

State of Oregon
Department of Environmental Quality

Memorandum

Date: July 28, 2023

To: FILE

Through: Kevin Parrett, Manager
Jeff Schatz, Project Manager
Northwest Region Cleanup Program

From: Rebecca Digiustino, Project Manager
Northwest Region

Subject: Leathers Oil Co. #50, LUST # 03-94-0068; Staff Memorandum in support of a No Further Action determination

This document presents the basis for the Oregon Department of Environmental Quality's (DEQ's) recommended No Further Action (NFA) determination for the Leathers Oil Company #50, in Sandy, Oregon. The proposed NFA determination meets the requirements of Oregon Administrative Rules Chapter 340, Division 122, Sections 0205 to 360 and ORS 465.200 through 465.455.

The proposal is based on information documented in the administrative record for this site. A copy of the administrative record index is presented at the end of this report.

1. BACKGROUND

Site location.

The site's location (Figure 1) can be described as follows:

- Address: 39021 Proctor Boulevard in Sandy, Oregon.
- Latitude 45.39747° North, longitude -122.26156° West
- Tax lot(s) 24E13BD05900, Township 2 South, Range 4 East, Section 13

Site setting.

The site is approximately 0.17 acres in size and located on the northeast corner of the intersection of Alt Avenue and Proctor Boulevard in Sandy, Oregon. The majority of the property is paved with minor landscaping areas along the property boundaries. A fueling canopy with five pumps and a fuel station kiosk is located on the western half of the property, and a restroom building is constructed along the east property boundary. Two underground storage tanks (USTs) are in the eastern half of the property, between the restroom building and the fueling canopy. (Figure 2).

According to the Clackamas County Property Account Summary, the property is zoned Commercial Land Improved. The property and adjacent properties are in the Central Business District of the City of Sandy's Zoning Map. Properties adjacent to the site are occupied as follows:

North and Northeast: The Clackamas County Bank parking lot followed by Pleasant Street
East: Boomer's Wall Street Pizza (39041 Proctor Boulevard), followed by multi-tenant commercial building (39075 Proctor Boulevard)

Southeast: Proctor Boulevard, followed by Sandy Family Restaurant and Ria's Bar (39024 Proctor Boulevard)

South and Southwest: Proctor Boulevard, followed by Sandy Public Library (38980 Proctor Boulevard)

West: Alt Avenue, followed by Clackamas County Bank (38975 Proctor Boulevard)

Physical setting.

Regional Geology

The site is within a region that has been geologically mapped as Cazadero soils (USDA, 2023). Cazadero soils are characterized as well drained silty clay loam. Permeability of the Cazadero soil is moderately slow. Soils are expected to be underlain by Pliocene to Pleistocene fluvial sedimentary rocks of the Troutdale Formation.

Site Geology

The site topography is relatively flat. During site investigations, the subsurface stratigraphy has been observed to generally consist of relatively uniform red clayey, sandy silt to a depth of approximately 15 feet bgs.

Site Hydrogeology

The site is located on a ridge between the Tickle Creek and Sandy River drainage basins. The groundwater flow direction is locally shown to be to the north towards the Sandy River (Figure 3). Groundwater levels fluctuate seasonally, but the water table has been locally encountered between approximately 4.5 to 12.5 feet below ground surface (bgs).

Site history.

The property has been developed as a retail fuel station for 60 to 70 years and was leased and operated at various times by Rocket Gas and Exxon. The station was redeveloped in the late 1950's. Leathers purchased the property on May 1, 1975. A second-generation UST system was installed in 1983, which included two 4,000-gallon USTs, one 6,000-gallon UST, and one 10,000-gallon UST. A third-generation UST system was installed in 1998, which includes two USTs. The property is currently occupied by Leathers Fuels, a gas station.

2. BENEFICIAL LAND AND WATER USE DETERMINATIONS

Land use.

The site is currently occupied by Leathers Fuels. According to the Clackamas County Property Account Summary, the property is zoned Commercial Land Improved. The property and adjacent properties are in the Central Business District of the City of Sandy's Zoning. Due to the established nature of the commercial uses in this area, DEQ does not anticipate any substantive future changes to the zoning or uses at the site or surrounding properties. However, new

residential construction is allowed in the area, but is limited to “residential care facilities” and “residential dwellings located above, beside, or behind a commercial business.”

Groundwater use.

A beneficial site use survey was conducted by Martin S. Burck Associates Inc (MSBA), the environmental contractor retained by the property owner, in general accordance with the DEQ document *Guidance for Conducting Beneficial Water Use Determinations at Environmental Cleanup Sites*, dated July 1, 1998.

MSBA reviewed the Oregon Water Resources Department (WRD) water well database to identify any potential drinking or irrigation water wells within a 0.5-mile radius of the site. The Oregon WRD database listed nine water supply well reports which may have been present within the survey area.

Because none of the well locations could be identified, MSBA mailed a *Groundwater Well Survey* letter to the owners or managers of the adjacent/nearby properties regarding the possible presence of wells and received well information sheets for all of the adjacent/nearby properties except from the Oregon Trail School District property. The property owners or managers indicated that the water is provided by the municipal water supply system. MSBA contacted Ron Junker of the Oregon Trail School District maintenance and facilities office by telephone to determine if wells were present at the school and aquatic center facilities. Mr. Junker stated that no water supply wells, or irrigation wells were present at the property.

Based on no water supply wells identified on adjacent or nearby properties, groundwater impacted by the site release is not likely to be used as a drinking water source by municipal water sources or domestic water wells.

Surface water use.

The nearest surface water body is a tributary of the Sandy River located approximately 950 feet northwest of the site. Sandy River has current or likely future beneficial uses of recreation and habitat for fish and benthic organisms.

The site is mostly paved with minor landscaped areas along the property boundaries (Figure 2). Stormwater infiltrates the landscaped areas or flows from the hardscaped surfaces to stormwater catch basins located along Alt Avenue and Proctor Boulevard.

3. INVESTIGATION AND CLEANUP WORK

In September 1998, Leathers Oil Company was conducting site renovation work, which included removing and replacing all fuel USTs, product dispensers, service islands, associated piping, and the station building, when petroleum impacted soils were observed in the backfill sand and subsurface soil adjacent to and beneath the fuel USTs. All five fuel USTs and one previously abandoned UST were decommissioned by removal on September 22, 1998. Subsequently, approximately 900 cubic yards of soil was excavated and removed from site. The results of the

soil excavation cleanup and site characterization activities are presented in *Site Characterization and Soil Cleanup Report*, dated February 18, 2000. Soil data results are presented in Tables 1 through 3.

Four groundwater monitoring wells (MW-1 through MW-4) were installed at the site by MSBA on June 23, 1999. Details of the well installation and results of associated soil and groundwater sample analyses are presented in *Ground Water Investigation Report*, dated February 28, 2000. On November 24, 1999, two downgradient wells (MW-5 and MW-6) were installed off-site at the Clackamas County Bank parking lot, located north of the site. On June 15, 2000, MSBA installed an additional off-site groundwater monitoring well (MW-7) at the Clackamas County Bank parking lot. Regular groundwater monitoring and sampling events were conducted by MSBA between June 1999 and January 2004. Groundwater monitoring results are presented in Tables 4 through 6.

In April 2012, MSBA installed additional monitoring wells MW-8 and MW-9 at the Clackamas County Bank parking lot. Additional groundwater investigation activities were performed in May 2012, September 2013, and January 2014.

DEQ determined the residential receptor was not precluded from consideration by the zoning criteria, as proposed by MSBA, and soil vapor sampling was requested. On August 7, 2014, semi-permanent soil vapor points SG-1, SG-2, SG-3, and SG-4 were installed at the site and adjacent Clackamas County Bank parking lot property to the north, as illustrated on Figure 4. Notably, gasoline-range hydrocarbons were detected at SG-2 south of the UST tank pit at a concentration of 7,800,000 $\mu\text{g}/\text{m}^3$. The soil vapor sample results for SG-1 through SG-4 are summarized in Table 7.

DEQ requested additional investigation or corrective action based on the elevated SG-2 gasoline-range hydrocarbons concentration; however, soon after completion of the 2014 soil vapor sampling, the City of Sandy expressed an interest in purchasing the property for a street realignment project that was under review. Therefore, additional site assessment was delayed pending the outcome of this development.

After the City of Sandy placed the realignment project on indefinite hold and declined to purchase the Leathers property, site characterization was resumed, and a soil vapor sample was collected from SG-2 in 2021 and 2022. The soil vapor sample results for SG-2 are summarized in Table 7.

4. RISK EVALUATION

Conceptual site model.

To evaluate human exposure to residual chemical contamination requires an assessment of the type and extent of that exposure. This is based on current and reasonably likely future site use. DEQ publishes risk-based concentrations (RBCs) for contaminants commonly encountered, for different types of exposure scenarios. These RBCs are conservative estimates of protective levels of contaminants in soil, groundwater, and air. In-text Table A (below) shows potential exposure

pathways and receptors for this site. Based on this, applicable RBCs are identified and used for risk screening.

Table A. Identification of applicable RBCs, based on pertinent pathways and receptors

Pathway	Receptor	Applicable RBC?	Basis for selection/exclusion
SOIL			
Ingestion, dermal contact, and inhalation	Residential	Yes	See Note 1.
	Urban residential	Yes	
	Occupational	Yes	
	Construction worker	Yes	
	Excavation worker	Yes	
Volatilization to outdoor air	Residential	Yes	See Note 1.
	Urban residential	No	
	Occupational	Yes	
Vapor intrusion into buildings	Residential	Yes	See Note 1.
	Urban residential	No	
	Occupational	Yes	
Leaching to groundwater	Residential	No	See Note 2.
	Urban residential	No	
	Occupational	No	
GROUNDWATER			
Ingestion and inhalation from tap water	Residential	No	See Note 3.
	Urban residential	No	
	Occupational	No	
Volatilization to outdoor air	Residential	Yes	See Note 1.
	Urban residential	No	
	Occupational	Yes	
Vapor intrusion into buildings	Residential	Yes	See Note 1.
	Urban residential	No	
	Occupational	Yes	
Groundwater in excavation	Construction and excavation worker	Yes	See Note 4.

Notes:

1. Although the site is a non-residential facility, single-family residential dwellings are allowed to be constructed in the area; therefore, residential exposure is assumed rather than urban residential exposure. Residential exposure RBCs are more stringent than urban residential exposure RBCs.
2. A beneficial use determination showed that groundwater is not used for drinking. This pathway is therefore not considered complete, in accordance with Section B.3.2.4 of DEQ's RBDM guidance.
3. City water is provided. Local groundwater is not currently used for drinking water and is not likely to be used for this purpose in the future.
4. Construction and excavation work are generally limited to a depth of approximately 15 feet. Groundwater at the site is generally encountered at approximately 4.5 to 12.5 feet bgs; therefore, the groundwater in excavation pathway is considered potentially complete.

Contaminant concentrations.

Maximum Contaminant Concentrations – Soil

Although the site is a non-residential facility, residential dwellings are allowed to be constructed in the area. Therefore, the maximum detected concentration (MDC) of gasoline-range hydrocarbons and volatile organic compounds (VOCs) were compared to residential RBCs (most stringent) to evaluate human health risks posed by contaminants in soil under various exposure scenarios.

Soil Ingestion, Dermal Contact and Inhalation Pathway

Constituent of Interest	MDC in Soil ppm	Residential (RBC _{ss}) ppm	Occupational Worker (RBC _{ss}) ppm	Construction Worker (RBC _{ss}) ppm	COPC? (Yes/No)
gasoline-range hydrocarbons	2,500	1,200	20,000	9,700	Y
ethylbenzene	2.28	34	150	1,700	N
total xylenes	4.82	1,400	25,000	20,000	N
naphthalene	1.97	5.3	23	580	N
1,2,4-TMB	24.2	430	6,900	2,900	N
1,3,5-TMB	7.88	430	6,900	2,900	N

Yellow highlighted RBCs were exceeded in samples collected from one or more locations.

ppm = parts per million

COPC = constituent of potential concern

TMB = trimethylbenzene

The detected concentration of gasoline-range hydrocarbons exceeded the residential RBC for the soil ingestion, dermal contact, and inhalation exposure pathway in soil sample USTW-E-6 only. No soils exceeded the occupational worker or construction worker RBC for the soil ingestion, dermal contact, and inhalation exposure pathway. All VOC concentrations were either not detected in the soil samples or were detected at concentrations below applicable RBCs.

The impacted soil found in USTW-E-6 was collected near the center of the property at approximately 6 feet bgs. This sample was collected from the eastern sidewall of the 1998 excavation of the second-generation USTs. Based on the depth of the impacts, the condition of the area (paved), and the current commercial use of the property, residential receptors are unlikely to encounter the impacted soil and there is no elevated risk to human health and safety with respect to the occupational worker or construction worker exposure pathways.

Soil Vapor Intrusion into Building

Constituent of Interest	MDC in Soil ppm	Residential (RBC _{si}) ppm	Occupational Worker (RBC _{si}) ppm	COPC? (Yes/No)
gasoline-range hydrocarbons	2,500	94	>Max	Y
ethylbenzene	2.28	1.3	17	Y
total xylenes	4.82	160	>Csat	N

naphthalene	1.97	6.4	83	N
1,2,4-TMB	24.2	140	>C _{sat}	N
1,3,5-TMB	7.88	98	>C _{sat}	N

Yellow-shaded RBCs were exceeded in samples collected from one or more locations.

>C_{sat} = Soil concentrations in excess of C_{sat} indicate free product may be present.

>Max = The constituent RBC for this pathway is greater than 1,000,000 mg/kg. Therefore, these substances are not expected to pose risks in the scenario shown.

Concentrations of gasoline-range hydrocarbons exceed the residential RBC for the soil vapor intrusion into building pathway in soil samples USTE-E-6, UST6-B-6, USTW-E-6, USTW-N-6, USTW-N2-6, MW-3-10, MW-5-10, MW-8-8.5, S1-10, S2-8, S3-8, and S3-13.5. The maximum detected concentration of gasoline-range hydrocarbons was detected in USTW-E-6. Ethylbenzene concentrations exceeded the residential RBC for the soil vapor intrusion into building pathway in soil sample GW-4-10. Based on the elevated concentrations detected in the soil, potential vapor intrusion risks to occupants of any future residential building onsite or constructed on the Clackamas County Bank parking lot property could not be ruled out. As discussed in a subsequent section of this Staff Memo, soil gas data was collected from the site and the Clackamas County Bank parking lot property to further evaluate risks from this pathway.

Maximum Contaminant Concentrations – Groundwater

To evaluate human health risks from contamination in groundwater under various exposure scenarios, the highest detected concentrations of gasoline-range hydrocarbons and VOCs from the following were used for comparison to applicable RBCs:

- The most recent data collected from the permanent monitoring wells (2012 to 2014); and
- Data from grab groundwater samples collected from the site and the Clackamas County Bank parking lot property in 2004.

It should be noted that analyte concentrations in grab groundwater samples may be biased high due to increased turbidity caused by a lack of filter pack material in temporary wells. Where available, DEQ prefers data from properly constructed, developed, and purged monitoring wells as being more representative of groundwater conditions in the subsurface.

Groundwater Vapor Intrusion into Building

Constituent of Interest	MDC in Groundwater ppb	Residential (RBC _{wi}) ppb	Occupational Worker (RBC _{wi}) ppb	COPC? (Yes/No)
gasoline-range hydrocarbons	23,800	22,000	>S	Y
benzene	1,940	210	2,800	Y
toluene	352	>S	>S	N
ethylbenzene	1,420	620	8,200	Y
total xylenes	3,350	86,000	>S	N
naphthalene	458	840	11,000	N
1,2,4-TMB	2,390	50,000	>S	N
1,3,5-TMB	827	36,000	>S	N

>S = Groundwater RBC exceeds the solubility limit, which indicates light nonaqueous phase liquids (LNAPL) may be present. Based on historical groundwater observations, LNAPL is not present at the site.
ppb = parts per billion

Concentrations of benzene exceeded residential RBC for the groundwater vapor intrusion into building pathway in grab groundwater samples GW-3A, GW-4, GW-5, GW-6, GW-9, and GW-10. Concentrations of ethylbenzene exceeded residential RBC for the groundwater vapor intrusion into building pathway in grab groundwater samples GW-3A, GW-4, GW-5, GW-6, and GW-9. The maximum detected concentrations of benzene and ethylbenzene were detected in groundwater sample GW-6. The detected concentration of gasoline-range hydrocarbons exceeded the residential RBC for the groundwater vapor intrusion into building pathway in the groundwater sample collected from MW-8 during the April 2012 groundwater monitoring event. Two subsequent monitoring events occurring in September 2013 and January 2014 yielded gasoline-range hydrocarbons concentrations of 580 ppb and 716 ppb, respectively, indicating concentrations are attenuating.

Although grab groundwater concentrations may be biased high and concentrations in the area have likely attenuated over the past 11 years, without more recent groundwater samples, potential vapor intrusion risks to the occupants of any future residential building onsite or constructed on the Clackamas County Bank parking lot property could not be ruled out. As discussed in a subsequent section of this Staff Memo, soil gas data was collected from the site and the Clackamas County Bank parking lot property to further evaluate risks from this pathway.

Groundwater in Excavation

Constituent of Interest	MDC in Groundwater ppb	Construction/Excavation Worker (RBC _{we}) ppb	COPC? (Yes/No)
gasoline-range hydrocarbons	23,800	14,000	Y
benzene	1,940	1,800	Y
toluene	352	220,000	N
ethylbenzene	1,420	4,500	N
total xylenes	3,350	23,000	N
naphthalene	458	500	N
1,2,4-TMB	2,390	6,300	N
1,3,5-TMB	827	7,500	N

Yellow highlighted RBCs were exceeded in samples collected from one or more locations.

The detected concentration of benzene exceeded the construction and excavation worker RBC for groundwater in excavations in the 2004 grab groundwater sample GW-6. Groundwater collected from GW-7 and GW-8, located north of GW-6, likewise contained detectable benzene concentrations, indicating the groundwater plume extends into the right-of-way of Pleasant Street; however, the concentrations were less than the construction and excavation worker RBC and there is no elevated risk to human health and safety with respect to the construction and excavation worker exposure pathway within the right-of-way of Pleasant Street.

The detected concentration of gasoline-range hydrocarbons exceeded the construction and excavation worker RBC for groundwater in excavations in the groundwater sample collected from MW-8 during the April 2012 groundwater monitoring event. Two subsequent monitoring events occurring in September 2013 and January 2014 yielded gasoline-range hydrocarbons concentrations of 580 ppb and 716 ppb, respectively, indicating concentrations are attenuating.

Additionally, the GW-6 sample location is approximately 5 feet east of monitoring well MW-9. Benzene concentrations in groundwater collected from MW-9 in 2014 were below the laboratory detection limit (< 0.250 parts per billion), indicating the GW-6 sample was biased high and/or has subsequently attenuated to concentrations below the construction and excavation worker RBC for groundwater in excavations. Based on data collected from MW-9, there is no elevated risk to human health and safety with respect to the construction and excavation worker exposure pathway.

Additional Evaluation of Soil Gas.

Three soil gas investigations were conducted to evaluate possible vapor intrusion risks to the onsite buildings and to any future buildings that may be constructed in the Clackamas County Bank parking lot. To evaluate human health risks from contamination in soil gas under various exposure scenarios, the highest detected concentrations of gasoline-range hydrocarbons and VOCs from the three investigations were utilized for comparison:

Constituent of Interest	MDC in Soil Gas $\mu\text{g}/\text{m}^3$	Residential (RBC_{sv}) $\mu\text{g}/\text{m}^3$	Occupational Worker (RBC_{sv}) $\mu\text{g}/\text{m}^3$	COPC? (Yes/No)
gasoline-range hydrocarbons	7,800,000	79,000	1,700,000	Y
toluene	0.87	1,000,000	21,900,000	N

Yellow highlighted RBCs were exceeded in samples collected from one or more locations.
 $\mu\text{g}/\text{m}^3$ = milligrams per cubic meter

Concentrations of gasoline-range hydrocarbons and VOCs were below applicable RBCs in all soil gas samples collected, except for SG-2 during the 2014 sampling. DEQ requested additional investigation or corrective action based on the elevated SG-2 gasoline-range hydrocarbons concentration, which was completed in 2021 and 2022. During the subsequent sampling events, gasoline-range hydrocarbon concentrations were either non-detect (April 2021) or 250 milligrams per cubic meter (August 2022). Based on data collected from the recent soil vapor investigations, there is no elevated risk to human health and safety with respect to the vapor intrusion into the building or volatilization to the area exposure pathway.

Human health risk.

Gasoline-range hydrocarbons, benzene, and ethylbenzene were detected in soil and/or groundwater at concentrations exceeding generic RBCs for one or more exposure pathways and exposure scenarios and therefore screened in as COPCs. However, based on the following, risks to

human receptors are limited (i.e., or nonexistent) for selected exposure pathways and were not carried forward as COCs:

- Soil contamination at the site exceeding the RBC for the soil ingestion, dermal contact, and inhalation exposure pathway for residential scenarios is present at depths of at least 6 feet bgs. Based on the depth of the detections, the current use of the property, and the current condition of the area (paved), the contamination does not pose unacceptable risks under the possible future residential exposure scenarios.
- Groundwater contamination that exceeded the construction and excavation worker RBC was limited to benzene in one grab groundwater sample (GW-6) collected in 2004 and gasoline-range hydrocarbons in the 2012 groundwater sample from MW-8. The GW-6 sample location is approximately 5 feet east of monitoring well MW-9. Benzene concentrations in groundwater collected from MW-9 in 2014 were below the laboratory detection limit (< 0.250 parts per billion), indicating the GW-6 sample was likely biased high and/or has attenuated to concentrations below the construction and excavation worker RBC for groundwater in excavations. Additionally, gasoline-range hydrocarbons concentrations in subsequent groundwater monitoring events at MW-8 were less than the construction and excavation worker RBC. Based on data collected from MW-9 and subsequent data collected from MW-8, there is no elevated risk to human health and safety with respect to the construction and excavation worker exposure pathway.
- Soil gas contamination that exceeded the residential RBC for the inhalation pathway was limited to gasoline-range hydrocarbons in sample SG-2. During subsequent sampling events of SG-2, gasoline-range hydrocarbon concentrations were either non-detect or were detected below the applicable RBC. Based on data collected from the recent soil vapor investigations, there is no elevated risk to human health and safety with respect to the vapor intrusion into the building or volatilization to the area exposure pathway.

Ecological risk.

The site is largely paved and, therefore, devoid of ecological habitat (Figure 2). The nearest surface water body is a tributary of the Sandy River located approximately 950 feet northwest of the site. Groundwater monitoring data indicate the groundwater plume is below the applicable RBCs, but remaining contamination extends off-site onto the north adjacent property and into Pleasant Street. Based on the known extent of the remaining groundwater contamination, flow direction, and the distance to the nearby tributary, ecological receptors in the area are unlikely to be impacted.

5. RECOMMENDATION

Based on the depth of the impacts, the condition of the impacted areas (paved), and the current commercial use of the properties, there is no elevated risk to human health and safety with respect to any exposure pathway. A No Further Action determination is recommended for this site. The No Further Action determination should be recorded in DEQ's LUST database (LUST No. 03-94-0068).

6. ADMINISTRATIVE RECORD

Site Characterization and Soil Cleanup Report. MSBA. February 18, 2000.

Ground Water Investigation report. MSBA. February 28, 2000.

Well Installation and Ground Water Monitoring Report November 1999. MSBA. March 13, 2000.

Ground Water Monitoring Report August 2000. MSBA. October 17, 2000.

Offsite Well Installation Results and Request for Closure. MSBA. February 25, 2014.

Off-site Well Installation Results and Request for Closure. MSBA. March 3, 2014.

Conceptual Site Model and Regulatory Closure Report. MSBA. November 29, 2010.

Soil Vapor Sampling and Request for Closure. MSBA. May 2, 2022.

2022 Soil Vapor Sampling and Request for Closure. MSBA. October 25, 2022.

7. ATTACHMENTS

Figure 1. Site Location Map

Figure 2. Monitoring Well Locations and Soil Data Map (April 2012)

Figure 3. Groundwater Data Map (January 2014)

Figure 4. Soil Vapor Data Map

Table 1. Soil Sample Analytical Data – Total Hydrocarbons

Table 2. Soil Sample Analytical Data – RBDM VOCs: BTEX

Table 3. Soil Sample Analytical Data – Additional RBDM VOCs

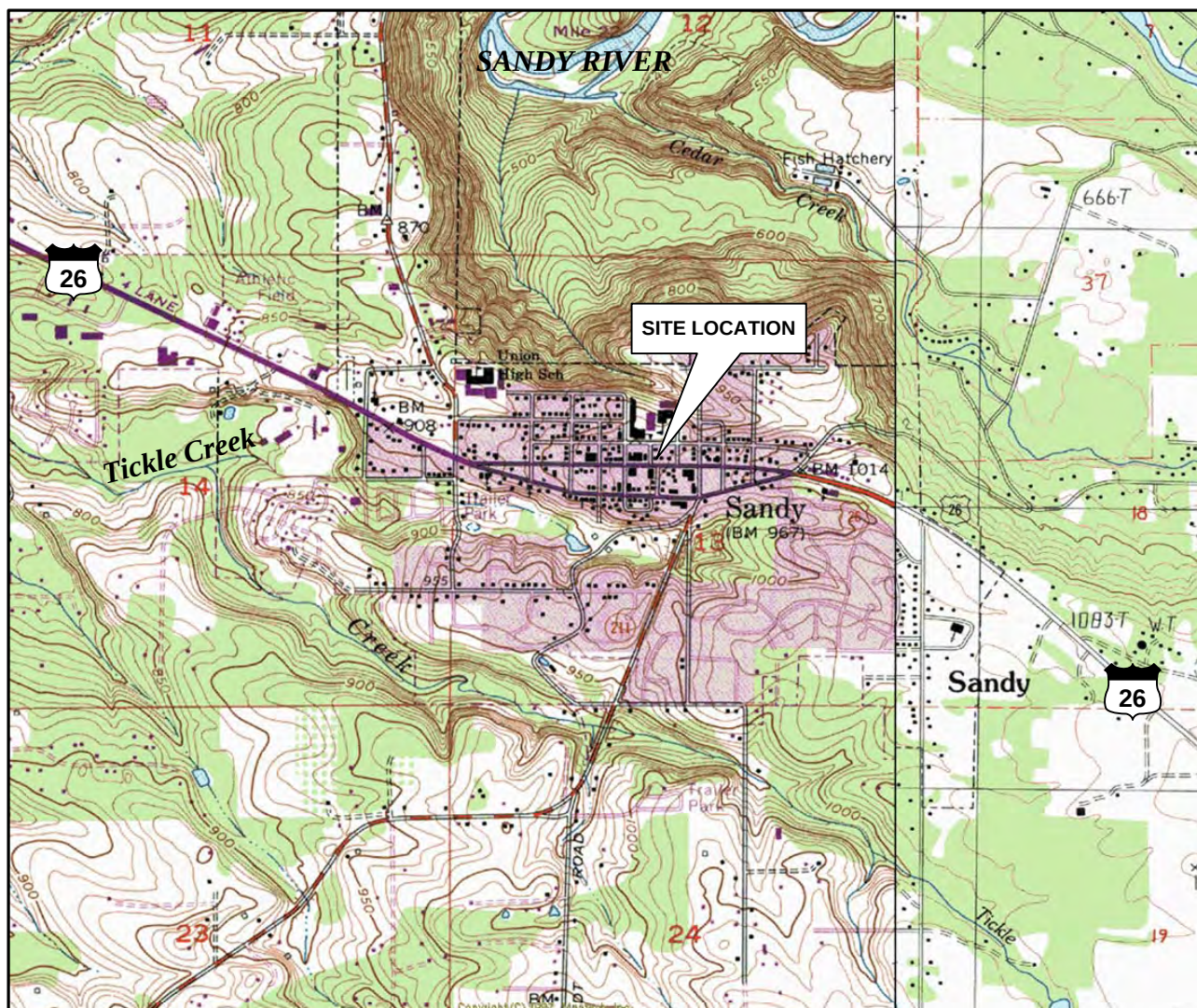
Table 4. Groundwater Level Data

Table 5. Groundwater Sample Analytical Data – Gasoline and BTEX

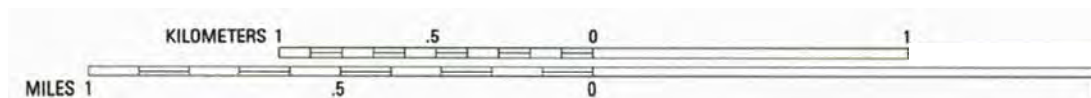
Table 6. Groundwater Sample Analytical Data – Selected VOCs and Lead

Table 7. Soil Vapor Sample Analytical Data

T. 2 S.



R. 4 E. R. 5 E.



Adapted from: Sandy, Oregon, 7.5 Minute Series
Contour Interval 10 feet
USGS Topographic Map, 1961, Edited 1985
National Geodetic Vertical Datum of 1929

Scale 1 : 24,000

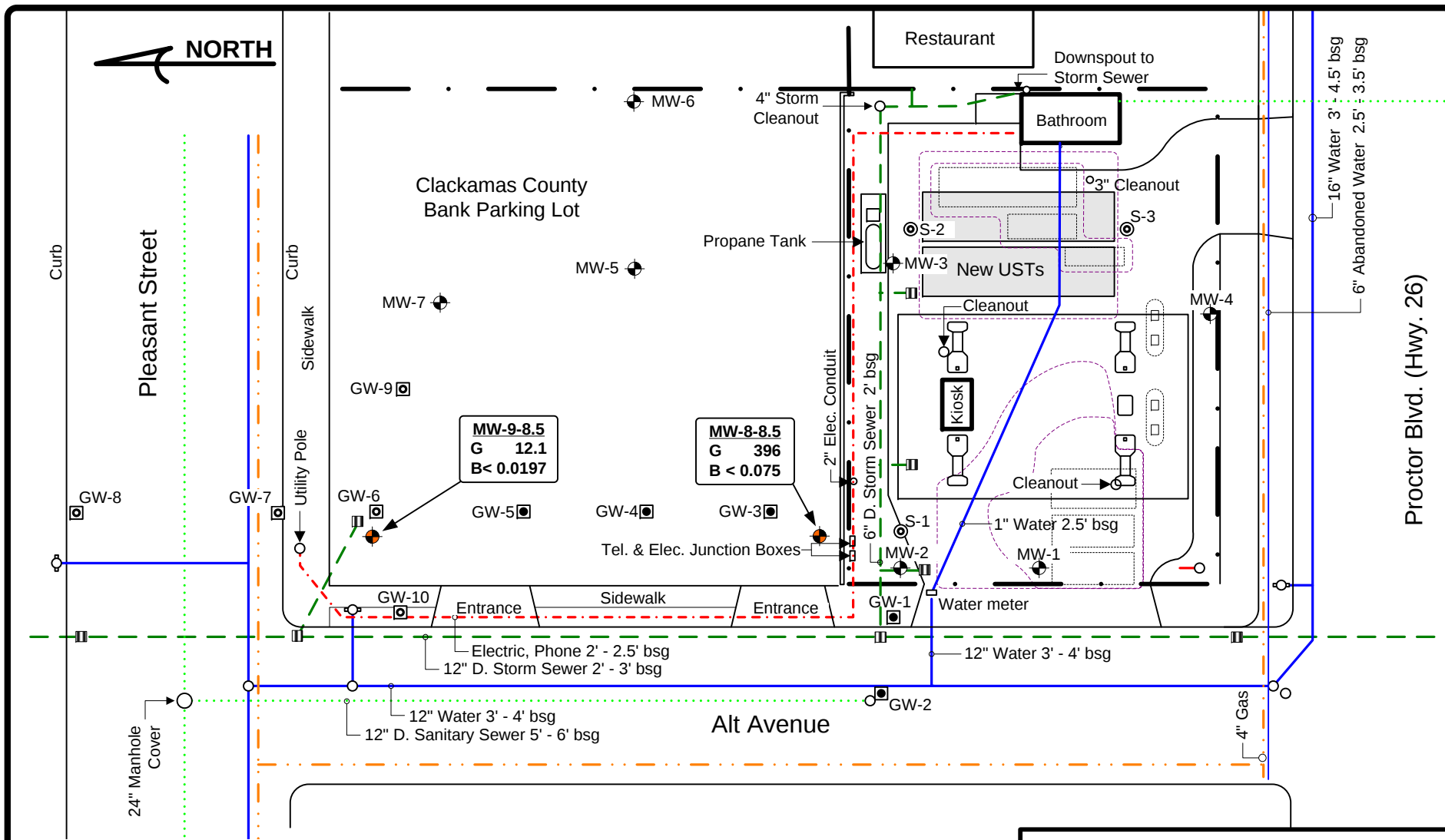


FIGURE 1

SITE LOCATION MAP

Leathers Service Station #50
39021 Proctor Boulevard, Sandy, Oregon
DEQ File No. 03-94-068





LEGEND

	Catch Basin	MW-1	Existing Monitoring well location & ID
	Fire Hydrant	MW-8	New Monitoring well location & ID
	Natural Gas	MW-8-8.5	Soil Sample ID & Depth (feet bsg)
	Water Line	G 396	Gasoline Concentration (ppm)
	Sanitary Sewer	B < 0.075	Benzene Concentration (ppm)
	Storm Water Sewer	<	Not Detected Above Reporting Limit
	PGE Electric and Verizon Phone	S-1	Soil Sample Location
		GW-3	Temporary well location & ID

0 15 30
Approximate Scale, Feet

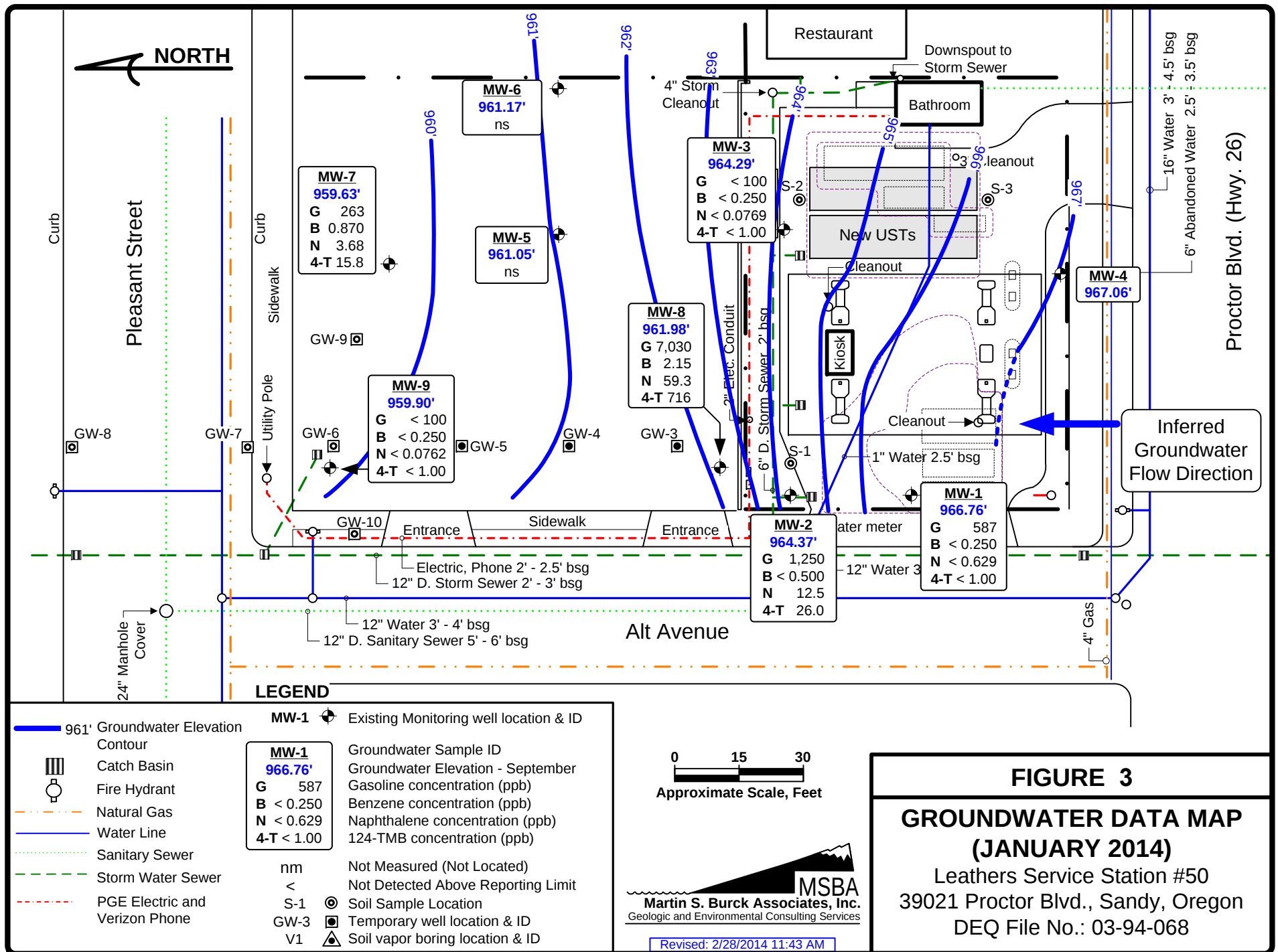
Martin S. Burck Associates, Inc.
Geologic and Environmental Consulting Services

Revised: 2/28/2014 11:41 AM

FIGURE 2

MONITORING WELL LOCATIONS AND SOIL DATA MAP (APRIL 2012)

Leathers Service Station #50
39021 Proctor Blvd., Sandy, Oregon
DEQ File No.: 03-94-068



LEGEND

- Monitoring Well and Soil Sample Location
- Soil Sample Location
- Removed Soil Sample Location
- S1-10 ← Soil Sample ID (see note 1)
- ← Soil Sample Depth (feet bsg)
- (654) ← Gasoline Concentration (ppm) (see note 2)
- [< 0.04] ← Benzene Concentration (ppm)
- note 1 **Brown Text = Results Represent Soil Excavated, Treated, and Disposed Offsite**
- note 2 **Orange Text = Concentration Exceeds Residential RBC for Potential VIB Pathway in Soil**
- Soil-Gas Sample Location
- SG-4**
(8/24/14)
G < 110
B < 0.87
E < 1.2
- Soil-Gas Sample ID
- Sample Collection Date
- Gasoline Concentration (ug/m³)
- Benzene Concentration (ug/m³)
- Ethylbenzene Concentration (ug/m³)
- Nd Not Detected
- < Not Detected Above Reporting Limit, as Listed (<)

MW-6
MW-6-10
(nd)

SG-3
(8/28/14)
G < 110
B < 0.86
E < 1.2

Bank
Parking
Lot

GW-9-9
[<0.40]

MW-9-8.5
(12.1)
[< 0.0197]

GW-5-10
(325)
[<0.40]

GW-4-10
[<0.40]
(Ethylbenzene: 2.28 ppm)

SG-4
(8/28/14)
G < 110
B < 0.87
E < 1.2

MW-8-8.5
(396)
[< 0.075]

SG-1
(8/28/14)
G 160
B < 0.84
E < 1.1

MW-2-10
(22.5)
[<0.05]

USTW-N2-6
(199)

USTW-N-6
(230)

MW-1-10
(nd)

USTW-W-6
(21.2)

USTW-S-6
(nd)

WDISP-2.5
(nd)

MW-4
EDISP-2.5
(nd)

MW-4-10
(15.7)

SG-2
(8/28/14)
G 7,800,000
B < 420
E < 570

SG-2
(4/1/21)
G < 89
B < 0.69
E < 0.94

SG-2
(8/29/22)
G 250
B < 0.70
E < 0.96

Approximate Limit of New
UST Cavity Excavation and
Clean Up: 12' - 18' bsg

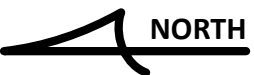
Approximate Limit of Excavation
Clean Up: 11-12' bsg

Proctor Boulevard

Alt Avenue



Approximate Scale (feet)



NORTH

Revised: 10/25/2022 12:48 PM

MSBA
Martin S. Burck Associates, Inc.
Geologic and Environmental Consulting Services

FIGURE 4

SOIL VAPOR DATA MAP

Leathers Oil Company
Station No. 50 (Sandy Save)
39021 Proctor Boulevard, Sandy, Oregon
DEQ File No. 03-94-068

TABLE 1 SOIL SAMPLE ANALYTICAL DATA - TOTAL HYDROCARBONS Leathers Oil Company Station No. 50 (Sandy Save) 39021 Proctor Boulevard, Sandy, Oregon DEQ File No. 03-94-068					
Sample	Location	Sample Date	Depth ^a (feet)	TPH-HCID (G,D,O) ^b	TPH-G ^c (ppm) ^d
WDISP-2.5	West dispenser island	9/22/98	2.5	– ^e	nd ^f
EDISP-2.5	East dispenser island	9/22/98	2.5	–	nd
USTE-E-6	East cavity-east sidewall	9/24/98	6	–	nd
USTE-S-6	East cavity-south sidewall	9/24/98	6	G ^g , D ^h	187
USTE-W-6	East cavity-west sidewall	9/24/98	6	–	2.85
USTE-N-6	East cavity-north sidewall	10/6/98	6	–	nd
USTE-MB-12	Bottom of east cavity	9/24/98	12	–	46.1
UST6-B-6	Bottom of UST6 cavity	9/29/98	6	G ^g , D ^h	328
USTW-E-6	West cavity-east sidewall	9/24/98	6	G, D ^h	2,500
USTW-S-6	West cavity-south sidewall	9/24/98	6	–	nd
USTW-W-6	West cavity-west sidewall	9/24/98	6	–	21.2
USTW-N-6	West cavity-north sidewall	9/24/98	6	–	230
USTW-MB-11	Bottom of west cavity	9/24/98	11	–	nd
USTW-E2-6	West cavity-east sidewall	9/30/98	6	–	nd
USTW-N2-6	West cavity-north sidewall	10/1/98	6	–	199
B1-6.5	Hand auger boring	9/22/98	6.5	–	82.6
B1-12.5	Hand auger boring	9/22/98	12.5	–	6.0
SS-1	1 ft. north of abandoned well	11/4/98	7.5	nd	–
FTG1-6	Under station building	10/8/98	6	--	24.7
TABLE 1 (continued)					

TABLE 1 (continued)
SOIL SAMPLE ANALYTICAL DATA - TOTAL HYDROCARBONS Leathers
Oil Company Station No. 50 (Sandy Save)

Sample	Location	Sample Date	Depth ^a (feet)	TPH-HCID (G,D,O) ^b	TPH-G ^c (ppm) ^d
MW-1-10	Monitoring well boring	6/23/99	10	–	nd
MW-2-10	Monitoring well boring	6/23/99	10	–	22.5
MW-3-10	Monitoring well boring	6/23/99	10	–	262
MW-4-10	Monitoring well boring	6/23/99	10	–	15.7
MW-5-10	Monitoring well boring	11/24/99	10	–	325
MW-6-10	Monitoring well boring	11/24/99	10	–	nd
MW-7-10	Monitoring well boring	6/16/00	10	–	19.7
MW-8-8.5	Monitoring well boring	4/17/12	8.5	–	396
MW-9-8.5	Monitoring well boring	4/17/12	8.5	–	12.1
S1-10	West cavity-north confirmation	4/13/04	10	–	654
S2-8	East cavity-north confirmation	4/13/04	8	–	389
S3-8	East cavity-south confirmation	4/13/04	8	–	782
S3-13.5	East cavity-south confirmation	4/13/04	13.5	–	101
GW-6-8	Temp well boring, parking lot	6/16/04	8	nd	–

- a** Sample depth measured in feet below surface grade (bsg)
b Total petroleum hydrocarbon identification by method TPH-HCID. Result reported only if detected;
G = Gasoline (>20 ppm); D = Diesel (>50 ppm); O = Heavy Oil (>100 ppm)
c Total petroleum hydrocarbons characterized as gasoline by OR DEQ method NWTPH-G or NWTPH-Gx
d Analytical results reported in parts per million (ppm)
e Not detected (nd)
f Not analyzed (–)
g Detected hydrocarbons attributed by the laboratory to weathered gasoline or mineral spirits
h Detected diesel hydrocarbons attributed by the laboratory to overlap of gasoline range hydrocarbons.

TABLE 2
SOIL SAMPLE ANALYTICAL DATA - RBDM VOCs: BTEX

Leathers Oil Company Station No. 50 (Sandy Save)

39021 Proctor Boulevard, Sandy, Oregon

DEQ File No. 03-94-068

Sample Name	Sample Date	Depth (feet)	Benzene ^a (ppm) ^b	Toluene ^a (ppm)	Ethylbenzene ^a (ppm)	Xylenes ^a (ppm)
SS-1	11/4/98	7.5	< 0.050 ^c	< 0.050	< 0.050	< 0.100
MW-2-10	6/23/99	10	< 0.050	< 0.050	0.148 ^d	< 0.100
MW-3-10	6/23/99	10	< 0.050	< 0.050	< 0.050	< 0.100
S1-10	4/13/04	10	< 0.040	< 0.050	0.393	1.86
S2-8	4/13/04	8	< 0.040	< 0.050	0.161	< 0.100
S3-8	4/13/04	8	< 0.040	< 0.050	< 0.050	< 0.100
S3-13.5	4/13/04	13.5	< 0.040	< 0.050	< 0.050	< 0.100
GW-4-10	5/18/04	10	< 0.040	< 0.050	2.28	4.82
GW-5-10	5/18/04	10	< 0.040	< 0.050	< 0.050	< 0.100
GW-6-8	6/16/04	8	< 0.040	< 0.050	< 0.050	< 0.100
GW-9-9	6/16/04	9	< 0.040	< 0.050	< 0.050	< 0.100
GW-10-8	6/16/04	8	< 0.040	< 0.050	< 0.050	< 0.100
MW-8-8.5	4/17/12	8.5	< 0.075	< 0.300	0.606	1.230
MW-9-8.5	4/17/12	8.5	< 0.0197	< 0.0788	< 0.0394	< 0.118

a Benzene, toluene, ethylbenzene, and xylenes (BTEX) analyzed by EPA method 8260B

b Numeric analytical data reported in parts per million (ppm)

c Analyte concentration not detected above the laboratory reporting limit, as listed (<)

d Bold value indicates analyte concentration exceeded the laboratory reporting limit

TABLE 3
SOIL SAMPLE ANALYTICAL DATA - ADDITIONAL RBDM VOCs

Leathers Oil Company Station No. 50 (Sandy Save)
39021 Proctor Boulevard, Sandy, Oregon
DEQ File No. 03-94-068

Sample Name	Date	Depth (feet)	MTBE ^a (ppm) ^b	EDB ^a (ppm)	EDC ^a (ppm)	124-TMB ^a (ppm)	135-TMB ^a (ppm)	NPB ^a (ppm)	IPB ^a (ppm)	Naphthalene ^a (ppm)
MW-2-10	6/23/99	10	< 0.200 ^c	< 0.050	< 0.050	– ^d	–	–	–	< 0.050
MW-3-10	6/23/99	10	< 0.200	< 0.050	< 0.050	–	–	–	–	0.087 ^e
S1-10	4/13/04	10	< 0.200	< 0.050	< 0.050	11.0	4.34	1.99	0.341	0.629
S2-8	4/13/04	8	< 0.200	< 0.050	< 0.050	1.36	0.165	0.621	< 0.200	0.267
S3-8	4/13/04	8	< 0.200	< 0.050	< 0.050	0.905	< 0.050	0.132	< 0.200	< 0.200
S3-13.5	4/13/04	13.5	< 0.200	< 0.050	< 0.050	0.231	0.387	0.355	< 0.200	< 0.200
GW-4-10	5/18/04	10	< 0.200	< 0.050	< 0.050	21.6	7.46	3.39	0.731	1.970
GW-5-10	5/18/04	10	< 0.200	< 0.050	< 0.050	0.477	0.189	0.082	< 0.200	0.341
GW-6-8	6/16/04	8	< 0.200	< 0.050	< 0.050	< 0.100	0.096	0.208	< 0.200	< 0.200
GW-9-9	6/16/04	9	< 0.200	< 0.050	< 0.050	< 0.100	< 0.050	0.071	< 0.200	< 0.200
GW-10-8	6/16/04	8	< 0.200	< 0.050	< 0.050	< 0.100	< 0.050	< 0.050	< 0.200	< 0.200
MW-8-8.5	4/17/12	8.5	< 0.300	< 0.150	< 0.150	24.200	7.880	3.760	0.630	0.822
MW-9-8.5	4/17/12	8.5	< 0.0788	< 0.0394	< 0.0394	< 0.0788	< 0.0788	0.0978	< 0.0788	< 0.158

a Methyl tert-butyl ether (MTBE), 1,2-dibromoethane (EDB), 1,2-dichloroethane (EDC), 1,2,4-trimethylbenzene (124-TMB), 1,3,5-trimethylbenzene (135-TMB), n-propylbenzene (NPB), isopropylbenzene (IPB), and naphthalene analyzed using EPA method 8260B

b Numeric analytical data reported in parts per million (ppm)

c Analyte concentration not detected above the laboratory reporting limit, as listed (<)

d Not analyzed (–)

e Bold value indicates analyte concentration exceeds the laboratory reporting limit

TABLE 4
GROUNDWATER LEVEL DATA

Leathers Oil Company Station No. 50 (Sandy Save)
39021 Proctor Boulevard, Sandy, Oregon
DEQ File No. 03-94-068

Well ID	Date	Top of Casing Elevation ^a	Depth to Water ^b	Ground Water Elevation ^c	Variance ^d
MW-1	7/6/99	972.99	4.62	968.37	– ^e
	8/31/99		4.90	968.09	- 0.28
	11/23/99		4.49	968.50	+ 0.41
	12/29/99		5.10	967.89	- 0.61
	2/29/00		4.88	968.11	+ 0.22
	5/25/00		6.29	966.70	- 1.41
	8/10/00		8.20	964.79	- 1.91
	11/15/00		6.05	966.94	+ 2.15
	5/8/01		6.08	966.91	- 0.03
	8/21/01		8.04	964.95	- 1.96
	11/29/01		4.96	968.03	+ 3.08
	2/11/02		5.11	967.88	- 0.15
	5/28/02		6.51	966.48	- 1.40
	8/19/02		8.55	964.44	- 2.04
	11/12/02		7.05	965.94	+ 1.05
	2/19/03		5.56	967.43	+ 1.49
	5/29/03		6.39	966.60	- 0.83
	1/28/04		4.57	968.42	+ 1.82
	5/11/12		5.92 ^g	967.07 ^g	- 1.35
	9/19/13		7.67	965.32	-1.75
	1/1/14		6.23	966.76	+ 1.44
MW-2	7/6/99	972.38	4.93	967.45	–
	8/31/99		5.50	966.88	- 0.57
	11/23/99		5.08	967.30	+ 0.42
	12/29/99		5.69	966.69	- 0.61
	2/29/00		5.41	966.97	+ 0.28
	5/25/00		6.60	965.78	- 1.19
	8/10/00		7.98	964.40	- 1.38
	11/15/00		6.55	965.83	+ 1.43
	5/8/01		6.74	965.64	- 0.19
	8/21/01		7.93	964.45	- 1.19
	11/29/01 ^f		6.53	965.85	+ 1.40
	2/11/02		5.70	966.68	+ 0.83
	5/28/02		6.78	965.60	- 1.08
	8/19/02		8.25	964.13	-1.47
	11/12/02		7.34	965.04	+ 0.91
	2/19/03		6.45	965.93	+ 0.89
	5/29/03		7.24	965.14	- 0.79
	1/28/04		5.25	967.13	+ 1.99
	5/11/12		nm	–	–
	9/19/13		10.83	961.55	–
	1/1/14		8.01	964.37	+ 2.82

TABLE 4 (continued)

TABLE 4 (continued)
GROUNDWATER LEVEL DATA
Leathers Oil Company Station No. 50 (Sandy Save)

Well ID	Date	Top of Casing Elevation ^a	Depth to Water ^b	Ground Water Elevation ^c	Variance ^d
MW-3	7/6/99	973.89	7.87	966.02	—
	8/31/99		8.27	965.62	- 0.40
	11/23/99		7.80	966.09	+ 0.47
	12/29/99		8.08	965.81	- 0.28
	2/29/00		8.13	965.76	- 0.05
	5/25/00		8.68	965.21	- 0.55
	8/10/00		9.90	963.99	- 1.22
	11/15/00		8.62	965.27	+ 1.28
	5/8/01		8.63	965.26	- 0.01
	8/21/01		9.76	964.13	- 1.13
	11/29/01		7.72	966.17	+ 2.04
	2/11/02		8.17	965.72	- 0.45
	5/28/02		9.03	964.86	- 0.86
	8/19/02		10.18	963.71	- 1.15
	11/12/02		9.82	964.07	+ 0.36
	2/19/03		8.64	965.25	+ 1.18
	5/29/03		9.27	964.62	- 0.63
	1/28/04		7.85	966.04	+ 1.42
	5/11/12		9.17	964.72	- 1.32
	9/19/13		12.49	961.40	- 3.32
1/1/14	9.60	964.29	+ 2.89		
MW-4	7/6/99	974.97	6.07	968.90	—
	8/31/99		5.94	969.03	+ 0.13
	11/23/99		5.55	969.42	+ 0.39
	12/29/99		6.73	968.24	- 1.18
	2/29/00		5.68	969.29	+ 1.05
	5/25/00		7.73	967.24	- 2.05
	8/10/00		9.00	965.97	- 1.27
	11/15/00		7.52	967.45	+ 1.48
	5/8/01		7.42	967.55	+ 0.10
	8/21/01		9.27	965.70	- 1.85
	11/29/01		5.19	969.78	+ 4.08
	2/11/02		6.27	968.70	- 1.08
	5/28/02		6.90	968.07	- 0.63
	8/19/02		9.60	965.37	- 2.70
	11/12/02		6.40	968.57	+ 3.20
	2/19/03		5.75	969.22	+ 0.65
	5/29/03		7.56	967.41	- 1.81
	1/28/04		5.45	969.52	+ 2.11
	5/11/12		nm	—	—
	9/19/13		nm	—	—
1/1/14	7.91	967.06	—		
TABLE 4 (continued)					

TABLE 4 (continued)
GROUNDWATER LEVEL DATA
Leathers Oil Company Station No. 50 (Sandy Save)

Well ID	Date	Top of Casing Elevation ^a	Depth to Water ^b	Ground Water Elevation ^c	Variance ^d
MW-5	12/29/99	970.45	7.82	962.63	—
	2/29/00		7.27	963.18	+ 0.55
	5/25/00		8.11	962.34	- 0.84
	8/10/00		9.84	960.61	- 1.73
	11/15/00		8.24	962.21	+ 1.60
	5/8/01		8.25	962.20	- 0.01
	8/21/01		10.02	960.43	- 1.77
	11/29/01		6.19	964.26	+ 3.83
	2/11/02		7.89	962.56	- 1.70
	5/28/02		8.15	962.30	- 0.26
	8/19/02		10.66	959.79	- 2.51
	11/12/02		8.52	961.93	+ 2.14
	2/19/03		7.34	963.11	+ 1.18
	5/29/03		8.72	961.73	- 1.38
	1/28/04		7.13	963.32	+ 1.59
	5/11/12		8.43	962.02	- 1.30
	9/19/13		11.61	958.84	- 3.18
	1/1/14		9.40	961.05	+ 2.21
MW-6	12/29/99	970.71	9.04	961.67	—
	2/29/00		7.48	963.23	+ 1.56
	5/25/00		9.31	961.40	- 1.83
	8/10/00		11.32	959.39	- 2.01
	11/15/00		9.39	961.32	+ 1.93
	5/8/01		9.26	961.45	+ 0.13
	8/21/01		11.71	959.00	- 2.45
	11/29/01		6.19	964.52	+ 5.52
	2/11/02		8.24	962.47	- 2.05
	5/28/02		9.05	961.66	- 0.81
	8/19/02		11.92	958.79	- 2.87
	11/12/02		8.81	961.90	+ 3.11
	2/19/03		7.29	963.42	+ 1.52
	5/29/03		9.41	961.30	- 2.12
	1/28/04		7.32	963.39	+ 2.09
	5/11/12		8.95	961.76	- 1.63
	9/19/13		10.65	960.06	- 1.70
	1/1/14		9.54	961.17	+ 1.11

TABLE 4 (continued)

TABLE 4 (continued)
GROUNDWATER LEVEL DATA
Leathers Oil Company Station No. 50 (Sandy Save)

Well ID	Date	Top of Casing Elevation ^a	Depth to Water ^b	Ground Water Elevation ^c	Variance ^d
MW-7	8/10/00	969.21	10.17	959.04	—
	11/15/00		8.82	960.39	+ 1.35
	5/8/01		8.59	960.62	+ 0.23
	8/21/01		10.35	958.86	- 1.76
	11/29/01		5.24	963.97	+ 5.11
	2/11/02		7.29	961.92	- 2.05
	5/28/02		8.34	960.87	- 1.05
	8/19/02		10.88	958.33	- 2.54
	11/12/02		8.78	960.43	+ 2.10
	2/19/03		6.45	962.76	+ 2.33
	5/29/03		9.10	960.11	- 2.65
	1/28/04		6.34	962.87	+ 2.76
	5/11/12		nm	—	—
	9/19/13		11.65	957.56	—
	1/1/14		9.58	959.63	+ 2.07
MW-8	4/17/12	971.38	nm	—	—
	5/11/12		7.69	963.69	—
	9/19/13		11.75	959.63	- 4.06
	1/1/14		9.40	961.98	+ 2.35
MW-9	4/17/12	967.82	nm	—	—
	5/11/12		6.89	960.93	—
	9/19/13		11.09	956.73	- 4.20
	1/1/14		7.92	959.90	+ 3.17

- a** Top of well casing elevations surveyed relative to a temporary benchmark with an assumed elevation in feet above mean sea level (msl)
- b** Depth to groundwater measured in feet from the surveyed location at the top of each well casing to the groundwater surface
- c** Elevation of measured groundwater surface in monitoring wells relative to assumed elevation in feet msl
- d** Variance represents the rise or fall of the water level compared to the previous monitoring event. Positive (+) indicates rise/increase; negative (-) indicates fall/decrease
- e** Not applicable (—)
- f** Depth to water measured subsequent to dual extraction feasibility test in well MW-2 and likely represents a lower level than equilibrium conditions
- g** Groundwater level/elevation suspect due to potentially compromised well casing

TABLE 5
GROUNDWATER SAMPLE ANALYTICAL DATA - GASOLINE AND BTEX
Leathers Oil Company Station No. 50 (Sandy Save)
39021 Proctor Boulevard, Sandy, Oregon
DEQ File No. 03-94-068

Well ID	Date	Depth to Water ^a	Gasoline ^b (ppb) ^c	Benzene ^d (ppb)	Toluene ^d (ppb)	Ethylbenzene ^d (ppb)	Xylenes ^d (ppb)
MW-1	6/23/99	nm ^e	—	19.7 ^f	4.63	190	358
	8/31/99	4.90	—	< 2.50 ^g	< 2.50	99.0	74.5
	11/23/99	4.49	—	5.35	20.9	107	127
	2/29/00	4.88	—	21.6	4.94	75.7	64.9
	5/25/00	6.29	—	9.63	2.77	91.0	71.1
	8/10/00	8.20	—	30.4	3.84	211	132
	11/15/00	6.05	—	3.77	1.41	45.9	23.2
	5/8/01	6.08	—	7.02	2.35	19.2	30.7
	8/21/01	8.04	—	—	—	—	—
	11/29/01	4.96	—	—	—	—	—
	1/28/04	4.57	—	1.42	< 0.50	4.26	5.53
	9/19/13	7.67	1,160	0.570	< 1.00	2.74	< 1.50
	1/1/14	6.23	587	< 0.250	< 1.00	< 0.500	< 1.50
MW-2	6/23/99	nm	—	106	< 25.0	1,090	5,570
	8/31/99	5.50	—	21.2	< 12.5	893	4,010
	11/23/99	5.08	—	101	22.0	786	2,880
	2/29/00	5.41	—	80.0	19.0	784	2,670
	5/25/00	6.60	—	64.0	26.5	779	2,320
	8/10/00	7.98	—	99.3	17.7	927	2,400
	11/15/00	6.55	—	38.2	< 10.0	668	1,700
	5/8/01	6.74	—	29.8	< 10.0	578	1,360
	8/21/01	7.93	—	27.2	< 10.0	737	1,960
	11/29/01	6.53	—	< 10.0	< 10.0	15.6	430
	2/11/02	5.70	—	25.8	< 10.0	519	1,240
	5/28/02	6.78	—	23.4	< 10.0	546	1,060
	8/19/02	8.25	—	21.2	< 10.0	466	596
	11/12/02	7.34	—	14.4	< 10.0	450	747
	2/19/03	6.45	—	13.8	< 10.0	334	484
	5/29/03	7.24	—	13.8	< 10.0	384	665
	1/28/04	5.25	—	7.40	< 5.00	180	290
	9/19/13	10.83	6,320	2.70	< 10.0	70.6	< 15.0
	1/1/14	8.01	1,250	< 0.500	< 2.00	11.6	< 3.00
MW-3	6/23/99	nm	—	194	10.2	303	261
	8/31/99	8.27	—	93.4	7.10	172	55.2
	11/23/99	7.80	—	117	45.2	142	36.5
	2/29/00	8.13	—	185	13.7	241	23.8
	5/25/00	8.68	—	154	10.3	254	16.7
	8/10/00	9.90	—	113	< 2.50	246	< 5.0
	11/15/00	8.62	—	44.7	< 2.50	131	< 5.0
	5/8/01	8.63	—	30.4	14.5	117	8.36
	8/21/01	9.76	—	—	—	—	—
	11/29/01	7.72	—	—	—	—	—
	1/28/04	7.85	—	0.52	< 0.50	1.60	< 1.00
	9/19/13	12.49	751	0.780	< 1.00	< 0.500	< 1.50
	1/1/14	9.60	< 100	< 0.250	< 1.00	< 0.500	< 1.50

TABLE 5 (continued)

TABLE 5 (continued)
GROUNDWATER SAMPLE ANALYTICAL DATA - GASOLINE AND BTEX
Leathers Oil Company Station No. 50 (Sandy Save)

Well ID	Date	Depth to Water ^a	Gasoline ^b (ppb) ^c	Benzene ^d (ppb)	Toluene ^d (ppb)	Ethylbenzene ^d (ppb)	Gasoline ^d (ppb)
MW-4	6/23/99	nm ^e	—	< 0.50	< 0.50	< 0.50	< 1.00
	8/31/99	5.94	—	< 0.50	< 0.50	< 0.50	< 1.00
	11/23/99	5.55	—	< 0.50	< 0.50	< 0.50	< 1.00
	2/29/00	5.68	—	< 0.50	< 0.50	< 0.50	< 1.00
	5/25/00	7.73	—	< 0.50	< 0.50	< 0.50	< 1.00
	8/10/00	9.00	—	< 0.50	< 0.50	< 0.50	< 1.00
	11/15/00	7.52	—	< 0.50	< 0.50	< 0.50	< 1.00
	5/8/01	7.42	—	—	—	—	—
	8/21/01	9.27	—	—	—	—	—
	11/29/01	5.19	—	—	—	—	—
	1/28/04	5.45	—	< 0.50	< 0.50	< 0.50	< 1.00
	9/19/13	nm	—	—	—	—	—
	1/1/14	7.91	—	—	—	—	—
MW-5	11/24/99	nm	—	67.6	18.8	63.7	20.9
	2/29/00	7.27	—	52.9	4.70	42.3	5.72
	5/25/00	8.11	—	56.3	3.24	58.5	8.57
	8/10/00	9.84	—	166	6.21	126	< 5.00
	11/15/00	8.24	—	96.9	< 2.50	90.8	< 5.00
	5/8/01	8.25	—	46.4	12.8	42.1	6.29
	8/21/01	10.02	—	—	—	—	—
	11/29/01	6.19	—	—	—	—	—
	1/28/04	7.13	—	24.1	< 0.50	17.7	< 1.00
	9/19/13	11.61	< 100	< 0.250	< 1.00	< 0.500	< 1.50
	1/1/14	9.40	—	—	—	—	—
MW-6	11/24/99	nm	—	144	29.8	8.87	48.5
	2/29/00	7.48	—	< 0.50	< 0.50	< 0.50	< 1.00
	5/25/00	9.31	—	< 0.50	< 0.50	< 0.50	< 1.00
	8/10/00	11.32	—	1.04	0.66	0.74	3.48
	11/15/00	9.39	—	< 0.50	< 0.50	< 0.50	< 1.00
	5/8/01	9.26	—	< 0.50	< 0.50	< 0.50	< 1.00
	8/21/01	11.71	—	—	—	—	—
	11/29/01	6.19	—	—	—	—	—
	1/28/04	7.32	—	< 0.50	< 0.50	< 0.50	< 1.00
	9/19/13	10.65	< 100	< 0.250	< 1.00	< 0.500	< 1.50
	1/1/14	9.54	—	—	—	—	—
MW-7	6/16/00	nm	—	28.2	3.06	67.7	45.5
	8/10/00	10.17	—	14.2	1.47	21.9	1.60
	11/15/00	8.82	—	3.95	< 0.50	2.21	< 1.00
	5/8/01	8.59	—	2.15	< 0.50	3.29	1.58
	8/21/01	10.35	—	—	—	—	—
	11/29/01	5.24	—	—	—	—	—
	1/28/04	6.34	—	1.96	< 0.50	1.12	5.06
	9/19/13	11.65	< 100	0.770	< 1.00	< 0.500	< 1.50
	1/1/14	9.58	263	0.870	< 1.00	3.12	< 1.50

TABLE 5 (continued)

TABLE 5 (continued)
GROUNDWATER SAMPLE ANALYTICAL DATA - GASOLINE AND BTEX
Leathers Oil Company Station No. 50 (Sandy Save)

Well ID	Sample Date	Depth to Water ^a	Gasoline ^b (ppb) ^c	Benzene ^d (ppb)	Toluene ^d (ppb)	Ethylbenzene ^d (ppb)	Xylenes ^d (ppb)
MW-8	4/17/12	nm	23,800	6.71	1.06	551	727
	9/19/13	11.75	9,540	5.35	< 1.00	278	124
	1/1/14	9.40	7,030	2.15	< 5.00	157	75.4
MW-9	4/17/12	nm	5,700	45.2	< 1.00	185	2.03
	9/19/13	11.09	< 100	< 0.250	< 1.00	< 0.500	< 1.50
	1/1/14	7.92	< 100	< 0.250	< 1.00	< 0.500	< 1.50
GW-1A	4/16/04	nm ^e	—	2.05	0.69	2.49	1.52
GW-2B	4/16/04	nm	—	< 0.20	< 0.50	< 0.50	< 1.00
GW-3A	4/16/04	nm	—	339	39.0	1,090	3,350
GW-4	5/19/04	nm	—	510	352	664	2,430
GW-5	5/19/04	nm	—	1,120	21.8	695	1,620
GW-6	6/17/04	nm	—	1,940	30.0	1,420	3,010
GW-7	6/17/04	nm	—	180	< 2.50	318	292
GW-8	6/17/04	nm	—	144	2.78	386	230
GW-9	6/17/04	nm	—	521	< 2.50	662	312
GW-10	6/17/04	nm	—	512	< 2.50	159	41.6

- a Depth to groundwater measured in feet below the surveyed location at the top of each well casing
b Gasoline analyzed using Oregon DEQ method NWTPH-Gx
c Analytical data reported in parts per billion (ppb)
d Benzene, toluene, ethylbenzene, and xylenes (BTEX) analyzed using EPA methods 8020A/8021B/ 8260B
e Not measured (nm)
f Not analyzed / not applicable (—)
g Bold value indicates analyte concentration detected as listed
h Analyte concentration not detected above the laboratory reporting limit, as listed (<)

TABLE 6
GROUNDWATER SAMPLE ANALYTICAL DATA - SELECTED VOCs AND LEAD

Leathers Oil Company Station No. 50 (Sandy Save)
39021 Proctor Boulevard, Sandy, Oregon
DEQ File No. 03-94-068

Well ID	Date	MTBE ^a (ppb) ^b	EDB ^a (ppb)	EDC ^a (ppb)	124-TMB ^a (ppb)	135-TMB ^a (ppb)	NPB ^a (ppb)	IPB ^a (ppb)	Naphthalene ^a (ppb)	Dissolved Lead ^c (ppb)
MW-1	5/25/00	9.67 ^d	— ^e	—	—	—	—	—	—	—
	1/28/04	< 2.00 ^f	< 0.50	< 0.50	59.1	19.7	24.5	5.93	2.02	< 1.00
	9/19/13	< 1.00	< 0.500	< 0.500	< 1.00	< 1.00	13.1	5.14	1.86 ^g	—
	1/1/14	< 1.00	< 0.500	< 0.500	< 1.00	< 1.00	2.84	1.06	< 0.629 ^g	—
MW-2	5/25/00	< 20.0 ^h	—	—	—	—	—	—	—	—
	11/15/00	< 40.0	< 10.0	< 10.0	3,130	950	470	116	342	—
	5/8/01	< 40.0	< 10.0	< 10.0	2,270	683	407	104	267	—
	8/21/01	< 40.0	< 10.0	< 10.0	2,880	860	507	125	377	—
	11/29/01	< 40.0	< 10.0	< 10.0	719	276	< 10.0	< 40.0	< 40.0	—
	2/11/02	< 40.0	< 10.0	< 10.0	2,700	746	322	84.0	235	—
	5/28/02	< 40.0	< 10.0	< 10.0	2,760	747	397	95.2	220	—
	8/19/02	< 40.0	< 10.0	< 10.0	1,990	532	340	84.2	198	—
	11/12/02	< 40.0	< 10.0	< 10.0	2,180	597	335	83.8	181	—
	2/19/03	< 40.0	< 10.0	< 10.0	1,840	483	295	71.8	151	—
	5/29/03	< 40.0	< 10.0	< 10.0	2,350	639	372	88.0	189	—
	1/28/04	< 20.0	< 5.00	< 5.00	1,110	273	193	49.6	87.5	< 1.00
	9/19/13	< 10.0	< 5.00	< 5.00	191	21.4	204	40.4	14.1 ^g	—
	1/1/14	< 2.00	< 1.00	< 1.00	26.0	2.64	40.1	8.44	12.5 ^g	—
MW-3	8/31/99	40.0	< 2.50	< 2.50	—	—	—	—	35.0	< 1.00
	11/23/99	43.2	—	—	—	—	—	—	—	—
	2/29/00	32.6	—	—	—	—	—	—	—	—
	5/25/00	18.5	—	—	—	—	—	—	—	—
	8/10/00	26.9	—	—	—	—	—	—	—	—
	11/15/00	< 10.0	< 2.50	< 2.50	21.6	5.35	78.6	28.8	17.7	—
	1/28/04	< 2.00	< 0.50	< 0.50	1.34	< 0.50	5.97	< 2.00	< 2.00	< 1.00

TABLE 6 (continued)

TABLE 6 (continued)
GROUNDWATER SAMPLE ANALYTICAL DATA - SELECTED VOCs AND LEAD
Leathers Oil Company Station No. 50 (Sandy Save)

Well ID	Date	MTBE ^a (ppb) ^c	EDB ^a (ppb)	EDC ^a (ppb)	124-TMB ^a (ppb)	135-TMB ^a (ppb)	NPB ^a (ppb)	IPB ^a (ppb)	Naphthalene ^a (ppb)	Dissolved Lead ^b (ppb)
MW-3 (cont)	9/19/13	< 1.00	< 0.500	< 0.500	< 1.00	< 1.00	1.35	1.76	< 1.47 ^g	—
	1/1/14	< 1.00	< 0.500	< 0.500	< 1.00	< 1.00	< 0.500	< 1.00	< 0.0769 ^g	—
MW-4	5/25/00	< 2.00 ^f	— ^e	—	—	—	—	—	—	—
	1/28/04	< 2.00	< 0.50	< 0.50	< 1.00	< 0.50	< 0.50	< 2.00	< 2.00	< 1.00
	9/19/13	—	—	—	—	—	—	—	—	—
	1/1/14	—	—	—	—	—	—	—	—	—
MW-5	2/29/00	10.9 ^d	—	—	—	—	—	—	—	—
	5/25/00	11.0	—	—	—	—	—	—	—	—
	11/15/00	< 10.0	< 2.50	< 2.50	< 5.00	< 2.50	52.2	22.1	< 10.0	—
	1/28/04	2.01	< 0.50	< 0.50	< 1.00	< 0.50	12.7	6.25	2.87	< 1.00
	9/19/13	< 1.00	< 0.500	< 0.500	< 1.00	< 1.00	< 0.500	< 1.00	0.466 ^g	—
	1/1/14	—	—	—	—	—	—	—	—	—
MW-6	5/25/00	< 2.00	—	—	—	—	—	—	—	—
	1/28/04	< 2.00	< 0.50	< 0.50	< 1.00	< 0.50	< 0.50	< 2.00	< 2.00	< 1.00
	9/19/13	< 1.00	< 0.500	< 0.500	< 1.00	< 1.00	< 0.500	< 1.00	< 0.0777 ^g	—
	1/1/14	—	—	—	—	—	—	—	—	—
MW-7	6/16/00	< 2.00	—	—	—	—	—	—	—	—
	11/15/00	2.08	—	—	—	—	—	—	—	—
	1/28/04	< 2.00	< 0.50	< 0.50	15.2	1.48	2.28	< 2.00	5.68	< 1.00
	9/19/13	< 1.00	< 0.500	< 0.500	< 1.00	< 1.00	< 0.500	1.04	< 2.00	—
	1/1/14	< 1.00	< 0.500	< 0.500	15.8	< 1.00	6.64	3.51	3.68 ^g	—
MW-8	4/17/12	< 1.00	< 0.500	< 0.500	2,390	827	377	115	302	—
	9/19/13	< 1.00	< 0.500	< 0.500	580	161	298	92.4	85.7 ^g	—
	1/1/14	< 5.00	< 2.50	< 2.50	716	132	233	57.7	59.3	—

TABLE 6 (continued)

TABLE 6 (continued)
GROUNDWATER SAMPLE ANALYTICAL DATA - SELECTED VOCs AND LEAD
Leathers Oil Company Station No. 50 (Sandy Save)

Well ID	Date	MTBE ^a (ppb) ^c	EDB ^a (ppb)	EDC ^a (ppb)	124-TMB ^a (ppb)	135-TMB ^a (ppb)	NPB ^a (ppb)	IPB ^a (ppb)	Naphthalene ^a (ppb)	Dissolved Lead ^b (ppb)
MW-9	4/17/12	< 1.00	< 0.500	< 0.500	8.68	5.40	153	48.9	65.2	—
	9/19/13	< 1.00	< 0.500	< 0.500	< 1.00	< 1.00	< 0.580	< 1.00	0.237 ^g	—
	1/1/14	< 1.00	< 0.500	< 0.500	< 1.00	< 1.00	< 0.500	< 1.00	< 0.0762 ^g	—
GW-1A	4/16/04	5.16	< 0.50	< 0.50	7.20	< 0.50	2.18	2.96	< 2.00	--
GW-2B	4/16/04	< 2.00	< 0.50	< 0.50	< 1.00	< 0.50	< 0.50	< 2.00	< 2.00	--
GW-5	5/19/04	< 20.0 ^f	< 5.0	< 5.0	866 ^d	181	85.2	40.4	244	— ^e
GW-6	6/17/04	< 40.0	< 10.0	< 10.0	1,790	401	201	93.2	458	—
GW-7	6/17/04	< 10.0	< 2.50	3.25	400	96.4	140	86.6	170	—
GW-8	6/17/04	6.16	< 1.00	< 1.00	321	77.2	110	46.6	135	—
GW-9	6/17/04	< 10.0	< 2.50	< 2.50	495	144	144	58.4	227	—
GW-10	6/17/04	< 10.0	< 2.50	< 2.50	30.0	6.75	40.2	25.0	79.7	—

- a Selected volatile organic compounds analyzed using EPA method 8021B or 8260B. MTBE detections confirmed by GC/MS unless otherwise noted; abbreviations are as follows: MTBE = Methyl tert-butyl ether, EDB = 1,2-dibromoethane, EDC = 1,2-dichloroethane, 124-TMB = 1,2,4-trimethylbenzene, 135-TMB = 1,3,5-trimethylbenzene, IPB = isopropylbenzene, and NPB = n-propylbenzene
- b Analytical data reported in parts per billion (ppb)
- c Dissolved lead analyzed using EPA method 6020 or 200.8
- d Bold value indicates analyte concentration exceeded the laboratory reporting limit
- e Not analyzed (—)
- f Analyte concentration not detected above the laboratory reporting limit, as listed (<)
- g Naphthalene analyzed using EPA method 8270 DSIM
- h MTBE concentration not confirmed by GC/MS. See Groundwater Monitoring Report - May 2000

TABLE 7

SOIL VAPOR SAMPLE ANALYTICAL DATA

Leathers Oil Company Station No. 50 (Sandy Save)
39021 Proctor Boulevard, Sandy, Oregon
DEQ File No. 03-94-0068

Sample Location	Sample Date	Sample ID	Sample Type	Gasoline and VOCs ^a (µg/m ³) ^b													
				Gasoline	RBDM VOCs												Leak Test
					Benzene	Toluene	Ethylbenzene	Xylenes	1,2-Dibromoethane	1,2-Dichloroethane	Methyl tert-butyl ether	Naphthalene	Isopropylbenzene	n-propylbenzene	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	2-Propanol
V1-3.4	03/17/05	V1-3.4	Soil Vapor	- ^c	< 100 ^d	-	-	-	-	-	-	-	-	-	-	-	-
SG-1	08/28/14	SG-1	Soil Vapor	160 ^e	< 0.84	< 0.99	< 1.1	< 2.2	< 2.0	< 1.1	< 0.95	< 6.9	< 1.3	< 1.3	< 1.3	< 1.3	140
SG-2	08/28/14	SG-2	Soil Vapor	7,800,000 ^f	< 420	< 500	< 570	< 1,140	< 1,000	< 530	< 470	< 2,800	< 650	< 650	< 650	< 650	< 1,300
	04/01/21	SG-2	Soil Vapor	< 89	< 0.69	< 0.82	< 0.94	< 1.88	< 1.7	< 0.88	< 0.78	< 5.7	< 1.1	< 1.1	< 1.1	< 1.1	5.7
		SG2-Shroud	Leak Test Shroud	-	-	-	-	-	-	-	-	-	-	-	-	-	180,000
	08/29/22	SG-2	Soil Vapor	250	< 0.70	0.87	< 0.96	< 1.92	620	< 0.89	< 0.79	< 2.3	< 1.1	< 1.1	< 1.1	< 1.1	620
		SG2-Shroud	Leak Test Shroud	-	-	-	-	-	-	-	-	-	-	-	-	-	240,000
SG-3	08/28/14	SG-3	Soil Vapor	< 110	< 0.86	< 1.0	< 1.2	< 2.4	< 2.0	< 1.1	< 0.97	< 7.0	< 1.3	< 1.3	< 1.3	< 1.3	97
SG-4	08/28/14	SG-4	Soil Vapor	< 110	< 0.87	< 1.0	< 1.2	< 2.4	< 2.1	< 1.1	< 0.98	< 7.1	< 1.3	< 1.3	< 1.3	< 1.3	78

DEQ Soil Vapor Risk-Based Concentrations (RBCs) - Updated May 2018

Soil Vapor RBC	Residential	79,000	72	1.E+06	220	21,000	0.94	22	2,200	17	83,000	-- ^g	13,000	13,000	--
	Occupational Worker	1.70E+06	1,600	2.19E+07	4,900	440,000	20	470	47,000	360	1,800,000	--	260,000	260,000	--

^a Gasoline and volatile organic compounds (VOCs) were analyzed in 2014 and 2021 using EPA method TO-15. Benzene was analyzed in 2005 using EPA method 8021B.

^b Analytical results and RBCs reported in micrograms per cubic meter (µg/m³)

^c (-) Not analyzed

^d (<) Analyte concentration not detected above the laboratory reporting limit, as listed

^e Bold value indicates analyte concentration exceeds the laboratory reporting limit

^f Yellow shaded indicates the analyte concentration (or one-half the laboratory reporting limit) exceeded an RBC. The exceeded RBC is also shaded

^g (--) Not available (Oregon DEQ has not established an RBC value for the respective analyte)