State of Oregon
Department of Environmental Quality

To:	LUST #20-88-4015 Facility I.D. #8134	**Date:**	August 28, 2013
From:	Nancy Sawka, Project Manager		
Section:	Western Region Environmental Cleanup Program		
Subject:	Staff Summary Report - Risk-Based Closure Former Sunny Thurston, 5737 Main St, Springfield, Lane County		

http://www.deq.state.or.us/lq/tanks/lust/LustPublicLookup.asp (refer to LUST # 20-88-4015)

Background and History

The former Sunny Thurston Service Station site (Site) is located at 5737 Main Street in Springfield, Oregon in the northeast quarter of the southeast quarter of Section 33, Township 17S, Range 2W, Lane County Map Tax Lot 170233410340. The Site has operated as a retail petroleum Service Station since the early 1960's and is currently an active permitted Shell-branded Service Station with a Buy2 market.

A release from the former UST[1] system was reported to DEQ in March 1988 while the Site was operating as a Sunny Service Station. Petroleum product was found in the observation wells of the UST vault during tightness testing. Approximately 400 gallons of free product was removed from the former UST vault between August and December 1988. The five former USTs, associated lines, piping and approximately 956 cubic yards of PCS were removed in December 1988 and disposed of at Short Mountain Landfill in Lane County. The subsequent owner, Texaco, installed new piping and four new 10,000 gallon USTs in the former UST excavation. These USTs are the current tanks in operation at the Site.

Figure 1 shows the Site location and Figure 2 shows the Site configuration.

Post 1988 UST Removal Petroleum Investigation and Cleanup

Early Pre- and Post-Remediation Soil and Groundwater Investigation

Bergeson-Boese and Russ Fetrow Engineering installed 10 shallow monitoring wells (MW-1 to MW-10) and 5 borings (PW-1 to PW-5) between 1989 and 1991. MW-1 through MW-10 were installed to delineate on and offsite groundwater contamination caused by the 1988 release. PW-1 through PW-5 were installed to delineate free product that was found in MW-1 in 1990. Locations are shown in Figure 2. Table 1 shows the soil sample results. Soils from the borings were sampled and analyzed for TPH (EPA Method 418.1) only. Low levels of TPH were detected at 10 feet bgs[2] in soil from onsite well MW-

[1] UST: underground storage tank
[2] bgs: below ground surface

1 and offsite wells MW-5 and 6 with concentrations ranging from 8 to 110 mg/kg[3]. TPH was also detected in PW-1 through PW-4 with concentrations ranging between 11 and 610 mg/kg. The highest TPH of 610 mg/kg was found at 15 feet bgs in PW-3. Free product was found to extend from MW-1 south to PW-1 and west to PW-4. Free product at measurable levels was not found in PW-2, 3 or 5.

A soil and groundwater contamination remediation system was installed and operated between 1991 and 1994. Free product recovery and SVE[4] was implemented in 1991 and operated through April 1997. Air sparging was added to the system in November 1994 and operated through November 1996.

Early shallow groundwater results from August 1989 through March 2001 are summarized in Table 2 (only wells with detections). Initial results prior to remediation show free product in MW-1 on the east property boundary (Figure 2). Shallow groundwater contamination was initially found to extend to the southwest corner of the property in onsite well MW-2, offsite on the adjacent property to the west/northwest in well MW-3, and at low levels offsite to the north across Main Street in MW-10. Contaminants analyzed and found at these locations included benzene, ethylbenzene, toluene and xylene. Little or no groundwater contamination was found offsite in MW-4 to the northeast, MW-5 east of MW-3, or in MW-6, 7, 8 or 9 to the south. Free product was eliminated from MW-1 by September 1992 and contaminant levels in this well began to stabilize and decrease over time. Contaminant concentrations in MW-2 and MW-3 significantly decreased after free product removal in 1989 and continued to decrease during subsequent remedial activities. Monitoring of MW-2, 4, 6, 7, 8 and 9 was discontinued after June 1992 and in MW-5 after December 1995 due to consistent non-detects. MW-2, 4, 5 and 8 were later again sampled between May 2001 and February 2013 and MW-4 between December 2008 and February 2013. These results are discussed below.

Secor and Delta installed 11 borings (GP-1 to GP-5 and DSB-1 to DSB-6) between 2002 and 2007 to assess post-cleanup soil and groundwater conditions. Soil samples were collected from each boring and groundwater samples were collected from GP-1 through 4, DSB-2, 4, 5, 6 and two existing shallow monitoring wells (MW-C and MC-F)[5]. Soil sampling results are summarized on Figure 3. The highest levels of soil contamination occurred between 12 and 15 feet bgs in GP-3 and GP-5, just northeast and north of the UST area, respectively. The main contaminants found included gasoline, diesel, BTEX[6], 1,2,4 and 1,2,5 TMB[7], naphthalene and low levels of several PAHs[8]. Soils from GP-3 and GP-5 exceeded the occupational vapor intrusion RBC[9] of 12 mg/kg for ethylbenzene with concentrations ranging between 12.9 and 29.1 mg/kg. Only low levels of contamination were detected in soil from the other borings.

Groundwater results for 2002 to 2007 are summarized in Tables 3, 4 and 5. Significant levels of gasoline, diesel, BTEX, naphthalene, and 1,2,4/1,3,5-TMB were detected in GP-1 to GP-4, DSB-2, 4, 6 and MW-C. Low levels of several PAHs were found in all of the samples except DSB-6. Further analysis of groundwater is discussed below.

Groundwater Monitoring 2001 through 2013

[3] mg/kg: milligram per kilogram
[4] SVE: soil vapor extraction
[5] Monitoring Wells MW-A through MW-F: Secor found 6 existing monitoring wells and labeled them as MW-A through MW-F in 2001. Secor was not able to find information on the well installation, construction, or identification. The wells are 2 inch diameter and range in depth from 7.98 feet to 19.05 feet.
[6] BTEX: benzene, toluene, ethylbenzene, total xylene
[7] TMB: trimethylbenzene
[8] PAHs: polynuclear aromatic hydrocarbons
[9] RBC: risk-based concentration

Groundwater monitoring of onsite wells (MW-A through MW-F and MW-2) and offsite wells (MW-4, 5, 8 and 10) was conducted by several different consultants including Bergeson-Boese, GeoEngineers, Delta/Inogen, and URS at various intervals between January 2001 and February 2013 to assess the effectiveness of the earlier treatment system and evaluate groundwater trends over time. The highest levels of contamination were consistently found in MW-B located between the USTs and dispensers and in MW-C on the northeast corner of the USTs. The range of detected concentrations for gasoline, diesel, benzene, and naphthalene in MW-B and C, onsite downgradient well MW-F and offsite downgradient well MW-10 for this time period is shown below:

Concentration Ranges between January 2001 and February 2013

Location	Gasoline in ug/L	Diesel in ug/L	Benzene in ug/L	Naphthalene ug/L
MW-B	4,100 to 50,000	8,900	250 to 17,000	240 to 1,430
MW-C	2,750 to 3,950	600 to 5,760	181to7,680	62.3 to 628
MW-F	<50 to 24,000	68 to 2,500	<0.2 to 5,300	<0.5 to 500
MW-10	ND	ND	<0.2 to 49	<0.5 to 0.46

Other constituents found in these wells included toluene, ethylbenzene, xylene, (1,2,4/1,3,5)-TMB, isopropylbenzene, n-propylbenzene, naphthalene, dissolved lead, and low levels of several PAHs.

Similar to earlier groundwater results, little or no petroleum contamination was detected in offsite wells MW-4, 5, and 8; in upgradient well MW-2; or onsite on the southwest side of the USTs in well MW-A during this period. Table 4 and 5 summarize the more recent groundwater results for the period between June 2007 and February 2013. Earlier results prior to June 2007 can be found in the July 29, 2008 Groundwater monitoring report by Delta Consultants located in the project file and online at http://www.deq.state.or.us/lq/tanks/lust/LustPublicLookup.asp (refer to LUST # 20-88-4015). In general, the results indicate that the treatment system along with natural attenuation has been effective in reducing groundwater contamination. The contaminant plume has receded and no longer extends offsite past Main Street to MW-10. Concentrations of contaminants in groundwater appear to have stabilized and/or are decreasing over time.

Depth to groundwater ranged between 5 and 12 feet bgs. Groundwater flow direction has predominantly been to the northwest but has varied between the northwest and northeast.

Soil Gas Investigation

At the request of DEQ, URS completed a soil gas investigation in January and February 2013. Four soil gas probes were installed to evaluate the potential for vapor intrusion from soil and groundwater contamination into onsite and nearby offsite buildings. SG-1 was installed between the site and the adjacent property and building to the west; SG-2 was installed on the northwest corner of the station building between the building and the UST cleanup area; SG-3 was installed in the area of highest contamination and between the site and Main Street to the north; and SG-4 was installed on the east property boundary between the site and the adjacent property to the east. Soil gas sample locations are shown in Figure 2. Table 6 summarizes the soil gas results. Gasoline, EDC[10], 1,2,4-TMB, Toluene, and xylenes were detected in all of the samples, but at concentrations significantly below the occupational Inhalation RBC.

Remaining Contamination

[10] EDC: 1,2-dichloroethane

The majority of contaminated soil was removed during UST decommissioning and cleanup activities in December 1988 and further remediated through SVE and air sparging between 1991 and 1997. The estimated area of remaining soil contamination is shown in Figure 4. This area measures about 135 feet across by 150 feet wide and is primarily around the UST and dispensers. The highest levels of contamination remain at about 12 to 15 feet bgs in small areas north of the USTs around the locations of former GP-3 and GP-5.

The estimated extent of remaining contamination in the groundwater (which is also the locality of facility) is shown on Figure 5. The groundwater contaminant plume and concentrations have significantly decreased since the start of the project in 1989. Free product has not been detected since June 1992 and the plume no longer extends offsite across Main Street north to MW-10. The current plume measures about 65 feet across and 137.5 feet long and extends part way under the south lane of Main Street to the north and under the northeast corner of the adjacent property to the west. The highest concentrations of contaminants in groundwater are found onsite in MW-B between the UST and dispensers and in MW-C just northeast of the USTs. The plume is stable and is not expected to increase or migrate further over time under the current site conditions.

Land Use

The Site and surrounding area is located within the Community Commercial Zoning District (CC) for the City of Springfield. CC provides for a wide range of retail sales, services and professional office use and includes existing commercial strip areas. The site is currently an active retail service station and convenience store. Main Street, a busy four lane road, borders the site to the north. Properties further north of Main Street and to the west, south and east are occupied by commercial businesses including Bi-Mart and Big Lots, Albertson's gas station, Albertson's grocery store, and Oregon Medical group, respectively.

Non-commercial uses such as residential (one single-family attached or detached for secondary use), parks, and playgrounds are permitted in this zoning, however it is unlikely that the site or surrounding area would be developed for anything other than commercial use. The site is located on a busy, four lane street along an existing commercial corridor and is not suitable for residential or park-like uses. Additionally, a restrictive covenant prohibiting future residential development of the Site has been recorded with the property by Shell Corporation.

Beneficial Water Uses

The SUB[11] supplies water to the Site and surrounding area. SUB obtains about 90% of its water supply from seven wellfields that extract groundwater from beneath the Springfield area. The Site is not within the wellhead protection zones of any of the SUB wellfields. The SUB also draws water from the Middle Fork of the Willamette River which is about 2 or more miles from the Site

Based on an OWRD well log search and a door-to-door survey completed by URS, there are no private water wells on the Site or adjacent properties. Additionally, the restrictive covenant recorded with the property also prohibits the installation of water supply wells on the Site.

The nearest surface water body is the Cedar Creek tributary, located approximately 2,700 feet east of the Site. There are no surface water bodies present on the Site or adjoining properties.

[11] SUB: Springfield Utility Board

Risk-Based Site Evaluation

Human Health Risk Evaluation

Table 7 summarizes the risk evaluation for the Site. The human health exposure pathways that are complete include:

1. Excavation and construction worker contact with soil and groundwater during excavation work.
2. Volatilization to outdoor air for onsite occupational receptors from soil and groundwater.
3. Vapor intrusion into buildings for onsite occupational receptors from soil and groundwater.

Significant levels of contamination were not found above 3 feet bgs, so the occupational soil ingestion, dermal contact and inhalation pathway was not considered complete for this evaluation. Additionally, contaminated areas of the Site are covered with asphalt, so there is no soil exposed at the surface.

Two RBCs were exceeded for the applicable exposure pathways above: the occupational vapor intrusion into buildings from soil and the construction and excavation worker exposure to groundwater in an excavation. Soil from GP-5 (12 and 15' bgs) and GP-3 (15' bgs) exceeded the occupational vapor intrusion RBC of 12 mg/kg for ethylbenzene with concentrations at 29.1, 21.4 and 12.9 mg/kg, respectively. However, follow-up soil vapor sample results were below the occupational as well as the residential inhalation RBC for ethylbenzene and other petroleum related constituents demonstrating that remaining soil contamination did not pose an unacceptable vapor intrusion risk to indoor air of buildings.

Except for one sample event in 2008, the groundwater in an excavation RBC for naphthalene of 500 ug/L was consistently exceeded in MW-B with concentrations ranging between 870 and 1,430 ug/L. Groundwater from nearby monitoring wells MW-A and MW-C did not exceed this limit indicating that groundwater contamination above the RBC is limited to a small area around MW-B. A CMMP[12] will be required as a condition of Site closure to address management, disposal and worker safety during future excavation work in areas of remaining soil and groundwater contamination.

All other petroleum related contaminants were within acceptable levels for their respective RBCs and applicable exposure pathways.

Ecological Risk Evaluation

The Site is covered in asphalt parking and surrounded primarily by similar businesses. There are no potential ecological receptors of concern on the Site.

The Cedar Creek tributary is located about 2,700 feet east of the Site. Groundwater contamination is limited to the Site and a short distance offsite to the north. Groundwater contamination does not extend to the Creek. There are no surface water bodies on the Site or adjoining properties.

Public Comment

As part of the public participation process required under Oregon regulations, DEQ sent letters to the current property owner, adjacent property owners, the City of Springfield, and the Springfield Utility Board on April 17, 2013, requesting public comment on the proposed risk-based closure by May 17, 2013. The Springfield Utility Board responded with an e-mail that they did not have any concerns about

[12] CMMP: contaminant media management plan

the closure. No other responses or comments were received.

Regulatory Site Closure

Based on the following findings from the soil and groundwater investigations and risk-based evaluation, the Site does not pose a threat to human health or the environment under the current and likely future land and water uses:

- The former USTs and majority of the related PCS have been removed from the Site. There are no known releases related to the current UST system and the current USTs are permitted and in compliance with DEQ regulations.
- The extent of petroleum contamination remaining in the soil and the groundwater on the Site has been defined.
- Contamination in the groundwater has been greatly reduced by the remediation efforts conducted between 1991 and 1997. The current contaminant plume is stable and appears to be decreasing over time.
- Land use and zoning of the Site is for commercial business use. Land use and zoning is expected to remain the same for the foreseeable future. A restrictive covenant prohibiting residential use of the Site has been recorded with the property.
- The nearest surface water body is the Cedar Creek tributary located 2,700 feet east of the Site. Contamination from the Site does not reach this water body.
- The majority of the soil contamination has been removed. Some remaining soil contamination is above the occupational vapor intrusion RBC for ethylbenzene. However, follow-up soil gas vapor samples were below the occupational as well as the residential RBCs for soil gas inhalation demonstrating that remaining soil contamination did not pose an unacceptable vapor intrusion risk. All other constituents in remaining soil contamination are below the applicable RBCs for the Site.
- The Site and surrounding area are serviced by water from the Springfield Utility Board. There are no existing or likely future uses of groundwater on the Site or adjacent properties.
- Groundwater contamination remains beneath the Site and extends a short distance offsite to the north under the west lane of Main Street and under the northwest corner of the adjacent property. Except for Naphthalene, the concentrations of contaminants remaining in groundwater are below the applicable RBCs for the Site. Naphthalene in groundwater at MW-B exceeds the RBC for groundwater in an excavation. To address this, a CMMP will be required as a condition of the Site closure.
- Based on the soil, groundwater and soil gas data, the Site does not pose threat to human health or the environment.
- A public notice and comment on the risk-based closure was sent out to adjacent property owners, the City of Springfield and the Springfield Utility Board. No comments were received.
- The Site meets the general requirements for a generic risk-bases closure

Figures:
Figure 1 - Site Vicinity Map
Figure 2 – Site Map with Soil and Groundwater Sample Locations
Figure 3 – Soil Sample Results 2002 to 2007
Figure 4 – Locality of Facility - Soil
Figure 5 – Locality of Facility - Groundwater

Tables:
Table 1 – Soil Sample Results, MW-1 to MW-10 and PW-1 to PW-5, 1989 to 1991
Table 2 – Early Groundwater Results, 1989 to 2001
Table 3 – Groundwater Results, GP-1 to GP-4, January 2002

Table 1
Soil Sample Results, MW-1 to MW-10 and PW-1 to PW-5, 1989 to 1991

Location ID	Sample ID	Sample Depth (feet bgs)	Sample Date	Field Results PID (ppm)	TPH
Occupational - RBC $_{s1}$					NE
Occupational - RBC $_{s0}$					NE
Excavation Worker - RBC $_{s1}$					NE
Construction Worker - RBC $_{s1}$					NE
MW-1	MW-1	10	8/1/1989	--	8.3
MW-2	MW-2	10	8/2/1989	--	< 5
MW-3	MW-3	10	8/2/1989	--	< 5
MW-4	SU04-MW4-SS10	10	1/3/1991	--	< 5
MW-5	MW05-10	10	3/30/1990	--	8
MW-6	SU04-MW6-SS10	10	1/2/1991	--	110
MW-7	SU04-MW7-SS10	10	12/31/1990	--	< 5
MW-8	MW-08-10	10	3/30/1990	--	< 5
MW-9	SU04-MW9-SS10	10	1/2/1991	--	< 5
MW-10	SU04-MW10-SS10	10	1/3/1991	--	< 5
FC-01	SU04-FC01-SS10	10	12/28/1990	--	< 5
PW-1	PW-1-5	5	2/26/1990	--	< 10
PW-1	PW-1-7.5	7.5	2/26/1990	--	< 10
PW-1	PW-1-15	15	2/26/1990	--	66
PW-2	PW-2-5	5	2/26/1990	--	11
PW-2	PW-2-10	10	2/26/1990	--	24
PW-2	PW-2-15	15	2/26/1990	--	18
PW-3	PW-3-5	5	3/1/1990	--	< 10
PW-3	PW-3-10	10	3/1/1990	--	< 10
PW-3	PW-3-15	15	3/1/1990	--	610
PW-4	PW-4-5	5	3/1/1990	--	< 10
PW-4	PW-4-10	10	3/1/1990	--	< 10
PW-4	PW-4-15	15	3/1/1990	--	130
PW-5	PW-5-5	5	3/1/1990	--	< 10
PW-5	PW-5-10	10	3/1/1990	--	< 10
PW-5	PW-5-15	15	3/1/1990	--	12

NE: Not established
Results in mg/kg
TPH: Total petroleum hydrocarbons

Table 2
Early Groundwater Results, 1989 to 2001

Date	MW-1 Benzene	MW-1 Toluene	MW-1 Ethylbenzene	MW-1 Xylene	MW-2 Benzene	MW-2 Toluene	MW-2 Ethylbenzene	MW-2 Xylene	MW-3 Benzene	MW-3 Toluene	MW-3 Ethylbenzene	MW-3 Xylene
17-Aug-89	12,600	35,400	4,680	27,900	2,310	1,320	43	1,970	3,090	2,540	5	3,120
09-Mar-90					1,300	49	340	460	5	ND	ND	28
12-Oct-90					260	ND	53	23	2,500	1,800	390	2,500
10-Jan-91					ND	ND	ND	2	ND	ND	ND	ND
12-Jun-91					62	ND	3	6	420	16	190	410
29-Oct-91					ND	ND	ND	ND	88	1,300	1,600	8,700
23-Dec-91					ND	ND	ND	ND	ND	ND	31	130
19-Mar-92					ND	ND	ND	ND	6	2	2	21
26-Jun-92					ND	ND	ND	ND	970	1,700	600	2,600
25-Sep-92	2,200	7,100	1,000	9,900					240	610	570	3,000
17-Dec-92	8,900	19,000	1,700	10,000					ND	ND	ND	3
30-Mar-93	2,200	6,500	700	4,500					14	34	58	105
11-Jun-93	2,700	7,200	1,100	5,400					ND	ND	ND	ND
21-Sep-93	1,200	3,200	890	4,600					17	7	85	120
29-Dec-93	5,400	1,600	2,400	14,000					4	ND	6	8
23-Mar-94	2,700	15,000	1,800	11,000					11	ND	10	2.4
27-Jun-94	3,400	20,000	3,800	20,000					3.6	ND	2.2	1.6
20-Sep-94									86	7.2	390	940
20-Dec-94									ND	ND	ND	ND
14-Mar-95	390	2,500	930	9,900					ND	ND	ND	ND
20-Jun-95	94	640	340	6,300					ND	ND	1.3	2.1
26-Sep-95	15	270	150	1,300					ND	ND	ND	ND
6-Dec-95	13	390	220	2,600					ND	ND	ND	ND
6-Mar-96	ND	13	18	220					ND	ND	ND	ND
13-Jun-96	5.1	200	130	2,800					ND	ND	ND	ND
12-Sep-96	ND	20	11	280					ND	ND	ND	ND
9-Dec-96	ND	5.4	3.7	89					ND	ND	ND	1.5
13-Mar-97	ND	17	17	190					ND	ND	ND	ND
6-Jun-97	ND	66	49	520					2.7	ND	8.3	3.3
19-Sep-97	ND	9.8	9.1	120					2.7	1.0	43	30
29-Dec-97	ND	14	12	190					ND	ND	ND	1.2
9-Mar-98	ND	37	26	420					ND	ND	ND	1.0
18-Jun-98	ND	24	22	440					ND	ND	ND	ND
14-Sep-98												
9-Dec-98	ND	4.5	7.2	230					ND	ND	ND	ND
11-Mar-99												
10-Jun-99												
30-Sep-99												
8-Dec-99												
6-Mar-00												
14-Aug-00												
26-Oct-00												
7-Dec-00												
7-Mar-01												

Date	MW-10 Benzene	MW-10 Toluene	MW-10 Ethylbenzene	MW-10 Xylene
10-Jan-91	ND	ND	ND	1
12-Jun-91	ND	ND	ND	ND
29-Oct-91	57	2	6	ND
20-Dec-91	ND	ND	ND	ND
19-Mar-92	ND	ND	ND	ND
26-Jun-92	320	25	31	140
25-Sep-92	ND	ND	ND	ND
17-Dec-92	86	83	71	320
30-Mar-93	39	73	63	330
11-Jun-93	16	ND	23	41
21-Sep-93	290	38	75	81
29-Dec-93	60	1	19	6.8
23-Mar-94	ND	ND	ND	ND
27-Jun-94	81	1.4	16	4.3
20-Sep-94	450	ND	68	28
20-Dec-94	ND	ND	ND	ND
14-Mar-95	ND	ND	ND	ND
20-Jun-95	ND	ND	ND	ND
26-Sep-95	60	ND	16	1.1
6-Dec-95	ND	ND	ND	ND
6-Mar-96	ND	ND	ND	1.3
13-Jun-96	ND	ND	ND	ND
12-Sep-96	98	ND	5.8	1.6
9-Dec-96	ND	ND	ND	ND
13-Mar-97	ND	ND	ND	ND
6-Jun-97	1.8	ND	ND	ND
19-Sep-97	31	ND	12	11
29-Dec-97	23	1.6	16	25
9-Mar-98	ND	3.3	ND	3.8
18-Jun-98	78	1.1	18	20
14-Sep-98	12	ND	17	18
9-Dec-98	ND	ND	ND	ND
11-Mar-99	1.4	3.6	ND	3.9
10-Jun-99	28	ND	14	31
30-Sep-99	2.9	ND	ND	ND

Analytical Methods
BTEX by EPA Method 8020

Units
BTEX in ug/L (ppb)
All measurements in feet

Abbreviations
ND = Not Detected
= Not analyzed
= Not sampled: Free product present
= Not sampled: Well obstructed
= Not sampled: Final Compliance achieved

Table 3
Groundwater Results, GP-1 to GP-4, January 2002

Sample Number	Date Sampled	TPH-G (µg/L)	TPH-D (µg/L)	TPH-O (µg/L)	Lead (µg/L)	VOCs (µg/L)												PAHs (µg/L)											
						Benzene	Ethylbenzene	Toluene	Total Xylenes	1,2-Dibromoethane	1,2-Dichloroethane	MTBE	Naphthalene	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Isopropylbenzene	n-Propylbenzene	Acenaphthene	Anthracene	Benzo (a) aphthracene	Benzo (a) pyrene	Benzo (b) fluoranthene	Chrysene	Fluoranthene	Fluorene	Naphthalene	Phenanthrene	Pyrene
GP-1	01/09/02	72,400	28,400	<704.	9.18	1,670	2,890	2,560	12,380	<50.0	<50.0	<50.0	358	2,230	662	128	410	1.24	0.908	0.809	0.551	0.522	0.857	1.92	1.99	749	4.43	1.78
GP-2	01/09/02	318	<294	<588	<1.0	36.6	1.03	<1.0	5.84	<1.0	<1.0	3.95	4.46	4.0	1.44	<2.0	<1.0	0.105	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.111	4.21	0.116	<0.1
GP-3	01/09/02	138,000	189,000	<6,670	14.2	3,250	948	1,580	20,380	<50.0	<50.0	<50.0	916	5,350	1,660	130	287	3.62	2.41	<1.0	<1.0	<1.0	<1.0	1.47	8.76	2,070	15.9	1.61
GP-4	01/09/02	183,000	28,800	<588	187.0	16,600	3,060	29,900	21,140	<500	<500	<500	1,420	2,940	795	<1,000	<500	1.65	0.86	<0.5	<0.5	<0.5	<0.5	0.608	1.66	1,650	2.35	0.572
121415-C	12/26/01	–	5,760	2,530	9.75 [a]	7,680	2,910	296	12,900	<50.0	<50.0	<50.0	628	2,560	643	<100	226	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	650	<1.0	<1.0
121415-F	12/26/01	–	951	1,820	<1.0 [a]	136	<1.0	<1.0	<2.0	<1.0	<1.0	1.48	3.61	10.0	4.47	2.16	1.93	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	1.13	<0.2	<0.2

Total petroleum hydrocarbons in the gasoline range (TPH-G) analysis by NW TPH-Gx Method.
TPH in the diesel range (TPH-D) and heavy oil range (TPH-O) analysis by NW TPH-Dx Method.
Lead analysis by EPA 200 Series Methods Results in micrograms per liter (µg/L).
Benzene, Toluene, Ethylbenzene, and Total Xylene (BTEX) analysis by EPA Method 8260B.
Volatile organic compounds (VOCs) analysis by EPA Method 8260B. Results in µg/L. Only detected VOC compounds are shown.
Polynuclear aromatic compounds (PAHs) analysis by EPA 8270 M-SIM. Results in µg/L. Only detected PAH compounds are shown.
Polychlorinated biphenyls (PCBs) analysis by EPA Method 8082. PCBs were not detected at or above laboratory MRLs.
– = Not analyzed.
ND = Not Detected.

a = Dissolved Lead Metals per EPA 6000/7000 Series Methods.

TABLE 4
SUMMARY OF GROUNDWATER ELEVATIONS AND ANALYTICAL DATA - TPH, RBDM VOCs, AND DISSOLVED LEAD
Shell Service Station (SAP No. 121415)
5737 Main Street
Springfield, Oregon

Well ID TOC	Date Sampled	Depth to Water (feet btoc)	Water Table Elevation (feet)	TPH-G	TPH-D	TPH-O	Benzene	Toluene	Ethyl-benzene	m,p-Xylene	o-Xylene	Total Xylenes	MTBE	Naph-thalene	1,2,4-TMB	1,3,5-TMB	EDB	EDC	Isopropyl-benzene	n-Propyl-benzene	sec-Butyl-benzene	Dissolved Lead
RBC Screening Criteria																						
Occupational - RBC_{wi}				>S	>S	>S	2,800	>S	7,400	NE	NE	>S	590,000	10,000	>S	>S	690	3,800	>S	NE	NE	NV
Construction & Excavation Worker - RBC_{wc}				14,000	>S	>S	1,700	210,000	4,400	NE	NE	23,000	62,000	500	1,700	23,000	28	630	>S	NE	NE	>S
DSB-2	07/25/07	--	--	103,000	55,300	< 476	900	750	780	--	--	4,900	< 50	1,800	3,000	640	< 50	< 50	64	160	< 50	8.07
DSB-4	07/25/07	--	--	54,000	74,400	612	270	8,300	3,400	--	--	17,000	< 50	2,900	7,700	2,200	< 50	< 50	380	1,200	170	5.88
DSB-5	07/25/07	--	--	109,000	14,400	< 485	3,400	20,000	3,800	--	--	19,000	< 500	< 5,000	8,200	920	< 500	< 500	< 500	< 500	< 500	< 1.00
DSB-6	07/25/07	--	--	< 200	< 238	< 476	< 0.50	< 0.50	< 0.50	--	--	0.75	< 0.50	< 5.0	1.1	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	9.84
MW-A	06/12/07	8.31	92.33	< 200	--	--	< 1.00	< 1.00	< 1.00	< 2.00	< 1.00	< 2.00	< 1.00	< 2.00	< 1.00	< 1.00	< 1.00	< 1.00	< 2.00	< 1.00	< 1.00	--
100.64	11/08/07	9.20	91.44	< 200	--	--	< 0.200	< 0.500	< 0.500	--	--	< 1.00	< 2.00	< 2.00	< 1.00	< 1.00	< 0.500	< 0.500	< 2.00	< 0.500	--	--
	05/04/08	9.19	91.45	< 50	--	--	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1	--	--
	12/03/08	9.24	91.40	< 50	--	--	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1	--	--
	04/29/09	9.51	91.13	< 100	--	--	< 0.28	< 0.33	< 0.22	--	--	< 0.45	< 0.30	< 2.5	< 0.24	< 0.23	< 0.010	< 0.31	< 0.23	< 0.79	--	--
	10/30/09	9.12	91.52	< 100	--	--	< 0.28	< 0.33	< 0.22	--	--	< 0.45	< 0.30	< 2.5	< 0.24	< 0.23	< 0.010	< 0.31	< 0.23	< 0.79	--	--
	04/30/10	8.81	91.83	< 100	--	--	< 0.28	< 0.33	< 0.22	--	--	< 0.45	< 0.30	< 2.5	< 0.24	< 0.23	< 0.010	< 0.31	< 0.23	< 0.79	--	--
	12/09/10	8.91	91.73	< 100	--	--	< 0.20	< 0.25	0.070 J	--	--	0.17 J	< 0.14	1.5	0.20 J	< 0.059	< 0.010	< 0.075	< 0.047	< 0.063	--	--
	05/19/11	9.31	91.33	< 50	--	--	< 0.30	< 0.50	< 0.30	--	--	< 0.70	< 0.50	< 0.50	< 0.50	< 0.50	< 0.20	< 0.30	< 0.20	--	--	--
	06/27/12	9.68	90.96	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	8/21/2012 [3]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	02/05/13	8.95	91.69	< 50	--	--	< 0.20	< 0.20	< 0.20	--	--	< 0.46	< 0.20	< 0.50	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	--	--	--
MW-B	06/12/07	8.93	90.84	16,000	5,810	1,240	957	54.2	1,230	2,740	242	2,982	< 20.0	1,200	1,450	259	< 20.0	< 20.0	66.2	176	< 20.0	15.5
99.77	11/08/07	10.36	89.41	< 2,000	3,670	916	419	15.4	614	--	--	1,030	< 40.0	875	700	115	< 10.0	< 10.0	< 40.0	94.2	--	7.91
	05/04/08	9.63	90.14	4,100	880	< 500	250	5.4	110	110	3	113	< 0.5	240	170	17	< 0.5	< 0.5	38	< 1	--	< 5
	12/03/08	10.06	89.71	13,000	1,100	< 500	940	48	890	1,100	43	1,143	< 10	870	770	100	< 10	< 10	70	150	--	13.2
	04/29/09	10.15	89.62	8,500	3,700 Z	700 Z	480	24	830	--	--	620	< 3.0	930	930	67	< 0.010	< 3.1	46	160	--	8.56
	10/30/09	10.28	89.49	12,000	8,200 Z	220 Z	710	12	900	--	--	650	< 3.0	990	730	43	< 0.010	< 3.1	58	170	--	10.2
	04/30/10	9.74	90.03	10,000	6,300 Z	600 Z	860	27	960	--	--	530	< 3.0	1,000	760	51	< 0.010	< 3.1	67	200	--	--
	12/09/10	9.66	90.11	11,000	8,900	1,400	1,100	36	980	--	--	440	< 1.4	1,000	610	36	< 0.010	< 0.75	65	180	--	14.4
	05/19/11	10.05	89.72	10,100	1,160	< 98	950	16.4 J	845	--	--	230	< 10	1,240	383	11.0 J	< 4.0	< 6.0	61.8	--	--	20.3
	06/27/12	10.21	89.56	10,500	1,320	< 300	1,440	24.6	1,060	--	--	169	< 4.0	1,430	190	< 4.0	< 4.0	< 4.0	66.1	--	--	27.0
	08/21/12	11.66	88.11	10,500	1,460	254	1,440	21.2	946	--	--	227	< 4.0	1,150	220	10.9 J	< 4.0	< 4.0	55.5	--	--	25.8
	02/05/13	9.99	89.78	12,700	2,610	1,410	1,500	9.5 J	1,140	--	--	155	< 5.0	1,210	161	14.5 J	< 5.0	< 5.0	58.9	--	--	31.7
MW-C	04/30/10	9.21	90.68	3,900	2,700 Z	860 Z	180	3.0	76	--	--	36	< 0.30	140	61	3.2	< 0.010	< 0.31	37	100	--	--
99.89	12/09/10	9.39	90.50	3,100	3,000	700	230	1.8 J	60	--	--	22	0.72	110	37	1.4 J	< 0.010	< 0.38	43	120	--	1.76
	05/19/11	9.81	90.08	3,320 J	600	266	181	1.8	59.5	--	--	23.6	--	111	53.5	--	< 0.50	< 0.75	34.7	--	--	< 10
	06/27/12	10.09	89.80	2,750	1,120	309	268	2.2	57.7	--	--	11.5	< 0.40	62.3	14.1	0.69 J	< 0.40	< 0.40	40.6	--	--	< 10
	08/21/12	11.23	88.66	3,960	1,280	686	416	2.3 J	65.2	--	--	14.1	< 1.0	78.4	15.1	1.4 J	< 1.0	< 1.0	38.8	--	--	--
	02/05/13	9.83	90.06	3,950	899	781	385	< 2.0	46.8	--	--	11.3 J	<2.0	88.9	25.4	6.8 J	< 2.0	< 2.0	35.9	--	--	< 10
MW-D	05/19/11	8.98	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	06/27/12	8.45	--	< 50	--	--	0.23 J	< 0.20	< 0.20	--	--	< 0.46	< 0.20	< 0.50	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	--	--	--
	8/21/2012 [3]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	02/05/13	8.53	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-E	05/19/11	7.97	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	06/27/12	7.46	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	8/21/2012 [4]	7.70	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	02/05/13	7.04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

TABLE 4
SUMMARY OF GROUNDWATER ELEVATIONS AND ANALYTICAL DATA - TPH, RBDM VOCs, AND DISSOLVED LEAD
Shell Service Station (SAP No. 121415)
5737 Main Street
Springfield, Oregon

Well ID TOC	Date Sampled	Depth to Water (feet btoc)	Water Table Elevation (feet)	TPH-G	TPH-D	TPH-O	Benzene	Toluene	Ethyl-benzene	m,p-Xylene	o-Xylene	Total Xylenes	MTBE	Naph-thalene	1,2,4-TMB	1,3,5-TMB	EDB	EDC	Isopropyl-benzene	n-Propyl-benzene	sec-Butyl-benzene	Dissolved Lead
RBC Screening Criteria																						
Occupational - RBC$_{wi}$				>S	>S	>S	2,800	>S	7,400	NE	NE	>S	590,000	10,000	>S	>S	690	3,800	>S	NE	NE	NV
Construction & Excavation Worker - RBC$_{ww}$				14,000	>S	>S	1,700	210,000	4,400	NE	NE	23,000	62,000	500	1,700	23,000	28	630	>S	NE	NE	>S
MW-F	06/12/07	5.97	92.88	< 200	< 250	< 500	< 1.00	< 1.00	< 1.00	< 2.00	< 1.00	< 2.00	< 1.00	< 2.00	< 1.00	< 1.00	< 1.00	< 1.00	< 2.00	< 1.00	< 1.00	< 1.00
98.85	11/08/07	8.92	89.93	< 200	< 245	< 490	< 0.200	< 0.500	< 0.500	--	--	< 1.00	< 2.00	< 2.00	< 1.00	< 0.500	< 0.500	< 0.500	< 2.00	< 0.500	--	< 1.00
	06/04/08	8.56	90.29	54	< 250	< 500	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1	< 5
	12/03/08	8.00	90.85	< 50	< 250	< 500	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1	< 5
	04/29/09	9.03	89.82	< 100	< 100	570	< 0.28	< 0.33	< 0.22	--	--	< 0.45	< 0.30	< 2.5	< 0.24	< 0.23	< 0.010	< 0.31	< 0.23	< 0.79	--	< 1.00
	10/30/09	8.01	90.84	< 100	< 100	420	< 0.28	< 0.33	< 0.22	--	--	< 0.45	< 0.30	< 2.5	< 0.24	< 0.23	< 0.010	< 0.31	< 0.23	< 0.79	--	< 1.00
	04/30/10	8.00	90.85	< 100	< 100	< 100	< 0.28	< 0.33	< 0.22	--	--	< 0.45	< 0.30	2.8 J	< 0.24	< 0.23	< 0.010	< 0.31	< 0.23	< 0.79	--	--
	12/09/10	8.20	90.65	< 100	< 100	600	0.27 J	< 0.25	0.070 J	--	--	< 0.081	< 0.14	2.0	< 0.068	< 0.059	< 0.010	< 0.075	< 0.047	0.12 J	--	< 1.00
	05/19/11	8.73	90.12	< 50	< 49	< 97	< 0.30	< 0.50	< 0.30	--	--	< 0.70	< 0.50	< 0.50	< 0.50	< 0.50	< 0.20	< 0.30	< 0.20	--	--	< 10
	06/27/12	9.03	89.82	< 50	166	438	< 0.20	< 0.20	< 0.20	--	--	< 0.46	< 0.20	< 0.50	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	--	--	< 10
	08/21/12	10.21	88.64	< 50	68.1 J	213	< 0.20	< 0.20	< 0.20	--	--	< 0.46	< 0.20	< 0.50	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	--	--	< 10
	02/05/13	8.62	90.23	< 50	63.7 J	159 J	< 0.20	< 0.20	0.49 J	--	--	0.48 J	< 0.20	< 0.50	0.32 J	< 0.20	< 0.20	< 0.20	< 0.20	--	--	< 10
MW-2	05/19/11	9.52	--	< 50	< 50	< 100	< 0.30	< 0.50	< 0.30	--	--	< 0.70	< 0.50	< 0.50	< 0.50	< 0.50	< 0.20	< 0.30	< 0.20	--	--	--
	06/27/12	9.91	--	< 50	< 49	< 98	< 0.20	< 0.20	< 0.20	--	--	< 0.46	< 0.20	< 0.50	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	--	--	--
	08/21/12	11.01	--	< 50	< 49	< 97	< 0.20	< 0.20	< 0.20	--	--	< 0.46	< 0.20	< 0.50	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	--	--	--
	02/05/13	9.50		< 50	< 49	< 97	< 0.20	< 0.20	< 0.20	--	--	< 0.46	< 0.20	< 0.50	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	--	--	--
MW-4	12/03/08	9.91	90.12	--	--	--	--	--	--			--	--	--	--	--	--	--	--	--	--	--
100.03 [1]	04/29/09	9.94	90.09	< 100	< 100	< 100	< 0.28	< 0.33	< 0.22	--	--	< 0.45	< 0.30	< 2.5	< 0.24	< 0.23	< 0.010	< 0.31	< 0.23	< 0.79	--	< 1.00
	10/30/09	9.97	90.06	< 100	< 100	< 100	< 0.28	< 0.33	< 0.22	--	--	< 0.45	< 0.30	< 2.5	< 0.24	< 0.23	< 0.010	< 0.31	< 0.23	< 0.79	--	--
	12/09/10	9.92	90.11	< 100	< 100	< 100	< 0.20	< 0.25	< 0.043	--	--	< 0.081	< 0.14	0.33 J	< 0.068	< 0.059	< 0.010	< 0.075	< 0.047	< 0.063	--	< 1.00
	05/19/11	10.03	90.00	< 50	< 50	< 100	< 0.30	< 0.50	< 0.30	--	--	< 0.70	< 0.50	< 0.50	< 0.50	< 0.50	< 0.20	< 0.30	< 0.20	--	--	< 10
	06/27/12	10.33	89.70	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	8/21/2012 [3]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	02/05/13	10.10	89.93	< 50	< 48	< 96	< 0.20	< 0.20	< 0.20	--	--	< 0.46	< 0.20	< 0.50	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	--	--	< 10
MW-5	05/19/11	10.57	--	< 50	< 49	< 98	< 0.30	< 0.50	< 0.30	--	--	< 0.70	< 0.50	< 0.50	< 0.50	< 0.50	< 0.20	< 0.30	< 0.20	--	--	--
	06/27/12	10.93	--	< 50	< 49	< 97	< 0.20	< 0.20	< 0.20	--	--	< 0.46	< 0.20	< 0.50	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	--	--	--
	08/21/12	11.79	--	< 50	< 48	< 96	< 0.20	< 0.20	< 0.20	--	--	< 0.46	< 0.20	< 0.50	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	--	--	--
	02/05/13	10.55		< 50	< 50	< 10	< 0.20	< 0.20	< 0.20	--	--	< 0.46	< 0.20	< 0.50	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	--	--	--
MW-8	05/19/11	8.59	90.81	< 50	< 49	< 98	< 0.30	< 0.50	< 0.30	--	--	< 0.70	< 0.50	< 0.50	< 0.50	< 0.50	< 0.20	< 0.30	< 0.20	--	--	--
99.40	06/27/12	9.14	90.26	< 50	< 49	< 97	< 0.20	< 0.20	< 0.20	--	--	< 0.46	< 0.20	< 0.50	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	--	--	--
	08/21/12	10.33	89.70	< 50	< 48	< 96	< 0.20	< 0.20	< 0.20	--	--	< 0.46	< 0.20	< 0.50	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	--	--	--
	02/05/13	8.68	90.72	< 50	< 49	< 97	< 0.20	< 0.20	< 0.20	--	--	< 0.46	< 0.20	< 0.50	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	--	--	--

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SUMMARY OF GROUNDWATER ELEVATIONS AND ANALYTICAL DATA - TPH, RBDM VOCs, AND DISSOLVED LEAD
Shell Service Station (SAP No. 121415)
5737 Main Street
Springfield, Oregon

Well ID TOC	Date Sampled	Depth to Water (feet btoc)	Water Table Elevation (feet)	TPH-G	TPH-D	TPH-O	Benzene	Toluene	Ethyl-benzene	m,p-Xylene	o-Xylene	Total Xylenes	MTBE	Naph-thalene	1,2,4-TMB	1,3,5-TMB	EDB	EDC	Isopropyl-benzene	n-Propyl-benzene	sec-Butyl-benzene	Dissolved Lead
RBC Screening Criteria																						
Occupational - RBC$_{wi}$				>S	>S	>S	2,800	>S	7,400	NE	NE	>S	590,000	10,000	>S	>S	690	3,800	>S	NE	NE	NV
Construction & Excavation Worker - RBC$_{we}$				14,000	>S	>S	1,700	210,000	4,400	NE	NE	23,000	62,000	500	1,700	23,000	28	630	>S	NE	NE	>S
MW-10 99.39	12/16/08	--	--	< 50	< 250	< 500	2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	0.53	0.51	1	--	< 5
	10/30/09	9.64	89.75	< 100	< 100	< 100	< 0.28	< 0.33	< 0.22	--	--	< 0.45	< 0.30	< 2.5	< 0.24	< 0.23	< 0.010	< 0.31	< 0.23	< 0.79	--	--
	04/30/10	9.58	89.81	< 100	< 100	< 100	< 0.28	< 0.33	< 0.22	--	--	< 0.45	< 0.30	< 2.5	< 0.24	< 0.23	< 0.010	< 0.31	< 0.23	< 0.79	--	--
	12/09/10	9.77	89.62	< 100	< 100	< 100	< 0.20	< 0.25	< 0.043	--	--	< 0.081	< 0.14	0.46 J	< 0.068	< 0.059	< 0.010	< 0.075	< 0.047	< 0.063	--	< 1.00
	05/19/11	9.95	89.44	< 50	< 49	< 98	< 0.30	< 0.50	< 0.30	--	--	< 0.70	< 0.50	< 0.50	< 0.50	< 0.50	< 0.20	< 0.30	< 0.20	--	--	< 10
	08/21/12	11.03	88.36	< 50	< 49	< 97	< 0.20	< 0.20	< 0.20	--	--	< 0.46	< 0.20	< 0.50	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	--	--	--
	02/05/13	9.98	89.41	< 50	< 49	< 97	< 0.20	< 0.20	< 0.20	--	--	< 0.46	< 0.20	< 0.50	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	--	--	--
TRIP BLANK	08/27/12	--	--	--	--	--	< 0.20	< 0.20	< 0.20	--	--	< 0.46	< 0.20	< 0.50	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	--	--	< 10
	08/21/12	--	--	--	--	--	< 0.20	< 0.20	< 0.20	--	--	< 0.46	< 0.20	< 0.50	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	--	--	--
	02/05/13	--	--	--	--	--	< 0.20	< 0.20	< 0.20	--	--	< 0.46	< 0.20	< 0.50	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	--	--	--

Notes:
Results reported in micrograms per liter (µg/L).
Concentrations in excess of the RBC are bolded.
Limits in excess of the RBC are bolded and italicized. Analyte may be present at a concentration greater than the most stringent RBC listed.
btoc = below top of casing
TOC = Top of Casing elevation in feet, surveyed to an arbitrarily assigned datum
RBDM VOCs = Risk-Based Decision Making Volatile Organic Compounds
-- = Not analyzed
< = Not detected at or above the indicated limit. The indicated limit is the lowest limit provided by the laboratory or previous consultant(s).
NE = Not Established
NV = Non-Volatile
>S = This groundwater Risk-Based Concentration exceeds the solubility limit.
EDB = 1,2-Dibromoethane
EDC = 1,2-Dichloroethane
MTBE = Methyl tert-butyl ether
1,2,4-TMB = 1,2,4-Trimethylbenzene
1,3,5-TMB = 1,3,5-Trimethylbenzene
TPH = Total Petroleum Hydrocarbons
TPH-G = Total Petroleum Hydrocarbons as Gasoline
TPH-D = Total Petroleum Hydrocarbons as Diesel
TPH-O = Total Petroleum Hydrocarbons as Oil
RBC = Risk-Based Concentrations. The generic RBC standards for groundwater for the pathways and receptors listed were obtained from *Appendix A of Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites* (DEQ, September 2003, modified June 2012).
RBC$_{wi}$ = Risk-Based Concentration for Vapor Intrusion into Buildings
RBC$_{we}$ = Risk-Based Concentration for Direct Contact with Groundwater in an Excavation
[J] = Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
[1] = Top of casing elevation deduced by Antea™ using data reported by previous consultants.
[2] = Laboratory note: The sample chromatographic pattern for TPH does not match the chromatographic pattern of the specified standard. Quantitation of the unknown hydrocarbon(s) in the sample was based upon the specified standard.
[3] = Well was dry.
[4] = Insufficient volume for sample collection.

TABLE 5
SUMMARY OF GROUNDWATER ANALYTICAL DATA - PAHs
Shell Service Station (SAP No. 121415)
5737 Main Street
Springfield, Oregon

Well ID	Date Sampled	1-Methyl-naphtha-lene	2-Methyl-naphtha-lene	Acenaph-thene	Acenaph-thylene	Anthra-cene	Benzo (a) anthracene	Benzo (a) pyrene	Benzo (b) fluoran-thene	Benzo (g,h,i) perylene	Benzo (k) fluoran-thene	Chrysene	Dibenzo (a,h) anthracene	Dibenzo-furan	Fluoran-thene	Fluorene	Indeno (1,2,3-cd) pyrene	Naphtha-lene	Phenan-threne	Pyrene
RBC Screening Criteria																				
Occupational - RBC$_{wi}$		NE	NE	>S	NE	>S	NV	NV	>S	NE	NV	>S	NV	NE	>S	>S	NV	10,000	NE	>S
Construction & Excavation Worker - RBC$_{ww}$		NE	NE	>S	NE	>S	9.1	0.53	>S	NE	>S	>S	0.21	NE	>S	>S	>S	500	NE	>S
DSB-2	07/25/07	–	–	3.41	<3.92	<1.96	<1.96	*<1.96*	<1.96	<1.96	<1.96	<1.96	*<3.92*	–	<1.96	4.95	<1.96	1,010	7.11	<1.96
DSB-4	07/25/07	–	–	<4.81	<4.81	<4.81	<4.81	*<4.81*	<4.81	<4.81	<4.81	<4.81	*<9.62*	–	<4.81	8.05	<4.81	1,360	14.4	<4.81
DSB-5	07/25/07	–	–	<9.62	<9.62	<9.62	<9.62	*<9.62*	<9.62	<9.62	<9.62	<9.62	*<19.2*	–	9.85	10.2	<9.62	2,550	22.8	<9.62
DSB-6	07/25/07	–	–	<0.0990	<0.0990	<0.0990	<0.0990	<0.0990	<0.0990	<0.0990	<0.0990	<0.0990	<0.198	–	<0.0990	<0.0990	<0.0990	0.280	<0.0990	<0.0990
MW-A	11/08/07	–	–	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	*<0.400*	–	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200
MW-B	06/12/07	–	–	0.837	<0.393	<0.0971	<0.0971	<0.0971	<0.0971	<0.0971	<0.0971	<0.0971	<0.194	–	<0.0971	0.988	<0.0971	750	0.646	<0.0971
	11/08/07	–	–	<2.43	<2.43	<2.43	<2.43	*<2.43*	<2.43	<2.43	<2.43	<2.43	*<4.85*	–	<2.43	<2.43	<2.43	777	<2.43	<2.43
	06/04/08	55	74	<5	<5	<5	<5	*<5*	<5	<5	<5	<5	*<5*	<5	<5	<5	<5	82	<5	<5
	12/03/08	200	300	<1	<1	<1	<1	*<1*	<1	<1	<1	<1	*<1*	<1	<1	1.1	<1	630	<1	<1
	04/29/09	410	260	<50	<50	<50	*<50*	*<50*	<50	<50	<50	<50	*<50*	–	<50	<50	<50	740	<50	<50
	10/30/09	620	920	<50	<50	<50	*<50*	*<50*	<50	<50	<50	<50	*<50*	–	<50	<50	<50	1,700	<50	<50
	04/30/10	290	490	<20	<20	<20	*<20*	*<20*	<20	<20	<20	<20	*<20*	–	<20	<20	<20	1,000	<20	<20
	12/09/10	290	420	<40	<40	<40	*<40*	*<40*	<40	<40	<40	<40	*<40*	–	<40	<40	<40	900	<40	<40
	05/19/11	225	357	0.72 J	0.36 J	<0.24	<0.029	<0.029	<0.029	<0.029	<0.029	<0.029	<0.029	–	<0.24	0.72 J	<0.029	835	0.47 J	<0.24
	06/27/12	276	453	1.0	<0.048	0.11 J	<0.051	<0.039	<0.034	<0.035	<0.037	<0.043	<0.034	–	0.050 J	1.4	<0.034	397	1.1	0.096 J
	08/21/12	272	440	1.3	<0.048	0.14 J	<0.050	<0.039	<0.033	<0.034	<0.037	<0.043	<0.033	–	0.053 J	1.7	<0.033	336	1.4	0.091 J
	02/05/13	201	305	0.73	<0.050	0.088 J	<0.053	<0.041	<0.035	<0.036	<0.039	<0.045	<0.035	–	<0.050	0.96	<0.035	645	0.98	0.11 J
MW-C	12/09/10	86	120	<10	<10	<10	*<10*	*<10*	<10	<10	<10	<10	*<10*	–	<10	<10	<10	89	<10	<10
	05/19/11	61.0	86.2	0.46 J	0.28 J	<0.25	<0.029	<0.029	<0.029	<0.029	<0.029	<0.029	<0.029	–	<0.25	0.81 J	<0.029	30.8	0.77 J	<0.25
	06/27/12	91.3	126	0.78	<0.047	0.13 J	<0.050	<0.039	<0.033	<0.034	<0.037	<0.042	<0.033	–	0.061 J	1.5	<0.033	41.0	1.5	0.13 J
	08/21/12	103	147	1.0	<0.049	0.19 J	<0.051	<0.040	<0.034	<0.035	<0.038	0.046 J	<0.034	–	0.13 J	2.0	<0.034	52.1	2.2	0.26 J
	02/05/13	55.5	74.4	0.37 J	<0.050	0.061 J	<0.053	<0.041	<0.035	<0.036	<0.039	<0.045	<0.035	–	<0.050	0.64	<0.035	30.1	0.77	0.11 J
MW-F	06/12/07	–	–	<0.0971	<0.0971	<0.0971	<0.0971	<0.0971	<0.0971	<0.0971	<0.0971	<0.0971	<0.194	–	<0.0971	<0.0971	<0.0971	<0.0971	<0.0971	<0.0971
	11/08/07	–	–	<0.0990	<0.0990	<0.0990	<0.0990	<0.0990	<0.0990	<0.0990	<0.0990	<0.0990	<0.198	–	<0.0990	<0.0990	<0.0990	<0.0990	<0.0990	<0.0990
	06/04/08	<1	<1	<1	<1	<1	<1	*<1*	<1	<1	<1	<1	*<1*	<1	<1	<1	<1	<1	<1	<1
	12/03/08	<1	<1	<1	<1	<1	<1	*<1*	<1	<1	<1	<1	*<1*	<1	<1	<1	<1	<1	<1	<1
	04/29/09	<0.10	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	–	<0.10	<0.10	<0.10	0.20	<0.10	<0.10
	10/30/09	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	–	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
	04/30/10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	–	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
MW-4	04/29/09	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	–	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
MW-10	12/16/08	<1	<1	<1	<1	<1	<1	*<1*	<1	<1	<1	<1	*<1*	<1	<1	<1	<1	<1	<1	<1

TABLE 5
SUMMARY OF GROUNDWATER ANALYTICAL DATA - PAHs
Shell Service Station (SAP No. 121415)
5737 Main Street
Springfield, Oregon

Well ID	Date Sampled	1-Methyl-naphtha-lene	2-Methyl-naphtha-lene	Acenaph-thene	Acenaph-thylene	Anthra-cene	Benzo (a) anthracene	Benzo (a) pyrene	Benzo (b) fluoran-thene	Benzo (g,h,i) perylene	Benzo (k) fluoran-thene	Chrysene	Dibenzo (a,h) anthracene	Dibenzo -furan	Fluoran-thene	Fluorene	Indeno (1,2,3-cd) pyrene	Naphtha-lene	Phenan-threne	Pyrene
RBC Screening Criteria																				
Occupational - RBC_{wi}		NE	NE	>S	NE	>S	NV	NV	>S	NE	NV	>S	NV	NE	>S	>S	NV	10,000	NE	>S
Construction & Excavation Worker - RBC_{ww}		NE	NE	>S	NE	>S	9.1	0.53	>S	NE	>S	>S	0.21	NE	>S	>S	>S	500	NE	>S

Notes:

Results reported in micrograms per liter (µg/L).

Concentrations in excess of the RBC are bolded

Limits in excess of the RBC are bolded and italicized. Analyte may be present at a concentration greater than the most stringent RBC listed.

PAH = Polycyclic Aromatic Hydrocarbon

– = Not analyzed

< = Not detected at or above the indicated limit. The indicated limit is the lowest limit provided by the laboratory or previous consultant(s).

NE = Not Established

NV = Non-Volatile

>S = This groundwater Risk-Based Concentration exceeds the solubility limit.

RBC = Risk-Based Concentrations. The generic RBC standards for groundwater for the pathways and receptors listed were obtained from *Appendix A of Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites* (DEQ, September 2003, modified June 2012).

RBC_{wi} = Risk-Based Concentration for Vapor Intrusion into Buildings

RBC_{ww} = Risk-Based Concentration for Direct Contact with Groundwater in an Excavation

J = Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.

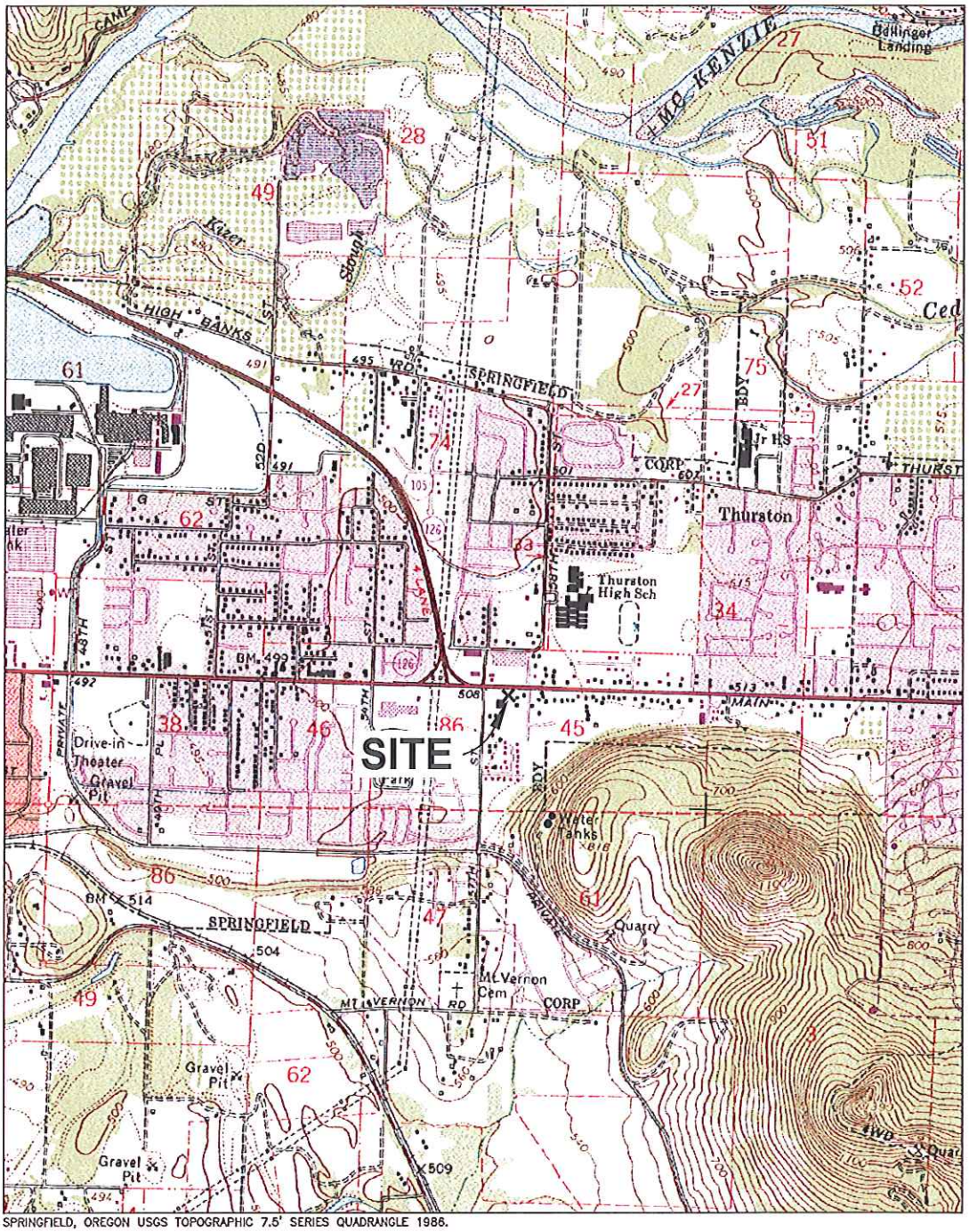
Table 6

SUMMARY OF SOIL GAS ANALYTICAL DATA - TPH AND VOCs
Shell Service Station (SAP No. 121415)
5737 Main Street
Springfield, Oregon

Sample Identification	Sample Date	TPH referenced to Gasoline	Benzene	Isopropylbenzene (Cumene)	EDB	EDC	Ethylbenzene	Methyl tert-Butyl Ether	Naphthalene	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Toluene	m,p-Xylene	o-Xylene	Total Xylenes [1]	2-Propanol
RBC Screening Criteria																
Occupational - RBC_{sv}		1,700,000	1,600	1,800,000	20	470	4,900	47,000	360	31,000	>Pv	22,000,000	NE	NE	440,000	
SG-1	01/11/13	140	< 0.48	< 0.73	< 1.1	1.6	< 0.65	< 0.54	< 3.9	1.10	< 0.73	0.96	1.30	< 0.65	< 1.95	—
	02/08/13	140	< 0.48	< 0.73	< 1.1	< 0.60	0.79	< 0.54	< 3.9	1.3	< 0.73	14	1.9	0.81	2.71	17
SG-2	01/11/13	310	0.50	< 0.72	< 1.1	2.9	< 0.63	< 0.53	< 3.8	1.20	< 0.72	1.90	2.00	0.81	2.81	—
	02/08/13	270	< 0.50	< 0.76	< 1.2	1.1	0.68	< 0.56	< 4.1	2.2	< 0.76	4.2	3.2	1.1	4.3	48
SG-3	01/11/13	260	< 0.50	< 0.76	< 1.2	1.6	< 0.67	< 0.56	< 4.1	1.40	< 0.76	1.6	2.20	0.77	2.97	—
	02/08/13	210	< 0.48	< 0.73	< 1.1	< 0.60	0.75	< 0.54	< 3.9	2.5	< 0.73	2.4	3.3	1.0	4.3	50
SG-4	01/11/13	230	< 0.44	< 0.68	< 1.1	< 0.56	< 0.6	< 0.50	< 3.6	1.60	< 0.68	3.70	2.20	0.69	2.99	—
	02/08/13	120	< 0.48	< 0.75	< 1.2	< 0.62	0.93	< 0.55	< 4.0	2.1	< 0.75	2.9	3.4	1.3	4.7	240 [E]

Notes:

Results reported in micrograms per cubic meter ($\mu g/m^3$).
Concentrations in excess of the RBC are bolded.
Method Reporting Limits (MRLs) in excess of the RBC are bolded and italicized. Analyte may be present at a concentration greater than the most stringent RBC listed.
< = Not detected at or above the indicated laboratory Method Reporting Limit (MRL)
NE = Not Established
EDB = 1,2-Dibromoethane
EDC = 1,2-Dichloroethane
TPH = Total Petroleum Hydrocarbons
VOC = Volatile Organic Hydrocarbon
RBC = Risk-Based Concentrations. The generic soil gas RBCs for the pathways and receptors listed were obtained from Appendix A of *Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites* (DEQ, September 2003, modified June 2012).
RBC_{sv} = Risk-Based Concentration for Soil Gas via Inhalation
>Pv = The air concentration reported for the RBC exceeds the vapor pressure of the pure chemical. It can be assumed that this constituent cannot create an unacceptable risk via this pathway. This chemical is classified as "volatile" for purposes of the exposure calculations.
[1] = Total xylenes calculated by URS Corporation as the sum of detected m,p-xylene and o-xylene. Where neither m,p-xylene nor o-xylene was detected, the detection limit shown is the greater of the detection limits for m,p-xylene and o-xylene.
[J] = Estimated value due to bias in the CCV
[E] = Exceeds instrument calibration range



APPROXIMATE SCALE:
1:24,000

SPRINGFIELD, OREGON USGS TOPOGRAPHIC 7.5' SERIES QUADRANGLE 1986.

C:\Users\Seth_Bergeson\vpodata\local\temp\AcPublish_4132\Fig 1 Site Vicinity Map-168254.dwg Jun 14, 2013 - 1:35pm

URS

SITE VICINITY MAP

SHELL SERVICE STATION (SAP NO. 121415)
5737 MAIN STREET
SPRINGFIELD, OREGON

JUNE 2013
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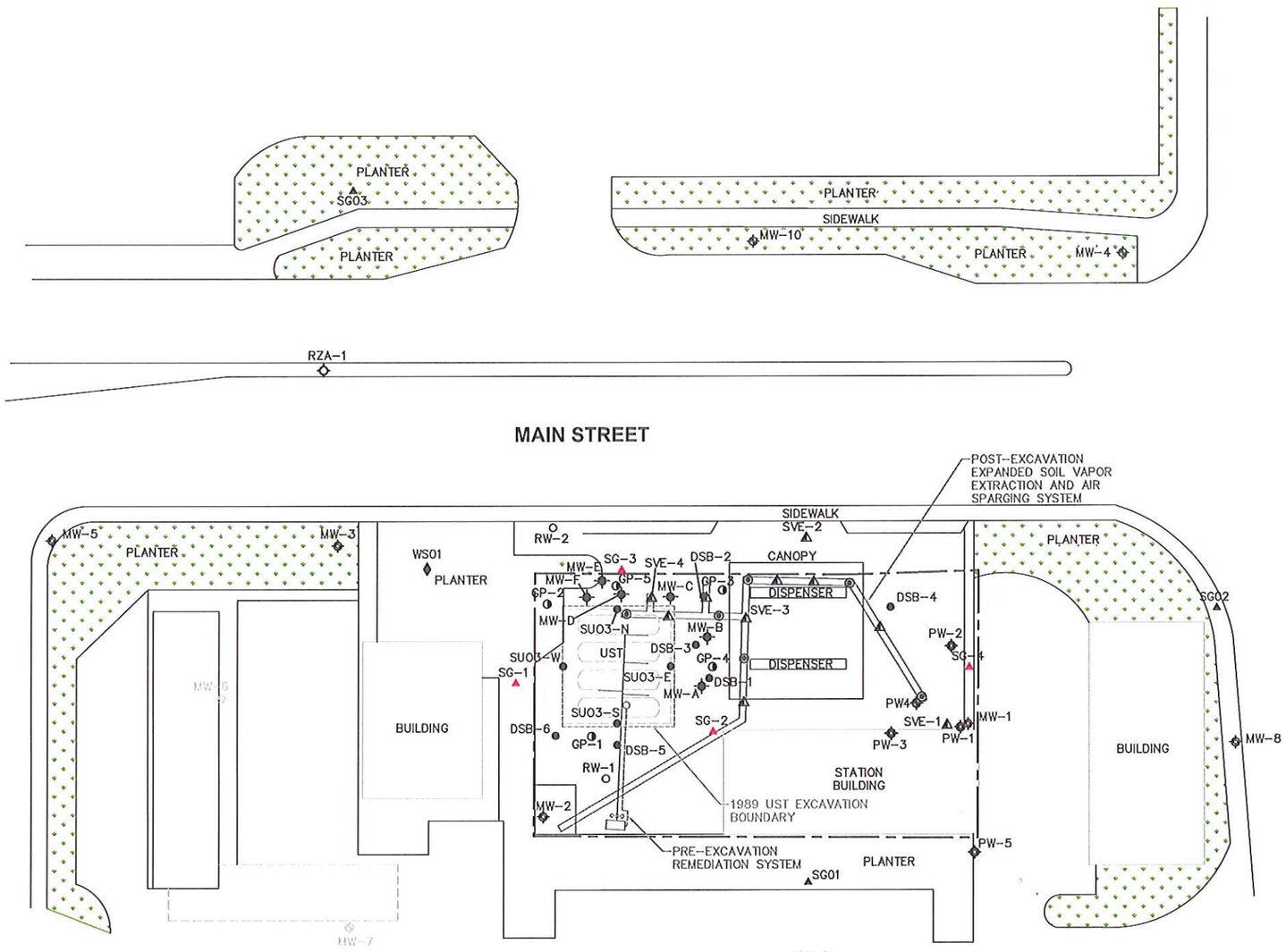
FIGURE 1



LEGEND

MW-4	GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION (BERGESON-BOESE & ASSOC. 1990-91)
SG-1	SOIL GAS SAMPLING LOCATION AND DESIGNATION (URS, 2013)
MW-1	GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION (RUSS-FENTROW, 1989-90)
FC01	MONITORING WELL AND DESIGNATION (UNKNOWN, 1990)
MW-E	MONITORING WELL AND DESIGNATION (UNKNOWN, IDENTIFIED BY SECOR, 2002)
RZA-1	UNKNOWN MONITORING WELL AND DESIGNATION
DSB-5	SOIL BORING SAMPLE LOCATION AND DESIGNATION (DELTA, 2007)
GP-1	SOIL BORING SAMPLE LOCATION AND DESIGNATION (SECOR, 2002)
WS01	SOIL GAS SAMPLING LOCATION AND DESIGNATION (RUSS FETROW, 1988)
	GROUNDWATER SAMPLING LOCATION AND DESIGNATION (RUSS FETROW, 1988)
SVE-1	SOIL VAPOR EXTRATION WELL (BERGESON-BOESE, 1990-91)
	AIR SPARGING WELL LOCATION AND DESIGNATION (BERGESON-BOESE, 1990-91)
RW-1	RECOVERY WELL AND DESIGNATION (BERGESON-BOESE & ASSOC., 1990-91)

ABANDONED WELLS ARE SHOWN IN GRAY

URS

SITE MAP

SHELL SERVICE STATION NO 121415
5737 MAIN STREET
SPRINGFIELD, OREGON

JUNE 2013
46194379

FIGURE 2

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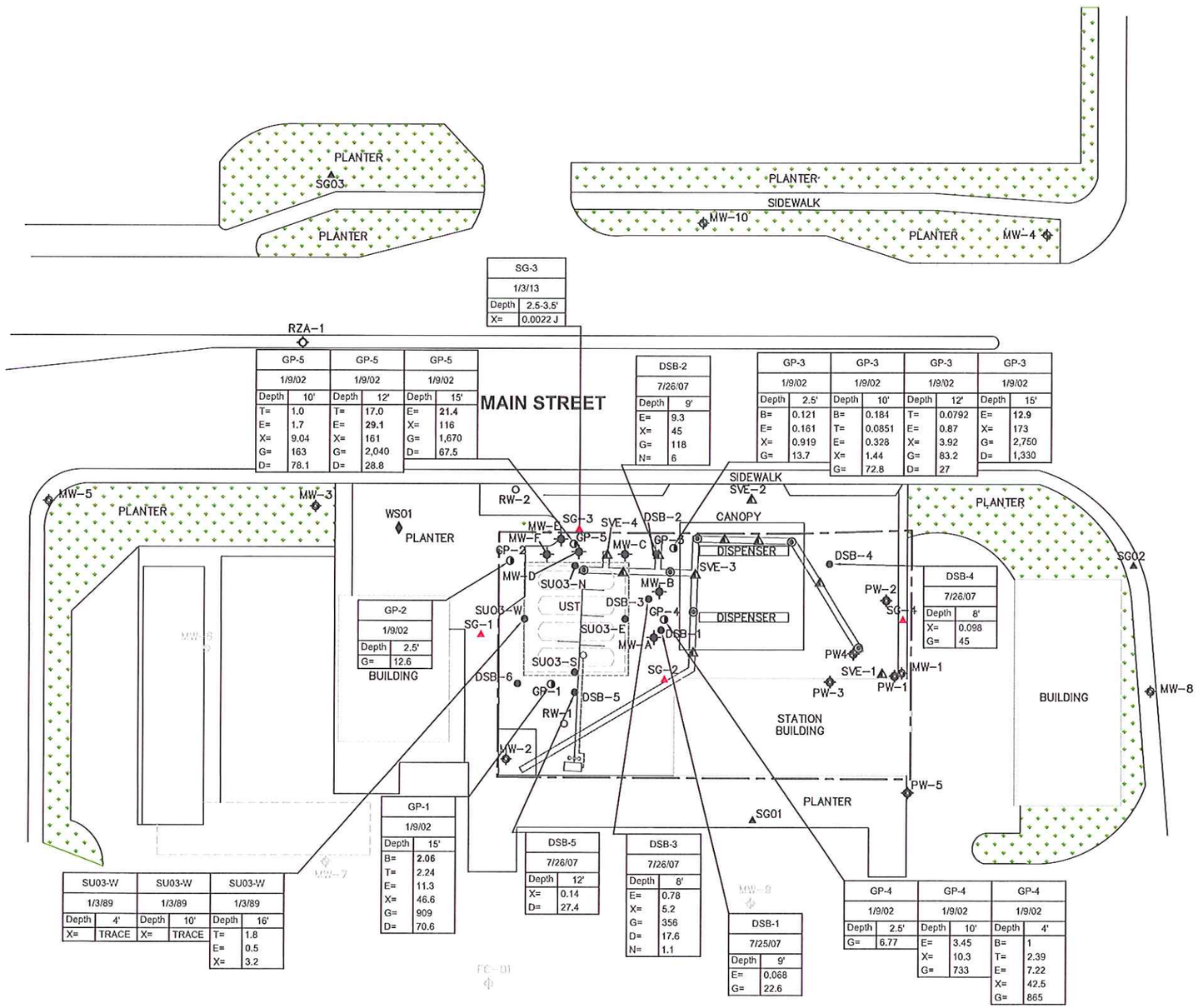


N
W E
S

25 0 25 50
SCALE IN FEET

LEGEND

MW-4 ◈	GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION (BERGESON-BOESE & ASSOC. 1990-91)
MW-1 ◈	GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION (RUSS-FENTROW, 1989-90)
FC01 ◈	MONITORING WELL AND DESIGNATION (UNKNOWN, 1990)
MW-E ◈	MONITORING WELL AND DESIGNATION (UNKNOWN, IDENTIFIED BY SECOR, 2002)
RZA-1 ◇	UNKNOWN MONITORING WELL AND DESIGNATION
DSB-5 ●	SOIL BORING SAMPLE LOCATION AND DESIGNATION (DELTA, 2007)
GP-1 ◑	SOIL BORING SAMPLE LOCATION AND DESIGNATION (SECOR, 2002)
SG-1 ▲	SOIL GAS SAMPLING LOCATION AND DESIGNATION (URS, 2013)
SG01 ▲	SOIL GAS SAMPLING LOCATION AND DESIGNATION (RUSS FETROW, 1988)
WS01 ◆	GROUNDWATER SAMPLING LOCATION AND DESIGNATION (RUSS FETROW, 1988)
SVE-1 ▲	SOIL VAPOR EXTRATION WELL (BERGESON-BOESE, 1990-91)
◎	AIR SPARGING WELL LOCATION AND DESIGNATION (BERGESON-BOESE, 1990-91)
RW-1 ○	RECOVERY WELL AND DESIGNATION (BERGESON-BOESE & ASSOC., 1990-91)
B	BENZENE (mg/kg)
T	TOLUENE (mg/kg)
E	ETHYLBENZENE (mg/kg)
X	TOTAL XYLENES (mg/kg)
G	TPH-G - TOTAL PETROLEUM HYDROCARBONS AS GASOLINE (mg/kg)
D	TPH-D - TOTAL PETROLEUM HYDROCARBONS AS DIESEL (mg/kg)
N	NAPHTHALENE (mg/kg)
mg/kg	MILLIGRAMS PER KILOGRAM

ABANDONED WELLS ARE SHOWN IN GRAY

Soil Sample Results 2002 to 2007

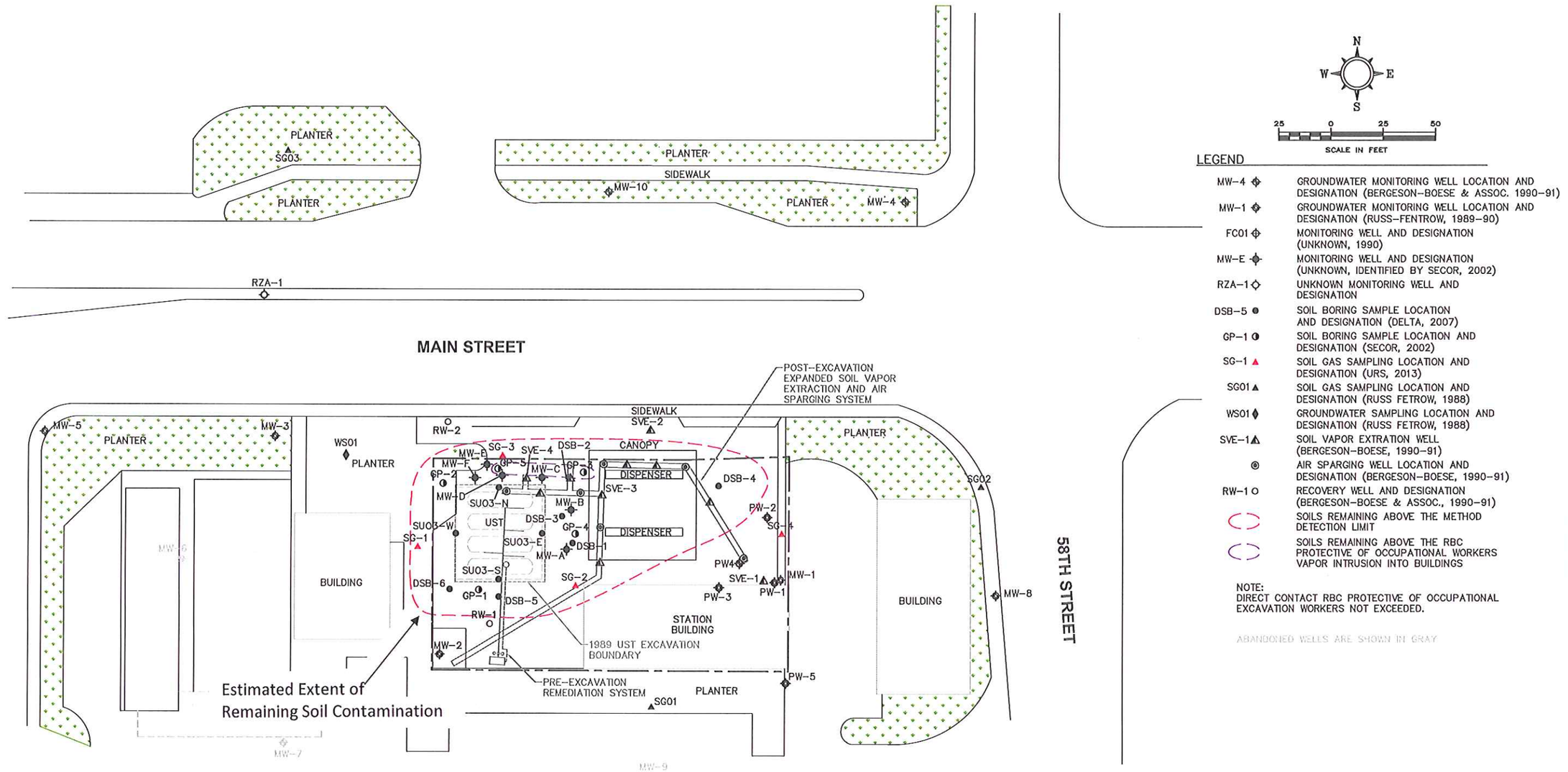
REMAINING SOIL CONCENTRATIONS

SHELL SERVICE STATION NO 121415
5737 MAIN STREET
SPRINGFIELD, OREGON

JUNE 2013
46194379

URS

Figure 3



LEGEND

MW-4 ◈	GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION (BERGESON-BOESE & ASSOC. 1990-91)
MW-1 ◈	GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION (RUSS-FENTROW, 1989-90)
FC01 ◈	MONITORING WELL AND DESIGNATION (UNKNOWN, 1990)
MW-E ◈	MONITORING WELL AND DESIGNATION (UNKNOWN, IDENTIFIED BY SECOR, 2002)
RZA-1 ◇	UNKNOWN MONITORING WELL AND DESIGNATION
DSB-5 ●	SOIL BORING SAMPLE LOCATION AND DESIGNATION (DELTA, 2007)
GP-1 ◑	SOIL BORING SAMPLE LOCATION AND DESIGNATION (SECOR, 2002)
SG-1 ▲	SOIL GAS SAMPLING LOCATION AND DESIGNATION (URS, 2013)
SG01 ▲	SOIL GAS SAMPLING LOCATION AND DESIGNATION (RUSS FETROW, 1988)
WS01 ◆	GROUNDWATER SAMPLING LOCATION AND DESIGNATION (RUSS FETROW, 1988)
SVE-1 ▲	SOIL VAPOR EXTRATION WELL (BERGESON-BOESE, 1990-91)
◉	AIR SPARGING WELL LOCATION AND DESIGNATION (BERGESON-BOESE, 1990-91)
RW-1 ○	RECOVERY WELL AND DESIGNATION (BERGESON-BOESE & ASSOC., 1990-91)
	SOILS REMAINING ABOVE THE METHOD DETECTION LIMIT
	SOILS REMAINING ABOVE THE RBC PROTECTIVE OF OCCUPATIONAL WORKERS VAPOR INTRUSION INTO BUILDINGS

NOTE:
DIRECT CONTACT RBC PROTECTIVE OF OCCUPATIONAL EXCAVATION WORKERS NOT EXCEEDED.

ABANDONED WELLS ARE SHOWN IN GRAY

LOCALITY OF FACILITY - SOIL

SHELL SERVICE STATION NO 121415
5737 MAIN STREET
SPRINGFIELD, OREGON

JUNE 2013
46194379

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Figure 4

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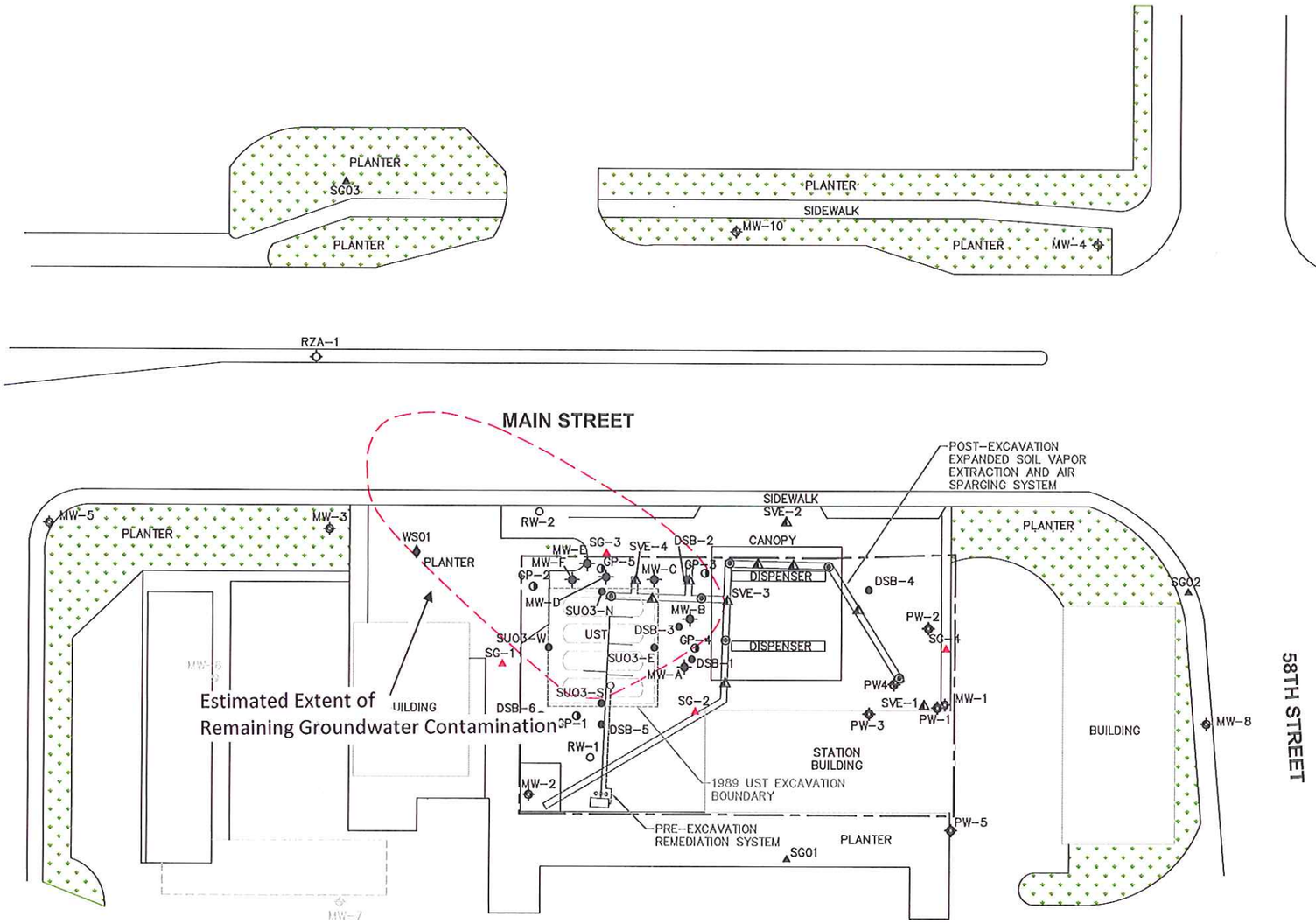

LEGEND

MW-4	GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION (BERGESON-BOESE & ASSOC. 1990-91)
MW-1	GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION (RUSS-FENTROW, 1989-90)
FC01	MONITORING WELL AND DESIGNATION (UNKNOWN, 1990)
MW-E	MONITORING WELL AND DESIGNATION (UNKNOWN, IDENTIFIED BY SECOR, 2002)
RZA-1	UNKNOWN MONITORING WELL AND DESIGNATION
DSB-5	SOIL BORING SAMPLE LOCATION AND DESIGNATION (DELTA, 2007)
GP-1	SOIL BORING SAMPLE LOCATION AND DESIGNATION (SECOR, 2002)
SG-1	SOIL GAS SAMPLING LOCATION AND DESIGNATION (URS, 2013)
SG01	SOIL GAS SAMPLING LOCATION AND DESIGNATION (RUSS FETROW, 1988)
WS01	GROUNDWATER SAMPLING LOCATION AND DESIGNATION (RUSS FETROW, 1988)
SVE-1	SOIL VAPOR EXTRATION WELL (BERGESON-BOESE, 1990-91)
	AIR SPARGING WELL LOCATION AND DESIGNATION (BERGESON-BOESE, 1990-91)
RW-1	RECOVERY WELL AND DESIGNATION (BERGESON-BOESE & ASSOC., 1990-91)
	LOCALITY OF FACILITY

ABANDONED WELLS ARE SHOWN IN GRAY

LOCALITY OF FACILITY - GROUNDWATER

SHELL SERVICE STATION NO 121415
5737 MAIN STREET
SPRINGFIELD, OREGON

JUNE 2013
46194379

URS

Figure 5

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