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STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

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August 15, 2016

Mr. Scott Rose
Associated Environmental Group LLC
605 11th Avenue SE, Suite 201
Olympia, WA 98501-2363

Re: Opinion on Proposed Cleanup of the following Site:

- **Site Name:** Holt's Quik Chek Market
- **Site Address:** 400 N Pacific Ave., Kelso, Cowlitz County, WA 98626
- **Facility/Site No.:** 87376683
- **Cleanup Site No.:** 6797
- **VCP Project No.:** SW1445

Dear Mr. Rose:

The Washington State Department of Ecology (Ecology) received your request for an opinion on your proposed independent cleanup of the Holt's Quik Chek Market facility (Site). This letter provides our opinion. We are providing this opinion under the authority of the Model Toxics Control Act (MTCA), Chapter 70.105D RCW.

Issue Presented and Opinion

Upon completion of the proposed cleanup, will further remedial action likely be necessary to clean up contamination at the Site?

NO. Ecology has determined that, upon completion of your proposed cleanup, no further remedial action will likely be necessary to clean up contamination at the Site.

This opinion is based on an analysis of whether the remedial action meets the substantive requirements of MTCA, Chapter 70.105D RCW, and its implementing regulations, Chapter 173-340 WAC (collectively "substantive requirements of MTCA"). The analysis is provided below.

Description of the Site

This opinion applies only to the Site described below. The Site is defined by the nature and extent of contamination associated with the following releases:

- Gasoline range total petroleum hydrocarbons (TPH-G) into the Soil and Groundwater.
- Benzene, toluene, ethylbenzene, and xylenes (BTEX) constituents into the Soil and Groundwater.

Enclosure A includes a detailed description and diagram of the Site, as currently known to Ecology.

Please note a parcel of real property can be affected by multiple sites. At this time, we have no information that the parcel(s) associated with this Site are affected by other sites.

Basis for the Opinion

This opinion is based on the information contained in the following documents:

1. Associated Environmental Group, LLC (AEG), Amendment to NFA Request, June 16, 2016.
2. AEG, Request for No Further Action, January 7, 2016.
3. AEG, Subsurface Investigation, July 31, 2015.
4. AEG, Work Plan for Final Closure, July 31, 2015.
5. AEG, October 2015 Holt's Quik Chek Quarterly Groundwater Sampling Results Report, November 5, 2015.
6. AEG, April 2015 Holt's Quik Chek Quarterly Groundwater Sampling Results Report, May 19, 2015.
7. AEG, January 2015 Holt's Quik Chek Quarterly Groundwater Sampling Results Report, February 4, 2015.
8. AEG, Holt's Quik Chek Quarterly Groundwater Sampling results Summary, December 3, 2014.
9. State of Washington Department of Ecology (Ecology), Site Hazard Assessment, March 26, 2014.
10. AEG, Proposed Supplemental Remedial Investigation Work Plan, July 15, 2011.
11. State of Washington Department of Ecology (Ecology), Further Action Determination, June 18, 2007.
12. Farallon Consulting, LLC (Farallon), Final Quarter of Groundwater Monitoring, May 24, 2007.
13. Farallon, Site Closure Report, Holt's Quik Chek Site, March 9, 2007.
14. EMCON, Phase I Environmental Site Assessment Report, December 5, 1997.

Those documents are kept in the Central Files of the Southwest Regional Office of Ecology (SWRO) for review by appointment only. You can make an appointment by calling the SWRO resource contact at (360) 407-3665.

This opinion is void if any of the information contained in those documents is materially false or misleading.

Analysis of the Cleanup

Ecology has concluded that, upon completion of your proposed cleanup, **no further remedial action** will likely be necessary to clean up contamination at the Site. That conclusion is based on the following analysis:

1. Characterization of the Site.

Ecology has determined your characterization of the Site is sufficient to establish cleanup standards and select a cleanup action. The Site is described above and in **Enclosure A**.

AEG has demonstrated that the Site has been sufficiently characterized and warrants a no further action determination with the use of an Environmental Covenant. Site characterization and groundwater monitoring at the Site show that:

- Groundwater sampling results from June 1997 through October 2015 show that contamination in groundwater has decreased to below MTCA Method A cleanup levels (CULs) in all wells except MW-6 (Table 2).
- Ecology agrees that MW-6 is likely completed in a different water-bearing zone from the Site, and that contamination in this well is unrelated to the Site. This determination is based on:
 - No water was noted, and assumed not encountered, during the construction of MW-6 (Boring log is included in Enclosure A).
 - MW-6 is completed in a siltstone that appears to go below the Site (Cross sections, Figures 6 and 7). The siltstone was noted in the bottom of the boring for MW-5. Boring logs for MW-6 and MW-5 are included in Enclosure A.
 - There is a large difference in the groundwater elevations between MW-6, and MW-1 through MW-5, and MW-7 (Table 3).

- AEG defined the vertical and horizontal extents of the contamination in soil. Petroleum contaminated soil (PCS) is still present at the Site and above the point of compliance for soils. Table 1, and Figures 5 through 7 show the extents of PCS at the Site. Because groundwater contamination levels have dropped below the CUL or are no longer detectible, PCS below the water table does not appear to be leaching into the groundwater. PCS is present off Site, to the west, below N Pacific Ave. and the sidewalk located between the road and the Holt's Quik Check property.
- Ecology agrees that soil vapor is not a concern at the Site. Although boring P11, located approximately 12 feet from the building, showed high BTEX levels in 1997, they were at a depth of 16 feet below ground surface (bgs), and sampled prior to in situ remedial activities conducted from 2003 to 2005. These in situ activities consisted of air sparging and a chemical oxidation application. AEG has shown that contamination is centered in the vicinity of MW-2, between the underground storage tank (UST) nest and N Pacific Ave. AEG also intends to achieve a no further action status using institutional controls as part of an Environmental Covenant.
- A Terrestrial Ecological Evaluation (TEE) was submitted as part of the January 2016 Request for No Further Action that demonstrates that the Site qualifies for an exclusion from further evaluation based on these criteria:
 - All contaminated soil, is or will be, covered by physical barriers (such as buildings or paved roads) that prevent exposure to plants and wildlife, and institutional controls are used to manage remaining contamination.
 - There is less than 1.5 acres of contiguous undeveloped land on or within 500 feet of any area of the Site.
- Because PCS is being left in place, AEG intends to achieve an NFA using an Environmental Covenant with institutional controls and long-term monitoring. The proposed institutional controls for the Site are:
 - Restrictive land use to activities that will not threaten human health or the environment.
 - Containment of soil under a cap consisting of at least 6 feet of soil and asphalt.
 - Restrictive use of the shallow groundwater beneath the property.

- Groundwater monitoring and sampling every 18 months of wells MW-2, MW-3, MW-4, in the vicinity of the PCS, and MW-5 as the down gradient well.
- AEG submitted a Disproportionate Cost Analysis (DCA) as part of the June 2016 Amendment to NFA request that examined the usability of multiple potential remedial activities, and proposed three potential cleanup alternatives. The proposed alternatives are:
 - Alternative 1; Closure with Covenant and Monitoring.
 - Alternative 2; Select excavation of PCS, and In-Situ Chemical Oxidation.
 - Alternative 3; Soil Vapor Extraction and Monitoring.

AEG selected Alternative 1 as the preferred remedial action given the remedial activities performed, the extent of contamination, and Site specific conditions.

- Ecology agrees with this assessment based on the nature of the Site, the proximity of the contamination to features that will limit the effectiveness of other alternatives, and the lack of current groundwater contamination.
- Ecology recommends making the following amendments to the Environmental Covenant that was supplied with the January 2016 Request for No Further Action:
 - Include cement as part of the protective cap options. Although asphalt is the most common material used for parking lot and driving areas for this type of Site and N Pacific Ave., it appears to make up a very small percentage of the contaminated area. Cement is more likely to be used to cap the UST nest and to be used in the construction of the sidewalk.
 - As discussed in our meeting on April 22, 2016, because there is limited groundwater data for 1-2 Dibromoethane (EDB), 1-2 dichloroethane (EDC), methyl tert-butyl ether (MTBE), and total lead for the Site, EDB, EDC, MTBE and total lead should be added to the long-term groundwater monitoring plan.
 - In addition to the groundwater monitoring, include a cap inspection plan as part of the monitoring for the Site. Provide a description of what will be looked for to establish the integrity of the cap, and how it will be documented.
 - Include the aerial extent map (Figure 5), and cross sections (Figures 6 and 7) to show the estimated location of the contamination.

- Because PCS exists off property, the Environmental Covenant needs to also include the City of Kelso as a Grantor.
- In accordance with WAC 173-340-840(5) and Ecology Toxics Cleanup Program Policy 840 (Data Submittal Requirements), data generated for Independent Remedial Actions shall be submitted simultaneously in both a written and electronic format. For additional information regarding electronic format requirements, see the website <http://www.ecy.wa.gov/eim>. Be advised that according to the policy, any reports containing sampling data that are submitted for Ecology review are considered incomplete until the electronic data has been entered. Please ensure that data generated during on-Site activities is submitted pursuant to this policy. **Data must be submitted to Ecology in this format for Ecology to issue a No Further Action determination.** Please be sure to submit all soil and groundwater data collected to date, as well as any future data, in this format. Data collected prior to August 2005 (effective date of this policy) is not required to be submitted; however, you are encouraged to do so if it is available. Be advised that Ecology requires up to two weeks to process the data once it is received.

2. Establishment of cleanup standards.

Ecology has determined the cleanup levels and points of compliance you established for the Site meet the substantive requirements of MTCA.

The Site has been fully defined. MTCA Method A soil and groundwater CULs for unrestricted land use are being used for the Site, and Standard points of compliance (POC) are currently being used for the Site. The POCs and CULs for each media are:

Groundwater

“The standard point of compliance shall be established throughout the Site from the uppermost level of the saturated zone extending vertically to the lowest most depth which could potentially be affected by the site” (WAC 173-340-720(8)(b)).

Contamination in all Site monitoring wells has decreased to levels below the CULs or laboratory detection limits except for well MW-6. There is good evidence that well MW-6 is not hydrogeologically connected to the rest of the Site, and therefore the contamination in this well is from a source other than the UST leak that occurred at the Site.

Soil

Protection of groundwater: “the point of compliance shall be established in the soils throughout the site” (WAC 173-340-740(6)(b)). Because groundwater contamination has decreased to levels below the CULs or laboratory detection limits, contamination levels at or below the groundwater levels have no impact on the groundwater.

Institutional controls in the form of a concrete and asphalt cap should mitigate any infiltration issues from contamination present above the groundwater level.

Vapor: “the point of compliance shall be established in the soils throughout the site from the ground surface to the uppermost ground water saturated zone” (WAC 173-340-740(6)(c)). Since PCS will remain in place above the water table, the existing asphalt and concrete cap must remain in place and maintained to prevent exposure to vapors from contaminated soil. The Environmental Covenant will restrict the Site usage to protect human health or the environment.

Direct contact: “the point of compliance shall be established in the soils throughout the Site from the ground surface to fifteen feet below the ground surface” (WAC 173-340-740(6)(d)). Since PCS will remain in place above fifteen feet bgs, the existing asphalt and concrete cap must remain in place and maintained to prevent direct contact with the contaminated soil. The Environmental Covenant will restrict the Site usage to protect human health or the environment.

3. Selection of cleanup action.

Ecology has determined the cleanup action you proposed for the Site meets the substantive requirements of MTCA.

The methods selected to remediate the contamination at the Site include:

- A biosparging system that operated from the spring of 2003 until September 2005.
- An in-situ chemical oxidation remediation using activated sodium persulfate was applied following the biosparging activities.
- Natural attenuation of groundwater.
- Establishment of institutional controls and long term monitoring with an Environmental Covenant.

Limitations of the Opinion

1. Opinion does not settle liability with the state.

Liable persons are strictly liable, jointly and severally, for all remedial action costs and for all natural resource damages resulting from the release or releases of hazardous substances at the Site. This opinion **does not**:

- Resolve or alter a person's liability to the state.
- Protect liable persons from contribution claims by third parties.

To settle liability with the state and obtain protection from contribution claims, a person must enter into a consent decree with Ecology under RCW 70.105D.040(4).

2. Opinion does not constitute a determination of substantial equivalence.

To recover remedial action costs from other liable persons under MTCA, one must demonstrate that the action is the substantial equivalent of an Ecology-conducted or Ecology-supervised action. This opinion does not determine whether the action you proposed will be substantially equivalent. Courts make that determination. *See* RCW 70.105D.080 and WAC 173-340-545.

3. Opinion is limited to proposed cleanup.

This letter does not provide an opinion on whether further remedial action will actually be necessary at the Site upon completion of your proposed cleanup. To obtain such an opinion, you must submit a report to Ecology upon completion of your cleanup and request an opinion under the VCP.

4. State is immune from liability.

The state, Ecology, and its officers and employees are immune from all liability, and no cause of action of any nature may arise from any act or omission in providing this opinion. *See* RCW 70.105D.030(1)(i).

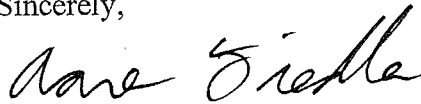
Contact Information

Thank you for choosing to clean up the Site under the Voluntary Cleanup Program (VCP). As you conduct your cleanup, please do not hesitate to request additional services. We look forward to working with you.

Mr. Scott Rose
August 15, 2016
Page 9

For more information about the VCP and the cleanup process, please visit our web site:
www.ecy.wa.gov/programs/tcp/vcp/vcpmain.htm. If you have any questions about this opinion,
please contact me by phone at (360) 407-6437 or e-mail at aaren.fiedler@ecy.wa.gov.

Sincerely,



Aaren Fiedler
SWRO Toxics Cleanup Program

AF: cm

Enclosure: A – Description, Diagrams, and Tables of the Site

By certified mail: 91 7199 9991 7036 2796 0008

cc: Han Kim, Holt's Quik Check
Matthew Alexander, Ecology
Nicholas Acklam, Ecology



Enclosure A

Description, Diagrams, & Tables of the Site



Site Description

The subject property is located at the northeast corner of the intersection of North Pacific Avenue and Cowlitz Way at 400 North Pacific Avenue in Kelso, Washington. The property is approximately 0.22 acres and comprised of one building, two fuel pump islands, and an asphalt parking lot. The building is a 3,075 square-foot convenience store and deli. The area surrounding the subject property is comprised of a mix of commercial and residential development. Located immediately north of and adjacent to the property is Thomas Automatic Transmissions. To the east is a parking lot and across Third Avenue is the Dahl Rosemary Funeral home. Located to the west across North Pacific Avenue is commercial office space and residential properties. To the south across Cowlitz Way is the First United Methodist Church. The property lies approximately 700 feet east of the Cowlitz River.

To date, the source of the releases has not been clearly stated and has not been clearly identified in any figures. Because the USTs passed pressure test following discovery, Ecology assumes that the contamination resulting from previous USTs located at the Site. Subsurface investigations conducted at the Site indicate the presence of petroleum contamination in both soils and groundwater. No soil vapor investigations have been conducted. The horizontal and vertical extent of the contamination has been defined. The horizontal extents appear to be located in the area around MW-2 and the USTs; extending to the west underneath N Pacific Ave. The vertical extents of the contamination appears to be from approximately 4 feet bgs to approximately 29 feet bgs.

Subsurface geology at the Site consists of silts and sands with an underlying siltstone layer. Sandy silt was encountered to a depth of approximately 13 ft. bgs. Silty sand was encountered from approximately 13 ft. bgs to approximately 22 ft. bgs. Sand was encountered below 22 ft. bgs. The siltstone was encountered at 19 ft. bgs at well MW-6 and 29.5 ft. bgs at well MW-5. Groundwater flow direction appears to be to the west. There is evidence that MW-6 is not hydrogeologically connected to the other Site wells.

Site History

Contamination at the Site was initially discovered in 1997 during a Phase I Environmental Site Assessment (December 1997) where petroleum hydrocarbons were determined to be present above MTCA Method A CULs in both soil and groundwater. A Phase II Site Investigation Report (September 1997) was conducted in which the monitoring wells MW-1 through MW-4 were installed. Soil samples taken from the wells indicated the presence of TPH-G, TPH-D, benzene, ethylbenzene, and xylenes in exceedance of MTCA Method A CULs. Groundwater samples taken from the wells indicated the presence of TPH-G, benzene, ethylbenzene, xylenes, and total lead in exceedance of MTCA Method A CULs. This was followed by an Additional Phase II Site Investigation (November 1997) where groundwater samples were similar to those found in the previous Phase II except that lead levels had fallen below MTCA Method A CULs. In the spring of 2003, a biosparging system was installed that consisted of eight sparge wells with air sparged into the subsurface water at about 0.1 cubic foot per minute. The biosparge system was operated until September 2005. Following the biosparging, an in situ chemical oxidation remediation using activated sodium persulfate was conducted.

After these remediation activities were completed, a Site Closure Report (March 2007) was submitted to Ecology. Ecology issued a Further Action Determination letter (June 2007) in which it was recommended that a down gradient well be installed, that the potential of an Environmental Covenant be explored, and that a feasibility study with a DCA should have been conducted prior to any remedial activities. Ecology had also determined that the characterization of the Site did not meet the substantive requirements of MTCA and that it was not apparent whether soil contamination remained above MTCA Method A CULs.

Ecology conducted a Site Hazard Assessment (SHA) (March 2014) and determined that since the extent of off-property impacts has not been defined for this Site, the Site received a ranking of 2, and the Site was added to the state's Hazardous Sites List.

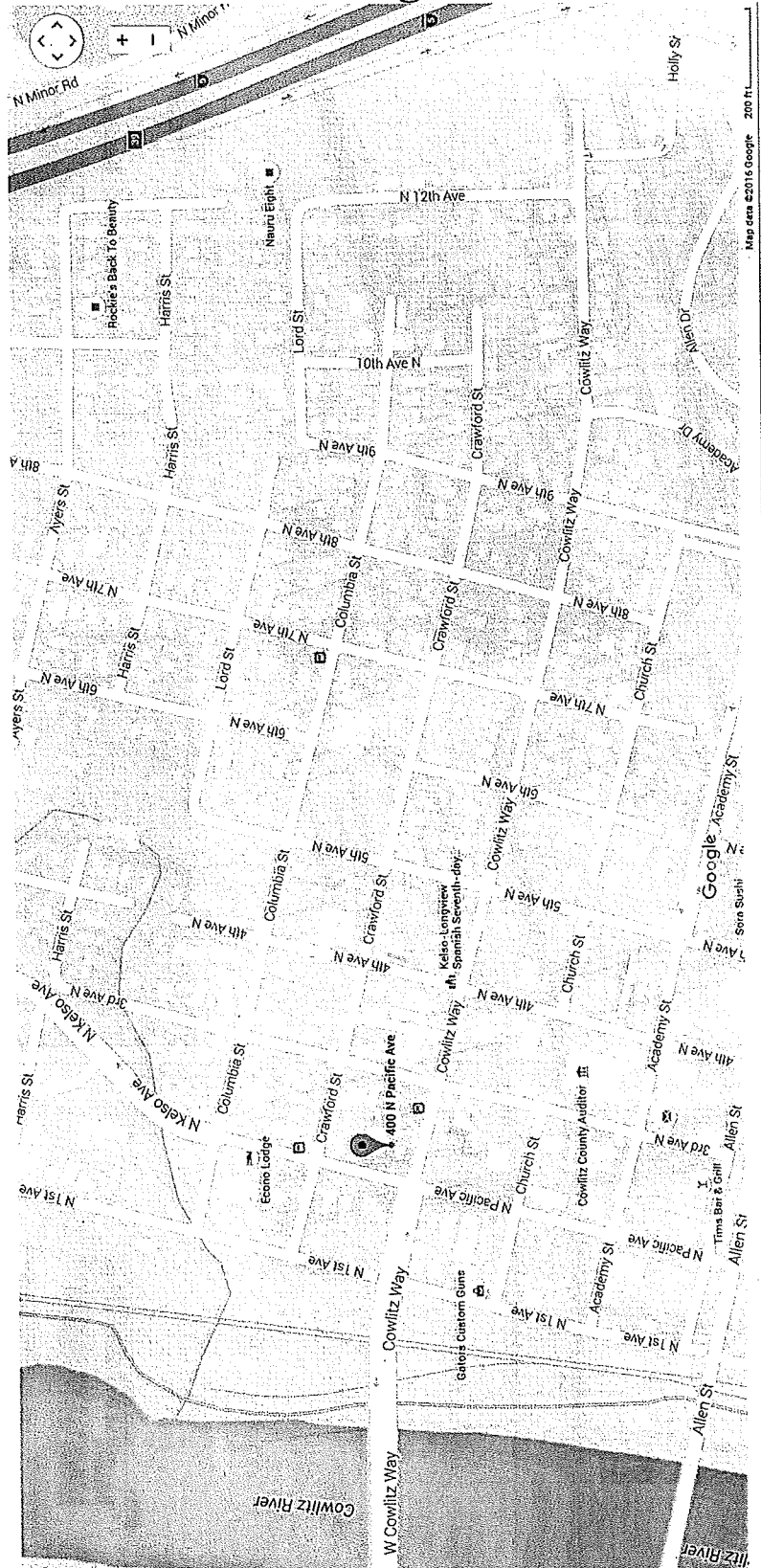
Quarterly groundwater monitoring of wells MW-1 through MW-5 was conducted from October 2014 to April 2015. During these monitoring events, no constituents of concern were detected above MTCA Method A CULs. Following these groundwater monitoring events, an NFA request was submitted to Ecology (May 2015). Ecology determined that Further Action (FA letter June 2015) was still warranted at the Site. Activities recommended were; to continue sampling MW-6, investigate down gradient wells MW-5 and MW-6, to establish actual well top-of-casing elevations so that a true groundwater flow gradient can be determined, explore the possibility of an Environmental Covenant for the Site, to show four quarters of groundwater results below MTCA Method A CULs, complete a TEE, and to submit all data on EIM in addition to the hard copy reports.

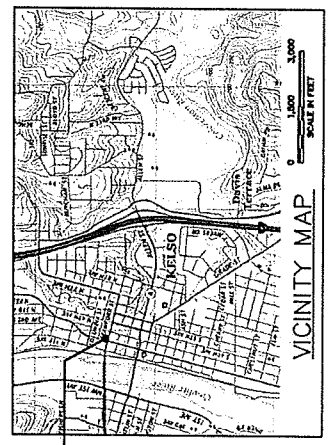
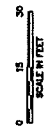
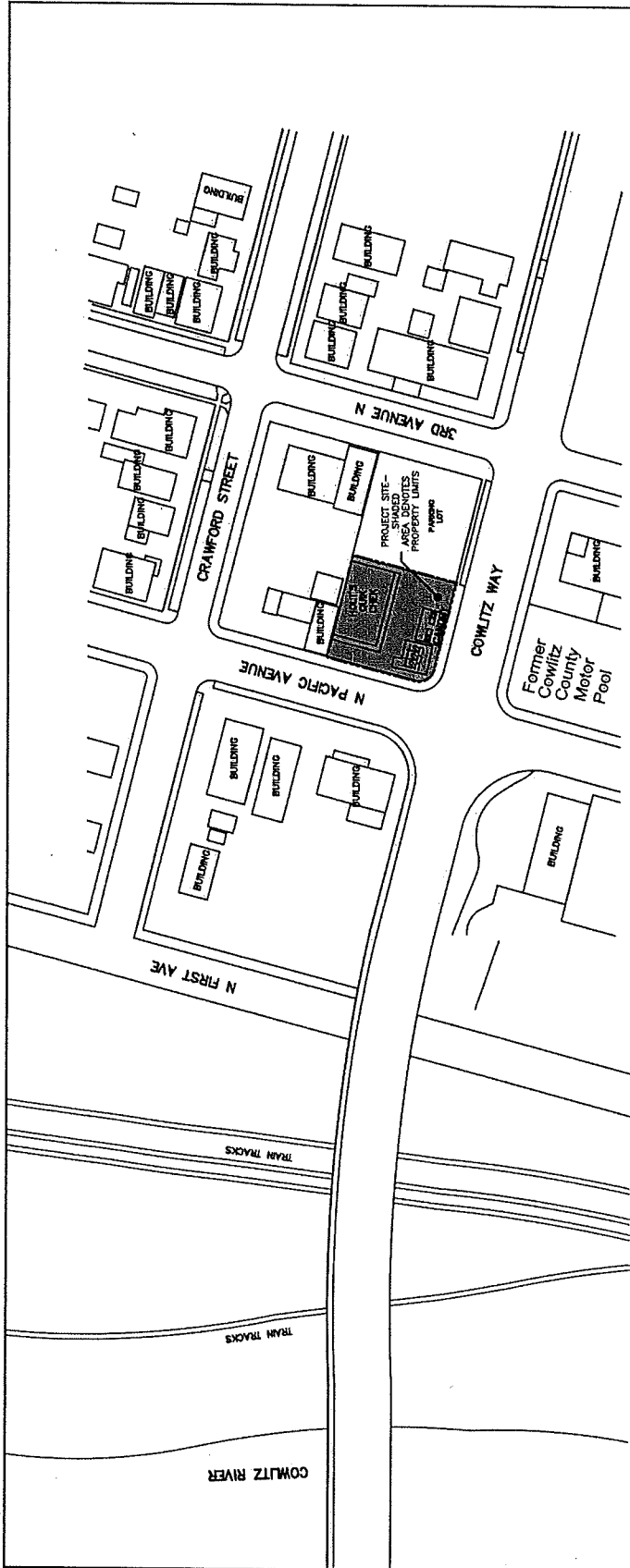
AEG submitted a Subsurface Investigation (July 2015) where monitoring well MW-7 and soil borings B-1 through B-4 were advanced at the Site. MW-7 showed no detectable BTEX or TPH-G in soil or groundwater. Soil borings B-1 through B-4 were advanced in the vicinity of the USTs and show MTCA Method A CUL exceedances of ethylbenzene and xylenes in B1-25

and B4-15. Exceedances of MTCA Method A CULs for TPH-G were detected in B1-10, B1-25, B3-25, and B4-15.



Site Diagrams






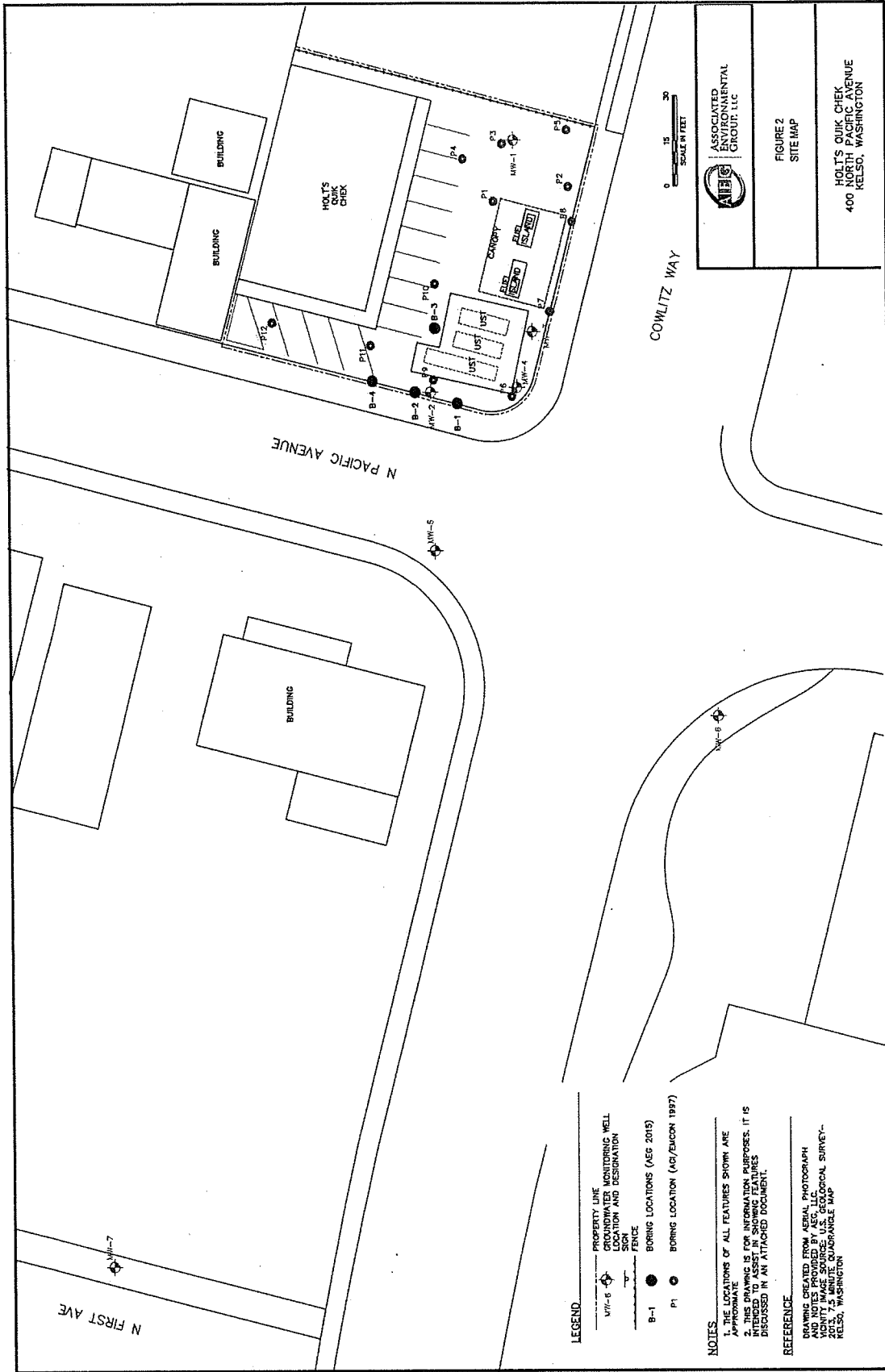
PROJECT LOCATION

- NOTES**
1. THE LOCATIONS OF ALL FEATURES SHOWN ARE APPROXIMATE
 2. THIS DRAWING IS FOR INFORMATION PURPOSES. IT IS NOT TO BE USED FOR CONSTRUCTION AND FEATURES DISCUSSED IN AN ATTACHED DOCUMENT.

REFERENCE

DRAWING CREATED FROM AERIAL PHOTOGRAPH AND NOTES PROVIDED BY ASB, LLC. VICINITY MAP SOURCE: U.S. GEOLOGICAL SURVEY - WASHINGTON, WASHINGTON

 ASSOCIATED ENVIRONMENTAL GROUP, LLC
FIGURE 1 VICINITY MAP
HOLTS GURK CHEK 400 14TH AVENUE KELSO, WASHINGTON



ASSOCIATED ENVIRONMENTAL GROUP, LLC

FIGURE 2
SITE MAP

HOLT'S CHECK
400 NORTH PACIFIC AVENUE
KELSO, WASHINGTON

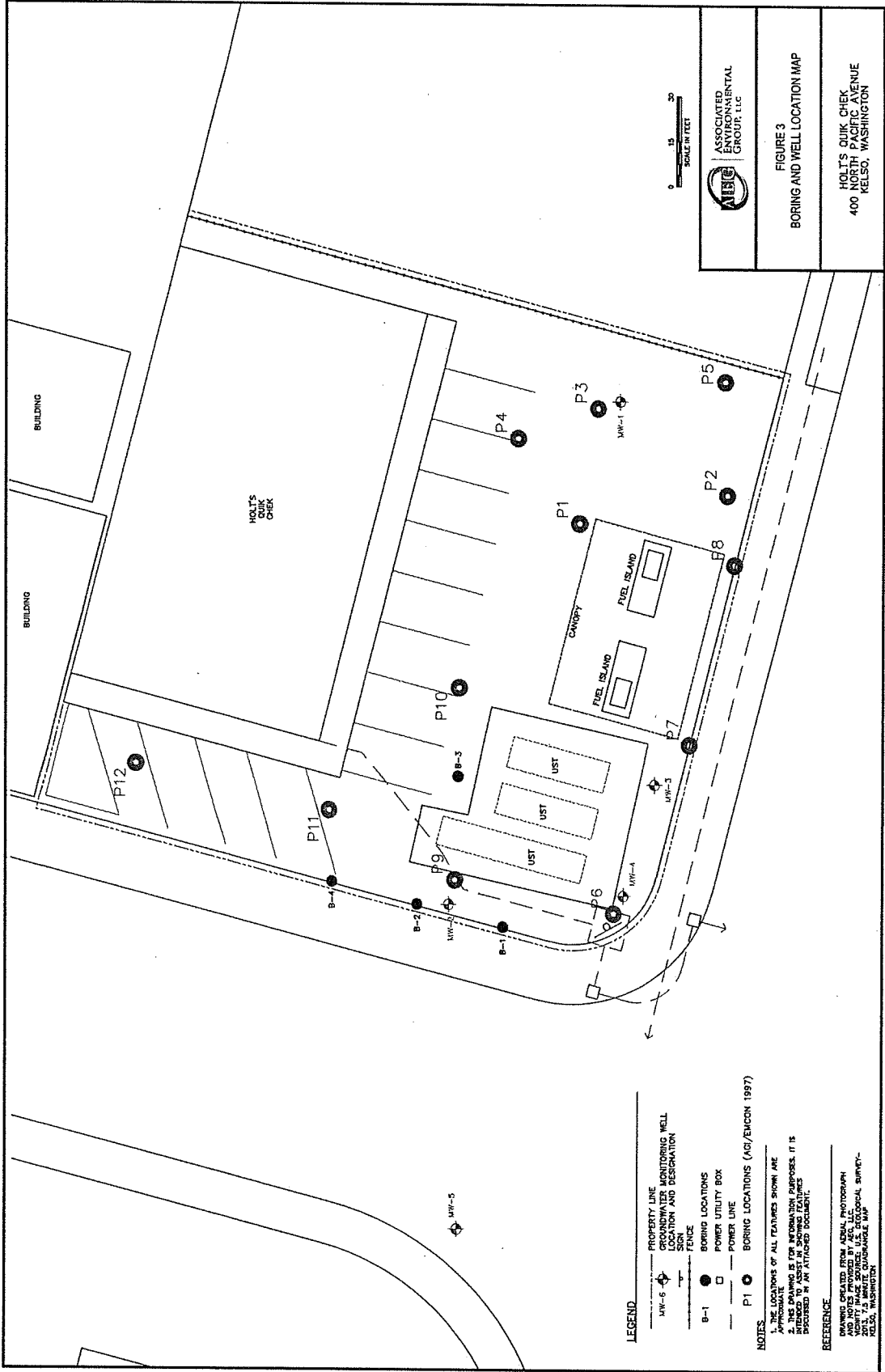
- LEGEND**
- PROPERTY LINE
 - MONITORING WELL LOCATION AND RESTRICTION SIGN
 - FENCE
 - BORING LOCATIONS (AEG 2019)
 - BORING LOCATION (AG/EUCON 1997)

NOTES

1. THE LOCATIONS OF ALL FEATURES SHOWN ARE FOR INFORMATION PURPOSES ONLY.
2. THIS DRAWING IS FOR INFORMATION PURPOSES. IT IS INTENDED TO ASSIST IN SHOWING FEATURES DISCUSSED IN AN ATTACHED DOCUMENT.

REFERENCE

DRAWING CREATED FROM AERIAL PHOTOGRAPH
 PHOTO SOURCE: AERIAL PHOTOGRAPHY
 PHOTO DATE SOURCE: U.S. GEOLOGICAL SURVEY-
 2013, 7.5 MINUTE QUADRANGLE MAP
 KELSO, WASHINGTON



ASSOCIATED ENVIRONMENTAL GROUP, LLC

FIGURE 3
BORING AND WELL LOCATION MAP

HOLT'S QUIK CHEK
400 SOUTH WASHINGTON
RELSO, WASHINGTON

LEGEND

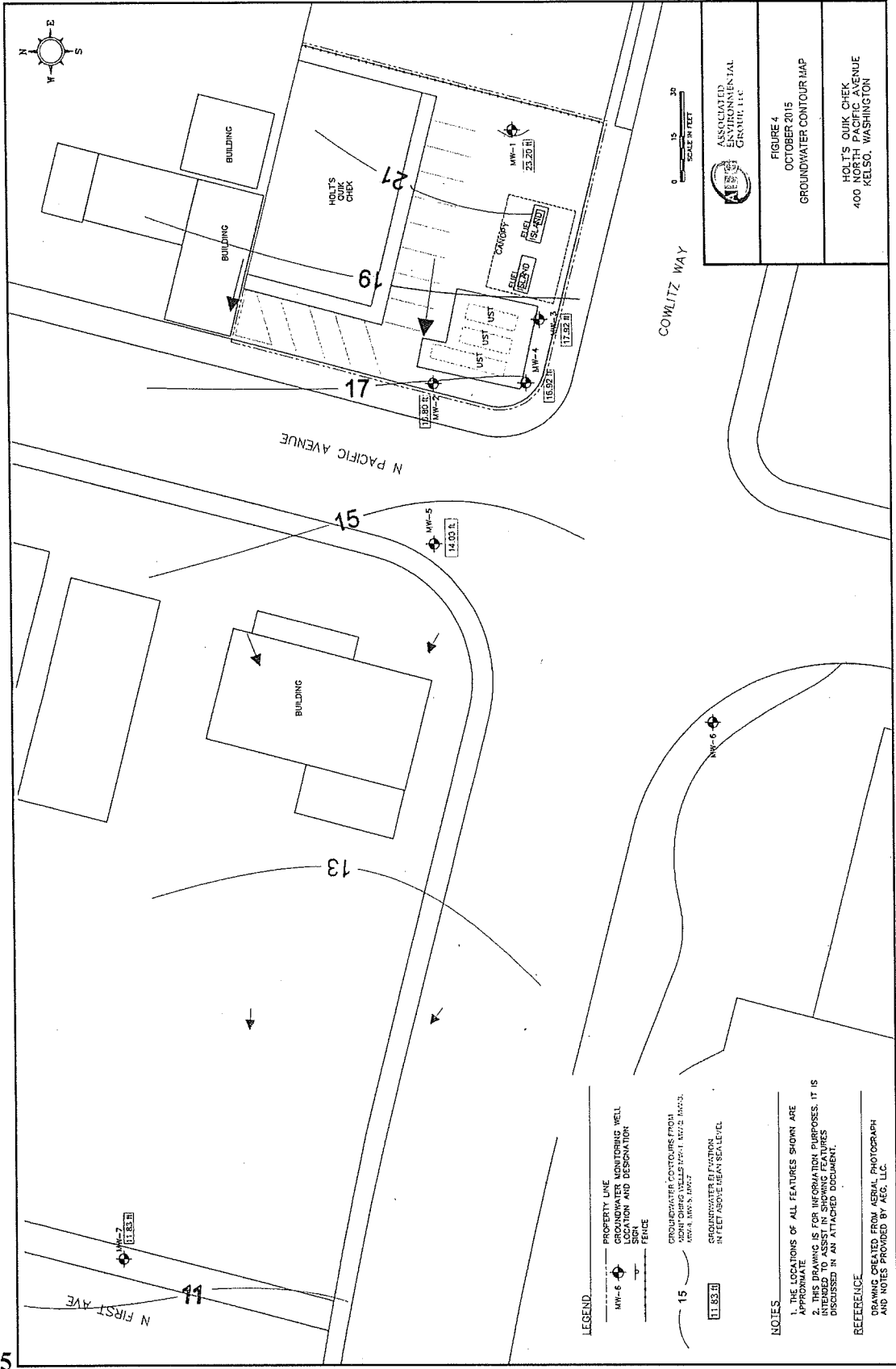
- MW-6 GROUNDWATER MONITORING WELL
- BORING LOCATIONS
- POWER UTILITY BOX
- POWER LINE
- P1 BORING LOCATIONS (AS/ENCON 1997)

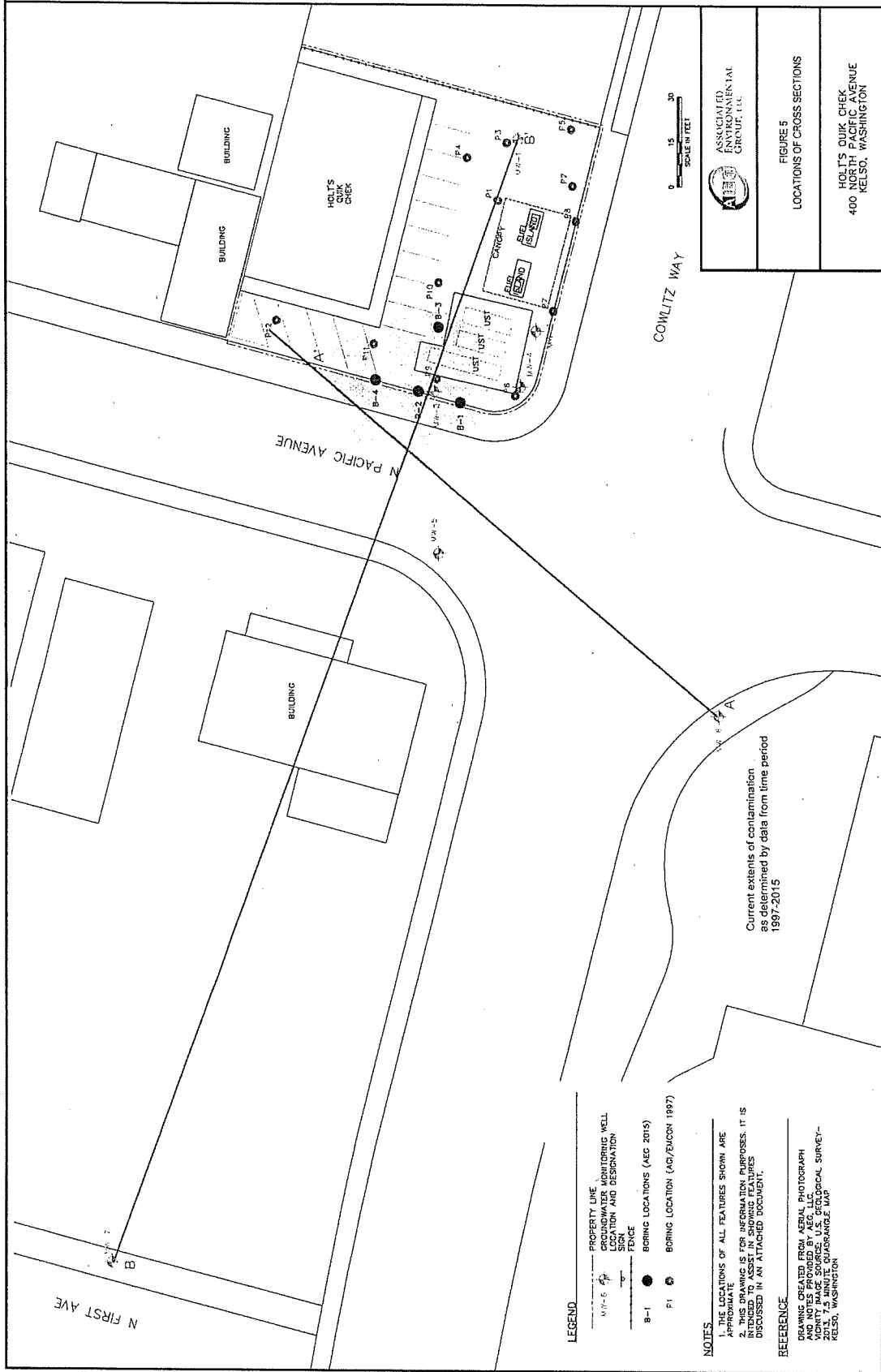
NOTES

1. THE LOCATIONS OF ALL FEATURES SHOWN ARE APPROXIMATE AND FOR INFORMATIONAL PURPOSES. IT IS ADVISED THAT THESE LOCATIONS MAY VARY FROM THOSE SHOWN IN AN ATTACHED DOCUMENT.

REFERENCE

AS/ENCON CONSULTING ENGINEERS, INC.
AND NOTES PROVIDED BY AS/ENCON
PROPERTY FILED UNDER U.S. GEOLOGICAL SURVEY-RELSO, WASHINGTON





ASSOCIATED ENVIRONMENTAL GROUP, LLC

FIGURE 5
LOCATIONS OF CROSS SECTIONS

HOLT'S QUIK CREEK
400 NORTH PACIFIC AVENUE
NELSO, WASHINGTON

- LEGEND**
- PROPERTY LINE
 - GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION
 - BOILING LOCATION (AUG/2015)
 - BOILING LOCATION (AUG/2008/1997)

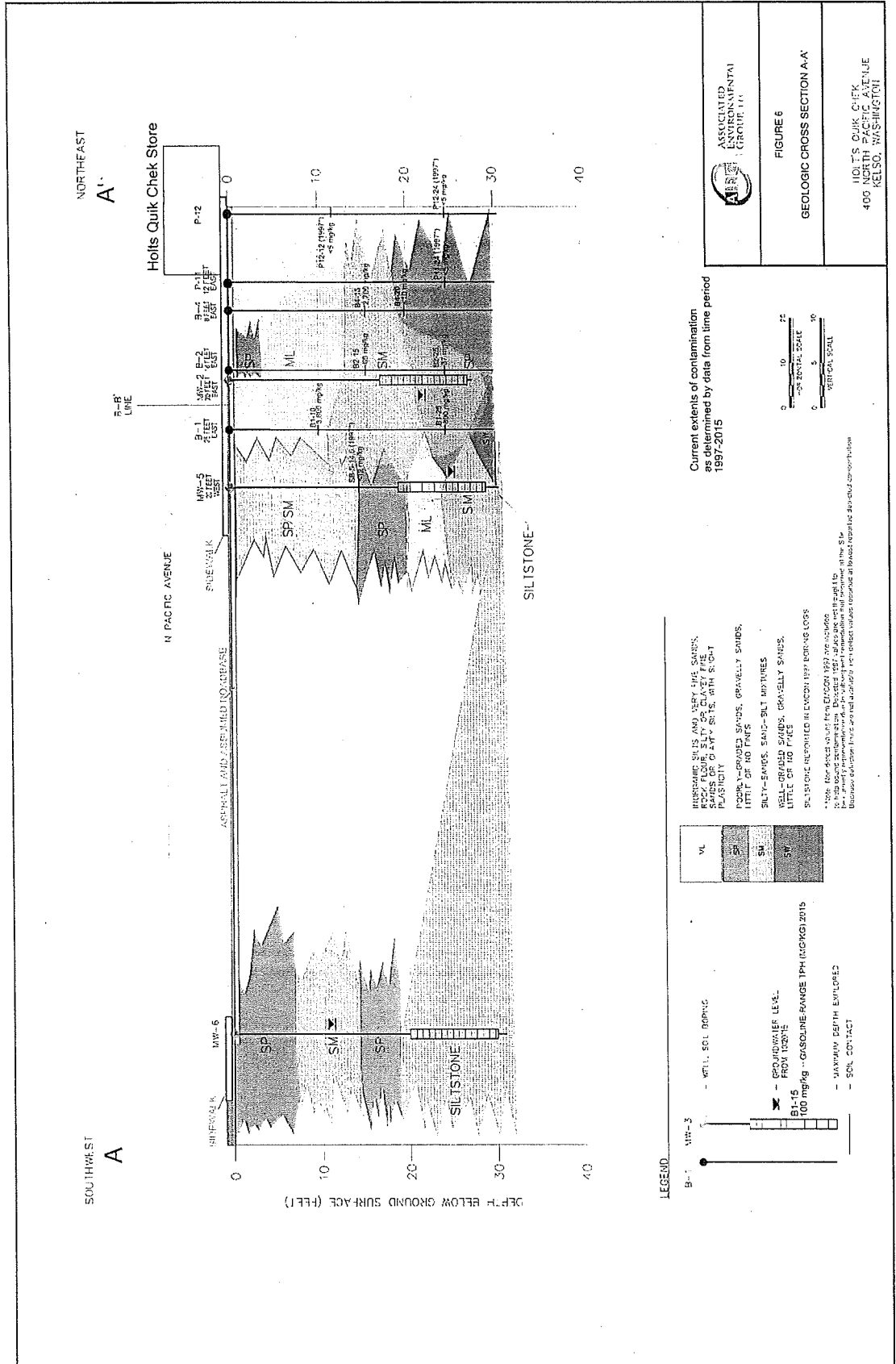
Current extent of contamination as determined by data from time period 1997-2015

NOTES:

1. THE LOCATIONS OF ALL FEATURES SHOWN ARE APPROXIMATE
2. THIS DRAWING IS FOR INFORMATION PURPOSES. IT IS NOT TO BE USED FOR REGULATORY PURPOSES DISCUSSED IN AN ATTACHED DOCUMENT.

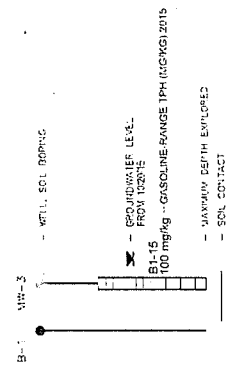
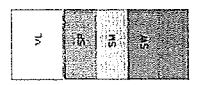
REFERENCE:

DRAWING CREATED FROM AERIAL PHOTOGRAPH AND NOTES PROVIDED BY AEG, LLC. VICINITY MAPS SOURCE: U.S. GEOLOGICAL SURVEY- WASHINGTON, WASHINGTON, WASHINGTON, WASH.

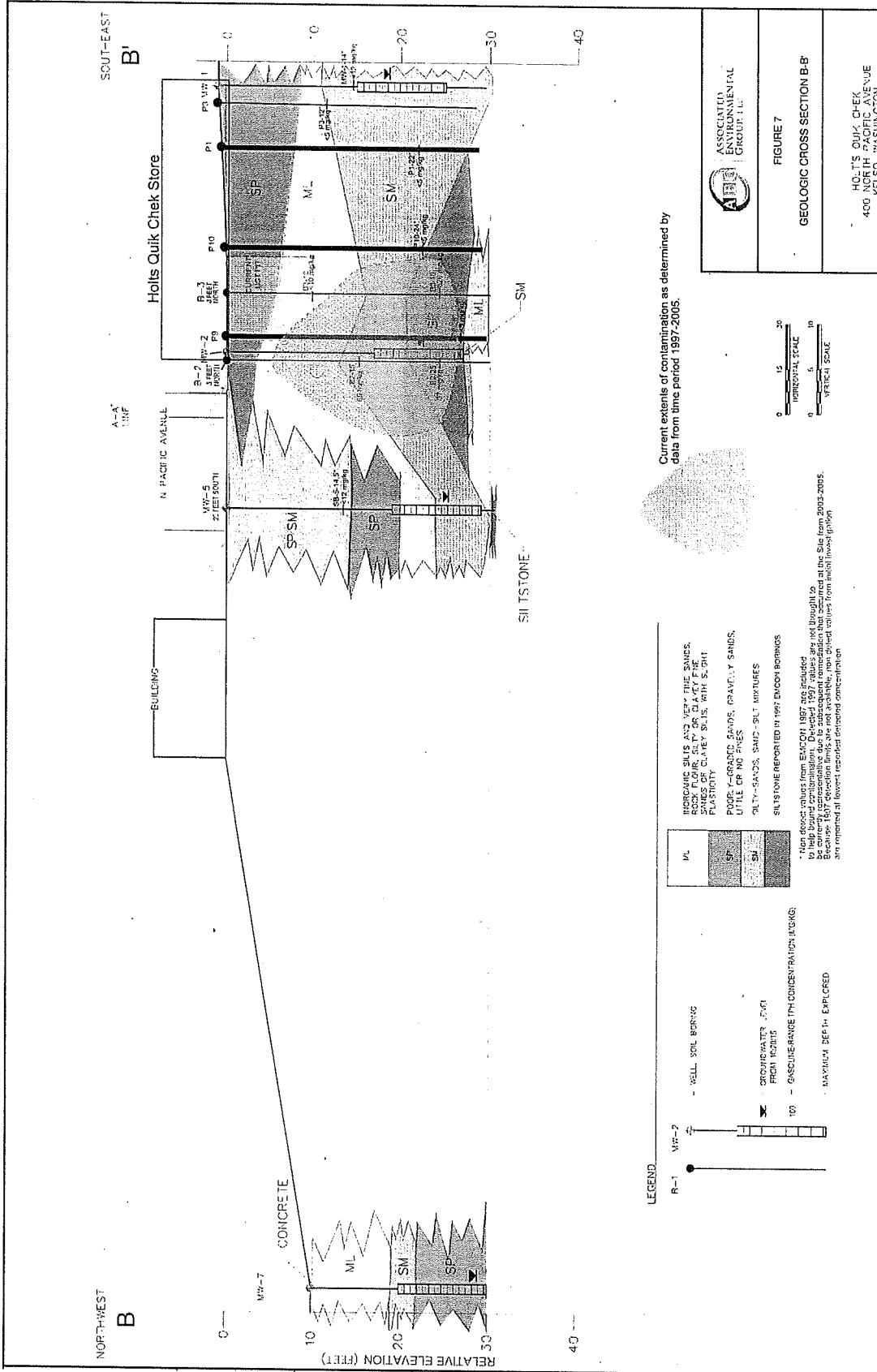


Current extent of contamination as determined by data from time period 1997-2015

HEAVY SANDS AND VERY FINE SANDS, ROCK FLOBS, SILTY CLAY, CLAY WITH PLASTICITY, FINE-GRAINED SANDS, GRAVELLY SANDS, LITTLE OR NO FINE
 SILTY SANDS, SAND-SILT MIXTURES
 WELL-GRAINED SANDS, GRAVELLY SANDS, LITTLE OR NO FINE
 SILTSTONE RECORDED IN EVERY TEST BORING LOGS
 *Note: For each chart from EPCOR 1997 and include in this report contamination. Dotted lines indicate test depth to maximum depth of soil contact. Each soil profile is recorded at least separate as well as soil below



ASSOCIATED ENVIRONMENTAL GROUP, INC.
 FIGURE 6
 GEOLOGIC CROSS SECTION A-A'
 HOLLIS QUIK CHEK
 400 NORTH PACIFIC AVENUE
 KELSO, WASHINGTON



Current extents of contamination as determined by data from time period 1997-2005.

Non detect values from EMOCH 1997 are included to help bring contamination. Detected 1997 values are not thorough to help bring contamination. Detected 1997 values are not thorough to help bring contamination. Detected 1997 values are not thorough to help bring contamination. Detected 1997 values are not thorough to help bring contamination.

LOG OF EXPLORATORY BORING

PROJECT NAME Holts Quik Chek
LOCATION Kelso, Washington
DRILLED BY Cascade Drilling, Inc.
DRILL METHOD Hollow Stem Auger
LOGGED BY Michelle Lange

BORING NO. MW- 5
PAGE 1 OF 2
GROUND ELEV.
TOTAL DEPTH 30.50'
DATE COMPLETED 09/23/97

SAMPLE NUMBER	SAMPLE TYPE	BLOWS PER 6 INCHES	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	WELL DETAILS	LITHOLOGIC COLUMN	LITHOLOGIC DESCRIPTION
								0 to 0.5 foot: ASPHALT 0.5 to 14.75 feet: SAND WITH SILT (SP-SM); brown; fine; few nonplastic silt; trace medium to coarse sand; trace fine to coarse, subangular to subrounded gravel; damp to moist. @ 4.5 to 30.5 feet: localized iron staining; micaceous.
5-4.5	SS	6-8-11		5				
5-9.5	SS	8-12-14		10				
5-14.5	SS	8-10-16		15				14.75 to 19.5 feet: SAND (SP); gray to brown; fine to coarse; trace nonplastic silt; moist; petroleum hydrocarbon-like odor.
5-19.5	SS	4-12-14		20				19.5 to 19.75 feet: SILTY SAND (SM); gray to



REMARKS

(1) SS = Soil samples collected with 3-inch outside-diameter split-spoon sampler. (2) Blow counts do not represent SPT results. (3) Borings were hand augered from ground surface to approximately 4 feet bgs for utility clearance purposes.

LOG OF EXPLORATORY BORING

PROJECT NAME Holts Quik Chek
LOCATION Kelso, Washington
DRILLED BY Cascade Drilling, Inc.
DRILL METHOD Hollow Stem Auger
LOGGED BY Michelle Lange

BORING NO. MW- 5
PAGE 2 OF 2-
GROUND ELEV.
TOTAL DEPTH 30.50'
DATE COMPLETED 09/23/97

SAMPLE NUMBER	SAMPLE TYPE	BLOWS PER 6 INCHES	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	WELL DETAILS	LITHOLOGIC COLUMN	LITHOLOGIC DESCRIPTION
5-24.5	SS	10-16-21	▽	25	2	2	2	brown; fine to coarse; some low plasticity silt; moist. 19.75 to 24.0 feet: SILT (ML); brown; fine; few nonplastic silt; trace medium to coarse sand; trace fine to coarse, subangular to subrounded gravel; damp to moist.
5-29.5	SS	20-50/6"		30	2	2	2	24.0 to 30.25 feet: SILTY SAND (SM); gray; fine to medium; little nonplastic to low plasticity silt; wet; petroleum hydrocarbon-like odor. @ 24.5 wet. 30.25 to 30.5 feet: SILTSTONE; red.
				35				Total depth drilled = 29.5 feet. Total depth sampled = 31.0 feet. WELL COMPLETION DETAILS: 0.5 to 18.5 feet: Nominal 2-inch inside-diameter, flush-threaded, Schedule 40 PVC blank riser pipe. 18.5 to 29.0 feet: Nominal 2-inch inside-diameter, flush-threaded, Schedule 40 PVC well screen with 0.010-inch machined slots. 29.0 to 29.5 feet: Nominal 2-inch inside-diameter, flush-threaded, Schedule 40 PVC end cap. 0 to 1.0 foot: Flush monument and concrete. 1.0 to 15.0 feet: Bentonite chips hydrated with potable water. 15.0 to 31.0 feet: 10 - 20 Colorado Silica Sand.
				40				



REMARKS

(1) SS = Soil samples collected with 3-inch outside-diameter split-spoon sampler. (2) Blow counts do not represent SPT results. (3) Borings were hand augered from ground surface to approximately 4 feet bgs for utility clearance purposes.

LOG OF EXPLORATORY BORING

PROJECT NAME Holts Quik Chek
LOCATION Kelso, Washington
DRILLED BY Cascade Drilling, Inc.
DRILL METHOD Hollow Stem Auger
LOGGED BY Michelle Lange

BORING NO. MW- 6
PAGE 1 OF 2
GROUND ELEV.
TOTAL DEPTH 31.00'
DATE COMPLETED 09/23/97

SAMPLE NUMBER	SAMPLE TYPE	BLDWS PER 6 INCHES	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	WELL DETAILS	LITHOLOGIC COLUMN	LITHOLOGIC DESCRIPTION
6-4.5	SS	6-10-11		5				0 to 7.0 feet: SAND WITH SILT (SP-SM); brown; fine; micaceous; few nonplastic silt; few fine to coarse, subangular to subrounded gravel; trace medium to coarse sand; damp to moist. @ 4.5 to 6.0 feet: reddish patches; no gravel.
6-7	GRAB							7.0 to 9.0 feet: SILTY SAND (SM); gray; fine; some nonplastic to low plasticity silt; moist; petroleum hydrocarbon-like odor.
6-9.5	SS	6-10-11		10				9.0 to 14.0 feet: SILTY SAND (SM); mottled gray and brown with reddish patches; fine; micaceous; some nonplastic to low plasticity silt; trace medium to coarse sand; trace fine to coarse, subangular to subrounded gravel; moist.
6-14.5	SS	50/6"		15				14.0 to 19.0 feet: GRAVELLY SAND WITH SILT (SP-SM); brown; fine to coarse; micaceous; little fine subangular gravel; trace nonplastic silt; moist; hydraulic fuel-like odor.
6-19.5	SS	50/6"		20				19.0 to 31.0 feet: SILTSTONE; reddish; micaceous; damp.



REMARKS

(1) SS = Soil samples collected with 3-inch outside-diameter split-spoon sampler. (2) Blow counts do not represent SPT results. (3) Borings were hand augered from ground surface to approximately 4 feet bgs for utility clearance purposes.

Tables

Table 1 - Summary of Soil Analytical Results
Holt's Quik Check
Kelso, Washington

Sample Number	Depth Collected (feet)	Sampled By	Date Collected	Volatile Organic Compounds										Total Petroleum Hydrocarbons				
				Benzene	Toluene	Ethylbenzene	Xylenes	MIBK	EDC	EDB	Naphthalene	Gasoline	Diesel	Heavy Oil	Lead			
P1-22	22.0	AGI	3/27/1997	<0.05	<0.1	<0.1	<0.1	--	--	--	--	--	--	<5	--	--	--	
P2-18	18.0	AGI	3/27/1997	<0.05	<0.1	<0.1	<0.1	--	--	--	--	--	--	<5	--	--	--	
P3-12	12.0	AGI	3/27/1997	<0.05	<0.1	<0.1	<0.1	--	--	--	--	--	--	<5	--	--	--	
P4-18	18.0	AGI	3/27/1997	<0.05	<0.1	<0.1	<0.1	--	--	--	--	--	--	<5	--	--	--	
P5-12	12.0	AGI	3/27/1997	<0.05	<0.1	1.2	8	--	--	--	--	--	1900	<5	--	--	--	
P6-20	20.0	AGI	3/27/1997	<0.05	<0.1	<0.1	<0.1	--	--	--	--	--	<5	<5	--	--	--	
P6-25	25.0	AGI	3/27/1997	<0.05	<0.1	<0.1	<0.1	--	--	--	--	--	<5	<5	--	--	--	
P7-12	12.0	AGI	3/27/1997	<0.05	<0.1	<0.1	<0.1	--	--	--	--	--	<5	<5	--	--	--	
P7-20	20.0	AGI	3/27/1997	<0.05	<0.1	<0.1	<0.1	--	--	--	--	--	<5	<5	--	--	--	
P8-16	16.0	AGI	3/28/1997	<0.05	0.1	0.4	8.4	--	--	--	--	--	250	200	--	--	--	
P8-20	20.0	AGI	3/28/1997	<0.05	0.2	0.4	7.8	--	--	--	--	--	200	200	--	--	--	
P8-24	24.0	AGI	3/28/1997	<0.05	<0.1	<0.1	<0.1	--	--	--	--	--	710	<5	--	--	--	
P9-12	12.0	AGI	3/28/1997	<0.05	<0.1	1.5	3.7	--	--	--	--	--	<5	<5	--	--	--	
P9-28	28.0	AGI	3/28/1997	<0.05	<0.1	<0.1	<0.1	--	--	--	--	--	<5	<5	--	--	--	
P10-12	12.0	AGI	3/28/1997	<0.05	<0.1	<0.1	<0.1	--	--	--	--	--	<5	<5	--	--	--	
P10-24	24.0	AGI	3/28/1997	<0.05	<0.1	<0.1	<0.1	--	--	--	--	--	12,000	<5	--	--	--	
P11-16	16.0	AGI	3/28/1997	<0.05	8.7	2.0	7.0	--	--	--	--	--	<5	<5	--	--	--	
P11-24	24.0	AGI	3/28/1997	<0.05	<0.1	<0.1	<0.1	--	--	--	--	--	<5	<5	--	--	--	
P12-12	12.0	AGI	3/28/1997	<0.05	<0.1	<0.1	<0.1	--	--	--	--	--	<5	<5	--	--	--	
P12-20	20.0	AGI	3/28/1997	<0.05	<0.1	<0.1	<0.1	--	--	--	--	--	<5	<5	--	--	--	
MW-1-14	14-15.5	EMCON	6/24/1997	ND	ND	ND	ND	--	--	--	--	--	ND	ND	ND	ND	ND	
MW-3-9.5	9.5-11	EMCON	6/24/1997	2.4	6.7	25	23	--	--	--	--	--	5760	3844	ND	ND	ND	
MW-2-27	27-27.5	EMCON	6/24/1997	ND	ND	0.8	ND	--	--	--	--	--	436	ND	ND	ND	ND	
MW-3-19	19-20.5	EMCON	6/25/1997	ND	ND	ND	ND	--	--	--	--	--	ND	ND	ND	ND	ND	
MW-4-19	19-20.5	EMCON	6/25/1997	ND	0.3	0.5	2	--	--	--	--	--	1280	209**	ND	ND	ND	
MW-4-21.5	21.5-23	EMCON	6/25/1997	ND	ND	ND	ND	--	--	--	--	--	ND	ND	ND	ND	ND	
MW-5-14.5	14-15.5	EMCON	9/26/1997	ND	ND	ND	ND	--	--	--	--	--	ND	ND	ND	ND	ND	
MW-6-7	7.0	EMCON	9/26/1997	1.21	1.92	9.09	4.97	--	--	--	--	--	2279	3723**	ND	ND	ND	
MW-6-19.5	19.5-20	EMCON	9/26/1997	ND	ND	ND	ND	--	--	--	--	--	ND	ND	ND	ND	ND	
MW-7-15	15.0	AEG	6/17/2015	<0.02	<0.05	<0.05	<0.15	<0.05	<0.05	<0.01	<0.05	<0.05	<0.05	<10	<50	<100	<100	
B1-10	10.0	AEG	6/17/2015	<0.02	1.6	5.4	300	<0.05	<0.05	<0.01	<0.05	6.3	3800	<50	<100	<100	<100	
B1-25	25.0	AEG	6/17/2015	<0.02	<0.05	0.17	1.1	<0.05	<0.05	<0.01	<0.05	5	800	<50	<100	<100	<100	
B2-15	15.0	AEG	6/17/2015	<0.02	<0.05	0.11	0.53	<0.05	<0.05	<0.01	<0.05	2.9	65	<50	<100	<100	<100	
B2-25	25.0	AEG	6/17/2015	<0.02	<0.05	<0.05	0.27	<0.05	<0.05	<0.01	<0.05	0.78	37	<50	<100	<100	<100	
B3-10	10.0	AEG	6/17/2015	<0.02	<0.05	<0.05	<0.15	<0.05	<0.05	<0.01	<0.05	<0.05	<10	<50	<100	<100	<100	
B3-25	25.0	AEG	6/17/2015	<0.02	<0.05	0.05	0.15	<0.05	<0.05	<0.01	<0.05	<0.05	630	<50	<100	<100	<100	
B4-15	15.0	AEG	6/17/2015	<0.02	0.53	1.3	86	<0.05	<0.05	<0.01	<0.05	0.78	2700	<50	<100	<100	<100	
B4-20	20.0	AEG	6/17/2015	<0.02	0.05	0.05	0.15	<0.05	<0.05	0.01	0.05	0.05	10	50	100	5	5	
MTCA Method A Cleanup Levels (mg/kg)				0.02	0.05	0.05	0.15	0.05	0.01	NL	0.005	5	100*	2,000	2,000	2,000	2,000	2,000

Notes:
 All results are in milligrams per kilogram (mg/kg)
 -- = Not analyzed for constituent
 * = Not detected at the listed laboratory detection limits
 Bold indicates the detected concentration exceeds Ecology MTCA Method A cleanup level
 Bold indicates the detected concentration is below Ecology MTCA Method A cleanup level
 * TPH-Gasoline Cleanup Level with no presence of Benzene anywhere at the Site
 ** According to EMCON, detected hydrocarbons in the diesel range appear to be due to the overlap from the gasoline range.
 EDB = Ethylene Dibromide
 EDC = 1,2-Dichloroethane
 MIBK = Methyl Tertiary Butyl Ether
 PQL = Practical Quantitation Limit (laboratory detection limit)
 NL = No Method A cleanup level is listed.
 ND = Not Detected (detection limits unavailable)

Table 2 - Summary of Groundwater Analytical Results
Hols Quick Check
Ketchikan, Washington

Sample Number	Date Collected	Volatile Organic Compounds (ppb)									Total Petroleum Hydrocarbons (ppb)			Tem/Leak	Dashed/Leak
		Benzene	Toluene	Ethylbenzene	Xylenes	MIBK	EDC	DEH ¹	Styrene	Isobutene	Diethyl	Heavy Oil			
MW-1	8/20/1997	<0.50	<0.50	<1.0	<1.0	..	..	..	..	..	<50	<250	<500	..	..
	9/20/1997	<0.50	<0.50	<1.0	<1.0	..	..	..	..	..	<50	<250	<500	1.5	ND
	12/15/1997	<0.50	<0.50	<1.0	<1.0	..	..	..	..	..	<50	<250	<500	..	..
	3/11/1998	<0.50	<0.50	<1.0	<1.0	..	..	..	..	..	<50	<250	<500	..	..
	4/11/1998	<0.50	<0.50	<1.0	<1.0	..	..	..	..	..	<50	<250	<500	..	..
	12/23/2004	<0.50	<0.50	<1.0	<1.0	..	..	..	..	..	<50	<250	<500	..	..
	3/17/2005	<0.50	<0.50	<1.0	<1.0	..	..	..	..	..	<50	<250	<500	..	..
	8/24/2005	<0.50	<0.50	<1.0	<1.0	..	..	..	..	..	<50	<250	<500	..	..
	10/7/2014	<1.0	<1.0	<1.0	<1.0	<1.0	..	..	..	..	<100	..	..	..	..
	1/20/2015	<1.0	<1.0	<1.0	<1.0	<1.0	..	..	..	..	100	..	..	..	..
	4/22/2015	<1.0	<1.0	<1.0	<1.0	<1.0	..	..	..	..	<100	..	..	..	..
	7/16/2015	<1.0	<1.0	<1.0	<1.0	<1.0	..	..	..	..	<100	..	..	..	..
	10/20/2015	<1.0	1.1	3.7	7.6	<1.0	<0.5	<0.1	<1.0	..	740	<250	<500	..	..
MW-2	8/20/1997	24.5	15.7	142	207	..	..	..	..	1,000	208	<500	..	..
	9/20/1997	25.5	22.3	174	372	..	..	..	..	7,750	<250	<500	2.1	1.8	
	12/15/1997	33.5	20.5	228	401	..	..	..	..	8,350	<250	<500	..	..
	3/11/1998	32.2	6.66	183	702	..	..	..	..	3,100	<250	<500	..	..
	4/11/1998	4.06	9.4	117	195	..	..	..	..	2,560	..	<500	..	..
	3/11/2004	11.3	1.90	18.1	7.47	..	..	..	..	..	..	..	..	..
	8/10/2004	4.48	1.56	7.45	4.66	..	..	..	..	..	..	..	..	..
	12/23/2004	4.54	6.51	1.56	1.15	..	..	..	..	..	..	..	..	..
	3/17/2005	2.25	<0.20	1.62	<1.0	..	..	..	..	..	500	..	..	..	..
	8/24/2005	7.68	<0.50	0.666	<1.0	..	..	..	..	..	0.00	..	..	..	..
	8/24/2005	11.09	<1.0	5.86	<1.0	..	..	..	..	..	100	..	..	..	..
	12/28/2005	0.91	<0.50	<1.0	<1.0	..	..	..	..	..	100	..	..	..	..
	3/23/2006	3.24	<0.20	<1.0	<1.0	..	..	..	..	..	502	..	..	..	..
8/24/2006	<0.50	<0.50	<1.0	<1.0	..	..	..	..	..	219	..	..	..	..
8/24/2006	2.85	<0.50	<1.0	<1.0	..	..	..	..	..	248	..	..	..	..
10/7/2014	<1.0	<1.0	<1.0	<1.0	..	..	..	..	..	<100	..	..	..	..
1/20/2015	<1.0	<1.0	<1.0	<1.0	..	..	..	..	..	<100	..	..	..	..
4/22/2015	<1.0	<1.0	<1.0	<1.0	..	..	..	..	..	100	..	..	..	..
7/16/2015	<1.0	<1.0	<1.0	<1.0	..	..	..	..	..	<100	..	..	..	..
10/20/2015	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<0.1	<1.0	..	..	<250	<500	..	..
MW-3	8/20/1997	0.8	<0.50	<1.0	<1.0	..	..	..	..	..	90.7	<250	<500	..	..
	9/20/1997	<0.50	<0.50	<1.0	<1.0	..	..	..	..	..	<50	<250	<500	3.8	ND
	12/15/1997	1.3	<0.50	<1.0	<1.0	..	..	..	..	..	<50	<250	<500	..	..
	3/11/1998	<0.50	<0.50	2.82	5.18	..	..	..	..	..	143	<250	<500	..	..
	4/11/1998	<0.50	<0.50	<1.0	<1.0	..	..	..	..	..	<50	<250	<500	..	..
	3/11/2004	<0.50	<0.50	<1.0	<1.0	..	..	..	..	..	<50	..	..	..	..
	12/23/2004	<0.50	<0.50	<1.0	<1.0	..	..	..	..	..	<50	..	..	..	..
	3/17/2005	<0.50	<0.50	<1.0	<1.0	..	..	..	..	..	<50	..	..	..	..
	8/24/2005	<1.0	<1.0	<1.0	<1.0	..	..	..	..	..	<100	..	..	..	..
	12/28/2005	<0.50	<0.50	<1.0	<1.0	..	..	..	..	..	<50	..	..	..	..
	3/24/2006	<0.50	<0.50	<1.0	<1.0	..	..	..	..	..	<50	..	..	..	..
	8/24/2006	<0.50	<0.50	<1.0	<1.0	..	..	..	..	..	<50	..	..	..	..
	10/7/2014	<1.0	<1.0	<1.0	<1.0	..	..	..	..	..	<100	..	..	..	..
1/20/2015	<1.0	<1.0	<1.0	<1.0	..	..	..	..	..	<100	..	..	..	..
4/22/2015	<1.0	<1.0	<1.0	<1.0	..	..	..	..	..	<100	..	..	..	..
7/16/2015	<1.0	<1.0	<1.0	<1.0	..	..	..	..	..	<100	..	..	..	..
10/20/2015	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<0.1	<1.0	..	..	<250	<500	..	..
MW-4	8/20/1997	1.8	<0.50	0.67	<1.0	..	..	..	..	..	491	<250	<500	..	..
	9/20/1997	<0.50	<0.50	<1.0	<1.0	..	..	..	..	..	285	<250	<500	3.8	ND
	12/15/1997	2.28	<0.50	<1.0	<1.0	..	..	..	..	..	301	<250	<500	..	..
	3/11/1998	<0.50	<0.50	1.74	3.76	..	..	..	..	..	124	<250	<500	..	..
	4/11/1998	<0.50	<0.50	<1.0	<1.0	..	..	..	..	..	205	<250	<500	..	..
	12/23/2004	<0.50	<0.50	<1.0	<1.0	..	..	..	..	..	<50	..	..	..	..
	3/17/2005	<0.50	<0.50	<1.0	<1.0	..	..	..	..	..	<50	..	..	..	..
	8/24/2005	<0.50	<0.50	<1.0	<1.0	..	..	..	..	..	<50	..	..	..	..
	12/28/2005	<0.50	<0.50	<1.0	<1.0	..	..	..	..	..	<100	..	..	..	..
	3/24/2006	<0.50	<0.50	<1.0	<1.0	..	..	..	..	..	<50	..	..	..	..
	8/24/2006	<0.50	<0.50	<1.0	<1.0	..	..	..	..	..	<50	..	..	..	..
	10/7/2014	<1.0	<1.0	<1.0	<1.0	..	..	..	..	..	<100	..	..	..	..
	1/20/2015	<1.0	<1.0	<1.0	<1.0	..	..	..	..	..	<100	..	..	..	..
4/22/2015	<1.0	<1.0	<1.0	<1.0	..	..	..	..	..	<100	..	..	..	..
7/16/2015	<1.0	<1.0	<1.0	<1.0	..	..	..	..	..	<100	..	..	..	..
10/20/2015	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<0.1	<1.0	..	..	<250	<500	..	..
MW-5	8/20/1997	11.5	1.87	24.8	17.7	..	..	..	..	..	1,240	<250	<500	6.1	ND
	12/15/1997	11.7	3.06	0.93	<1.0	..	..	..	..	..	1,510	<250	<500	..	..
	3/11/1998	4.48	<0.50	9.83	1.47	..	..	..	..	..	1,080	<250	<500	..	..
	4/11/1998	31.1	0.66	3.18	<1.0	..	..	..	..	..	1,270	<250	<500	..	..
	3/17/2005	7.16	0.893	1.77	3.65	..	..	..	..	..	1,190	..	..	..	..
	8/24/2005	4.47	<0.50	11.3	3.18	..	..	..	..	..	2,140	..	..	..	..
	8/24/2005	2.19	<1.0	<1.0	<1.0	..	..	..	..	..	<100	..	..	..	..
	12/28/2005	<1.0	<1.0	14.5	8.5	..	..	..	..	..	3,530	..	..	..	..
	1/21/2006	2.91	<0.50	0.92	1.27	..	..	..	..	..	373	..	..	..	..
	8/24/2006	<0.50	0.576	<1.0	<1.0	..	..	..	..	..	710	..	..	..	..
	8/24/2006	1.31	0.831	1.3	<1.0	..	..	..	..	..	100	..	..	..	..
	10/7/2014	<1.0	<1.0	<1.0	<1.0	..	..	..	..	..	<100	..	..	..	..
	1/20/2015	<1.0	<1.0	<1.0	<1.0	..	..	..	..	..	100	..	..	..	..
4/22/2015	<1.0	<1.0	<1.0	<1.0	..	..	..	..	..	<100	..	..	..	..
7/16/2015	<1.0	<1.0	<1.0	<1.0	..	..	..	..	..	<100	..	..	..	..
10/20/2015	..	..	..	..	..	..	..	..	..	..	<250	<500	..	..
MW-6	8/20/1997	31.1	2.47	1.1	8.55	..	..	..	..	..	2,070	<250	<500	ND	ND
	12/15/1997	210	6.32	<1.0	2.38	..	..	..	..	..	416	<250	<500	..	..
	3/11/1998	244	<1.50	4.76	<1.0	..									

Table 3 - Summary of Groundwater Elevations

Holt's Quik Chek
Kelso, Washington

Well No./ TOC Elevation (feet)	Date	Depth to Water (feet)	Depth to Free Product (feet)	Free Product Thickness (feet)	Actual Groundwater Elevation (feet)	Change in Elevation (feet)
MW-1	10/7/2014	17.67	--	--	23.51	--
41.18	1/20/2015	14.75	--	--	26.43	2.92
	4/22/2015	16.09	--	--	25.09	-1.34
	7/16/2015	17.30	--	--	23.88	-1.21
	10/20/2015	17.98	--	--	23.20	-0.68
MW-2	10/7/2014	23.36	--	--	17.33	--
40.69	1/20/2015	22.02	--	--	18.67	1.34
	4/22/2015	22.00	--	--	18.69	0.02
	7/16/2015	23.15	--	--	17.54	-1.15
	10/20/2015	23.89	--	--	16.80	-0.74
MW-3	10/7/2014	22.49	--	--	18.41	--
40.9	1/20/2015	21.28	--	--	19.62	1.21
	4/22/2015	21.31	--	--	19.59	-0.03
	7/16/2015	22.28	--	--	18.62	-0.97
	10/20/2015	22.98	--	--	17.92	-0.70
MW-4	10/7/2014	23.36	--	--	17.50	--
40.86	1/20/2015	22.02	--	--	18.84	1.34
	4/22/2015	21.98	--	--	18.88	0.04
	7/16/2015	23.17	--	--	17.69	-1.19
	10/20/2015	23.94	--	--	16.92	-0.77
MW-5	10/7/2014	25.75	--	--	14.50	--
40.25	1/20/2015	24.31	--	--	15.94	1.44
	4/22/2015	24.08	--	--	16.17	0.23
	7/16/2015	25.46	--	--	14.79	-1.38
	10/20/2015	26.22	--	--	14.03	-0.76
MW-6	7/16/2015	11.37	--	--	29.37	--
40.74	10/20/2015	12.97	--	--	27.77	-1.60
MW-7	7/16/2015	17.83	--	--	12.46	--
30.29	10/20/2015	18.46	--	--	11.83	-0.63

Notes:

TOC = Top of casing elevation relative to assigned benchmark.

-- = Not measured, not available, or not applicable

