

GROUNDWATER MONITORING REPORT: DECEMBER 2015

Former Jim's BP/Union 76 Mini Mart
13 East Main Street
Battle Ground, Clark County, Washington
VCP Site SW1423

January 4, 2016
Project No. 81157108

Prepared for:
CLMG Corporation
Plano, Texas

Prepared by:
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Offices Nationwide
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The logo for Terracon, featuring the word "Terracon" in a bold, white, sans-serif font. The letter "T" is significantly larger and more stylized than the other letters, with a thick vertical bar on its left side. The logo is set against a dark red background.

Geotechnical ■ Environmental ■ Construction Materials ■ Facilities

January 4, 2016

CLMG Corporation
7195 Dallas Parkway
Plano, Texas 75024

Attn: Mr. Todd Cansler
P: (469) 467-5558
E: tcansler@clmgcorp.com

Re: **Groundwater Monitoring Report - December 2015**
Former Jim's BP/Union 76 Mini Mart
13 East Main Street
Battle Ground, Clark County, Washington
VCP Site SW1423
Project Number: 81157108

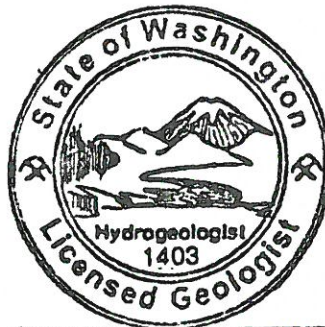
Dear Mr. Cansler:

Terracon Consultants, Inc. (Terracon) is pleased to submit this Groundwater Monitoring Report for the above referenced site. This work was performed in general accordance with Terracon Proposal No. P81150196 dated July 7, 2015, and the terms, conditions and limitations in the Master Services Agreement between Terracon Consultants, Inc. and CLMG Corporation, dated July 1, 2013.

We appreciate the opportunity to perform these services for CMLG Corporation. In addition to sampling services, our professionals provide geotechnical, environmental, construction materials, and facilities services on a wide variety of projects locally, regionally and nationally. For more detailed information on all of Terracon's services please visit our website at www.terracon.com. Please contact either of the undersigned at 425-771-3304 if you have questions regarding the information provided in the report.

Sincerely,
Terracon


S. Kyle Long
Environmental Technician



MICHAEL D. NOLL



Michael D. Noll, L.G., L.H.G.
Senior Project Manager

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GROUNDWATER MONITORING REPORT – DECEMBER 2015
Former Jim’s BP/Union 76 Mini Mart
13 East Main Street
Battle Ground, Clark County, Washington
VCP Site SW1423

Terracon Project No. 81157108
January 4, 2016

1.0 SITE DESCRIPTION

This groundwater sampling report documents groundwater sampling activities that were conducted at the Former Jim’s BP/Union 76 Mini Mart site located on the southeast corner of East Main Street and South Parkway Avenue in Battle Ground, Clark County, Washington. The subject site is an approximate 0.23-acre tract of land (Clark County tax parcel 91101110) that was developed as a gas station and convenience store in the early 1980s. Remedial activities and groundwater sampling were performed in August and September 2015. A Topographic Map is included as Figure 1 and shows the site in relation to the surrounding area. Figure 2 presents the locations of the monitoring wells, injection borings, and former features at the site. Figure 3 depicts the groundwater migration direction inferred from water level measurements taken in December 2015.

1.1 Scope of Work

Terracon Consultants, Inc. (Terracon) conducted groundwater monitoring at select wells, in general accordance with Terracon Proposal No. P81150196 dated July 7, 2015, and the terms, conditions and limitations in the Master Services Agreement between Terracon Consultants, Inc. and CLMG Corporation, dated July 1, 2013.

This report includes a description of the groundwater sample collection activities, tables showing current and historical depth to groundwater measurements and analytical results, and a copy of the analytical laboratory report with chain-of-custody documentation.

1.2 Standard of Care

Terracon’s services were performed in a manner consistent with generally accepted practices of the profession undertaken in similar studies in the same geographical area during the same time period. Please note that Terracon does not warrant the work of laboratories, regulatory agencies or other third parties supplying information used in the

preparation of the report. These remedial treatment and groundwater monitoring services were performed in accordance with the scope of work agreed with you, our client, as reflected in our proposal.

1.3 Additional Scope Limitations

This report was intended to reduce, but not eliminate, uncertainty regarding the existence of recognized environmental conditions in connection with the subject site. Findings, conclusions, and recommendations resulting from these services are based upon information derived from the on-site activities and other services performed under this scope of work; such information is subject to change over time. Certain indicators of the presence of hazardous substances, petroleum products, or other constituents may have been latent, inaccessible, unobservable, non-detectable, or not present during these services, and we cannot represent that the site contains no hazardous substances, toxic materials, petroleum products, or other latent conditions beyond those identified during this groundwater sampling event. Subsurface conditions may vary from those encountered at the time of construction or at specific borings or wells or during other surveys, tests, assessments, investigations, or exploratory services. The data, interpretations, findings, and our recommendations are based solely upon data obtained at the time and within the scope of these services. If, during future site development, different subsurface conditions from those encountered during our explorations are observed or appear to be present, we must be advised promptly so that we can review these conditions and reconsider or modify our conclusions and recommendations where necessary.

1.4 Reliance

This report has been prepared for the exclusive use and reliance of CMLG Corporation. Use or reliance by any other party (except a governmental entity having jurisdiction over the site) is prohibited without the written authorization of CMLG Corporation and Terracon.

Reliance on this report by the client and all authorized parties will be subject to the terms, conditions and limitations stated in this report and Terracon's agreement for services. The limitation of liability defined in the terms and conditions is the aggregate limit of Terracon's liability to the client and all relying parties unless otherwise agreed in writing.

2.0 SITE HISTORY AND PREVIOUS SAMPLING EVENTS

The subject site was developed as a gasoline station in the early 1980s. The site most recently operated as a Union 76-branded gasoline station/convenience store with a fueling island, dispenser canopy, asphalt paved parking areas, and landscaped areas. Three underground storage tanks (USTs) are located at the site, consisting of a single wall steel 6,000-gallon gasoline tank, a single wall steel 4,000-gallon diesel tank, and a fiberglass reinforced plastic (FRP) double wall 8,000-gallon gasoline tank. The tanks were permanently closed-in-place in June 2014 and the dispenser island and canopy were demolished. The associated convenience store is currently occupied by a retail liquor store tenant. The attached Figure 2 Site Diagram shows the approximate locations of former site features.

A confirmed release of petroleum hydrocarbons to site soil and groundwater was discovered during the installation of the 8,000-gallon FRP UST in 1991 (Ecology, *Feasibility Studies and Remedial Activities Conducted at Jim's BP*, June 30, 2000). The site owner/operator entered into a Consent Decree with Ecology and Ecology conducted a site characterization and remedial action at the site between 1992 and 1999. Ecology oversaw the installation of four groundwater monitoring wells (MW-1, MW-3, MW-5, and MW-6) on the site (Figure 2). Ecology directed soil sampling at several locations on the site (see borings SP-7 and SP-8 on Figure 2), and selected injections of an oxygen release compound (ORC) as the remedial alternative at the site. Those injections of ORC were performed by Ecology's contractor in 1999. After those injections were performed, and although soil and groundwater impacts still exceeded the Washington State Model Toxics Control Act (MTCA) Method A cleanup levels for petroleum hydrocarbons in 1999, Ecology issued a No Further Action (NFA) determination for the site in 2000, presumably basing its determination on the limited extent of remaining soil contamination at the site, the unpotable nature of the perched groundwater, and the lack of potential for direct contact with soils because of the paved nature of the site.

Terracon conducted a Limited Site Investigation (LSI) at the site on behalf of CLMG in 2011 (*Limited Site Investigation, Union 76 Mini Mart*, October 4, 2011). Soil and groundwater samples were collected from direct-push soil borings B-1 through B-4 in the vicinity of the USTs and fuel dispensers (Figure 2). With the exception of one location, all soil and groundwater analytical results were below the laboratory reporting limit and/or respective MTCA Method A cleanup levels for benzene, toluene, ethylbenzene, and xylenes (BTEX) and for diesel- and oil-range total petroleum hydrocarbons (TPH). Elevated concentrations of gasoline-range TPH exceeding the MTCA Method A cleanup levels were identified in site soil and groundwater at the location of boring B-3. Based on the similarity with the concentrations observed by Ecology in 1999, the lack of BTEX compounds, and the weathered nature of the

chromatograms for this location, these impacts appeared to be associated with the previous documented release that Ecology was aware of and had issued an NFA letter for, dated April 6, 2000. Based on this information, additional investigation did not appear to be warranted.

Terracon and 3 Kings Environmental, on behalf of CLMG, permanently closed the USTs in place between April and June 2014 (*UST Decommissioning Report, Union 76 Mini Mart*, July 9, 2014). Terracon collected soil samples from the north, east, south, and west sides of the tank basin (THN-6, THE-6.5, THS-6, and THW-5, respectively; Figure 2) at 5 to 6.5 feet below the ground surface (bgs), just above the top of the groundwater table. Groundwater samples were also collected at this time from site monitoring wells MW-1, MW-3, MW-5, and MW-6 to evaluate groundwater quality for the UST closure investigation. Three soil samples were collected from beneath the west, central, and east fuel dispensers (DIW-2.5, DIC-2.5, and DIE-2.5) at approximately 2.5 feet bgs. All soil and groundwater sample analytical results were below the laboratory reporting limit and/or respective MTCA Method A cleanup levels for gasoline-range TPH, BTEX, and diesel- and oil-range TPH.

After reviewing the initial soil sample locations and laboratory results, Ecology requested that additional soil samples be collected from the UST area as part of the UST system closure evaluation. Terracon collected additional compliance soil samples from borings B-5 through B-8 in May 2014 (Figure 2). The borings were advanced to 8 feet bgs and compliance soil samples were collected from the borings at 6 to 7 feet bgs (top of the groundwater table). All soil sample results were below the laboratory reporting limit and/or respective MTCA Method A cleanup levels for gasoline-range TPH, BTEX, and diesel- and oil-range TPH.

During the tank closure process, Ecology expressed concern regarding the limited soil and groundwater impacts at boring B-3 identified by Terracon as part of the 2011 LSI. After a series of conversations with Ecology, CLMG made the decision to perform additional soil and groundwater sampling in the vicinity of B-3 to confirm that the soil impacts in that area were associated with the earlier, known releases at the site that were the subject of Ecology's April 6, 2000 NFA determination.

Terracon completed a Supplemental LSI for the site in November 2014. Five soil borings (B-9 through B-12 and MW-7) were advanced in the area of former boring B-3. Upon completion of the boring at MW-7, a permanent groundwater monitoring well was installed. Two to three soil samples were collected from each boring, and groundwater samples were collected from monitoring wells MW-5 and MW-7. Gasoline-range TPH and benzene were detected above the MTCA Method A cleanup levels for soil collected from the MW-7 boring at approximately 7.5 feet bgs, below the top of the groundwater

table (encountered at approximately 5 feet bgs). Gasoline-range TPH was detected at a concentration of 990 micrograms per liter ($\mu\text{g/L}$) in the groundwater sample collected from monitoring well MW-7, slightly above the MTCA Method A cleanup level (800 $\mu\text{g/L}$ when benzene is present). Diesel-range TPH was detected at concentrations slightly above the MTCA Method A cleanup level (500 $\mu\text{g/L}$) for the groundwater samples collected from monitoring wells MW-5 and MW-7 (560 $\mu\text{g/L}$ and 980 $\mu\text{g/L}$, respectively).

In August 2015, Terracon and Cascade Drilling, L.P., completed injections of in situ chemical oxidation (ISCO) compounds (ORC-A and RegenOx® Part A) into five direct push borings (IP-01 through IP-05, Figure 2) in the vicinity of monitoring wells MW-5 and MW-7. Depth to groundwater in each well was measured prior to the ISCO injection activities. Following the completion of the injections, Terracon collected groundwater samples from wells MW-5 and MW-7 in September 2015. Diesel-range TPH was detected at a concentration of 770 $\mu\text{g/L}$ in the groundwater sample collected from monitoring well MW-7, slightly above the MTCA Method A cleanup level, but below the sample concentration reported in November 2014, which was collected prior to the ISCO injections.

3.0 GROUNDWATER SAMPLING

3.1 Groundwater Sampling

Terracon collected groundwater samples from wells MW-5 and MW-7 on December 3, 2015. Depth to groundwater in each well was measured prior to the sample collection activities. The water level probe was cleaned using an Alconox® wash and distilled water rinse before use in each well. Measured depth to water ranged from 4.24 feet below the top of the well casing (TOC) at well MW-6 to 21.35 feet below TOC at well MW-3 (Table 1). The measured depth to water at wells MW-5 through MW-7 decreased by 2 to 3 feet between August 2015 and December 2015, reflecting a rise in the local perched groundwater table of 2 to 3 feet.

Measured depth to groundwater and TOC elevation data were used to determine the groundwater elevation at each well. Groundwater elevations ranged from approximately 272 feet above mean sea level (MSL) at wells MW-1 and MW-3, to approximately 288 feet MSL at well MW-6. Based on the December 2015 groundwater elevation data, groundwater appeared to be mounded in the vicinity of wells MW-5 and MW-6 and flowing mainly toward the southeast (Figure 3).

The wells were purged using a peristaltic pump equipped with clean tubing. Low-flow groundwater discharge rates were maintained during purging in order to minimize the drawdown of the water level in the wells. Groundwater parameters (pH, temperature,

specific conductance, and dissolved oxygen) were measured during well purging using a multifunction meter and a flow-through cell. Samples were collected when all parameters were within 10% for two consecutive readings.

Stabilized dissolved oxygen (DO) readings for the groundwater purged from wells MW-5 and MW-7 were 10.58 milligrams per liter (mg/L) and 14.31 mg/L, respectively, down slightly from 18.25 mg/L and 20 mg/L, respectively, observed during the September 2015 sampling event. These post-remedial treatment DO readings are substantially higher than the pre-remedial treatment DO values of 1.44 mg/L for MW-5 and 2.67 mg/L for MW-7 recorded during the November 2014 sampling event.

Purge volumes were approximately 0.5 to 0.75 gallons from each well. The purge water from monitoring well MW-5 was clear with a sour odor. The purge water from monitoring well MW-7 was clear with occasional white sediment. No hydrocarbon-like odor or sheen was observed in the purge water from either of the wells. The purge water was stored onsite in a labeled 55-gallon drum located in the dumpster enclosure at the southeast corner of the property, pending receipt of laboratory analytical results.

Following the stabilization of measured groundwater parameters, samples were collected utilizing a peristaltic pump. Discharge from the peristaltic pump was directed into laboratory provided glassware. Each sample container was labeled with the site name, date, time, and well/sample number.

3.4 Analytical Laboratory Testing

Groundwater samples were delivered to ALS Laboratory Group (ALS), a Washington accredited analytical laboratory located in Everett, Washington, for laboratory analysis for the following:

- Diesel- and oil-range TPH using Northwest Method NWTPH-Dx;
- Gasoline-range TPH using Northwest Method NWTPH-Gx; and
- Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX) using EPA Method 8021.

The executed chain-of-custody form and laboratory analytical certificate are provided in Appendix A. All analyses were completed using standard turnaround times.

3.5 Quality Assurance/Quality Control Results

The analytical results for the current investigation were checked for completeness immediately upon receipt from the laboratory to ensure that data and QA/QC information requested were present. Data quality was assessed by considering hold times,

surrogate recovery, method blanks, matrix spike and matrix spike duplicate (MS/MSD) recovery, and detection limits. QA/QC review was completed using guidance described in *USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review* (Draft Final, USEPA, 2005). Our evaluation assumes that the QA/QC is correct as reported by the laboratory, and merely provides an interpretation of the QA/QC results.

- Hold Times: All analyses were completed within specified hold times.
- Surrogate Recoveries: All surrogate recoveries were within laboratory limits.
- Method Blanks: Analytes were not detected in any of the laboratory method blanks.
- Trip Blank: Analytes were not detected in the laboratory trip blank.
- MS/MSD Results: MS and MSD recoveries were all within laboratory limits, and Relative Percent Differences (RPDs) between MS and MSD recoveries were all within laboratory limits.
- Laboratory Reporting Limits: Reporting limits were below relevant MTCA cleanup levels. The diesel-range product reporting limit for the sample collected from MW-7 was raised to the MTCA Method A cleanup level (500 µg/L) due to volatile range product overlap.

Based upon our interpretation of quality control information provided by the laboratory, it is our opinion that the overall dataset is useable as qualified for the purposes of this report and groundwater sampling event.

4.0 LABORATORY ANALYTICAL RESULTS

A summary of analytical results for groundwater quality from the December 2015 sampling event is presented in Table 2. The results are tabulated with the state cleanup levels included for comparison. The complete laboratory report and chain-of-custody form for analytical results from this sampling event are included in Appendix A.

Diesel- and Oil-Range Organics

Diesel-range TPH was identified above the analytical laboratory reporting limit in the groundwater sample collected from well MW-5 at a concentration of 240 µg/L, which is below the MTCA Method A cleanup level of 500 µg/L. All other diesel- and oil-range TPH groundwater sampling results were below their analytical laboratory reporting limits.

According to the laboratory analytical report (Appendix A), the chromatogram for the MW-5 groundwater sample indicates that it is likely that the sample contains highly weathered diesel.

Gasoline-Range Organics and BTEX

Gasoline-range TPH was identified in the groundwater sample collected from well MW-7 at a concentration of 1,900 µg/L, which is above the MTCA Method A cleanup level of 800 µg/L for gasoline-range TPH when benzene is present.

Gasoline-range TPH was identified above the analytical laboratory reporting limit in the groundwater sample collected from well MW-5 at a concentration of 100 µg/L, which is well below the MTCA Method A cleanup level of 800 µg/L.

According to the laboratory analytical report (Appendix A), the chromatograms for the MW-5 and MW-7 groundwater samples indicate that it is likely that the samples contain highly weathered gasoline.

Ethylbenzene was detected above the laboratory reporting limit in the groundwater sample collected from well MW-7 at a concentration of 18 µg/L, which is well below the MTCA Method A cleanup level of 800 µg/L. No other samples contained detections of BTEX above the analytical laboratory reporting limits.

5.0 FINDINGS AND CONCLUSIONS

Monitoring wells MW-5 and MW-7 were sampled in December 2015, approximately 4 months following the August 2015 ISCO injections. Based on the results of the December 2015 groundwater sampling event, the findings and conclusions of this report are as follows:

- Gasoline-range TPH was identified in the groundwater sample collected from monitoring well MW-7 at a concentration of 1,900 µg/L, exceeding the MTCA Method A cleanup level of 800 µg/L. According to the analytical laboratory, the sample likely contains highly weathered gasoline, consistent with the release discovered at the site in 1991, which was previously treated and documented by Ecology.
- Gasoline- and diesel-range TPH in the groundwater sample collected from monitoring well MW-5 were identified at a concentration above the laboratory reporting limits, but below the MTCA Method A cleanup levels.
- Ethylbenzene was detected in the groundwater sample collected from monitoring well MW-7 at a concentration above the laboratory reporting limit, but below the MTCA Method A cleanup level.

- Groundwater is generally mounded in the vicinity of monitoring MW-6, and appears to migrate outward in all directions.

The gasoline-range TPH concentration in the groundwater samples collected from monitoring well MW-7 increased from below the laboratory reporting limit in September 2015 to 1,900 µg/L in December 2015. During the period of August to December 2015, the shallow perched groundwater table rose 2 to 3 feet, which may have caused remnant highly weathered gasoline in the shallow soil to come into contact with the groundwater. We infer that this has caused an increase in the localized gasoline-range TPH concentration in the groundwater at MW-7.

The ORC-Advanced product used for the ISCO injections is designed to release oxygen to the subsurface over a period of up to one year. Based on the elevated DO readings of approximately 10 to 15 mg/L at wells MW-5 and MW-7 approximately 3 months after the ISCO treatment injection, the ORC-Advanced product is continuing to release oxygen to the subsurface. Additional improvement to the site groundwater quality is expected to occur as the effects of the injected ISCO products continue to degrade the residual petroleum hydrocarbons remaining in shallow soil and groundwater at the site.

6.0 RECOMMENDATIONS

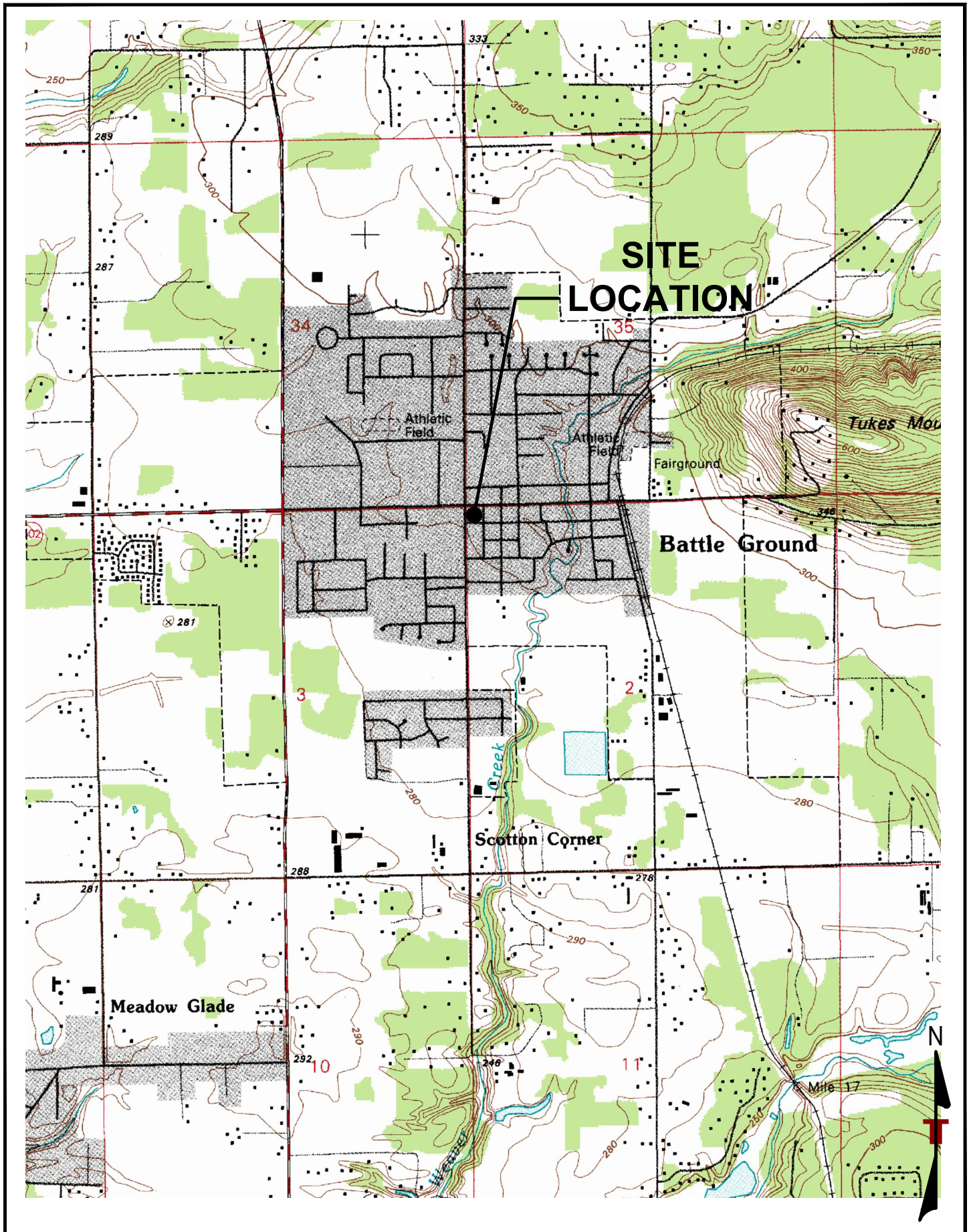
Groundwater in the vicinity of monitoring well MW-7 currently remains impacted with gasoline-range TPH at a concentration exceeding the MTCA Method A cleanup level. Based on the results of the most recent groundwater sampling event conducted at the site, Terracon recommends that groundwater sampling be continued at the site for at least one additional quarter.

FIGURES

Figure 1 – Topographic Map

Figure 2 – Site Diagram

Figure 3 – Groundwater Contour Map – December 3, 2015



Project Mngnr.	MDN
Drawn By:	AWS
Checked By:	MDN
Approved By:	MYW

Project No.	81157108
Scale:	NOT TO SCALE
File No.	FIGURE 1
Date:	OCTOBER 2015

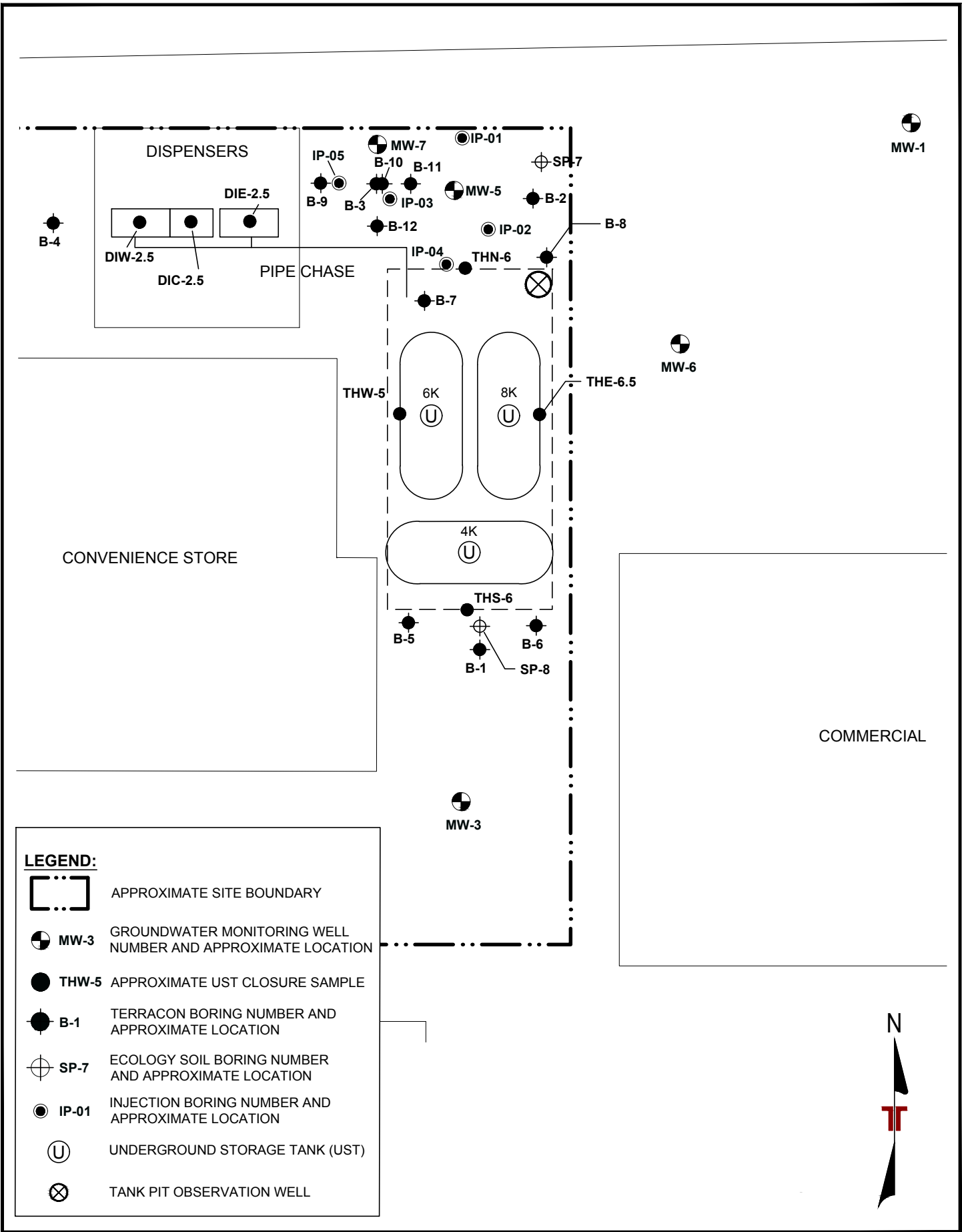
Terracon
 Consulting Engineers and Scientists

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TOPOGRAPHIC MAP

Union 76 Mini Mart
 13 East Main Street
 Battle Ground, Clark County, Washington

FIG. NO.	1
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LEGEND:

-  APPROXIMATE SITE BOUNDARY
-  **MW-3** GROUNDWATER MONITORING WELL NUMBER AND APPROXIMATE LOCATION
-  **THW-5** APPROXIMATE UST CLOSURE SAMPLE
-  **B-1** TERRACON BORING NUMBER AND APPROXIMATE LOCATION
-  **SP-7** ECOLOGY SOIL BORING NUMBER AND APPROXIMATE LOCATION
-  **IP-01** INJECTION BORING NUMBER AND APPROXIMATE LOCATION
-  UNDERGROUND STORAGE TANK (UST)
-  TANK PIT OBSERVATION WELL



Project Mngnr:	MDN
Drawn By:	AWS
Checked By:	MDN
Approved By:	MYW

Project No.	81157108
Scale:	NOT TO SCALE
File No.	FIGURE 2
Date:	OCTOBER 2015

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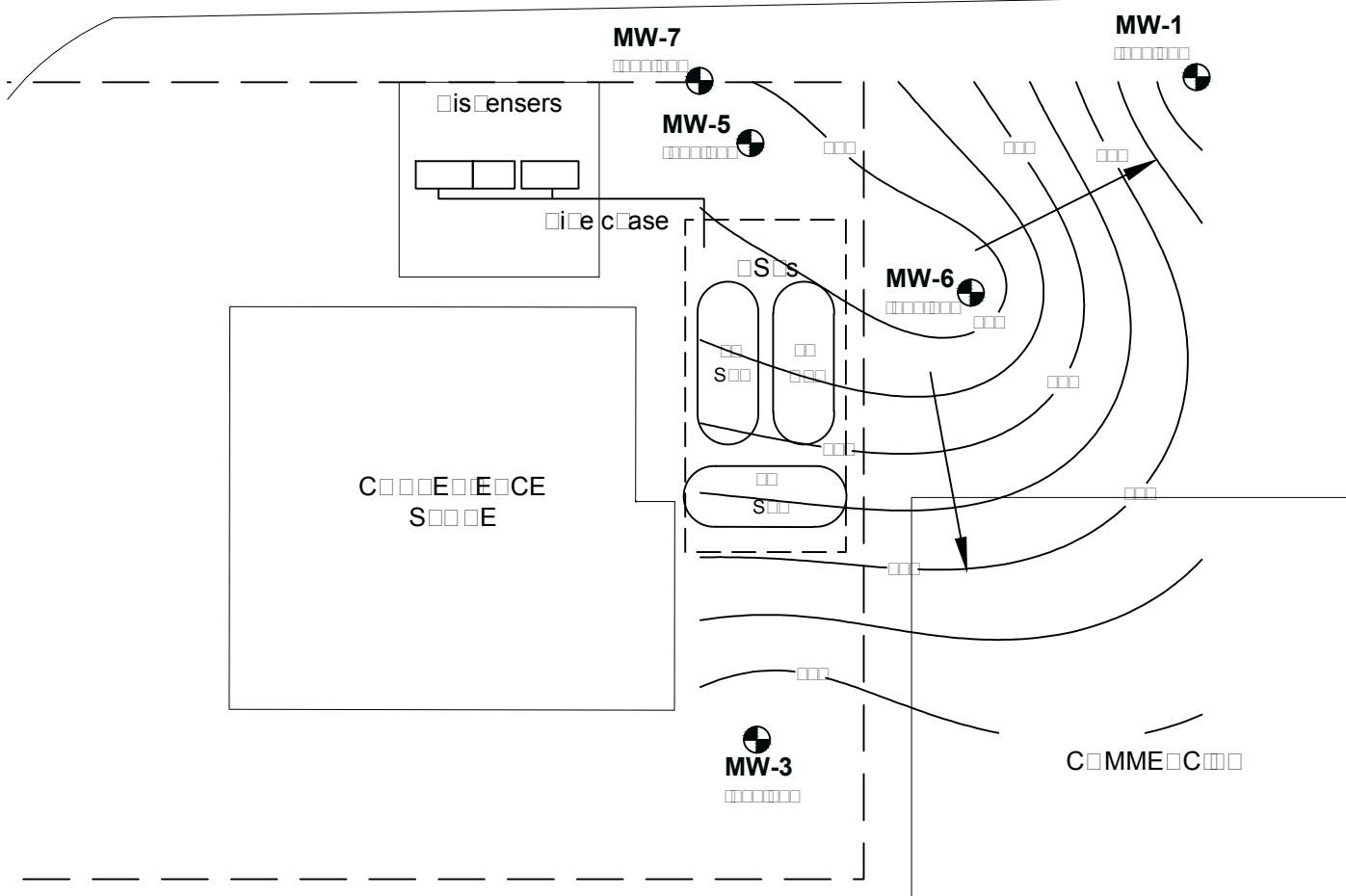
21905 64th Avenue W., Ste 100 Mountlake Terrace, WA 98043
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SITE DIAGRAM
Union 76 Mini Mart
13 East Main Street
Battle Ground, Clark County, Washington

FIG. NO.	2
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□ M □ □ S □ □ E □ □



LEGEND:



MW-3 □ round water monitoring well number
 □ round water elevation contour

□ round water Contour feet
 □ inferred groundwater flow direction

Project Mng:	MDN	Project No.	81157108
Drawn By:	SKL	Scale:	AS SHOWN
Checked By:	MDN	File No.	120315.dwg
Approved By:	MYW	Date:	December 2015

Consulting Engineers and Scientists

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GROUNDWATER CONTOUR MAP
 Union 76 Mini Mart
 13 East Main Street
 Battle Ground, Clark County, Washington

FIG. No.	3
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TABLES

Table 1 – Summary of Depth to Groundwater Measurements

Table 2 – Summary of Groundwater Analytical Results

TABLE 1

SUMMARY OF DEPTH TO GROUNDWATER MEASUREMENTS

Union 76 Mini Mart
 13 East Main Street
 Battle Ground, Washington

Well Number	Sample Date	TOC Elevation* (Feet)	Depth to Water (Feet)	Relative Groundwater Elevation (Feet)
MW-1 (Depth to Bottom = 20.5 feet; Well Screen = 10 to 20 feet)	12/3/15	291.83	20.23	271.60
	9/11/15	291.83	Dry	--
	8/13/15	291.83	Dry	--
	11/10/14	291.83	19.45	272.38
	5/22/14	291.83	18.50	273.33
	4/29/14	291.83	18.10	273.73
	Dec-99	291.83	19.2	272.63
	Sep-98	291.83	Dry	--
	Nov-95	291.83	19.3	272.53
	May-95	291.83	19.1	272.73
	Nov-94	291.83	18.8	273.03
	Apr-94	291.83	19.6	272.23
	Apr-93	291.83	19.2	272.63
	Jan-93	291.83	19.3	272.53
	Oct-92	291.83	Dry	--
	May-92	291.83	17.7	274.13
	Apr-92	291.83	15.6	276.23
Mar-92	291.83	13.0	278.83	
MW-3 (Depth to Bottom = 24.0 feet; Well Screen = 13 to 23 feet)	12/3/15	293.08	21.35	271.73
	9/11/15	293.08	22.55	270.53
	8/13/15	293.08	22.61	270.47
	11/10/14	293.08	21.32	271.76
	5/22/14	293.08	20.89	272.19
	4/29/14	293.08	20.16	272.92
	Dec-99	293.08	21.0	272.08
	Sep-98	293.08	22.3	270.78
	Nov-95	293.08	20.8	272.28
	May-95	293.08	21.1	271.98
	Nov-94	293.08	20.0	273.08
	Apr-94	293.08	21.3	271.78
	Apr-93	293.08	21.2	271.88
	Jan-93	293.08	21.0	272.08
	Oct-92	293.08	22.7	270.38
	May-92	293.08	20.7	272.38
	Apr-92	293.08	20.4	272.68
Mar-92	293.08	14.0	279.08	

TABLE 1

SUMMARY OF DEPTH TO GROUNDWATER MEASUREMENTS

Union 76 Mini Mart
 13 East Main Street
 Battle Ground, Washington

Well Number	Sample Date	TOC Elevation* (Feet)	Depth to Water (Feet)	Relative Groundwater Elevation (Feet)
MW-5 (Depth to Bottom = 20.5 feet; Well Screen = 10 to 20 feet)	12/3/15	292.25	5.55	286.70
	9/11/15	292.25	7.43	284.82
	8/13/15	292.25	7.65	284.60
	11/10/14	292.25	4.34	287.91
	5/22/14	292.25	5.56	286.69
	4/29/14	292.25	4.63	287.62
	Dec-99	292.25	7.3	284.95
	Sep-98	292.25	15.6	276.65
	Nov-95	292.25	9.46	282.79
	May-95	292.25	11.4	280.85
	Nov-94	292.25	13.9	278.35
	Apr-94	292.25	13.5	278.75
	Apr-93	292.25	11.8	280.45
	Jan-93	292.25	12.6	279.65
	Oct-92	292.25	17.6	274.65
	May-92	292.25	8.6	283.65
	Apr-92	292.25	8.3	283.95
Mar-92	292.25	9.5	282.75	
MW-6 (Depth to Bottom = 20.0 feet; Well Screen = 10 to 20 feet)	12/3/15	291.86	4.24	287.62
	9/11/15	291.86	7.35	284.51
	8/13/15	291.86	6.33	285.53
	11/10/14	291.86	3.78	288.08
	5/22/14	291.86	4.65	287.21
	4/29/14	291.86	4.09	287.77
	Dec-99	291.86	4.7	287.16
	Sep-98	291.86	7.6	284.26
	Nov-95	291.86	4.5	287.36
	May-95	291.86	4.8	287.06
	Nov-94	291.86	5.5	286.36
	Apr-94	291.86	6.1	285.76
	Apr-93	291.86	5.0	286.86
	Jan-93	291.86	5.8	286.06
	Oct-92	291.86	8.1	283.76
	May-92	291.86	9.1	282.76
	Apr-92	291.86	5.8	286.06
Mar-92	291.86	9.0	282.86	

TABLE 1

SUMMARY OF DEPTH TO GROUNDWATER MEASUREMENTS

Union 76 Mini Mart

13 East Main Street

Battle Ground, Washington

Well Number	Sample Date	TOC Elevation* (Feet)	Depth to Water (Feet)	Relative Groundwater Elevation (Feet)
MW-7 (Depth to Bottom = 20.0 feet; Well Screen = 10 to 20 feet)	12/3/15	292.21	6.04	286.17
	9/11/15	292.21	14.21	278.00
	8/13/15	292.21	9.62	282.59
	11/10/14	292.21	5.41	286.80

*TOC = Top of casing elevations for wells MW-1, MW-3, MW-5, and MW-6 from *Feasibility Studies and Remedial Activities Conducted at Jim's BP*, Department of Ecology, June 30, 2000, Figure 5 - Stratigraphic Cross Sections.

TABLE 2

SUMMARY OF GROUNDWATER ANALYTICAL RESULTS

Union 76 Mini Mart

13 East Main Street

Battle Ground, Clark County, Washington

all concentrations are in µg/l (micrograms per liter)

Well Location	Sample Number	Sample Date	Groundwater Depth (ft)	TPH			BTEX				Metals
				Gasoline-Range	Diesel-Range	Oil-Range	Benzene	Toluene	Ethylbenzene	Xylenes	Lead
MW-1	MW-1	4/29/2014	18.10	ND (<100)	ND (<100)	ND (<250)	ND (<0.50)	ND (<5.0)	ND (<0.50)	ND (<1.5)	--
MW-3	MW-S	9/2/2011	23	ND (<100)	41 J	ND (<250)	ND (<1.0)	ND (<5.0)	ND (<1.0)	ND (<3.0)	--
	MW-3	4/28/2014	20.03	ND (<100)	ND (<100)	ND (<250)	ND (<0.50)	ND (<5.0)	ND (<0.50)	ND (<1.5)	--
MW-5	MW-N	9/2/2011	9	150	270	ND (<250)	ND (<1.0)	ND (<5.0)	ND (<1.0)	ND (<3.0)	--
	MW-5	4/28/2014	4.40	ND (<100)	200	ND (<250)	0.73	ND (<5.0)	0.51	2.0	ND (<5.0)
	MW-5	11/10/2014	4.34	ND (<100)	560	ND (<250)	ND (<0.50)	ND (<5.0)	ND (<0.50)	ND (<1.5)	--
	MW-5*	9/11/2015	7.43	ND (<250)	450	ND (<250)	ND (<0.50)	ND (<0.50)	ND (<0.50)	1.1**	--
	MW-5	12/3/2015	5.55	100	240	ND (<250)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)	--
MW-6	MW-6	4/29/2014	4.09	ND (<100)	ND (<100)	ND (<250)	ND (<0.50)	ND (<5.0)	ND (<0.50)	ND (<1.5)	--
MW-7	MW-7	11/10/2014	5.41	990	980	280	1.3	ND (<5.0)	41	2.1	--
	MW-7*	9/11/2015	14.21	ND (<250)	770	480	ND (<0.50)	ND (<0.50)	ND (<0.50)	ND (<1.0)	--
	MW-7	12/3/2015	6.04	1,900	ND (<500)	ND (<250)	ND (<1.0)	ND (<1.0)	18	ND (<3.0)	--
MTCA Method A Cleanup Level				800	500	500	5	1,000	700	1,000	15

Note: Concentrations detected are in **BOLD** type. Shaded and bold concentrations are above MTCA cleanup levels.

TPH - total petroleum hydrocarbons

MTCA - Model Toxics Control Act

-- - not sampled

ND - Not detected above laboratory reporting limit.

J: Estimated value below the lowest calibration point. Confidence correlates with concentration.

* TPH results were reported in mg/L in the laboratory report and converted to µg/L for this table.

** Xylene was detected in the field blank during the 9/11/2015 sampling event.

Appendix A

Analytical Report and Chain-of-Custody Documentation



December 7, 2015

Mr. Mike Noll
Terracon
21905 - 64th Ave W, Suite 100
Mountlake Terrace, WA 98043

Dear Mr. Noll,

On December 4th, 2 samples were received by our laboratory and assigned our laboratory project number EV15120043. The project was identified as your 81157108. The sample identification and requested analyses are outlined on the attached chain of custody record.

No abnormalities or nonconformances were observed during the analyses of the project samples.

Please do not hesitate to call me if you have any questions or if I can be of further assistance.

Sincerely,

ALS Laboratory Group

Rick Bagan
Laboratory Director



CERTIFICATE OF ANALYSIS

CLIENT:	Terracon 21905 - 64th Ave W, Suite 100 Mountlake Terrace, WA 98043	DATE:	12/7/2015
		ALS JOB#:	EV15120043
CLIENT CONTACT:	Mike Noll	ALS SAMPLE#:	EV15120043-01
CLIENT PROJECT:	81157108	DATE RECEIVED:	12/04/2015
CLIENT SAMPLE ID	MW-5	COLLECTION DATE:	12/3/2015 12:52:00 PM
		WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	100	50	1	UG/L	12/04/2015	PAB
Benzene	EPA-8021	U	1.0	1	UG/L	12/04/2015	PAB
Toluene	EPA-8021	U	1.0	1	UG/L	12/04/2015	PAB
Ethylbenzene	EPA-8021	U	1.0	1	UG/L	12/04/2015	PAB
Xylenes	EPA-8021	U	3.0	1	UG/L	12/04/2015	PAB
TPH-Diesel Range	NWTPH-DX	240	130	1	UG/L	12/04/2015	EBS
TPH-Oil Range	NWTPH-DX	U	250	1	UG/L	12/04/2015	EBS

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	96.4	12/04/2015	PAB
TFT	EPA-8021	98.0	12/04/2015	PAB
C25	NWTPH-DX	80.2	12/04/2015	EBS

U - Analyte analyzed for but not detected at level above reporting limit.
Chromatogram indicates that it is likely that sample contains highly weathered gasoline and highly weathered diesel.



CERTIFICATE OF ANALYSIS

CLIENT:	Terracon 21905 - 64th Ave W, Suite 100 Mountlake Terrace, WA 98043	DATE:	12/7/2015
CLIENT CONTACT:	Mike Noll	ALS JOB#:	EV15120043
CLIENT PROJECT:	81157108	ALS SAMPLE#:	EV15120043-02
CLIENT SAMPLE ID	MW-7	DATE RECEIVED:	12/04/2015
		COLLECTION DATE:	12/3/2015 1:30:00 PM
		WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	1900	50	1	UG/L	12/04/2015	PAB
Benzene	EPA-8021	U	1.0	1	UG/L	12/04/2015	PAB
Toluene	EPA-8021	U	1.0	1	UG/L	12/04/2015	PAB
Ethylbenzene	EPA-8021	18	1.0	1	UG/L	12/04/2015	PAB
Xylenes	EPA-8021	U	3.0	1	UG/L	12/04/2015	PAB
TPH-Diesel Range	NWTPH-DX	U	500	1	UG/L	12/04/2015	EBS
TPH-Oil Range	NWTPH-DX	U	250	1	UG/L	12/04/2015	EBS

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	107	12/04/2015	PAB
TFT	EPA-8021	104	12/04/2015	PAB
C25	NWTPH-DX	93.6	12/04/2015	EBS

U - Analyte analyzed for but not detected at level above reporting limit.
 Chromatogram indicates that it is likely that sample contains highly weathered gasoline.
 Diesel range product reporting limits raised due to volatile range product overlap.



CERTIFICATE OF ANALYSIS

CLIENT:	Terracon 21905 - 64th Ave W, Suite 100 Mountlake Terrace, WA 98043	DATE:	12/7/2015
CLIENT CONTACT:	Mike Noll	ALS SDG#:	EV15120043
CLIENT PROJECT:	81157108	WDOE ACCREDITATION:	C601

LABORATORY BLANK RESULTS

MBG-120315W3 - Batch 99530 - Water by NWTPH-GX

ANALYTE	METHOD	RESULTS	QUAL	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U		UG/L	50	12/03/2015	PAB

U - Analyte analyzed for but not detected at level above reporting limit.

MB-120315W3 - Batch 99530 - Water by EPA-8021

ANALYTE	METHOD	RESULTS	QUAL	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
Benzene	EPA-8021	U		UG/L	1.0	12/03/2015	PAB
Toluene	EPA-8021	U		UG/L	1.0	12/03/2015	PAB
Ethylbenzene	EPA-8021	U		UG/L	1.0	12/03/2015	PAB
Xylenes	EPA-8021	U		UG/L	3.0	12/03/2015	PAB

U - Analyte analyzed for but not detected at level above reporting limit.

MB-113015W - Batch 99434 - Water by NWTPH-DX

ANALYTE	METHOD	RESULTS	QUAL	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
TPH-Diesel Range	NWTPH-DX	U		UG/L	130	12/01/2015	EBS
TPH-Oil Range	NWTPH-DX	U		UG/L	250	12/01/2015	EBS

U - Analyte analyzed for but not detected at level above reporting limit.



CERTIFICATE OF ANALYSIS

CLIENT: Terracon
21905 - 64th Ave W, Suite 100
Mountlake Terrace, WA 98043
CLIENT CONTACT: Mike Noll
CLIENT PROJECT: 81157108

DATE: 12/7/2015
ALS SDG#: EV15120043
WDOE ACCREDITATION: C601

LABORATORY CONTROL SAMPLE RESULTS

ALS Test Batch ID: 99530 - Water by NWTPH-GX

Table with 6 columns: SPIKED COMPOUND, METHOD, %REC, RPD, QUAL, ANALYSIS DATE, ANALYSIS BY. Rows include TPH-Volatile Range - BS and TPH-Volatile Range - BSD.

ALS Test Batch ID: 99530 - Water by EPA-8021

Table with 6 columns: SPIKED COMPOUND, METHOD, %REC, RPD, QUAL, ANALYSIS DATE, ANALYSIS BY. Rows include Benzene, Toluene, Ethylbenzene, and Xylenes in both BS and BSD forms.

ALS Test Batch ID: 99434 - Water by NWTPH-DX

Table with 6 columns: SPIKED COMPOUND, METHOD, %REC, RPD, QUAL, ANALYSIS DATE, ANALYSIS BY. Rows include TPH-Diesel Range - BS and TPH-Diesel Range - BSD.

APPROVED BY

Handwritten signature of Paul Bagum

Laboratory Director

