μg/L in 2006; 4.3 μg/L in 2007; 2.3 μg/L in 2008; 1.5 μg/L in 2009; 0.63 μg/L in 2010), remaining below the cleanup level since 2007.

Summary. The groundwater quality data collected during the past five years reflect substantial cleanup progress and restoration of former TGA VOC source areas. With a few limited exceptions, cleanup levels have been attained in Areas 1, 2, 3, and 4. In Area 1 at EX-1, a localized area of VC detection remains, and in Area 4 TCE concentrations have been variable with some detections above the cleanup level during the past 5 years, but have on an average basis remained below the cleanup level since 2007.

On-site Remedial Action Objectives

TGA Remedy RAOs are presented in Table 3. RAOs 1 through 6 address the goals of TGA groundwater restoration and protection of surface water and TSA groundwater quality[3].

The primary TGA groundwater exposure and migration pathways occur off-site near the TGA and CU 1 erosional truncation, where TGA groundwater discharges to Shepard Spring and to the underlying TSA. Historically, TGA VOCs discharged into the TSA in this area. Consequently, the primary performance goal at on-site locations is to protect off-site TGA groundwater quality for the subsequent protection of surface water and TSA water quality. This goal is met by the attainment of remedy cleanup levels at almost all on-site TGA well locations.

The on-site vertical distribution of VOCs above cleanup levels was historically restricted to the Upper TGA gravel horizon, except near the on-site northern perimeter, where plume interception pumping drew contaminants down into the Lower TGA sandstone. The on-site Upper TGA gravel is approximately 50 to 40 feet thick and the Lower TGA sandstone is approximately 10 feet thick. They are underlain by approximately 5 feet or less of fine-grained Siltstone Transition Zone (STZ) deposits and approximately 50 feet of CU 1, comprised of claystone, siltstone, and sandstone[4].

The absence of significant contamination in the Lower TGA, the presence of approximately 50 feet of CU 1, and the low CU 1 vertical hydraulic conductivity estimates[5] reflect on-site conditions protective of the underlying TSA.

A localized historical on-site pathway existed from the TGA to the TSA through the casing of an industrial supply well before it was decommissioned in 1991. Upper TSA groundwater quality in this area is monitored at TSA well MW-19(ds). MW-19(ds) is screened near the base of the Upper TSA and reports low TCE levels that have fluctuated above and below the cleanup level in recent years, as shown in Figure 4. The average TCE concentration in this well is 5.6 μg/L for 2010 and 2011. The low

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[3] Note: Additional RAOs 7 and 8 address the remediation of unsaturated soil to protect groundwater quality to protect potential exposure pathway receptors. These goals were previously achieved through soil removal, soil vapor extraction, and surface capping.

[4] *TGA 2002 Annual Performance Report* (Prowell Environmental and Pegasus Geoscience, February 28, 2002).

[5] CU 1 vertical hydraulic conductivity estimates = 0.0002 ft/day, per the east Multnomah County groundwater flow model and 0.00011 ft/day to 0.077 ft/day, per the *Phase 3 Remedial Investigation / Feasibility Study*, EMCON, March 10, 1995).

concentrations and the absence of a vertical concentration gradient in this well[6] indicate the absence of a current pathway concern.

In summary, the on-site groundwater conditions meet the TGA remedy RAOs and the overall goals of on-site TGA groundwater restoration, off-site TGA groundwater protection, surface water quality protection, and protection of the underlying TSA and its uses.

Proposed Ramp-down Well Decommissionings

Due to the successful attainment of on-site aquifer restoration, the on-site TGA well network is no longer needed for assessing remedy performance and is recommended for decommissioning. As a result, we propose, subject to DEQ's approval, decommissioning the ten wells shown in Figure 1 (including EX-1, EX-7, EX-10, EX-13, MW-6b, MW-9i, MW-27s, RW-2, RW-4, and RW-5), in accordance with Oregon Administrative Rules, Chapter 690, Division 240. Construction details for these wells are shown in Table 4.

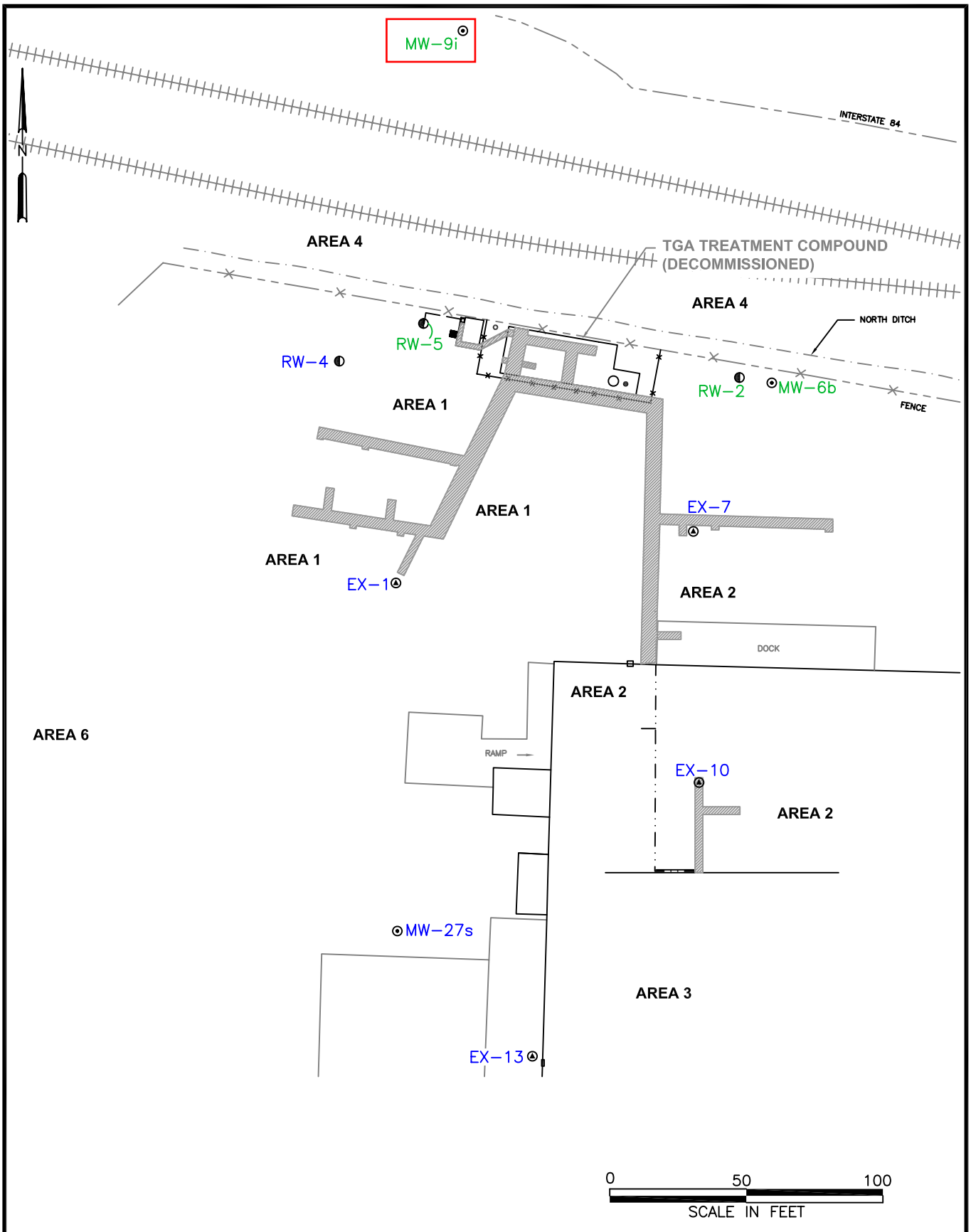
All work will be performed by an Oregon-licensed driller after obtaining Oregon Water Resource Department (OWRD) start card authorizations. Specific decommissioning methods will be determined by the licensed drilling company and the OWRD, as applicable to specific well conditions. DEQ will be notified before field activities begin and a report of methods and records will be submitted to DEQ following completion of the work.

Attachments:

Figure 1. On-site Well Locations
Figure 2. TCE Concentrations – February 2011
Figure 3. VC Concentrations – February 2011
Figure 4. TCE Concentration Profile Upper TSA Well MW-19(ds)
Table 1. On-site Groundwater VOC Concentrations February 2010 – February 2011
Table 2. On-site Groundwater VIC Concentrations February 2006 – February 2011
Table 3. Remedy Action Objectives
Table 4. Construction Details for Wells Proposed to be Decommissioned

cc: John Cushing, Cascade Corporation
Charles Andrews, S.S. Papadopulos & Associates, Inc.

[6] See MW-19(ds) vertically-profiled sampling results in the *Semiannual Performance Report: April 1 through September 30, 2010, TSA Remedy*, Prowell Environmental and Landau Associates, November 30, 2010.



E X P L A N A T I O N

▲ ◐ ⊙ TGA WELL

UPPER TGA WELLS SHOWN IN BLUE

LOWER TGA WELLS SHOWN IN GREEN

Figure 1
On-Site Well Locations
Cascade Corporation – TGA Remedy

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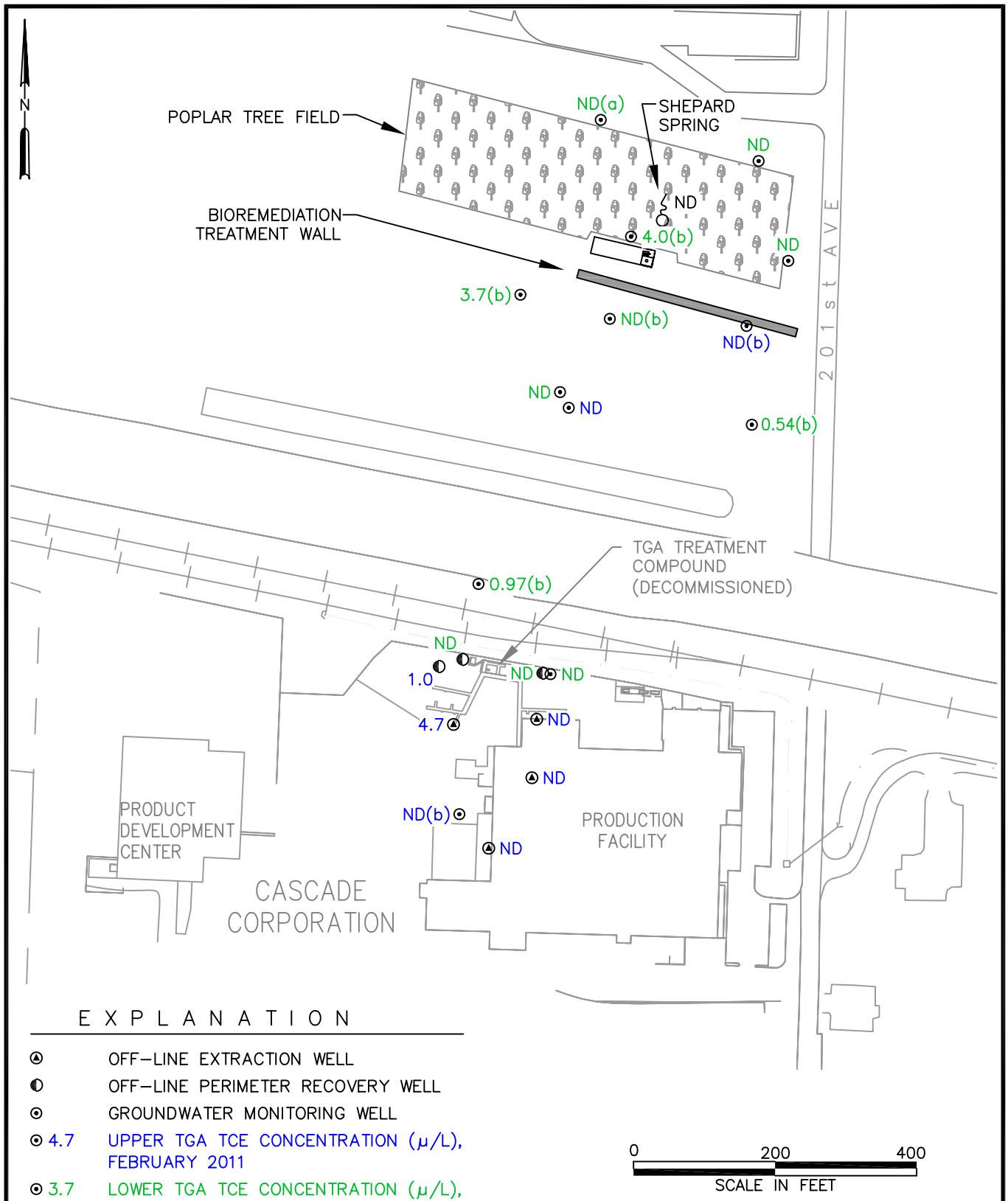


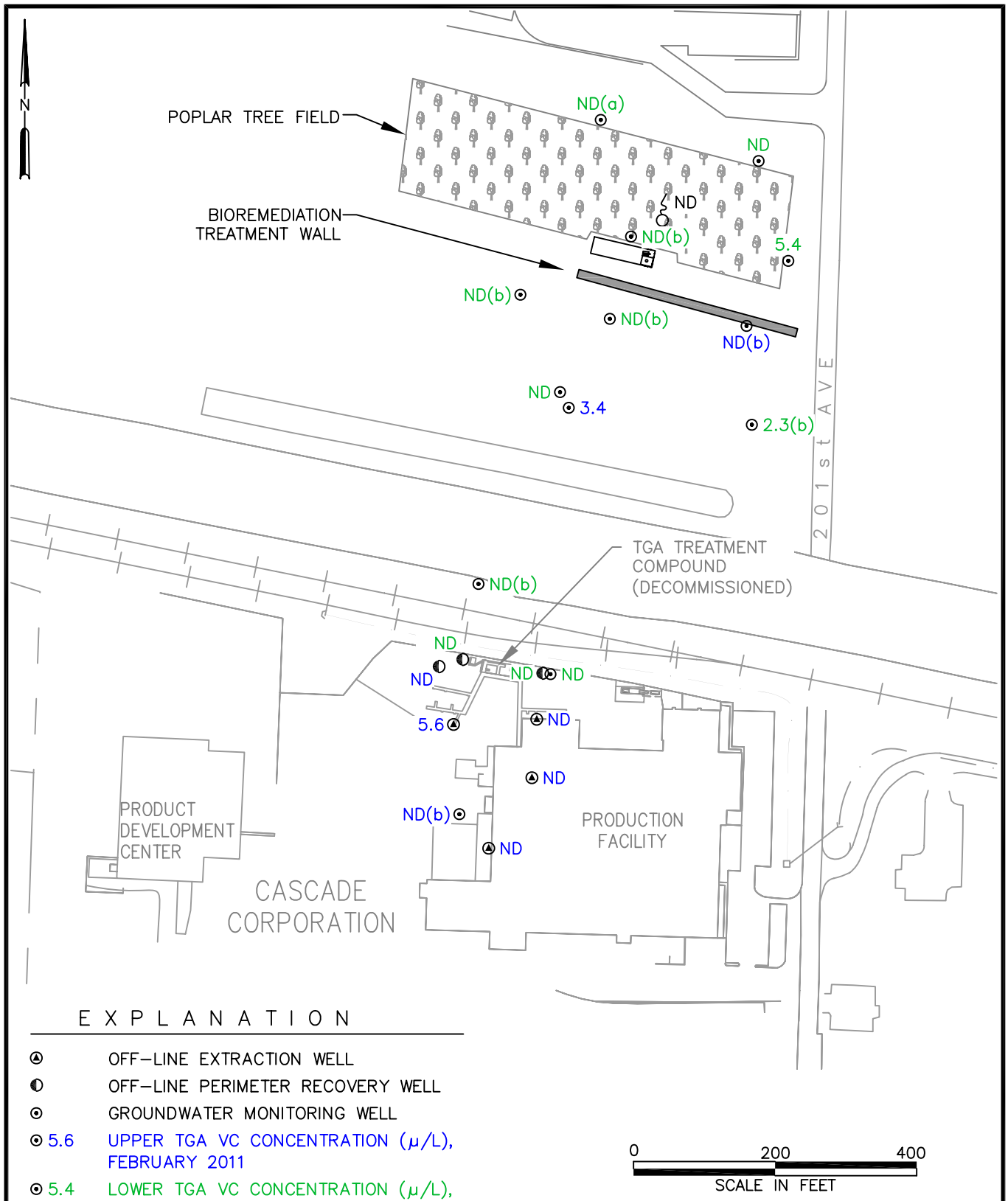
EXPLANATION

⊙	OFF–LINE EXTRACTION WELL
◐	OFF–LINE PERIMETER RECOVERY WELL
⊙	GROUNDWATER MONITORING WELL
⊙ 4.7	UPPER TGA TCE CONCENTRATION (µ/L), FEBRUARY 2011
⊙ 3.7	LOWER TGA TCE CONCENTRATION (µ/L), FEBRUARY 2011
ND	TCE NOT DETECTED AT DETECTION LIMIT
(a)	LAST SAMPLED AUGUST 2009
(b)	LAST SAMPLED AUGUST 2010

NOTE: WHERE SAMPLE COLLECTED IN DUPLICATE, HIGHER CONCENTRATION IS SHOWN.

Figure 2
TCE Concentrations – February 2011
Cascade Corporation – TGA Remedy

Y:\Prowell Environmental\Cascade\TGA Well Decommissioning\2011\PlanningFig2.dwg 7/19/11



NOTE: WHERE SAMPLE COLLECTED IN DUPLICATE, HIGHER CONCENTRATION IS SHOWN.

Figure 3
VC Concentrations – February 2011
Cascade Corporation – TGA Remedy

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Table 1
On-site Groundwater VOC Concentrations
February 2010 - February 2011
Cascade Corporation - TGA Remedy

Sample Location	Sample Date	Tetrachloro-ethene		Trichloro-ethene		*cis* -1,2-Dichloroethene		Vinyl Chloride	
		(µg/L)	L	(µg/L)	L	(µg/L)	L	(µg/L)	L
Groundwater Cleanup Levels		**5.0**		**5.0**		**70**		**2.0**	
Area 1 Well									
EX-1	2/3/10	0.5	U	4.9		4.1		0.52	
EX-1	5/11/10	0.5	U	4.5		8.8		0.58	
EX-1	8/3/10	0.5	U	0.5	U	14		1.6	
EX-1	11/9/10	0.5	U	4.9		22		**4.5**	
EX-1	2/9/11	0.5	U	4.7		31		**5.6**	
Area 2 Wells									
EX-7	2/3/10	0.5	U	0.5	U	0.5	U	0.5	U
EX-7	5/11/10	0.5	U	0.5	U	0.5	U	0.5	U
EX-7	8/2/10	0.5	U/R-04	0.5	U/R-04	0.5	U/R-04	0.5	U/R-04
EX-7	11/9/10	0.5	U	0.5	U	0.62		0.5	U
EX-7	2/9/11	0.5	U	0.5	U	0.5	U	0.5	U
EX-10	2/3/10	0.5	U	0.5	U	2.9		1.7	
EX-10	8/3/10	0.5	U	0.5	U	0.97		0.5	U
EX-10	2/9/11	0.5	U	0.5	U	0.5	U	0.5	U
Area 3 Wells									
EX-13	2/3/10	0.5	U	0.5	U	0.5	U	0.5	U
EX-13	5/11/10	0.5	U	0.5	U	0.5	U	0.5	U
EX-13	8/3/10	0.5	U	0.5	U	0.5	U	0.5	U
EX-13	11/9/10	0.5	U	0.5	U	0.5	U	0.5	U
EX-13	2/9/11	2.5	U	2.5	U	2.5	U	2.5	U
MW-27s	8/3/10	0.5	U	0.5	U	0.70		0.5	U
Area 4 Wells									
MW-6b	2/3/10	0.70		1.1		0.5	U	0.5	U
MW-6b	5/11/10	0.5	U	0.5	U	0.5	U	0.5	U
MW-6b	8/2/10	0.5	U	0.5	U	1.2		0.5	U
MW-6b	11/9/10	0.5	U	0.5	U	1.2		0.5	U
MW-6b	2/9/11	0.5	U	0.5	U	0.5	U	0.5	U
MW-9i	8/3/10	0.5	U	0.97		1.1		0.5	U
RW-2	2/3/10	0.5	U	0.5	U	0.5	U	0.5	U
RW-2 Dup	2/3/10	0.5	U	0.5	U	0.5	U	0.5	U
RW-2	5/11/10	0.5	U	0.5	U	0.5	U	0.5	U
RW-2 Dup	5/11/10	0.5	U	0.5	U	0.5	U	0.5	U
RW-2	8/2/10	5.0	U/R-04	5.0	U/R-04	5.0	U/R-04	5.0	U/R-04
RW-2 Dup	8/2/10	5.0	U/R-04	5.0	U/R-04	5.0	U/R-04	5.0	U/R-04
RW-2	11/9/11	10	U	10	U	10	U	10	U
RW-2 Dup	11/9/11	10	U	10	U	10	U	10	U
RW-2	2/9/11	5.0	U	5.0	U	5.0	U	5.0	U
RW-2 Dup	2/9/11	5.0	U	5.0	U	5.0	U	5.0	U

Table 1
On-site Groundwater VOC Concentrations
February 2010 - February 2011
Cascade Corporation - TGA Remedy

Sample Location	Sample Date	Tetrachloro-ethene		Trichloro-ethene		*cis* -1,2-Dichloroethene		Vinyl Chloride	
		(µg/L)	L	(µg/L)	L	(µg/L)	L	(µg/L)	L
Groundwater Cleanup Levels		**5.0**		**5.0**		**70**		**2.0**	
RW-4	2/3/10	3.9		**7.8**		3.7		0.5	U
RW-4	5/11/10	0.99		1.4		7.3		0.5	U
RW-4	8/3/10	0.5	U	0.5	U	2.9		0.5	U
RW-4	11/9/10	0.67		0.90		0.60		0.5	U
RW-4	2/9/11	0.5	U	1.0		1.6		0.5	U
RW-5	2/3/10	0.5	U	0.74		0.5	U	0.5	U
RW-5	5/11/10	0.5	U	0.5	U	0.5	U	0.5	U
RW-5	8/2/10	0.5	U	0.61		0.70		0.5	U
RW-5	11/9/10	0.5	U	0.5	U	0.5	U	0.5	U
RW-5	2/9/11	0.5	U	0.5	U	0.5	U	0.5	U

NOTES:

Bold denotes concentration above TGA groundwater cleanup level.

TGA remedy cleanup levels are per DEQ's TGA Record of Decision, 1996.

µg/L = micrograms/liter; L = laboratory qualifier; Dup = duplicate sample; U = not detected at method reporting limit;

R-04 = reporting levels elevated due to dilution necessary for analysis (method detection limit reported)

Table 2
On-site Groundwater VOC Concentrations
February 2006 - February 2011
Cascade Corporation - TGA Remedy

Sample Location	Sample Date	Tetrachloro-ethene		Trichloro-ethene		*cis* -1,2-Dichloroethene		Vinyl Chloride	
		(µg/L)	L	(µg/L)	L	(µg/L)	L	(µg/L)	L
Groundwater Cleanup Levels		**5.0**		**5.0**		**70**		**2.0**	
Area 1 Well									
EX-1	2/2/06	19		130	D	220	D	2.9	
EX-1	4/6/06	20		140	D	280	D	6.0	
EX-1	5/8/06	25		150	D	270	D	2.5	
EX-1	8/21/06	0.5	U	1.3		27		1.9	
EX-1	11/13/06	0.5	U	0.87		5.6		0.5	U
EX-1	2/15/07	0.5	U	1.2		44		3.7	
EX-1	5/22/07	0.5	U	0.5	U	16		1.5	
EX-1	8/27/07	0.5	U	0.5	U	9.5		5.4	
EX-1	2/12/08	0.5	U	1.0		10		6.5	
EX-1	8/18/08	0.5	U	0.5	U	5.6		3.2	
EX-1	2/11/09	0.5	U	3.1		23		5.6	
EX-1	8/12/09	0.5	U	0.5	U	3.3		2.3	
EX-1	2/3/10	0.5	U	4.9		4.1		0.52	
EX-1	5/11/10	0.5	U	4.5		8.8		0.58	
EX-1	8/3/10	0.5	U	0.5	U	14		1.6	
EX-1	11/9/10	0.5	U	4.9		22		4.5	
EX-1	2/9/11	0.5	U	4.7		31		5.6	
Area 2 Wells									
EX-7	2/15/06	3.0		4.2		1.3		0.5	U
EX-7	5/8/06	2.8		4.6		1.3		0.5	U
EX-7	8/17/06	2.4		5.4		1.5		0.5	U
EX-7	11/14/06	1.6		3.3		0.87		0.5	U
EX-7	12/7/06	2.5		4.7		1.7		0.5	U
EX-7	1/4/07	0.5	U	0.5	U	0.5	U	0.5	U
EX-7	2/20/07	2.0		5.7		3.2		0.5	U
EX-7	5/24/07	1.9		3.5		1.2		0.5	U
EX-7	8/15/07	1.3		2.8		1.4		0.5	U
EX-7	8/6/09	0.81		20		22		0.50	
EX-7	2/3/10	0.5	U	0.5	U	0.5	U	0.5	U
EX-7	5/11/10	0.5	U	0.5	U	0.5	U	0.5	U
EX-7	8/2/10	0.5	U/R-04	0.5	U/R-04	0.5	U/R-04	0.5	U/R-04
EX-7	11/9/10	0.5	U	0.5	U	0.62		0.5	U
EX-7	2/9/11	0.5	U	0.5	U	0.5	U	0.5	U
EX-10	2/15/06	4.0		6.9		3.7		0.5	U
EX-10	5/8/06	4.1		5.6		6.3		0.5	U
EX-10	7/17/06	1.6		8.6		2.6		0.5	U
EX-10	8/17/06	0.51		2.2		6.2		0.5	U
EX-10	9/7/06	0.5	U	0.52		11		0.5	U
EX-10	10/26/06	0.5	U	0.5	U	2.7		0.5	U
EX-10	11/16/06	0.5	U	0.5	U	5.2		0.5	U
EX-10	12/7/06	0.5	U	0.5	U	5.3		0.5	U
EX-10	1/4/07	0.5	U	0.5	U	2.9		0.5	U

Table 2
On-site Groundwater VOC Concentrations
February 2006 - February 2011
Cascade Corporation - TGA Remedy

Sample Location	Sample Date	Tetrachloro-ethene		Trichloro-ethene		*cis* -1,2-Dichloroethene		Vinyl Chloride	
		(µg/L)	L	(µg/L)	L	(µg/L)	L	(µg/L)	L
Groundwater Cleanup Levels		**5.0**		**5.0**		**70**		**2.0**	
EX-10	2/19/07	0.5	U	0.5	U	9.7		0.57	
EX-10	5/29/07	0.5	U	0.5	U	8.9		0.63	
EX-10	8/15/07	0.5	U	1.1		9.7		7.0	
EX-10	2/13/08	0.5	U	0.56		4.5		8.7	
EX-10	8/18/08	0.5	U	0.5	U	2.6		2.7	
EX-10	2/11/09	0.5	U	0.5	U	7.4		5.7	
EX-10	8/11/09	0.5	U	0.5	U	1.2		0.5	U
EX-10 Dup	8/11/09	0.5	U	0.5	U	1.0		0.5	U
EX-10	2/3/10	0.5	U	0.5	U	2.9		1.7	
EX-10	8/3/10	0.5	U	0.5	U	0.97		0.5	U
EX-10	2/9/11	0.5	U	0.5	U	0.5	U	0.5	U
Area 3 Wells									
EX-13	2/2/06	0.5	U	3.6		110	D	22	
EX-13	5/8/06	0.5	U	0.5	U	62	D	83	D
EX-13	8/21/06	0.5	U	0.73		74	D	120	D
EX-13	11/15/06	0.5	U	0.5	U	49		69	D
EX-13	2/15/07	0.5	U	0.5	U	55	D	120	D
EX-13	5/23/07	0.5	U	0.5	U	31		48	
EX-13	8/27/07	0.5	U	0.5	U	15		63	
EX-13	2/12/08	0.5	U	0.5	U	57		53	
EX-13	8/18/08	0.70		0.56		69		33	
EX-13	2/11/09	0.5	U	0.5	U	0.78		0.5	U
EX-13	8/12/09	0.5	U	0.5	U	16		4.0	
EX-13	2/3/10	0.5	U	0.5	U	0.5	U	0.5	U
EX-13	5/11/10	0.5	U	0.5	U	0.5	U	0.5	U
EX-13	8/3/10	0.5	U	0.5	U	0.5	U	0.5	U
EX-13	11/9/10	0.5	U	0.5	U	0.5	U	0.5	U
EX-13	2/9/11	2.5	U	2.5	U	2.5	U	2.5	U
MW-27s	2/15/06	4.2		1.6		0.5	U	0.5	U
MW-27s	8/30/06	8.5		2.2		0.91		0.5	U
MW-27s	2/21/07	3.9		1.3		0.5	U	0.5	U
MW-27s	8/27/07	8.1		2.3		0.98		0.5	U
MW-27s Dup	8/27/07	7.9		2.1		0.96		0.5	U
MW-27s	8/19/08	2.9		1.1		2.3		0.5	U
MW-27s Dup	8/19/08	3.1		1.1		2.3		0.5	U
MW-27s	8/11/09	2.8		0.96		0.5	U	0.5	U
MW-27s	8/3/10	0.5	U	0.5	U	0.70		0.5	U
Area 4 Wells									
MW-6b	2/20/06	1.3		11		5.6		1.2	
MW-6b	8/30/06	2.1		15		6.5		0.5	U
MW-6b	2/21/07	1.5		11		4.0		0.5	U
MW-6b Dup	2/21/07	1.2		7.7		2.8		0.5	U

Table 2
On-site Groundwater VOC Concentrations
February 2006 - February 2011
Cascade Corporation - TGA Remedy

Sample Location	Sample Date	Tetrachloro-ethene		Trichloro-ethene		*cis* -1,2-Dichloroethene		Vinyl Chloride	
		(µg/L)	L	(µg/L)	L	(µg/L)	L	(µg/L)	L
Groundwater Cleanup Levels		**5.0**		**5.0**		**70**		**2.0**	
MW-6b	8/27/07	4.1		9.5		5.9		0.5	U
MW-6b	8/19/08	1.4		2.4		1.4		0.5	U
MW-6b	8/11/09	0.5	U	18		63		52	
MW-6b	2/3/10	0.70		1.1		0.5	U	0.5	U
MW-6b	5/11/10	0.5	U	0.5	U	0.5	U	0.5	U
MW-6b	8/2/10	0.5	U	0.5	U	1.2		0.5	U
MW-6b	11/9/10	0.5	U	0.5	U	0.5	U	0.5	U
MW-6b	2/9/11	0.5	U	0.5	U	0.5	U	0.5	U
MW-9i	2/20/06	0.61		3.1		1.2		0.5	U
MW-9i	5/9/06	0.98		7.5		13		0.5	U
MW-9i	8/29/06	1.5		10		14		0.5	U
MW-9i	11/15/06	0.87		6.1		9.7		0.5	U
MW-9i	2/19/07	1.5		13		25		0.5	U
MW-9i	5/29/07	1.1		10		17		0.5	U
MW-9i	8/28/07	0.63		4.8		7.1		0.5	U
MW-9i	8/18/08	0.5	U	2.5		1.5		0.5	U
MW-9i	8/11/09	0.5	U	1.3		1.4		0.5	U
MW-9i	8/3/10	0.5	U	0.97		1.1		0.5	U
RW-2	2/15/06	1.5		4.3		120	D	0.69	
RW-2	5/8/06	0.82		2.2		58		0.5	U
RW-2	8/17/06	1.5		4.2		61	D	0.5	U
RW-2	11/9/06	1.5		3.4		31		0.5	U
RW-2	2/14/07	1.9		4.4		62		0.5	U
RW-2	5/24/07	1.5		3.6		51		0.5	U
RW-2	8/15/07	1.9		3.8		27		0.5	U
RW-2	2/12/08	2.5		5.2		59		0.5	U
RW-2	8/18/08	2.5		23		74	D	0.5	U
RW-2	10/9/08	2.2		14		65		0.5	U
RW-2	2/11/09	0.5	U	5.1		14		0.74	
RW-2	8/11/09	0.5	U	0.67		6.2		13	
RW-2 Dup	8/11/09	0.5	U	0.66		6.5		13	
RW-2	2/3/10	0.5	U	0.5	U	0.5	U	0.5	U
RW-2 Dup	2/3/10	0.5	U	0.5	U	0.5	U	0.5	U
RW-2	5/11/10	0.5	U	0.5	U	0.5	U	0.5	U
RW-2 Dup	5/11/10	0.5	U	0.5	U	0.5	U	0.5	U
RW-2	8/2/10	5.0	U/R-04	5.0	U/R-04	5.0	U/R-04	5.0	U/R-04
RW-2 Dup	8/2/10	5.0	U/R-04	5.0	U/R-04	5.0	U/R-04	5.0	U/R-04
RW-2	11/9/10	10	U	10	U	10	U	10	U
RW-2 Dup	11/9/10	10	U	10	U	10	U	10	U
RW-2	2/9/11	5.0	U	5.0	U	5.0	U	5.0	U
RW-2 Dup	2/9/11	5.0	U	5.0	U	5.0	U	5.0	U
RW-4	2/15/06	8.6		30		9.5		0.5	U
RW-4	5/8/06	8.2		24		6.2		0.5	U

Table 2
On-site Groundwater VOC Concentrations
February 2006 - February 2011
Cascade Corporation - TGA Remedy

Sample Location	Sample Date	Tetrachloro-ethene		Trichloro-ethene		*cis* -1,2-Dichloroethene		Vinyl Chloride	
		(µg/L)	L	(µg/L)	L	(µg/L)	L	(µg/L)	L
Groundwater Cleanup Levels		**5.0**		**5.0**		**70**		**2.0**	
RW-4	8/22/06	6.2		18		2.9		0.5	U
RW-4	11/9/06	6.8		16		2.5		0.5	U
RW-4	2/14/07	8.8		26		4.2		0.5	U
RW-4	5/24/07	9.7		27		5.7		0.5	U
RW-4	8/27/07	4.8		12		3.9		0.5	U
RW-4	11/14/07	0.82		2.8		43		1.5	
RW-4	2/12/08	0.5	U	0.5	U	35		6.2	
RW-4	5/8/08	0.5	U	0.5	U	25		16	
RW-4	8/18/08	0.5	U	0.5	U	3.3		1.3	
RW-4	2/11/09	0.5	U	0.57		2.3		4.4	
RW-4	8/11/09	0.5	U	0.5	U	6.0		4.5	
RW-4	2/3/10	3.9		7.8		3.7		0.5	U
RW-4	5/11/10	0.99		1.4		7.3		0.5	U
RW-4	8/3/10	0.5	U	0.5	U	2.9		0.5	U
RW-4	11/9/10	0.67		0.90		0.60		0.5	U
RW-4	2/9/11	0.5	U	1.0		1.6		0.5	U
RW-5	2/15/06	3.1		13		35		0.5	U
RW-5	5/8/06	2.6		11		18		0.5	U
RW-5	8/22/06	3.2		15		14		0.5	U
RW-5	11/9/06	2.7		7.6		9.2		0.5	U
RW-5	2/14/07	2.5		8.5		4.7		0.5	U
RW-5	5/24/07	2.4		7.5		4.9		0.5	U
RW-5	8/20/07	2.9		8.3		16		0.5	U
RW-5	2/13/08	1.5		3.4		2.3		0.5	U
RW-5	8/19/08	0.5	U	0.5	U	0.5	U	0.99	
RW-5	2/10/09	0.5	U	1.4		2.2		6.9	
RW-5	8/11/09	0.5	U	0.89		2.3		2.6	
RW-5	2/3/10	0.5	U	0.74		0.5	U	0.5	U
RW-5	5/11/10	0.5	U	0.5	U	0.5	U	0.5	U
RW-5	8/2/10	0.5	U	0.61		0.70		0.5	U
RW-5	11/9/10	0.5	U	0.5	U	0.5	U	0.5	U
RW-5	2/9/11	0.5	U	0.5	U	0.5	U	0.5	U

NOTES:

TGA remedy cleanup levels are per DEQ's TGA Record of Decision, 1996.

µg/L = micrograms/liter; L = laboratory qualifier; Dup = duplicate sample; D = sample diluted to bring concentration within calibration limit; U = compound not detected at posted method reporting limit; R-04 = reporting levels elevated due to dilution necessary for analysis (method detection limit reported).

One out of range TCE detection occurred in EX-7 in Aug. 2009, exceeding the concentration range since 1998.

Out of range detections also occurred in Aug. 2009 in wells MW-6b (for TCE and VC) and RW-2 (VC).

Table 3
Remedy Action Objectives
Cascade Corporation - TGA Remedy

RAO No. 1	"Restore the TGA to background or the lowest protective concentrations, if feasible, in a reasonable time. If this is not feasible, minimize the areal extent of the TGA that contains contaminants above maximum contaminant levels (MCLs), 1 X 10^{-6} excess cancer risk, or a hazard quotient of 1.0 (whichever is more protective), and provide long-term containment for areas where concentrations are above MCLs or risk-based levels."
RAO No. 2	"Prevent ingestion of TGA groundwater or surface water that contains contaminants at concentrations above MCLs or acceptable risk-based levels."
RAO No. 3	"Protect environmental receptors by preventing discharge of TGA groundwater to surface water at VOC concentrations that may exceed ambient water quality criteria."
RAO No. 4	"Prevent the further spread of contamination in the TGA to the extent practicable."
RAO No. 5	"Protect groundwater quality in the TSA."
RAO No. 6	"Allow existing uses of groundwater resources in east Multnomah County."
RAO No. 7	"Prevent direct contact with unsaturated soil that has contaminant concentrations exceeding risk-based protective cleanup levels."
RAO No. 8	"Reduce contaminant concentrations in, and prevent contaminant migration from, unsaturated soil to the extent necessary to achieve the groundwater RAOs defined above."

NOTES:

Source: *TGA Record of Decision* (DEQ, December 1996).

MW-8i Decommissioning Records

Cascade Corporation TGA Remedy

MULT 110542

STATE OF OREGON
MONITORING WELL REPORT
(as required by ORS 537.765 & OAR 690-240-0395)

9/7/2012

WELL I.D. LABEL# L

START CARD # 1016407

(1) LAND OWNER

Owner Well I.D. MW-8I

First Name _____ Last Name _____

Company UPRR

Address 1525 N RIVER AVE

City PORTLAND State OR Zip 97227

(2) TYPE OF WORK

☐ New ☐ Deepening ☐ Conversion ☐ Alteration (repair/recondition) ☒ Abandonment

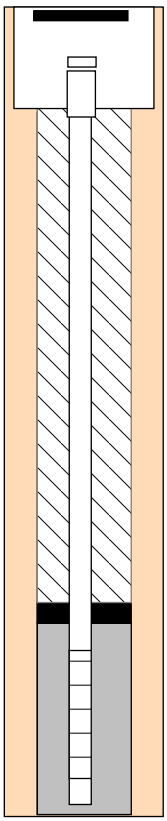
(3) DRILL METHOD

☐ Rotary Air ☐ Rotary Mud ☐ Cable ☐ Hollow Stem Auger ☐ Cable Mud ☐ Reverse Rotary ☒ Other IN-SITU DECOMMISSION

(4) CONSTRUCTION

Piezometer Well ☐

Depth of Completed Well 46.60 ft. Special Standard ☒



MONUMENT/VAULT Below Ground
From 0 To 2

BORE HOLE
Diameter 10 From 0 To 11

CASING
Dia. 2 From ☐ 1 To 36
Gauge S40 Wld ☐ Thrd ☒
Material ◯ Steel ◉ Plastic

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

SEAL
From 0 To 46.6
Material Bentonite Grout
Amount 1 Sacks Grout weight _____

SCREEN
Casing/Liner Casing Material PVC
Diameter 2 From 36 To 46
Slot Size 0.020

FILTER
From _____ To _____ Material _____ Size of pack _____

(5) WELL TESTS

◯ Pump ◯ Bailer ◯ Air ◯ Flowing Artesian

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

Temperature _____ °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 1.00 E E/W WM
Sec 29 NE 1/4 of the SE 1/4 Tax Lot RR ROW
Tax Map Number _____ Lot _____
Lat ° ' " or _____ DMS or DD
Long ° ' " or _____ DMS or DD
◉ Street address of well ◯ Nearest address

UPRR ROW, SOUTH SIDE OF I-84 EAST BOUND,NEAREST TO MP 14, ADJACENT TO CASCADE CORPORATION PROPERTY 2201 NE 201ST

(7) STATIC WATER LEVEL

	Date	SWL(psi)	+	SWL(ft)
Existing Well / Predeepening			☐	
Completed Well			☐	

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

Ground Elevation _____

Material	From	To
No Formation Info - Abandon in Place	0	46.6

Date Started 8/10/2012 Completed 8/10/2012

(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 10607 Date 9/4/2012
Password : (if filing electronically) _____
Signed ADONIS PABLO (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 10563 Date 9/7/2012
Password : (if filing electronically) _____
Signed FORD STIGALL (E-filed)
Contact Info (optional) Ford Stigall

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

Form Version:

MONITORING WELL REPORT - continuation page

MULT 110542

WELL I.D. LABEL# L

START CARD # 1016407

9/7/2012

(4) CONSTRUCTION

BORE HOLE

Dia	From	To
8	11	46.6

FILTER PACK

From	To	Material	Size

SEAL

Material	From	To	Amt	sacks/ lbs	grout weight

CASING/LINER

Casing	Liner	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd

SCREENS

Perf/ Screen	Casing/ Liner	Screen Dia	From	To	Scrn size/ slot width	Slot length	# of slots	Tele/ pipe size

(5) WELL TESTS

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

Water Quality Concerns

From	To	Description	Amount	Units

(7) STATIC WATER LEVEL

Water Bearing Zones

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

(8) WELL LOG

Material	From	To

Comments/Remarks

Monitoring Well decommissioned in-situ by pressure grout from bottom to top of monitoring well, per special standard attached. Vault removed and capped with compacted gravel.

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

MULT 110542

9/7/2012

Map of Hole

8I + 9I

Oregon
John A. Kitzhaber, MD, 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

June 5, 2012

FORD STIGALL #10563
WESTERN STATES SOIL & CONS INC
PO BOX 428
HUBBARD OR 97032

FINAL ORDER

Dear Ford:

The Special Standards Request Form you submitted for owner: UPRR, Start Card numbers 1016407 (MW8I) and 1016408 (MW9I), is hereby approved for the following: You may abandon these monitoring wells utilizing the method described in OAR 690-240-0510(2). *Bentonite grout may only be used to abandon the portion of the wells that is below the static water level.* Above the static water level another approved sealing material must be used. Your Special Standards Request Form is enclosed. All other standards must be adhered to. ***Please note that well MW9S was not approved due to remaining contamination. A formal denial will be sent once it is finalized.***

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) 986-0851, or by e-mail at Kristopher.R.Byrd@wrd.state.or.us.

Sincerely,

Kristopher Byrd, Coordinator
Well Construction Program
Well Construction and Compliance Section

enclosure

cc: Bill Ferber, W Region Manager
File

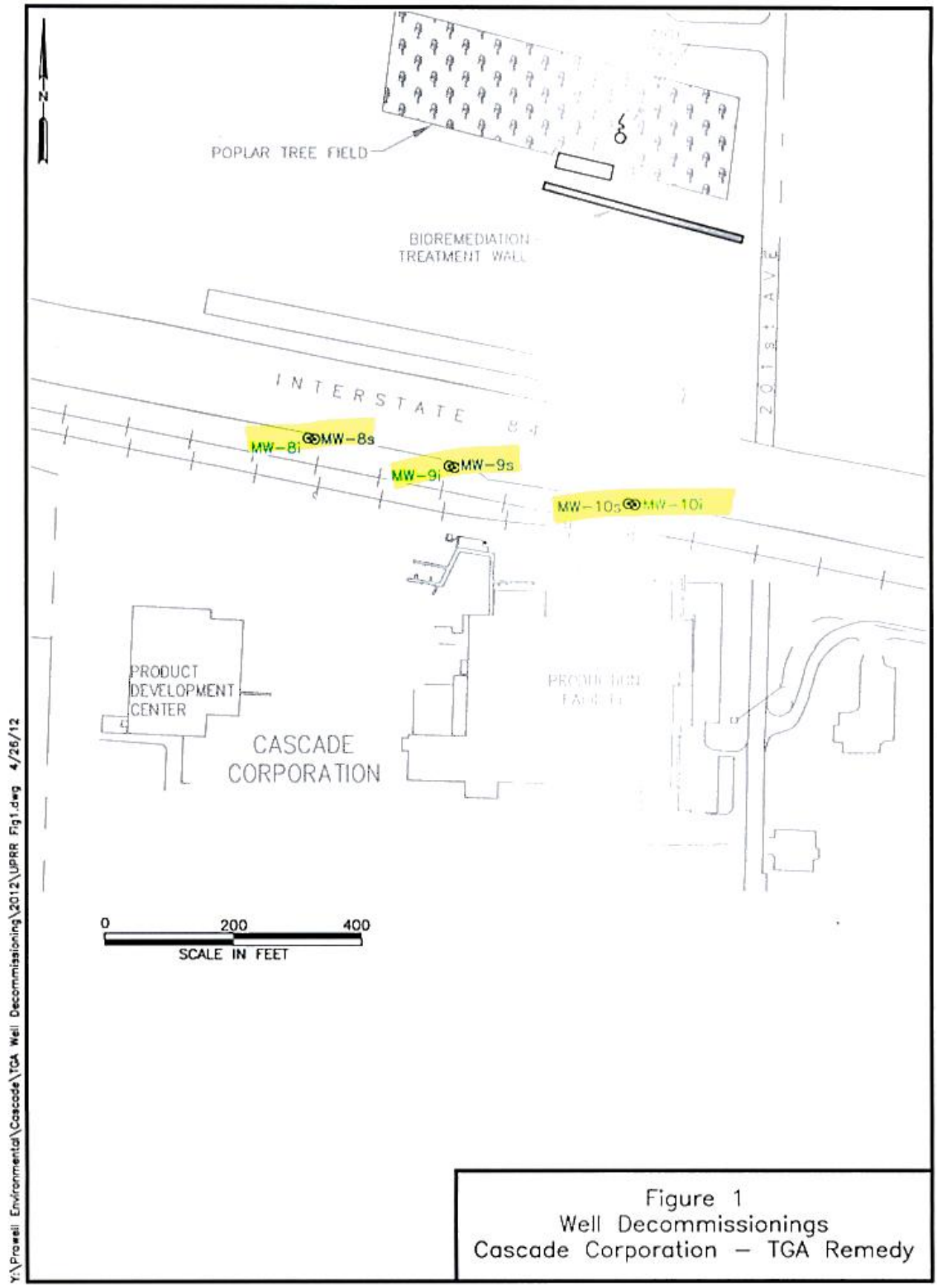
This is a final order in other than a contested case. This order is subject to judicial review under ORS 183.484. Any petition for judicial review must be filed within the 60 day time period specified by ORS 183.484(2). Pursuant to ORS 536.075 and OAR 137-004-0080 you may either petition for judicial 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.

MONITORING WELL REPORT - continuation page

MULT 110542

9/7/2012

Map of Hole



CENTURY WEST ENGINEERING

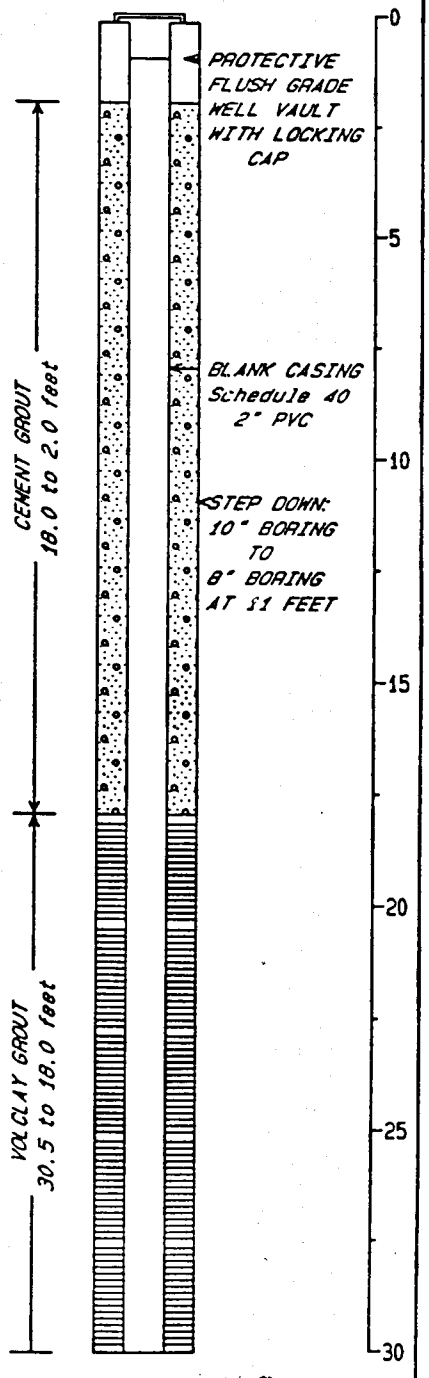
SUBSURFACE EXPLORATION LOG

IB-8I

Project CASCADE - RI/FS PHASE I
Location Portland, OR
Job Number 4008900401
Geologist/Engineer Rick Malin
Drilling Subcontractor Staco / Cable tool
Surface Elevation 136.894 msl

Boring Number IB-8I
Well Number MW-8I
Depth of Boring 50.5 feet
Top of Casing Elevation 136.085 msl
Date Started 5/3/90
Date Completed 5/4/90

DEPTH IN FEET	N-VALUE	SAMPLE	LITHOLOGY	DESCRIPTION
0			SM	SILTY SAND - with coarse sand and gravel, brown, damp, poorly graded, silt approx. 45%, organic fragments, PID: 0 ppm.
5				decreasing silt, increasing coarse sands and fine gravel.
10				tannish brown to blackish green sand, fine to coarse, silt approx. 15%, moderately well graded.
15			GP	SANDY GRAVEL - with some silt, medium greenish black sand, no indication of cementation, organic fragments, PID: 0 ppm.
20			GP	SANDY GRAVEL - greenish black sand, fine to medium, basaltic gravels, loose, well-graded, PID: 3.0 ppm.
25			SW	GRAVELLY SANDS - greenish black to tan sands, medium fine sand to fine gravel, loose, dominantly basalt, some quartz, and granitic fragments, well-graded, PID: 1.8 ppm.
30				



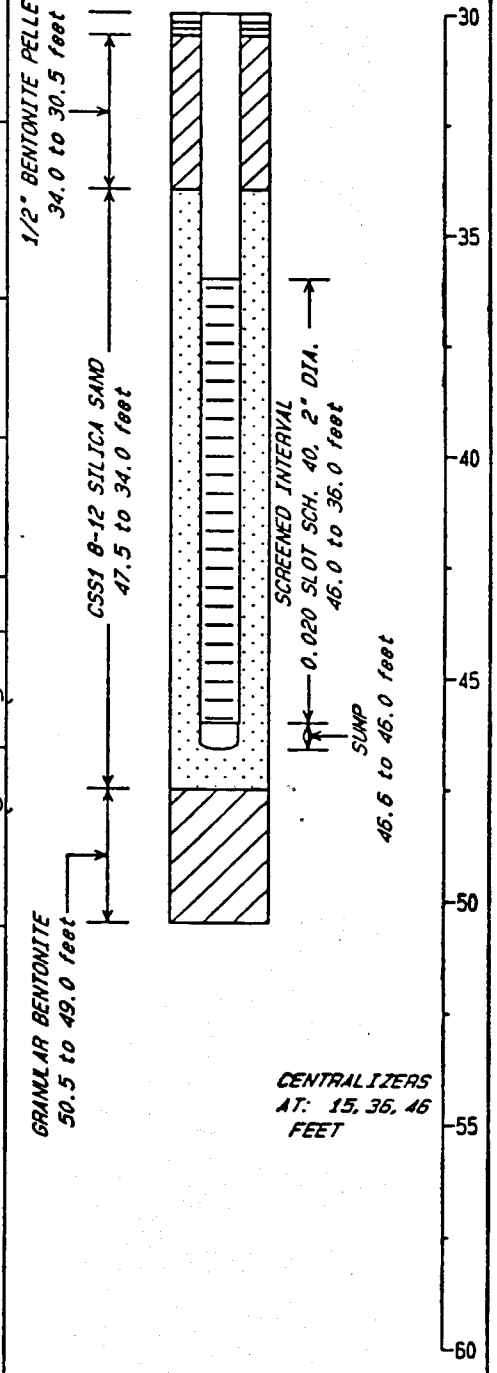
CENTURY WEST ENGINEERING

SUBSURFACE EXPLORATION LOG

IB-8I

DEPTH IN FEET	N-VALUE	SAMPLE	LITHOLOGY	DESCRIPTION
30			SW	very fine to coarse sands, 5%, silt, medium dense, well-graded, PID: 0.4 ppm.
35			GM/SM	SANDY GRAVEL - with silt, greenish black sand, fine to medium, fine gravels dominantly basalt, PID: 0 ppm.
			GW	GRAVELLY SAND - black, well-sorted, basaltic, moderately dense, drills loose, dense, signs of cementation.
40			SM	SANDY GRAVEL - black, fine to coarse sands, occasional cobble, loose, well-graded, PID: 0 ppm.
45			SW	SAND - black, fine to coarse, intermixed with tannish cemented silty sands, partially friable increasing silt with depth, PID: 0 ppm.
	10 29 37		CL/ML	SILTY CLAY - light brown with some sand, dense, slightly damp, very fine sand, PID: 0 ppm.
50				greenish blue clayey silt with sand.
				Bottom of Hole = 50.5 feet.
55				
60				

WELL CONSTRUCTION DETAIL



Client: Prowell Environmental, Incorporated
Project: Cascade TGA
Sample Matrix: Water

Service Request: K0907368
Date Collected: 08/11/2009
Date Received: 08/12/2009

Volatile Organic Compounds

Sample Name: MW8i-081109
Lab Code: K0907368-008

Units: ug/L
Basis: NA

Extraction Method: EPA 5030B
Analysis Method: 8260B

Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Dichlorodifluoromethane	ND	U	0.50	1	08/19/09	08/19/09	KWG0907324	
Chloromethane	ND	U	0.50	1	08/19/09	08/19/09	KWG0907324	
Vinyl Chloride	ND	U	0.50	1	08/19/09	08/19/09	KWG0907324	
Bromomethane	ND	U	0.50	1	08/19/09	08/19/09	KWG0907324	
Chloroethane	ND	U	0.50	1	08/19/09	08/19/09	KWG0907324	
Trichlorofluoromethane	ND	U	0.50	1	08/19/09	08/19/09	KWG0907324	
1,1-Dichloroethene	ND	U	0.50	1	08/19/09	08/19/09	KWG0907324	
Trichlorotrifluoroethane	ND	U	0.50	1	08/19/09	08/19/09	KWG0907324	
Methylene Chloride	ND	U	2.0	1	08/19/09	08/19/09	KWG0907324	
trans-1,2-Dichloroethene	ND	U	0.50	1	08/19/09	08/19/09	KWG0907324	
1,1-Dichloroethane	ND	U	0.50	1	08/19/09	08/19/09	KWG0907324	
cis-1,2-Dichloroethene	ND	U	0.50	1	08/19/09	08/19/09	KWG0907324	
Chloroform	ND	U	0.50	1	08/19/09	08/19/09	KWG0907324	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	1	08/19/09	08/19/09	KWG0907324	
Carbon Tetrachloride	ND	U	0.50	1	08/19/09	08/19/09	KWG0907324	
1,2-Dichloroethane (EDC)	ND	U	0.50	1	08/19/09	08/19/09	KWG0907324	
Trichloroethene (TCE)	ND	U	0.50	1	08/19/09	08/19/09	KWG0907324	
1,2-Dichloropropane	ND	U	0.50	1	08/19/09	08/19/09	KWG0907324	
Bromodichloromethane	ND	U	0.50	1	08/19/09	08/19/09	KWG0907324	
2-Chloroethyl Vinyl Ether	ND	U	5.0	1	08/19/09	08/19/09	KWG0907324	
cis-1,3-Dichloropropene	ND	U	0.50	1	08/19/09	08/19/09	KWG0907324	
trans-1,3-Dichloropropene	ND	U	0.50	1	08/19/09	08/19/09	KWG0907324	
1,1,2-Trichloroethane	ND	U	0.50	1	08/19/09	08/19/09	KWG0907324	
Tetrachloroethene (PCE)	ND	U	0.50	1	08/19/09	08/19/09	KWG0907324	
Dibromochloromethane	ND	U	0.50	1	08/19/09	08/19/09	KWG0907324	
Chlorobenzene	ND	U	0.50	1	08/19/09	08/19/09	KWG0907324	
Bromoform	ND	U	0.50	1	08/19/09	08/19/09	KWG0907324	
1,1,2,2-Tetrachloroethane	ND	U	0.50	1	08/19/09	08/19/09	KWG0907324	
1,3-Dichlorobenzene	ND	U	0.50	1	08/19/09	08/19/09	KWG0907324	
1,4-Dichlorobenzene	ND	U	0.50	1	08/19/09	08/19/09	KWG0907324	
1,2-Dichlorobenzene	ND	U	0.50	1	08/19/09	08/19/09	KWG0907324	

Comments:

Client: Prowell Environmental, Incorporated
Project: Cascade TGA
Sample Matrix: Water

Service Request: K0907368
Date Collected: 08/11/2009
Date Received: 08/12/2009

Volatile Organic Compounds

Sample Name: MW8i-081109
Lab Code: K0907368-008

Units: ug/L
Basis: NA

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	97	73-122	08/19/09	Acceptable
Toluene-d8	108	78-129	08/19/09	Acceptable
4-Bromofluorobenzene	87	68-117	08/19/09	Acceptable

Comments:

MW-8s Decommissioning Records

Cascade Corporation TGA Remedy

MULT 110546

STATE OF OREGON
MONITORING WELL REPORT
(as required by ORS 537.765 & OAR 690-240-0395)

9/7/2012

WELL I.D. LABEL# L

START CARD # 1016414

(1) LAND OWNER

Owner Well I.D. MW-8S

First Name _____ Last Name _____

Company UPRR

Address 1525 N RIVER AVE

City PORTLAND State OR Zip 97227

(2) TYPE OF WORK

☐ New ☐ Deepening ☐ Conversion ☐ Alteration (repair/recondition) ☒ Abandonment

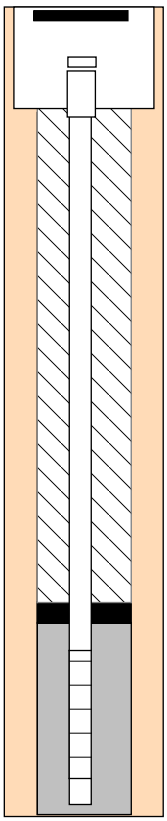
(3) DRILL METHOD

☐ Rotary Air ☐ Rotary Mud ☐ Cable ☐ Hollow Stem Auger ☐ Cable Mud ☐ Reverse Rotary ☒ Other IN-SITU DECOMMISSION

(4) CONSTRUCTION

Piezometer Well ☐

Depth of Completed Well 26.60 ft. Special Standard ☒



MONUMENT/VAULT Below Ground
From 0 To 2

BORE HOLE
Diameter 10 From 0 To 13

CASING
Dia. 2 From ☐ 1 To 16
Gauge S40 Wld ☐ Thrd ☒
Material ◯ Steel ◉ Plastic

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

SEAL
From 0 To 26.6
Material Bentonite Grout
Amount 0.5 Sacks Grout weight _____

SCREEN
Casing/Liner Casing Material PVC
Diameter 2 From 16 To 26
Slot Size 0.020

FILTER
From _____ To _____ Material _____ Size of pack _____

(5) WELL TESTS

◯ Pump ◯ Bailer ◯ Air ◯ Flowing Artesian

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

Temperature _____ °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 NE 1/4 of the SE 1/4 Tax Lot RR ROW
Tax Map Number _____ Lot _____
Lat ° ' " or _____ DMS or DD
Long ° ' " or _____ DMS or DD

◉ Street address of well ◯ Nearest address

UPRR ROW, SOUTH SIDE OF I-84 EAST BOUND,NEAREST TO MP 14, ADJACENT TO CASCADE CORPORATION PROPERTY 2201 NE 201ST

(7) STATIC WATER LEVEL

	Date	SWL(psi)	+	SWL(ft)
Existing Well / Predeepening			☐	
Completed Well			☐	

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

Ground Elevation _____

Material	From	To
No Formation Info - Abandon in Place	0	26.6

Date Started 8/10/2012 Completed 8/10/2012

(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 10607 Date 9/4/2012
Password : (if filing electronically) _____
Signed ADONIS PABLO (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 10563 Date 9/4/2012
Password : (if filing electronically) _____
Signed FORD STIGALL (E-filed)
Contact Info (optional) Ford Stigall

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

Form Version:

MONITORING WELL REPORT - continuation page

MULT 110546

WELL I.D. LABEL# L

START CARD # 1016414

9/7/2012

(4) CONSTRUCTION

BORE HOLE

Dia	From	To
8	13	26.6

FILTER PACK

From	To	Material	Size

SEAL

Material	From	To	Amt	sacks/ lbs	grout weight

CASING/LINER

Casing	Liner	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd

SCREENS

Perf/ Screen	Casing/ Liner	Screen Dia	From	To	Scrn size/ slot width	Slot length	# of slots	Tele/ pipe size

(5) WELL TESTS

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

Water Quality Concerns

From	To	Description	Amount	Units

(7) STATIC WATER LEVEL

Water Bearing Zones

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

(8) WELL LOG

Material	From	To

Comments/Remarks

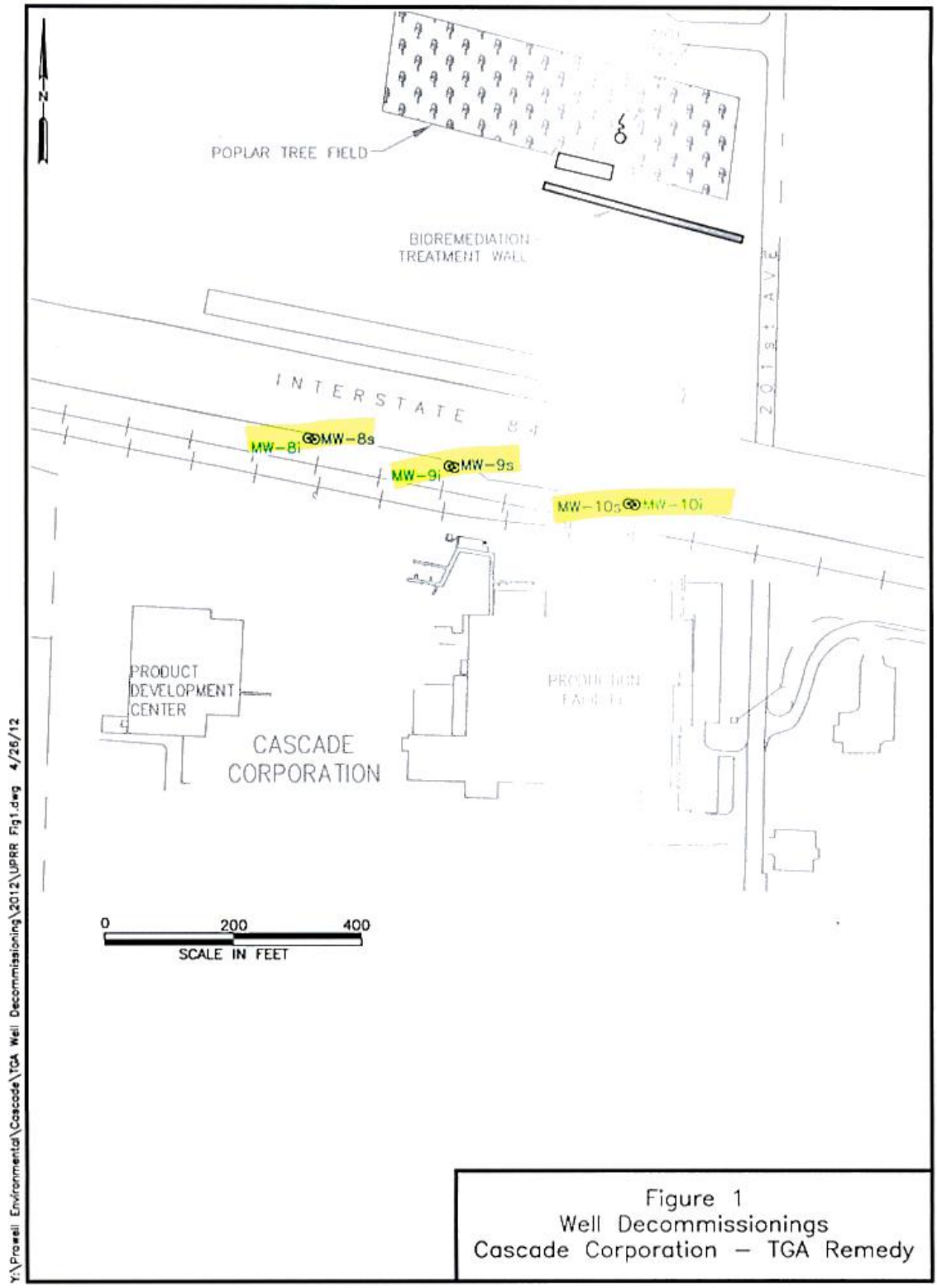
Monitoring Well decommissioned in-situ by pressure grout from bottom to top of monitoring well, per special standard attached. Vault removed and capped with compacted gravel.

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

MULT 110546

9/7/2012

Map of Hole



MONITORING WELL REPORT - continuation page

MULT 110546

9/7/2012

Map of Hole

10S, 10E, 8S

Oregon
John A. Kitzhaber, MD, 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

May 7, 2012

FORD STIGALL #10563
WESTERN STATES SOIL & CONS INC
PO BOX 428
HUBBARD OR 97032

FINAL ORDER

Dear Ford:

The Special Standards Request Form you submitted for owner: UPRR, Start Card numbers 1016414 (MW8S), 1016415 (MW10I) and 1016416 (MW10S), is hereby approved for the following: You may abandon these monitoring wells utilizing the method described in OAR 690-240-0510(2). *Bentonite grout may only be used to abandon the portion of the wells that is below the static water level.* Above the static water level another approved sealing material must be used. 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) 986-0851, or by e-mail at Kristopher.R.Byrd@wrd.state.or.us.

Sincerely,

Kristopher Byrd, Coordinator
Well Construction Program
Well Construction and Compliance Section

enclosure

cc: Bill Ferber, W Region Manager
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.

CENTURY WEST ENGINEERING

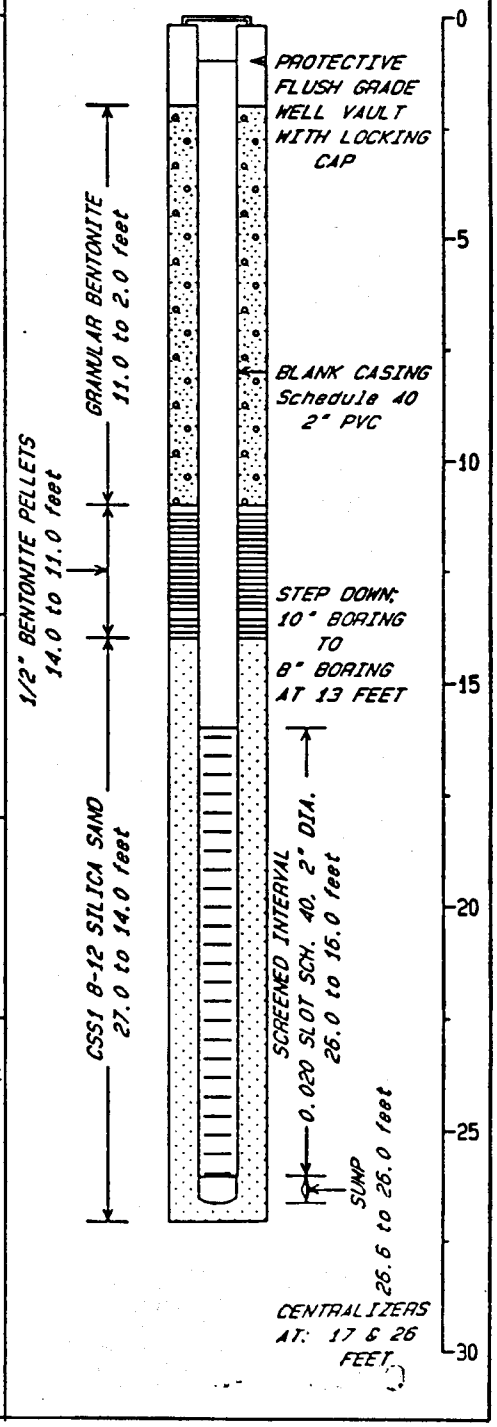
SUBSURFACE EXPLORATION LOG

IB-8S

Project CASCADE - RI/FS PHASE I
Location Portland, OR
Job Number 4008900401
Geologist/Engineer Rick Malin
Drilling Subcontractor Staco / Cable tool
Surface Elevation 136.887 msl

Boring Number IB-8S
Well Number MW-8S
Depth of Boring 27.0 feet
Top of Casing Elevation 136.266 msl
Date Started 4/14/90
Date Completed 4/14/90

DEPTH IN FEET	N-VALUE	SAMPLE	LITHOLOGY	DESCRIPTION
0			SM	SANDY SILT - with gravel and coarse sand, brown, some clay, sticky material, very fine to coarse sand, light brown to black, moderately well-graded, organic fragments.
5				
10				← decrease in silt, increase in sand.
				← increase in gravels.
15			GM	SANDY GRAVEL - greenish black sand to tan sand with mica, very fine to coarse, 5% silt, no indication of cementation, moderately graded, basaltic and granitic material.
20			GW	SANDY GRAVEL - greenish black sand, fine to coarse, decrease in gravel size, moderately well-graded.
25			SW	GRAVELLY SAND - greenish black sand, very fine to medium, silt approx. 8%, well-graded.
				← loose black coarse sand. Bottom of boring at 27 feet.
30				



COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Pre-decommissioning
VOC Results (sample date 8/20/07)

Client: Prowell Environmental, Incorporated
Project: Cascade TGA
Sample Matrix: Water

Service Request: K0707540
Date Collected: 08/20/2007
Date Received: 08/22/2007

Volatile Organic Compounds

Sample Name: MW8s-082007
Lab Code: K0707540-003

Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA

Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Dichlorodifluoromethane	ND	U	0.50	1	08/27/07	08/27/07	KWG0709345	
Chloromethane	ND	U	0.50	1	08/27/07	08/27/07	KWG0709345	
Vinyl Chloride	ND	U	0.50	1	08/27/07	08/27/07	KWG0709345	
Bromomethane	ND	U	0.50	1	08/27/07	08/27/07	KWG0709345	
Chloroethane	ND	U	0.50	1	08/27/07	08/27/07	KWG0709345	
Trichlorofluoromethane	ND	U	0.50	1	08/27/07	08/27/07	KWG0709345	
1,1-Dichloroethene	ND	U	0.50	1	08/27/07	08/27/07	KWG0709345	
Trichlorotrifluoroethane	ND	U	0.50	1	08/27/07	08/27/07	KWG0709345	
Methylene Chloride	ND	U	2.0	1	08/27/07	08/27/07	KWG0709345	
trans-1,2-Dichloroethene	ND	U	0.50	1	08/27/07	08/27/07	KWG0709345	
1,1-Dichloroethane	ND	U	0.50	1	08/27/07	08/27/07	KWG0709345	
cis-1,2-Dichloroethene	ND	U	0.50	1	08/27/07	08/27/07	KWG0709345	
Chloroform	ND	U	0.50	1	08/27/07	08/27/07	KWG0709345	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	1	08/27/07	08/27/07	KWG0709345	
Carbon Tetrachloride	ND	U	0.50	1	08/27/07	08/27/07	KWG0709345	
1,2-Dichloroethane (EDC)	ND	U	0.50	1	08/27/07	08/27/07	KWG0709345	
Trichloroethene (TCE)	ND	U	0.50	1	08/27/07	08/27/07	KWG0709345	
1,2-Dichloropropane	ND	U	0.50	1	08/27/07	08/27/07	KWG0709345	
Bromodichloromethane	ND	U	0.50	1	08/27/07	08/27/07	KWG0709345	
2-Chloroethyl Vinyl Ether	ND	U	5.0	1	08/27/07	08/27/07	KWG0709345	
cis-1,3-Dichloropropene	ND	U	0.50	1	08/27/07	08/27/07	KWG0709345	
trans-1,3-Dichloropropene	ND	U	0.50	1	08/27/07	08/27/07	KWG0709345	
1,1,2-Trichloroethane	ND	U	0.50	1	08/27/07	08/27/07	KWG0709345	
Tetrachloroethene (PCE)	ND	U	0.50	1	08/27/07	08/27/07	KWG0709345	
Dibromochloromethane	ND	U	0.50	1	08/27/07	08/27/07	KWG0709345	
Chlorobenzene	ND	U	0.50	1	08/27/07	08/27/07	KWG0709345	
Bromoform	ND	U	0.50	1	08/27/07	08/27/07	KWG0709345	
1,1,2,2-Tetrachloroethane	ND	U	0.50	1	08/27/07	08/27/07	KWG0709345	
1,3-Dichlorobenzene	ND	U	0.50	1	08/27/07	08/27/07	KWG0709345	
1,4-Dichlorobenzene	ND	U	0.50	1	08/27/07	08/27/07	KWG0709345	
1,2-Dichlorobenzene	ND	U	0.50	1	08/27/07	08/27/07	KWG0709345	

Comments:

Client:	Prowell Environmental, Incorporated	**Service Request:**	K0707540
Project:	Cascade TGA	**Date Collected:**	08/20/2007
Sample Matrix:	Water	**Date Received:**	08/22/2007

Volatile Organic Compounds

Sample Name:	MW8s-082007	**Units:**	ug/L
Lab Code:	K0707540-003	**Basis:**	NA

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	101	82-125	08/27/07	Acceptable
Toluene-d8	110	87-120	08/27/07	Acceptable
4-Bromofluorobenzene	101	73-118	08/27/07	Acceptable

Comments:

MW-9i Decommissioning Records

Cascade Corporation TGA Remedy

MULT 110543

STATE OF OREGON
MONITORING WELL REPORT
(as required by ORS 537.765 & OAR 690-240-0395)

9/7/2012

WELL I.D. LABEL# L

START CARD # 1016408

(1) LAND OWNER

Owner Well I.D. MW-9I

First Name _____ Last Name _____

Company UPRR

Address 1525 N RIVER AVE

City PORTLAND State OR Zip 97227

(2) TYPE OF WORK

☐ New ☐ Deepening ☐ Conversion ☐ Alteration (repair/recondition) ☒ Abandonment

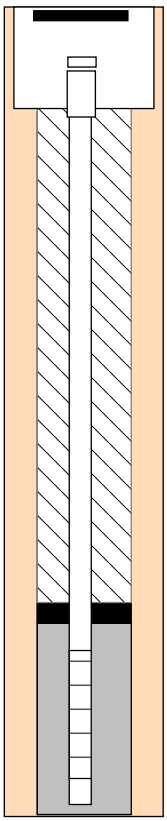
(3) DRILL METHOD

☐ Rotary Air ☐ Rotary Mud ☐ Cable ☐ Hollow Stem Auger ☐ Cable Mud ☐ Reverse Rotary ☒ Other IN-SITU DECOMMISSION

(4) CONSTRUCTION

Piezometer Well ☐

Depth of Completed Well 47.60 ft. Special Standard ☒



MONUMENT/VAULT Below Ground
From 0 To 2

BORE HOLE
Diameter 10 From 0 To 13

CASING
Dia. 2 From ☐ 1 To 37
Gauge S40 Wld ☐ Thrd ☒
Material ◯ Steel ◉ Plastic

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

SEAL
From 0 To 47.6
Material Bentonite Grout
Amount 1 Sacks Grout weight _____

SCREEN
Casing/Liner Casing Material PVC
Diameter 2 From 37 To 47
Slot Size 0.020

FILTER
From _____ To _____ Material _____ Size of pack _____

(5) WELL TESTS

◯ Pump ◯ Bailer ◯ Air ◯ Flowing Artesian

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

Temperature _____ °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 NE 1/4 of the SE 1/4 Tax Lot RR ROW
Tax Map Number _____ Lot _____
Lat ° ' " or _____ DMS or DD
Long ° ' " or _____ DMS or DD
◯ Street address of well ◉ Nearest address

UPRR ROW, SOUTH SIDE OF I-84 EAST BOUND,NEAREST TO MP 14, ADJACENT TO CASCADE CORPORATION PROPERTY 2201 NE 201ST

(7) STATIC WATER LEVEL

	Date	SWL(psi)	+	SWL(ft)
Existing Well / Predeepening			☐	
Completed Well			☐	

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

Ground Elevation _____

Material	From	To
No Formation Info - Abandon in Place	0	47.6

Date Started 8/9/2012 Completed 8/9/2012

(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 10607 Date 9/4/2012
Password : (if filing electronically) _____
Signed ADONIS PABLO (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 10563 Date 9/4/2012
Password : (if filing electronically) _____
Signed FORD STIGALL (E-filed)
Contact Info (optional) Ford Stigall

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

Form Version:

MONITORING WELL REPORT - continuation page

MULT 110543

WELL I.D. LABEL# L

START CARD # 1016408

9/7/2012

(4) CONSTRUCTION

BORE HOLE

Dia	From	To
8	13	47.6

FILTER PACK

From	To	Material	Size

SEAL

Material	From	To	Amt	sacks/ lbs	grout weight

CASING/LINER

Casing	Liner	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd

SCREENS

Perf/ Screen	Casing/ Liner	Screen Dia	From	To	Scrn size/ slot width	Slot length	# of slots	Tele/ pipe size

(5) WELL TESTS

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

Water Quality Concerns

From	To	Description	Amount	Units

(7) STATIC WATER LEVEL

Water Bearing Zones

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

(8) WELL LOG

Material	From	To

Comments/Remarks

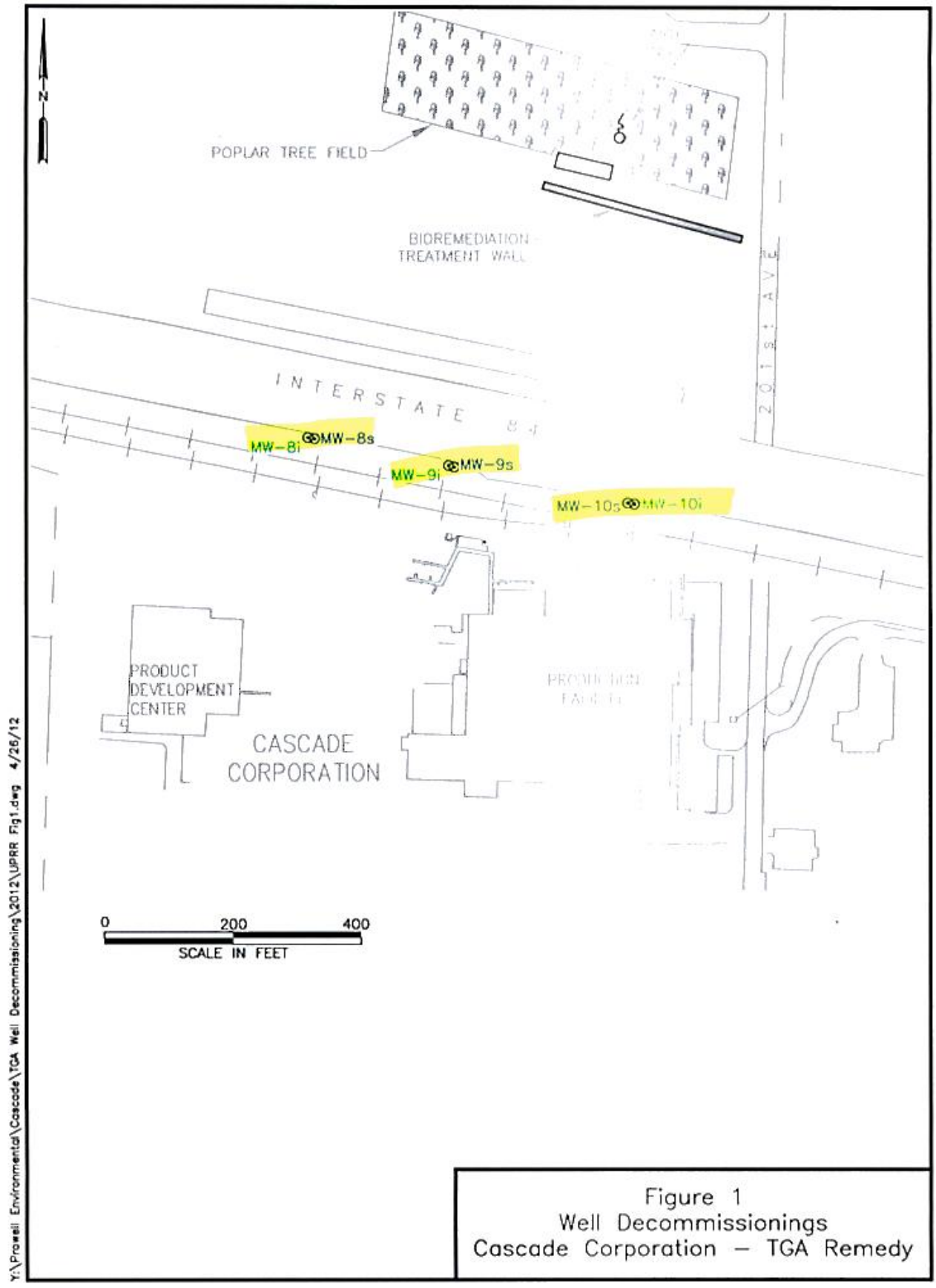
Monitoring Well decommissioned in-situ by pressure grout from bottom to top of monitoring well, per special standard attached.

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

MULT 110543

9/7/2012

Map of Hole



MONITORING WELL REPORT - continuation page

MULT 110543

9/7/2012

Map of Hole

8I + 9I

Oregon
John A. Kitzhaber, MD, 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

June 5, 2012

FORD STIGALL #10563
WESTERN STATES SOIL & CONS INC
PO BOX 428
HUBBARD OR 97032

FINAL ORDER

Dear Ford:

The Special Standards Request Form you submitted for owner: UPRR, Start Card numbers 1016407 (MW8I) and 1016408 (MW9I), is hereby approved for the following: You may abandon these monitoring wells utilizing the method described in OAR 690-240-0510(2). *Bentonite grout may only be used to abandon the portion of the wells that is below the static water level.* Above the static water level another approved sealing material must be used. Your Special Standards Request Form is enclosed. All other standards must be adhered to. ***Please note that well MW9S was not approved due to remaining contamination. A formal denial will be sent once it is finalized.***

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) 986-0851, or by e-mail at Kristopher.R.Byrd@wrd.state.or.us.

Sincerely,

Kristopher Byrd, Coordinator
Well Construction Program
Well Construction and Compliance Section

enclosure

cc: Bill Ferber, W Region Manager
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.

CENTURY WEST ENGINEERING

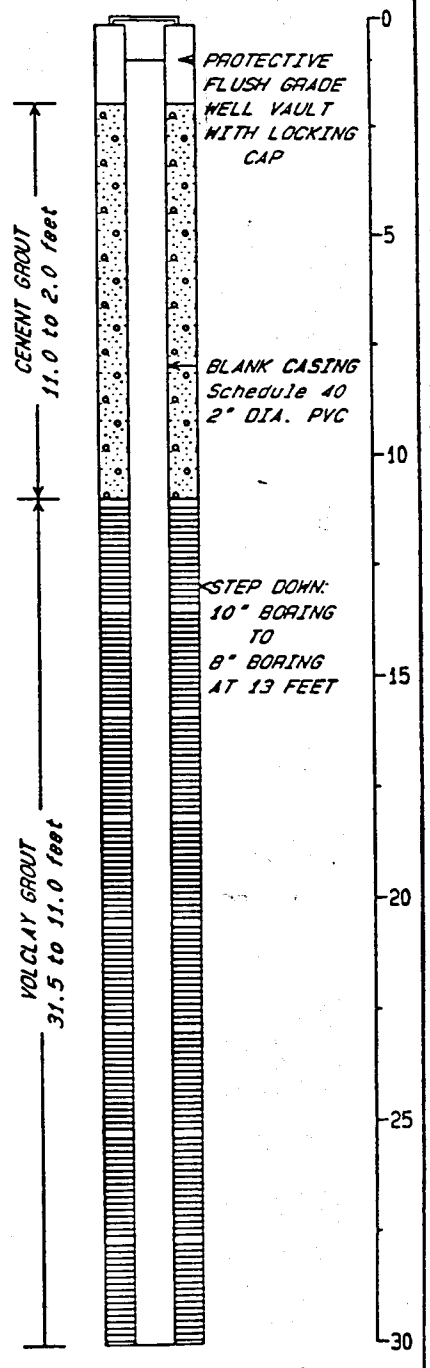
SUBSURFACE EXPLORATION LOG

IB-9I

Project CASCADE - RI/FS PHASE I
Location Portland, OR
Job Number 4008900401
Geologist/Engineer Rick Malin
Drilling Subcontractor Stacp / Cable tool
Surface Elevation 136.425 msl

Boring Number IB-9I
Well Number MW-9I
Depth of Boring 51.0 feet
Top of Casing Elevation 135.471 msl
Date Started 4/10/90
Date Completed 4/11/90

DEPTH IN FEET	N-VALUE	SAMPLE	LITHOLOGY		DESCRIPTION
0				SM/GM	SILTY SAND - with some gravels, brown silt, coarse to fine sands, PID: 1.0 ppm
5				GM	SILTY GRAVEL - with fine sand, moderate brown, tan to black sands, quartz, basalt, and granitic gravels, dominantly basalt, PID: 1.0 ppm.
10				GW	SILTY SAND - with some gravels, moderate to dark brown, tan colored sand, fine to medium with mica and organic material, PID: 3.0 ppm
15				GW	SANDY GRAVEL - with silt, some cobbles, tan to black sands, dense, poorly graded, PID: 37 ppm (split spoon), 63 ppm (bailed material).
20	65 50			GP	SANDY GRAVEL - black sands, with a trace of mica, medium to coarse sands, dominantely basaltic gravels and cobbles, silt < 5%, no indication of cementation on clasts, some quartz fragments, dense. increasing consolidation, PID: 21 ppm.
25					
30					



WELL CONSTRUCTION DETAIL

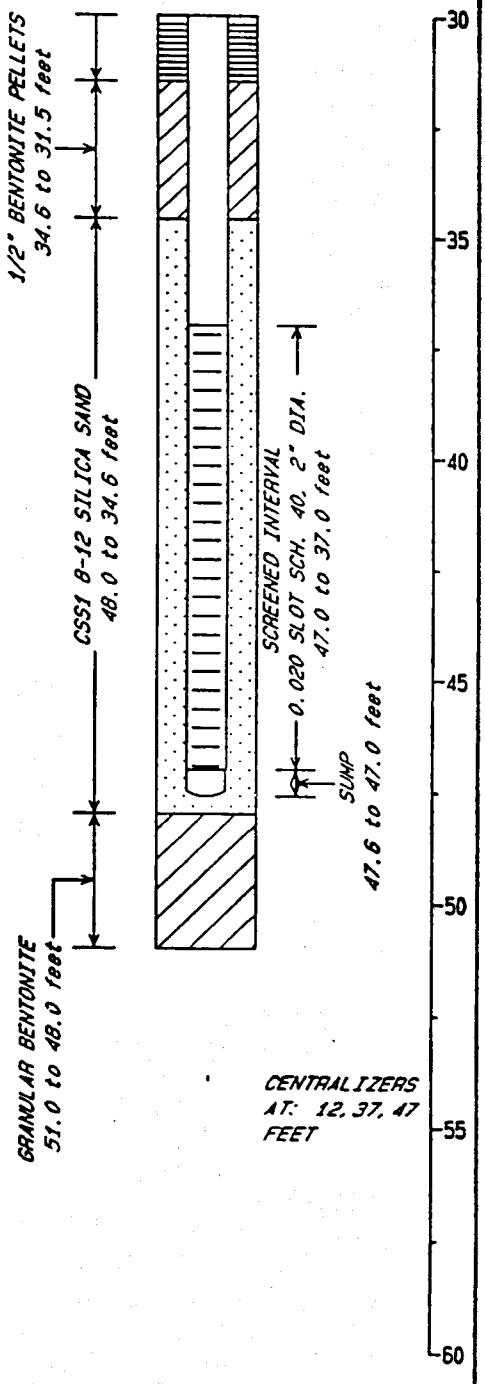
CENTURY WEST ENGINEERING

SUBSURFACE EXPLORATION LOG

IB-9I

DEPTH IN FEET	N-VALUE	SAMPLE	LITHOLOGY	DESCRIPTION
30			GP	PID: 0.4 ppm.
				slow drilling, large cobbles or greater, signs of cementation, PID: 0 ppm.
35				decreasing in silt, PID: 0 ppm.
TCA 40			SP/SW	GRAVELLY SAND - transition area, decrease in gravels, increase in silt, fine to coarse sand, black to tan drilling easy, PID: 0 ppm.
SU14	25 110		SM	SILTY SAND - tan, medium to fine sand, partially cemented, friable, traces of silt clay, PID: 0 ppm.
45				
47 CH1			CL/ML	SILTY CLAY -with sand and traces of pebbles, light brown to beige, slightly damp.
50				blue green silty clay with sand, slightly damp, partial intermixing with light brown silty clay material.
				Bottom of Hole = 51 feet.
55				
60				

WELL CONSTRUCTION DETAIL



Client: Prowell Environmental, Incorporated
Project: Cascade TGA
Sample Matrix: Water

Service Request: K1107117
Date Collected: 08/02/2011
Date Received: 08/03/2011

Volatile Organic Compounds

Sample Name: MW9i-080211
Lab Code: K1107117-003

Extraction Method: EPA 5030B
Analysis Method: 8260C

Units: ug/L
Basis: NA

Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Dichlorodifluoromethane	ND	U	0.50	1	08/03/11	08/03/11	KWG1107373	
Chloromethane	ND	U	0.50	1	08/03/11	08/03/11	KWG1107373	
Vinyl Chloride	ND	U	0.50	1	08/03/11	08/03/11	KWG1107373	
Bromomethane	ND	U	0.50	1	08/03/11	08/03/11	KWG1107373	
Chloroethane	ND	U	0.50	1	08/03/11	08/03/11	KWG1107373	*
Trichlorofluoromethane	ND	U	0.50	1	08/03/11	08/03/11	KWG1107373	
Trichlorotrifluoroethane	ND	U	0.50	1	08/03/11	08/03/11	KWG1107373	
1,1-Dichloroethene	ND	U	0.50	1	08/03/11	08/03/11	KWG1107373	
Methylene Chloride	ND	U	2.0	1	08/03/11	08/03/11	KWG1107373	
trans-1,2-Dichloroethene	ND	U	0.50	1	08/03/11	08/03/11	KWG1107373	
1,1-Dichloroethane	ND	U	0.50	1	08/03/11	08/03/11	KWG1107373	
cis-1,2-Dichloroethene	ND	U	0.50	1	08/03/11	08/03/11	KWG1107373	
Chloroform	ND	U	0.50	1	08/03/11	08/03/11	KWG1107373	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	1	08/03/11	08/03/11	KWG1107373	
Carbon Tetrachloride	ND	U	0.50	1	08/03/11	08/03/11	KWG1107373	
1,2-Dichloroethane (EDC)	ND	U	0.50	1	08/03/11	08/03/11	KWG1107373	
Trichloroethene (TCE)	ND	U	0.50	1	08/03/11	08/03/11	KWG1107373	
1,2-Dichloropropane	ND	U	0.50	1	08/03/11	08/03/11	KWG1107373	
Bromodichloromethane	ND	U	0.50	1	08/03/11	08/03/11	KWG1107373	
cis-1,3-Dichloropropene	ND	U	0.50	1	08/03/11	08/03/11	KWG1107373	
trans-1,3-Dichloropropene	ND	U	0.50	1	08/03/11	08/03/11	KWG1107373	
1,1,2-Trichloroethane	ND	U	0.50	1	08/03/11	08/03/11	KWG1107373	
Tetrachloroethene (PCE)	ND	U	0.50	1	08/03/11	08/03/11	KWG1107373	
Dibromochloromethane	ND	U	0.50	1	08/03/11	08/03/11	KWG1107373	
Chlorobenzene	ND	U	0.50	1	08/03/11	08/03/11	KWG1107373	
Bromoform	ND	U	0.50	1	08/03/11	08/03/11	KWG1107373	
1,1,2,2-Tetrachloroethane	ND	U	0.50	1	08/03/11	08/03/11	KWG1107373	
1,3-Dichlorobenzene	ND	U	0.50	1	08/03/11	08/03/11	KWG1107373	
1,4-Dichlorobenzene	ND	U	0.50	1	08/03/11	08/03/11	KWG1107373	
1,2-Dichlorobenzene	ND	U	0.50	1	08/03/11	08/03/11	KWG1107373	

* See Case Narrative

Comments:

Client:	Prowell Environmental, Incorporated	**Service Request:**	K1107117
Project:	Cascade TGA	**Date Collected:**	08/02/2011
Sample Matrix:	Water	**Date Received:**	08/03/2011

Volatile Organic Compounds

Sample Name:	MW9i-080211	**Units:**	ug/L
Lab Code:	K1107117-003	**Basis:**	NA

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	100	73-122	08/03/11	Acceptable
Toluene-d8	89	78-129	08/03/11	Acceptable
4-Bromofluorobenzene	77	68-117	08/03/11	Acceptable

Comments:

MW-9s Decommissioning Records

Cascade Corporation TGA Remedy

MULT 110541

Well Decommissioning Report

STATE OF OREGON
MONITORING WELL REPORT
(as required by ORS 537.765 & OAR 690-240-0395)

9/7/2012
Amended

WELL I.D. LABEL# L

START CARD # 1016409

(1) LAND OWNER

Owner Well I.D. MW-9S

First Name _____ Last Name _____

Company UPRR

Address 1525 N RIVER AVE

City PORTLAND State OR Zip 97227

(2) TYPE OF WORK

☐ New ☐ Deepening ☐ Conversion
☐ Alteration (repair/recondition) ☒ Abandonment

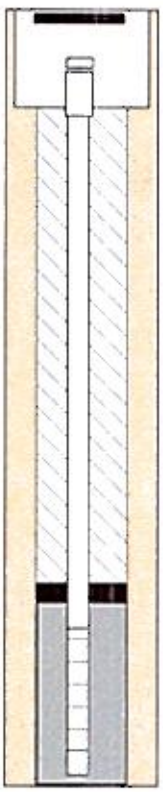
(3) DRILL METHOD

☐ Rotary Air ☐ Rotary Mud ☐ Cable ☒ Hollow Stem Auger ☐ Cable Mud
☐ Reverse Rotary ☐ Other

(4) CONSTRUCTION

Piezometer Well ☐

Depth of Completed Well 22.50 ft. Special Standard ☒



MONUMENT/VAULT Below Ground
From 0 To 2

BORE HOLE
Diameter 10 From 0 To 23

CASING
Dia. _____ From ☐ _____ To _____
Gauge _____ Wld Thrd
Material ◯Steel ◯Plastic ☐ ☐

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

SEAL
From 0 To 23
Material Bentonite Grout
Amount 5 Sacks Grout weight _____

SCREEN
Casing/Liner _____ Material _____
Diameter _____ From _____ To _____
Slot Size _____

FILTER
From _____ To _____ Material _____ Size of pack _____

(5) WELL TESTS

◯ Pump ◯ Bailer ◯ Air ◯ Flowing Artesian

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

Temperature _____ °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 NE 1/4 of the SE 1/4 Tax Lot RR ROW
Tax Map Number _____ Lot _____
Lat ° ' " or _____ DMS or DD
Long ° ' " or _____ DMS or DD
◉ Street address of well ◯ Nearest address

UPRR ROW, SOUTH SIDE OF I-84 EAST BOUND,NEAREST TO MP 14, ADJACENT TO CASCADE CORPORATION PROPERTY 2201 NE 201ST

(7) STATIC WATER LEVEL

	Date	SWL(psi)	+ SWL(ft)
Existing Well / Predeepening			
Completed Well			

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

Ground Elevation _____

Material	From	To
Overdrill & Abandon Monitoring Well	0	23

Date Started 8/9/2012 Completed 8/9/2012

(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 10607 Date 9/4/2012
Password : (if filing electronically) _____
Signed ADONIS PABLO (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 10563 Date 9/7/2012
Password : (if filing electronically) _____
Signed FORD STIGALL (E-filed)
Contact Info (optional) Ford Stigall

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

Form Version:

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

MULT 110541

9/7/2012

Map of Hole

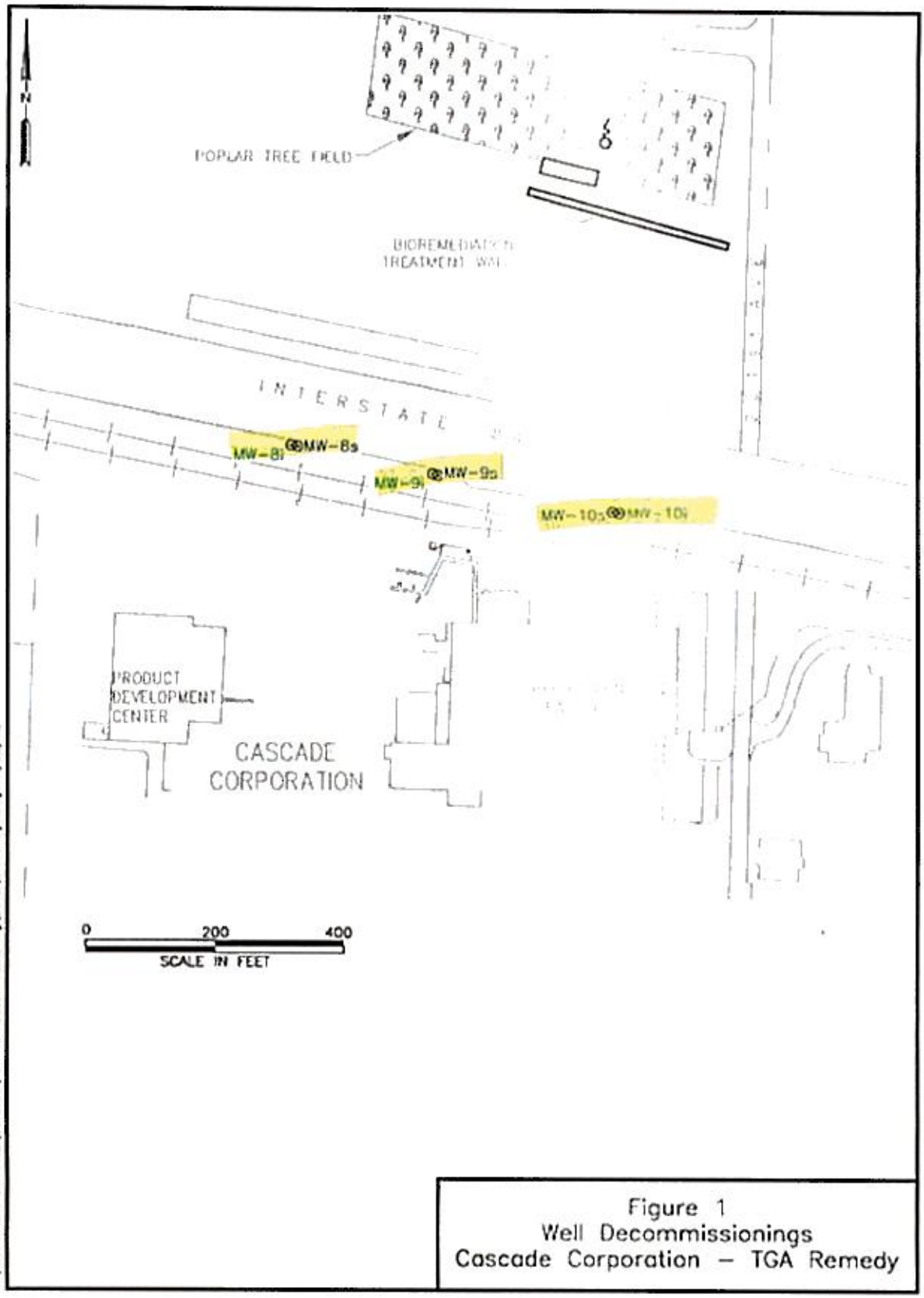


Figure 1
Well Decommissionings
Cascade Corporation – TGA Remedy

CENTURY WEST ENGINEERING

SUBSURFACE EXPLORATION LOG

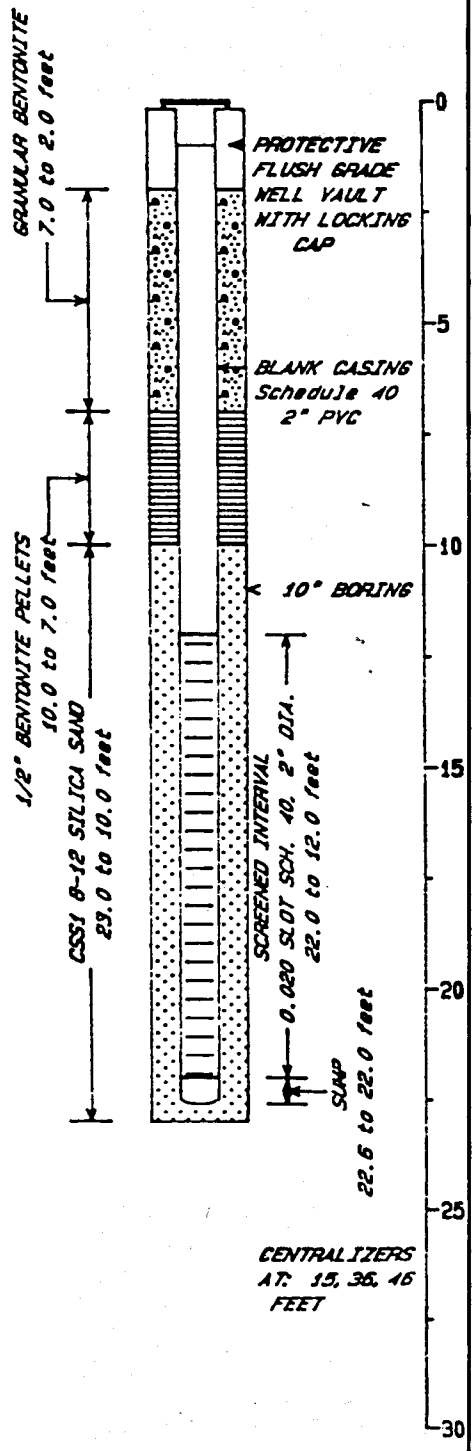
IB-9S

Project CASCADE - RI/FS PHASE I
Location Portland, OR
Job Number 4008900401
Geologist/Engineer Rick Malin
Drilling Subcontractor Stacy / Cable tool
Surface Elevation 136.379 msl

Boring Number IB-9S
Well Number MW-9S
Depth of Boring 23.0 feet
Top of Casing Elevation 135.285 msl
Date Started 4/20/90
Date Completed 4/20/90

DEPTH IN FEET	N-VALUE	SAMPLE	LITHOLOGY	DESCRIPTION
0			SM	SILTY SAND - with gravel, brown silt, black to tan sand, fine to coarse, small gravels, well-graded, organic fragments.
5				PID: 1.3 ppm.
			GM	SILTY GRAVEL - with sand, brown silt, tan to dark brown sand with mica and organic fragments, fine to coarse gravels, moderately sorted, PID: 0 ppm.
10				
15				increase in sand, dark brown silt, fine sands mixed with granitic and basaltic gravels, PID: 0 ppm.
				decrease in silt, increase in sand, tan to greenish black sand with mica and organic fragments, gravels becoming coarser, PID: 7.0 ppm.
20				PID: 11.0 ppm
				decreasing in silt, PID: 17.0 ppm.
25				sandy gravels and cobbles with some silt, increase in sand, PID: 69 ppm.
				Bottom of boring at 23 feet.
30				

WELL CONSTRUCTION DETAIL



COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Pre-decommissioning
VOC Results (sample date 8/28/07)

Client: Prowell Environmental, Incorporated
Project: Cascade TGA
Sample Matrix: Water

Service Request: K0707770
Date Collected: 08/28/2007
Date Received: 08/29/2007

Volatile Organic Compounds

Sample Name: MW9s-082807
Lab Code: K0707770-002

Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA

Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Dichlorodifluoromethane	ND	U	0.50	1	09/04/07	09/04/07	KWG0709579	
Chloromethane	ND	U	0.50	1	09/04/07	09/04/07	KWG0709579	
Vinyl Chloride	ND	U	0.50	1	09/04/07	09/04/07	KWG0709579	
Bromomethane	ND	U	0.50	1	09/04/07	09/04/07	KWG0709579	
Chloroethane	ND	U	0.50	1	09/04/07	09/04/07	KWG0709579	
Trichlorofluoromethane	ND	U	0.50	1	09/04/07	09/04/07	KWG0709579	
1,1-Dichloroethene	ND	U	0.50	1	09/04/07	09/04/07	KWG0709579	
Trichlorotrifluoroethane	ND	U	0.50	1	09/04/07	09/04/07	KWG0709579	
Methylene Chloride	ND	U	2.0	1	09/04/07	09/04/07	KWG0709579	
trans-1,2-Dichloroethene	ND	U	0.50	1	09/04/07	09/04/07	KWG0709579	
1,1-Dichloroethane	ND	U	0.50	1	09/04/07	09/04/07	KWG0709579	
cis-1,2-Dichloroethene	**1.5**		0.50	1	09/04/07	09/04/07	KWG0709579	
Chloroform	ND	U	0.50	1	09/04/07	09/04/07	KWG0709579	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	1	09/04/07	09/04/07	KWG0709579	
Carbon Tetrachloride	ND	U	0.50	1	09/04/07	09/04/07	KWG0709579	
1,2-Dichloroethane (EDC)	ND	U	0.50	1	09/04/07	09/04/07	KWG0709579	
Trichloroethene (TCE)	**4.4**		0.50	1	09/04/07	09/04/07	KWG0709579	
1,2-Dichloropropane	ND	U	0.50	1	09/04/07	09/04/07	KWG0709579	
Bromodichloromethane	ND	U	0.50	1	09/04/07	09/04/07	KWG0709579	
2-Chloroethyl Vinyl Ether	ND	U	5.0	1	09/04/07	09/04/07	KWG0709579	
cis-1,3-Dichloropropene	ND	U	0.50	1	09/04/07	09/04/07	KWG0709579	
trans-1,3-Dichloropropene	ND	U	0.50	1	09/04/07	09/04/07	KWG0709579	
1,1,2-Trichloroethane	ND	U	0.50	1	09/04/07	09/04/07	KWG0709579	
Tetrachloroethene (PCE)	ND	U	0.50	1	09/04/07	09/04/07	KWG0709579	
Dibromochloromethane	ND	U	0.50	1	09/04/07	09/04/07	KWG0709579	
Chlorobenzene	ND	U	0.50	1	09/04/07	09/04/07	KWG0709579	
Bromoform	ND	U	0.50	1	09/04/07	09/04/07	KWG0709579	
1,1,2,2-Tetrachloroethane	ND	U	0.50	1	09/04/07	09/04/07	KWG0709579	
1,3-Dichlorobenzene	ND	U	0.50	1	09/04/07	09/04/07	KWG0709579	
1,4-Dichlorobenzene	ND	U	0.50	1	09/04/07	09/04/07	KWG0709579	
1,2-Dichlorobenzene	ND	U	0.50	1	09/04/07	09/04/07	KWG0709579	

Comments:

0034

Client: Prowell Environmental, Incorporated
Project: Cascade TGA
Sample Matrix: Water

Service Request: K0707770
Date Collected: 08/28/2007
Date Received: 08/29/2007

Volatile Organic Compounds

Sample Name: MW9s-082807
Lab Code: K0707770-002

Units: ug/L
Basis: NA

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	100	82-125	09/04/07	Acceptable
Toluene-d8	112	87-120	09/04/07	Acceptable
4-Bromofluorobenzene	109	73-118	09/04/07	Acceptable

Comments:

MW-10i Decommissioning Records

Cascade Corporation TGA Remedy

MULT 110544

Well Decommissioning Report

STATE OF OREGON
MONITORING WELL REPORT
(as required by ORS 537.765 & OAR 690-240-0395)

9/7/2012

WELL I.D. LABEL# L

START CARD # 1016415

(1) LAND OWNER

Owner Well I.D. MW-10I

First Name _____ Last Name _____

Company UPRR

Address 1525 N RIVER AVE

City PORTLAND State OR Zip 97227

(2) TYPE OF WORK

☐ New ☐ Deepening ☐ Conversion ☐ Alteration (repair/recondition) ☒ Abandonment

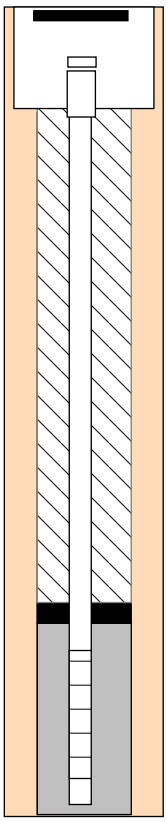
(3) DRILL METHOD

☐ Rotary Air ☐ Rotary Mud ☐ Cable ☐ Hollow Stem Auger ☐ Cable Mud ☐ Reverse Rotary ☒ Other IN-SITU DECOMMISSION

(4) CONSTRUCTION

Piezometer Well ☐

Depth of Completed Well 45.60 ft. Special Standard ☒



MONUMENT/VAULT Below Ground
From 0 To 2

BORE HOLE
Diameter 10 From 0 To 6

CASING
Dia. 2 From ☐ 1 To 35
Gauge S40 Wld ☐ Thrd ☒
Material ◯ Steel ◉ Plastic

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

SEAL
From 0 To 45.6
Material Bentonite Grout
Amount 1 Sacks Grout weight _____

SCREEN
Casing/Liner Casing Material PVC
Diameter 2 From 35 To 45
Slot Size 0.020

FILTER
From _____ To _____ Material _____ Size of pack _____

(5) WELL TESTS

◯ Pump ◯ Bailer ◯ Air ◯ Flowing Artesian

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

Temperature _____ °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 NE 1/4 of the SE 1/4 Tax Lot RR ROW
Tax Map Number _____ Lot _____
Lat ° ' " or _____ DMS or DD
Long ° ' " or _____ DMS or DD
◯ Street address of well ◉ Nearest address

UPRR ROW, SOUTH SIDE OF I-84 EAST BOUND,NEAREST TO MP 14, ADJACENT TO CASCADE CORPORATION PROPERTY 2201 NE 201ST

(7) STATIC WATER LEVEL

	Date	SWL(psi)	+	SWL(ft)
Existing Well / Predeepening			☐	
Completed Well			☐	

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

Ground Elevation _____

Material	From	To
No Formation Info - Abandon in Place	0	45.6

Date Started 8/9/2012 Completed 8/9/2012

(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 10607 Date 9/4/2012
Password : (if filing electronically) _____
Signed ADONIS PABLO (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 10563 Date 9/4/2012
Password : (if filing electronically) _____
Signed FORD STIGALL (E-filed)
Contact Info (optional) Ford Stigall

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

Form Version:

MONITORING WELL REPORT - continuation page **MULT 110544** **WELL I.D. LABEL# L________________**

START CARD # 1016415

9/7/2012

(4) CONSTRUCTION

BORE HOLE

Dia	From	To
8	6	45.6

FILTER PACK

From	To	Material	Size

SEAL

Material	From	To	Amt	sacks/ lbs	grout weight

CASING/LINER

Casing	Liner	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd
○	○		☐				○	○	☐	☐
○	○		☐				○	○	☐	☐
○	○		☐				○	○	☐	☐
○	○		☐				○	○	☐	☐
○	○		☐				○	○	☐	☐
○	○		☐				○	○	☐	☐
○	○		☐				○	○	☐	☐
○	○		☐				○	○	☐	☐
○	○		☐				○	○	☐	☐

SCREENS

Perf/ Screen	Casing/ Liner	Screen Dia	From	To	Scrn size/ slot width	Slot length	# of slots	Tele/ pipe size

(5) WELL TESTS

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

Water Quality Concerns

From	To	Description	Amount	Units

(7) STATIC WATER LEVEL

Water Bearing Zones

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

(8) WELL LOG

Material	From	To

Comments/Remarks

Monitoring Well decommissioned in-situ by pressure grout from bottom to top of monitoring well, per special standard attached. Vault removed and capped with compacted gravel.

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

MULT 110544

9/7/2012

Map of Hole

10S, 10E, 8S

Oregon
John A. Kitzhaber, MD, 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

May 7, 2012

FORD STIGALL #10563
WESTERN STATES SOIL & CONS INC
PO BOX 428
HUBBARD OR 97032

FINAL ORDER

Dear Ford:

The Special Standards Request Form you submitted for owner: UPRR, Start Card numbers 1016414 (MW8S), 1016415 (MW10I) and 1016416 (MW10S), is hereby approved for the following: You may abandon these monitoring wells utilizing the method described in OAR 690-240-0510(2). *Bentonite grout may only be used to abandon the portion of the wells that is below the static water level.* Above the static water level another approved sealing material must be used. 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) 986-0851, or by e-mail at Kristopher.R.Byrd@wrd.state.or.us.

Sincerely,

Kristopher Byrd, Coordinator
Well Construction Program
Well Construction and Compliance Section

enclosure

cc: Bill Ferber, W Region Manager
File

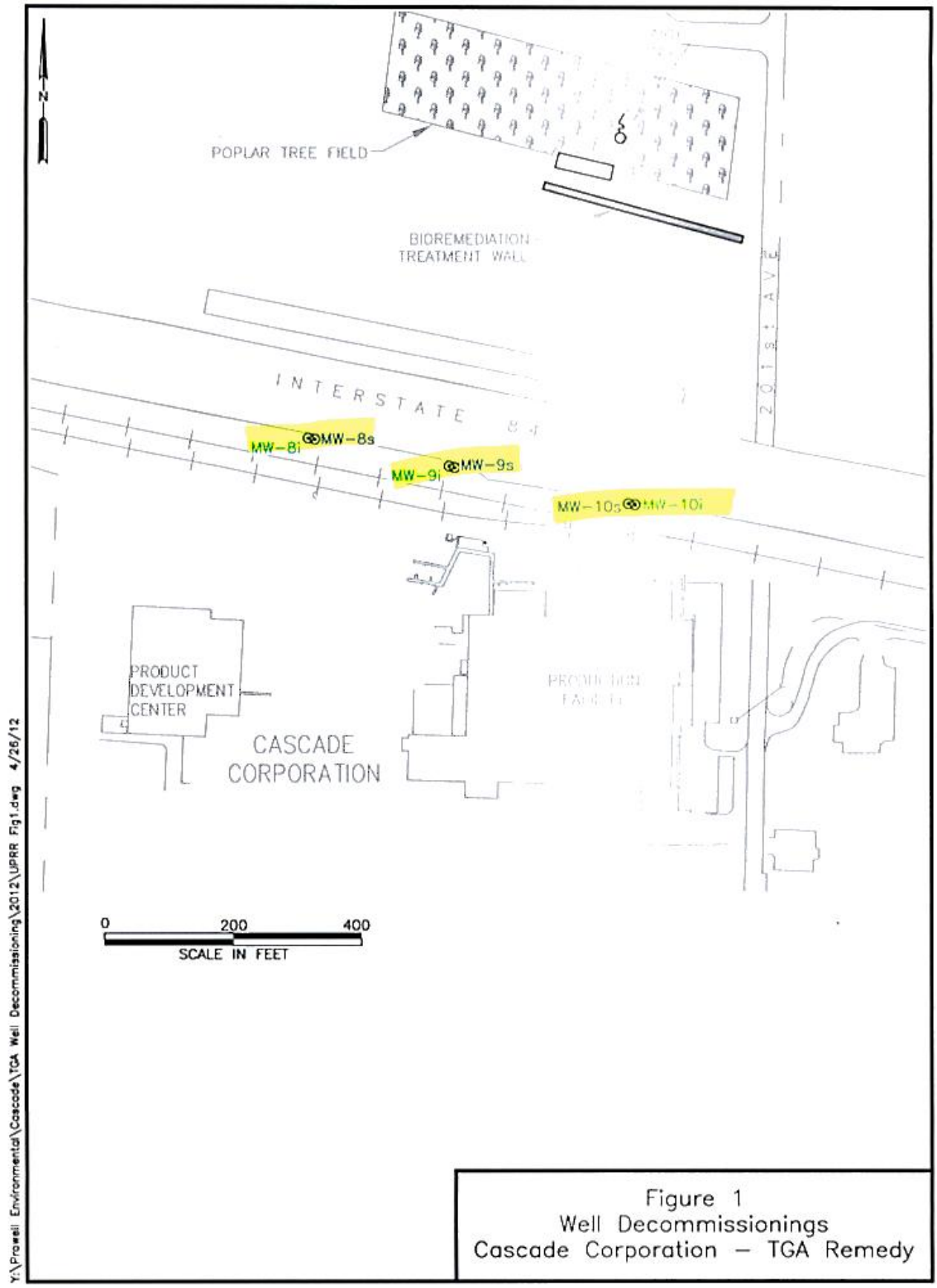
This is a final order in other than a contested case. This order is subject to judicial review under ORS 183.484. Any petition for judicial review must be filed within the 60 day time period specified by ORS 183.484(2). Pursuant to ORS 536.075 and OAR 137-004-0080 you may either petition for judicial 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.

MONITORING WELL REPORT - continuation page

MULT 110544

9/7/2012

Map of Hole



CENTURY WEST ENGINEERING

SUBSURFACE EXPLORATION LOG

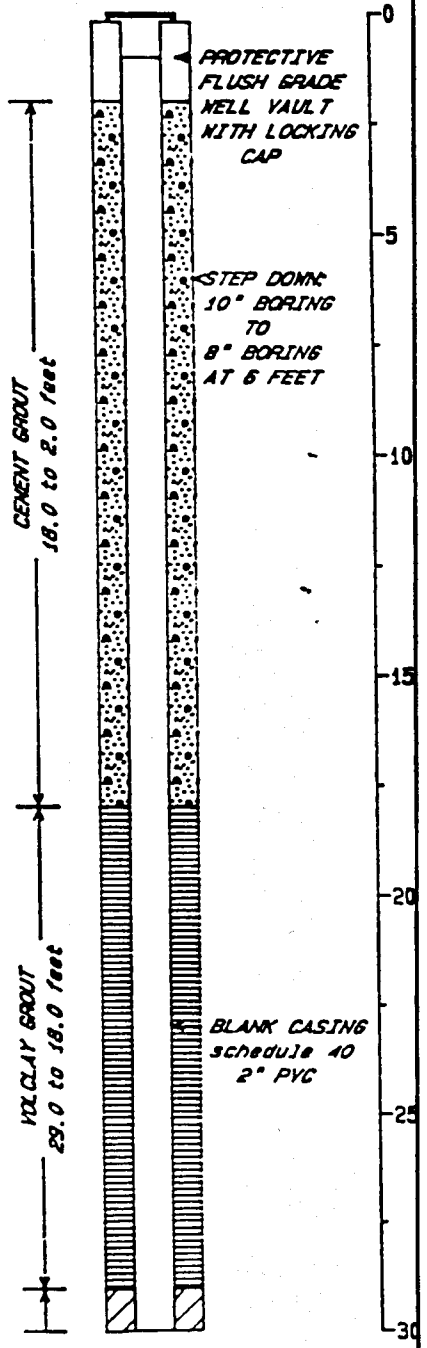
IB-10I

Project CASCADE - RI/FS PHASE I
Location Portland, OR
Job Number 4008900401
Geologist/Engineer Richard Roche
Drilling Subcontractor Staco / Cable tool
Surface Elevation 135.870 msl

Boring Number IB-10I
Well Number MW-10I
Depth of Boring 50.0 feet
Top of Casing Elevation 135.454 msl
Date Started 4/24/90
Date Completed 4/26/90

DEPTH IN FEET	N-VALUE	SAMPLE	LITHOLOGY	DESCRIPTION
0			SM	GRAVELLY SILT - with sand, brown, some cobbles and boulders, fine to coarse gravel, andesitic and basaltic material, traces of quartz.
5				←PID: 0 ppm.
10			SP	GRAVELLY SAND - brown, fine to coarse gravel, some silt, greenish black sand with mica, basalt and quartz gravels.
15				←decrease in gravels, increase in silt, traces of organic fragments.
20				←blackish green sand, basaltic gravels, some silt, PID: 0 ppm.
25				←gravels and cobbles in a sand matrix, tannish sand with mica cemented on some clasts, PID: 0 ppm.
30				

WELL CONSTRUCTION DETAIL



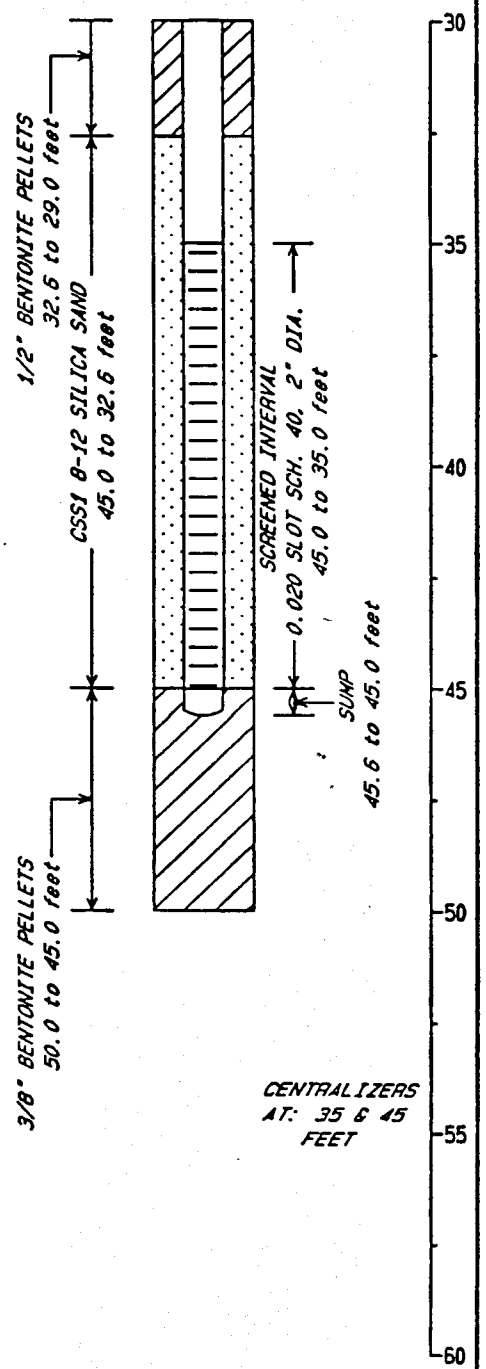
CENTURY WEST ENGINEERING

SUBSURFACE EXPLORATION LOG

IB-10I

DEPTH IN FEET	N-VALUE	SAMPLE	LITHOLOGY	DESCRIPTION
30			SP	decrease in gravel size, blackish green sand, medium to coarse.
35				black basaltic medium grained sands, clasts of basalt and quartz.
40			SM	SAND - with some silt, light brown to dark brown, medium grain sands, partially cemented.
45				increasing silt.
50			CL	CLAY - grey, slightly plastic, intermixing with a darker bluish green silty clay.
				bluish to tan clay, plastic.
				bottom of boring at 50 feet.
55				
60				

WELL CONSTRUCTION DETAIL



Client: Prowell Environmental, Incorporated
Project: CascadeTGA
Sample Matrix: Water

Service Request: K1000189
Date Collected: 01/07/2010
Date Received: 01/08/2010

Volatile Organic Compounds

Sample Name: MW-10i-010710
Lab Code: K1000189-008

Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA

Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Dichlorodifluoromethane	ND	U	0.50	1	01/12/10	01/12/10	KWG1000353	
Chloromethane	ND	U	0.50	1	01/12/10	01/12/10	KWG1000353	
Vinyl Chloride	ND	U	0.50	1	01/12/10	01/12/10	KWG1000353	
Bromomethane	ND	U	0.50	1	01/12/10	01/12/10	KWG1000353	
Chloroethane	ND	U	0.50	1	01/12/10	01/12/10	KWG1000353	
Trichlorofluoromethane	ND	U	0.50	1	01/12/10	01/12/10	KWG1000353	
Trichlorotrifluoroethane	ND	U	0.50	1	01/12/10	01/12/10	KWG1000353	
1,1-Dichloroethene	ND	U	0.50	1	01/12/10	01/12/10	KWG1000353	
Methylene Chloride	ND	U	2.0	1	01/12/10	01/12/10	KWG1000353	
trans-1,2-Dichloroethene	ND	U	0.50	1	01/12/10	01/12/10	KWG1000353	
1,1-Dichloroethane	ND	U	0.50	1	01/12/10	01/12/10	KWG1000353	
cis-1,2-Dichloroethene	ND	U	0.50	1	01/12/10	01/12/10	KWG1000353	
Chloroform	ND	U	0.50	1	01/12/10	01/12/10	KWG1000353	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	1	01/12/10	01/12/10	KWG1000353	
Carbon Tetrachloride	ND	U	0.50	1	01/12/10	01/12/10	KWG1000353	
1,2-Dichloroethane (EDC)	ND	U	0.50	1	01/12/10	01/12/10	KWG1000353	
Trichloroethene (TCE)	ND	U	0.50	1	01/12/10	01/12/10	KWG1000353	
1,2-Dichloropropane	ND	U	0.50	1	01/12/10	01/12/10	KWG1000353	
Bromodichloromethane	ND	U	0.50	1	01/12/10	01/12/10	KWG1000353	
2-Chloroethyl Vinyl Ether	ND	U	5.0	1	01/12/10	01/12/10	KWG1000353	
cis-1,3-Dichloropropene	ND	U	0.50	1	01/12/10	01/12/10	KWG1000353	
trans-1,3-Dichloropropene	ND	U	0.50	1	01/12/10	01/12/10	KWG1000353	
1,1,2-Trichloroethane	ND	U	0.50	1	01/12/10	01/12/10	KWG1000353	
Tetrachloroethene (PCE)	ND	U	0.50	1	01/12/10	01/12/10	KWG1000353	
Dibromochloromethane	ND	U	0.50	1	01/12/10	01/12/10	KWG1000353	
Chlorobenzene	ND	U	0.50	1	01/12/10	01/12/10	KWG1000353	
Bromoform	ND	U	0.50	1	01/12/10	01/12/10	KWG1000353	
1,1,2,2-Tetrachloroethane	ND	U	0.50	1	01/12/10	01/12/10	KWG1000353	
1,3-Dichlorobenzene	ND	U	0.50	1	01/12/10	01/12/10	KWG1000353	
1,4-Dichlorobenzene	ND	U	0.50	1	01/12/10	01/12/10	KWG1000353	
1,2-Dichlorobenzene	ND	U	0.50	1	01/12/10	01/12/10	KWG1000353	

Comments:

Client: Prowell Environmental, Incorporated
Project: CascadeTGA
Sample Matrix: Water

Service Request: K1000189
Date Collected: 01/07/2010
Date Received: 01/08/2010

Volatile Organic Compounds

Sample Name: MW-10i-010710
Lab Code: K1000189-008

Units: ug/L
Basis: NA

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	99	73-122	01/12/10	Acceptable
Toluene-d8	114	78-129	01/12/10	Acceptable
4-Bromofluorobenzene	95	68-117	01/12/10	Acceptable

Comments:

MW-10s Decommissioning Records

Cascade Corporation TGA Remedy

MULT 110545

STATE OF OREGON
MONITORING WELL REPORT
(as required by ORS 537.765 & OAR 690-240-0395)

9/7/2012

WELL I.D. LABEL# L

START CARD # 1016416

(1) LAND OWNER

Owner Well I.D. MW-10S

First Name _____ Last Name _____

Company UPRR

Address 1525 N RIVER AVE

City PORTLAND State OR Zip 97227

(2) TYPE OF WORK

☐ New ☐ Deepening ☐ Conversion ☐ Alteration (repair/recondition) ☒ Abandonment

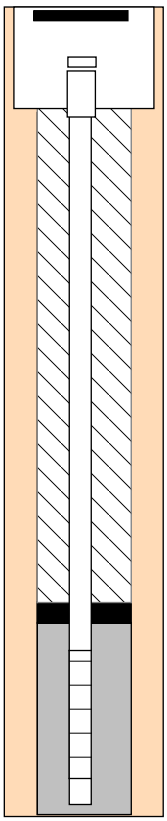
(3) DRILL METHOD

☐ Rotary Air ☐ Rotary Mud ☐ Cable ☐ Hollow Stem Auger ☐ Cable Mud ☐ Reverse Rotary ☒ Other IN-SITU DECOMMISSION

(4) CONSTRUCTION

Piezometer Well ☐

Depth of Completed Well 20.60 ft. Special Standard ☒



MONUMENT/VAULT Below Ground
From 0 To 2

BORE HOLE
Diameter 10 From 0 To 18

CASING
Dia. 2 From ☐ 1 To 10
Gauge S40 Wld ☐ Thrd ☒
Material ◯ Steel ◉ Plastic

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

SEAL
From 0 To 20.6
Material Bentonite Grout
Amount 0.5 Sacks Grout weight _____

SCREEN
Casing/Liner Casing Material PVC
Diameter 2 From 10 To 20
Slot Size 0.020

FILTER
From _____ To _____ Material _____ Size of pack _____

(5) WELL TESTS

◯ Pump ◯ Bailer ◯ Air ◯ Flowing Artesian

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

Temperature _____ °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 NE 1/4 of the SE 1/4 Tax Lot RR ROW
Tax Map Number _____ Lot _____
Lat ° ' " or _____ DMS or DD
Long ° ' " or _____ DMS or DD
◉ Street address of well ◯ Nearest address

UPRR ROW, SOUTH SIDE OF I-84 EAST BOUND,NEAREST TO MP 14, ADJACENT TO CASCADE CORPORATION PROPERTY 2201 NE 201ST

(7) STATIC WATER LEVEL

	Date	SWL(psi)	+	SWL(ft)
Existing Well / Predeepening			☐	
Completed Well			☐	

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

Ground Elevation _____

Material	From	To
No Formation Info - Abandon in Place	0	20.6

Date Started 8/9/2012 Completed 8/9/2012

(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 10607 Date 9/4/2012
Password : (if filing electronically) _____
Signed ADONIS PABLO (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 10563 Date 9/4/2012
Password : (if filing electronically) _____
Signed FORD STIGALL (E-filed)
Contact Info (optional) Ford Stigall

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

Form Version:

MONITORING WELL REPORT - continuation page

MULT 110545

9/7/2012

WELL I.D. LABEL# L

START CARD # 1016416

(4) CONSTRUCTION

BORE HOLE

Dia	From	To
8	18	20.6

FILTER PACK

From	To	Material	Size

SEAL

Material	From	To	Amt	sacks/ lbs	grout weight

CASING/LINER

Casing	Liner	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd

SCREENS

Perf/ Screen	Casing/ Liner	Screen Dia	From	To	Scrn size/ slot width	Slot length	# of slots	Tele/ pipe size

(5) WELL TESTS

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

Water Quality Concerns

From	To	Description	Amount	Units

(7) STATIC WATER LEVEL

Water Bearing Zones

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

(8) WELL LOG

Material	From	To

Comments/Remarks

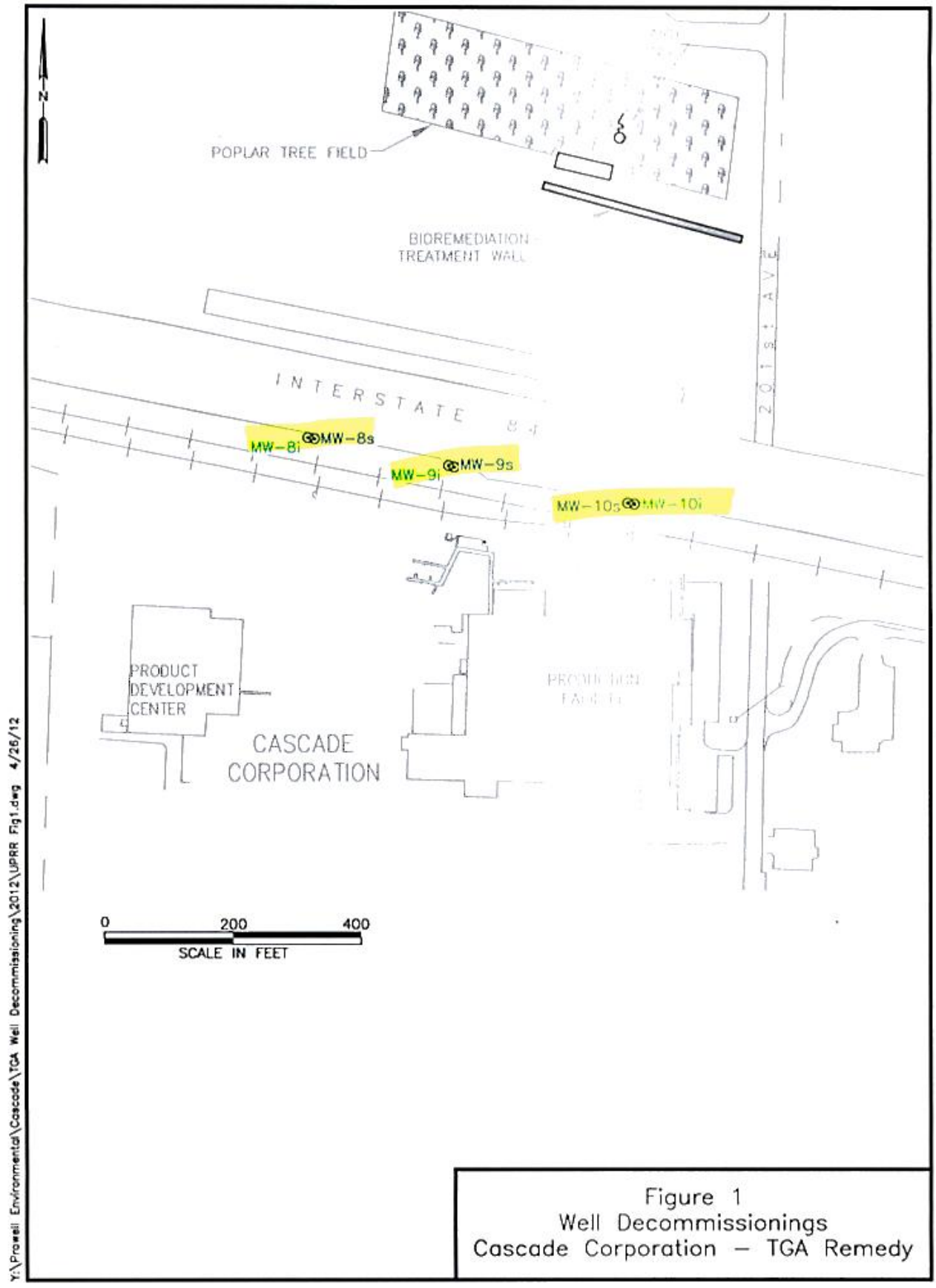
Monitoring Well decommissioned in-situ by pressure grout from bottom to top of monitoring well, per special standard attached. Vault removed and capped with compacted gravel.

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

MULT 110545

9/7/2012

Map of Hole



MONITORING WELL REPORT - continuation page

MULT 110545

9/7/2012

Map of Hole

10S, 10E, 8S

Oregon
John A. Kitzhaber, MD, 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

May 7, 2012

FORD STIGALL #10563
WESTERN STATES SOIL & CONS INC
PO BOX 428
HUBBARD OR 97032

FINAL ORDER

Dear Ford:

The Special Standards Request Form you submitted for owner: UPRR, Start Card numbers 1016414 (MW8S), 1016415 (MW10I) and 1016416 (MW10S), is hereby approved for the following: You may abandon these monitoring wells utilizing the method described in OAR 690-240-0510(2). *Bentonite grout may only be used to abandon the portion of the wells that is below the static water level.* Above the static water level another approved sealing material must be used. 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) 986-0851, or by e-mail at Kristopher.R.Byrd@wrd.state.or.us.

Sincerely,

Kristopher Byrd, Coordinator
Well Construction Program
Well Construction and Compliance Section

enclosure

cc: Bill Ferber, W Region Manager
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.

Well Installation Report

OWRD Installation Report Not Available

CENTURY WEST ENGINEERING

SUBSURFACE EXPLORATION LOG

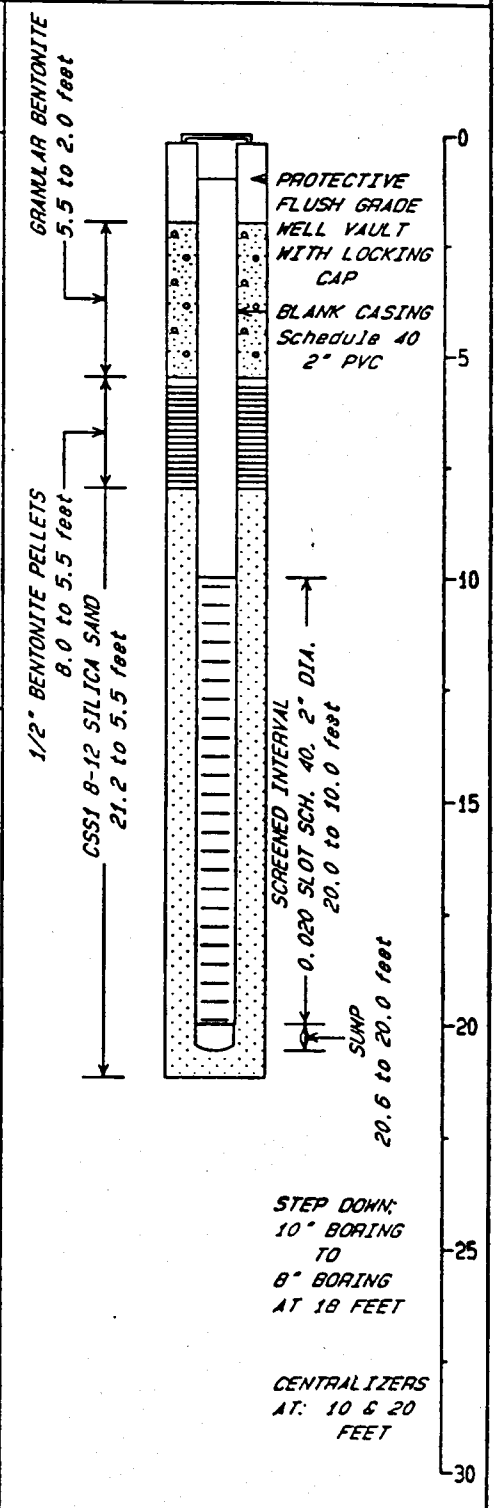
IB-10S

Project CASCADE - RI/FS PHASE I
Location Portland, OR
Job Number 4008900401
Geologist/Engineer Rick Malin
Drilling Subcontractor Staco / Cable tool
Surface Elevation 136.078 msl

Boring Number IB-10S
Well Number MW-10S
Depth of Boring 21.2 feet
Top of Casing Elevation 135.617 msl
Date Started 5/1/90
Date Completed 5/1/90

DEPTH IN FEET	N-VALUE	SAMPLE	LITHOLOGY	DESCRIPTION
0			SM	SANDY SILT - with gravel and cobbles, also andesitic boulders, greenish black to tan sand with organic fragments, PID: 0.4 ppm.
5			SM	
10				← decrease in boulders, PID: 0 ppm.
15			GM	SANDY GRAVEL - with silt, brownish grey, greenish black sand with some tan sand and mica fine to medium, organic fragments, basaltic and granitic material, well-graded, PID: 0.2 ppm.
				← PID: 0 ppm.
20			SW	GRAVELLY SAND - fine to coarse with small gravel, blackish green sand, well-graded, PID: 0 ppm.
				Bottom of boring at 21.2 feet.
25				
30				

WELL CONSTRUCTION DETAIL



COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Pre-decommissioning
VOC Results (sample date 8/28/07)

Client: Prowell Environmental, Incorporated
Project: Cascade TGA
Sample Matrix: Water

Service Request: K0707770
Date Collected: 08/28/2007
Date Received: 08/29/2007

Volatile Organic Compounds

Sample Name: MW10s-082807
Lab Code: K0707770-003

Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: ug/L
Basis: NA

Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Dichlorodifluoromethane	ND	U	0.50	1	09/05/07	09/05/07	KWG0709650	
Chloromethane	ND	U	0.50	1	09/05/07	09/05/07	KWG0709650	
Vinyl Chloride	ND	U	0.50	1	09/05/07	09/05/07	KWG0709650	
Bromomethane	ND	U	0.50	1	09/05/07	09/05/07	KWG0709650	
Chloroethane	ND	U	0.50	1	09/05/07	09/05/07	KWG0709650	
Trichlorofluoromethane	ND	U	0.50	1	09/05/07	09/05/07	KWG0709650	
1,1-Dichloroethene	ND	U	0.50	1	09/05/07	09/05/07	KWG0709650	
Trichlorotrifluoroethane	ND	U	0.50	1	09/05/07	09/05/07	KWG0709650	
Methylene Chloride	ND	U	2.0	1	09/05/07	09/05/07	KWG0709650	
trans-1,2-Dichloroethene	ND	U	0.50	1	09/05/07	09/05/07	KWG0709650	
1,1-Dichloroethane	ND	U	0.50	1	09/05/07	09/05/07	KWG0709650	
cis-1,2-Dichloroethene	ND	U	0.50	1	09/05/07	09/05/07	KWG0709650	
Chloroform	ND	U	0.50	1	09/05/07	09/05/07	KWG0709650	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	1	09/05/07	09/05/07	KWG0709650	
Carbon Tetrachloride	ND	U	0.50	1	09/05/07	09/05/07	KWG0709650	
1,2-Dichloroethane (EDC)	ND	U	0.50	1	09/05/07	09/05/07	KWG0709650	
Trichloroethene (TCE)	ND	U	0.50	1	09/05/07	09/05/07	KWG0709650	
1,2-Dichloropropane	ND	U	0.50	1	09/05/07	09/05/07	KWG0709650	
Bromodichloromethane	ND	U	0.50	1	09/05/07	09/05/07	KWG0709650	
2-Chloroethyl Vinyl Ether	ND	U	5.0	1	09/05/07	09/05/07	KWG0709650	
cis-1,3-Dichloropropene	ND	U	0.50	1	09/05/07	09/05/07	KWG0709650	
trans-1,3-Dichloropropene	ND	U	0.50	1	09/05/07	09/05/07	KWG0709650	
1,1,2-Trichloroethane	ND	U	0.50	1	09/05/07	09/05/07	KWG0709650	
Tetrachloroethene (PCE)	ND	U	0.50	1	09/05/07	09/05/07	KWG0709650	
Dibromochloromethane	ND	U	0.50	1	09/05/07	09/05/07	KWG0709650	
Chlorobenzene	ND	U	0.50	1	09/05/07	09/05/07	KWG0709650	
Bromoform	ND	U	0.50	1	09/05/07	09/05/07	KWG0709650	
1,1,2,2-Tetrachloroethane	ND	U	0.50	1	09/05/07	09/05/07	KWG0709650	
1,3-Dichlorobenzene	ND	U	0.50	1	09/05/07	09/05/07	KWG0709650	
1,4-Dichlorobenzene	ND	U	0.50	1	09/05/07	09/05/07	KWG0709650	
1,2-Dichlorobenzene	ND	U	0.50	1	09/05/07	09/05/07	KWG0709650	

Comments:

Client:	Prowell Environmental, Incorporated	**Service Request:**	K0707770
Project:	Cascade TGA	**Date Collected:**	08/28/2007
Sample Matrix:	Water	**Date Received:**	08/29/2007

Volatile Organic Compounds

Sample Name:	MW10s-082807	**Units:**	ug/L
Lab Code:	K0707770-003	**Basis:**	NA

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	102	82-125	09/05/07	Acceptable
Toluene-d8	111	87-120	09/05/07	Acceptable
4-Bromofluorobenzene	113	73-118	09/05/07	Acceptable

Comments: