

February 10, 2016

Mr. Christophe Allen
Acme Fuel Company
416 State Avenue NE
Olympia, Washington 98501-1135

RE: **Interim Remedial Action Plan – Soil Removal**
Acme Bulk Fuel Plant
303 Thurston Avenue NE
Olympia, Washington

Dear Mr. Allen:

Associated Environmental Group, LLC (AEG) has prepared this Interim Remedial Action Plan (IRAP) for the Acme Bulk Fuel Plant located at 303 Thurston Avenue NE Olympia, Washington 98501 (Site). The IRAP describes the Site, environmental conditions, cleanup objectives, and the appropriate cleanup standards selected under the Washington State Department of Ecology (Ecology) Model Toxics Control Act (MTCA).

SITE DESCRIPTION

The Acme property is listed with the Thurston County Assessor as Parcel Number 78503100300, which is a triangular-shaped parcel and is about 0.60 acres. A general location map, illustrating approximate parcel boundaries, is provided as Figure 1, *Vicinity Map*. A Site diagram is included as Figure 2, *Site Map*.

The Site is currently occupied by a Fast Fuel retail fuel station and is also the location of Acme Fuel Companies bulk fuel terminal for their delivery service. The Fast Fuel retail fueling station serves unleaded, mid-grade, premium gasoline fuel, and diesel fuel. Three aboveground storage tanks (ASTs) are present on Site and are utilized for Acme's delivery services. A 30,000-gallon propane tank is located near the western side of the Site within a fenced-off area used also for general storage. One 30,000-gallon diesel/heating oil AST is located near the northwest corner of the Site along with a loading rack used for transferring fuel from the AST to trucks. The AST and loading rack canopy are fenced off and a concrete berm (about 4 feet high) encircles the AST.

According to Ecology, six underground storage tanks (USTs) were installed at the Site in 1986. Four have a capacity of 8,000 gallons each (historical contents included leaded and unleaded gasoline and diesel); one is a 500-gallon waste oil UST; and one is 1,000 gallons and is utilized as an oil-water separator for both the AST pump dispenser and UST dispenser. The oil-water separator is connected to sanitary sewer. Two pump island canopies and associated dispensers are

located near the northeast area of the Site (approximate location of the 8,000-gallon USTs). Near the southeast corner of the Site is a fenced enclosure utilized for drum and dumpster storage (location of the 500-gallon waste oil UST). A railroad track borders the western boundary of the Site and runs southeast to northwest. In addition to the six USTs described above, a 1,000-gallon gasoline UST was installed around the early to mid-1970s and closed-in-place around the mid-1980s, around the time the four 8,000-gallon USTs were installed.

The majority of the Site is covered in asphalt. Gravel and soil surrounds the area near the AST and loading dock. Vegetation at the property is minimal, confined to an island at the northeast corner. The Site and immediate area has been used for commercial and light industrial purposes since the late 1980s. The Site is zoned Urban Waterfront.

MTCA defines a Site/Facility as:

"...any building, structure, installation, equipment, pipe or pipeline...well, pits, pond, lagoon, impoundment, ditch, landfill, storage container...or area where a hazardous substance, other than a consumer product in consumer use, has been deposited, stored, disposed of, or placed, or otherwise come to be located." (WAC 173-340-200)

Under this definition, a Site is not limited to the legal property boundaries and can extend to other properties, both private and public, if contamination has migrated to them. For this Site, based on the data collected to date, the "Site" includes the Acme property along with areas under the right-of-way (ROW) for Thurston Avenue NE to the north. The extent of contamination beneath the ROW has been fully defined.

SITE HISTORY

Acme Fast Fuel (automated fueling) is listed in the 1995 Polk City Directory for Olympia, Washington. Ecology records show that in 1998, Joe Hall Construction retrofitted five USTs to comply with upgrading requirements, and that a 2,000-gallon gasoline UST was closed-in-place. The UST was used for Acme Fuel Company's delivery service fleet around the late 1960s and early 1970s. According to Acme Fuel Company, the UST was closed-in-place around 1975, at which time an UST was installed near the loading rack at the Site as a replacement.

Ecology issued the Site a notice of non-compliance (NONC) on April 3, 2003 for not properly monitoring leaks and cathodic protection. Following the NONC, Acme Fuel Company contracted Associated Environmental Services, Inc. to conduct a tightness and cathodic protection test.

On April 27, 2003, the four 8,000-gallon USTs passed both the tightness and cathodic protection test; however, the waste oil UST failed the cathodic protection test. On April 29, 2003, the waste oil UST was retrofitted with sacrificial anodes and a subsequent cathodic protection test passed. Passing tightness tests on the four 8,000-gallon USTs occurred on February 12, 2008, March 1, 2010, and May 30, 2011.

PREVIOUS ENVIRONMENTAL WORK SUMMARY

Diesel Fuel Spill – 2011

On September 17, 2011, an employee with Kenan Advantage Group, Inc. (KAG) was delivering fuel and started pumping diesel fuel oil into a 70,000-gallon AST, formerly located adjacent to the 30,000-gallon AST at the northwestern area of the Site. Approximately 2,600 gallons of diesel fuel spilled out of the open manhole cover at the bottom of the AST. According to Acme Fuel Company, prior to the incident, the AST was placed out of service due to a small leak at the bottom of the tank. While estimating the cost of repair, the manhole cover had been removed by a contractor and was loosely fitted back on. The majority of the spill percolated into the soil within the secondary containment surrounding the AST.

Immediately following the release, the National Response Corporation (NRC) used vacuum trucks to attempt to recover the free product. The initial emergency response started with recovery of the remaining surface liquid (free product) followed by limited soil excavation around the immediate area of the AST. Following the release, a total of 51 recovery wells and two recovery trenches were installed at the Site (AECOM, 2011). Groundwater was encountered at approximately 5 feet below ground surface (bgs). Free product was predominately observed in the recovery wells located within the secondary containment. Recovery wells where free product was not observed and free product was no longer being recovered were removed. By November 2011, 34 recovery wells had been removed while “*recovery wells that continue to produce diesel for recovery have been retained and continue to be vacuumed*” (AECOM, 2011).

The spill was found to have migrated east through the vadose zone to outside the secondary containment. AECOM reported that as of December 7, 2011, approximately 37,020 gallons of petroleum-impacted water and 1,950 gallons of diesel had been recovered. Further excavation in the area of the spill extending down to the water table resulted in the removal of about 140 tons of soil. On behalf of KAG, AECOM conducted a subsurface investigation at the Site on November 1, 2011 where six borings were advanced via a direct-push probe at locations outside the secondary containment. The following day, five monitoring wells (MW-1 through MW-5) were installed.

AECOM indicated that soil at monitoring well MW-4 (located adjacent northeast and downgradient of the spill area) was impacted by diesel- and gasoline-range petroleum hydrocarbons (TPH) at

2,600 milligrams per kilogram (mg/Kg) and 580 mg/Kg, respectively. These concentrations are above the MTCA Method A soil cleanup levels of 2,000 mg/Kg and 30 mg/Kg, respectively. With respect to groundwater, elevated concentrations of diesel-range TPH (1,700 micrograms per liter [$\mu\text{g/L}$]) and benzene (1,600 $\mu\text{g/L}$) were present in MW-4. These concentrations are above their respective MTCA Method A groundwater cleanup levels of 500 $\mu\text{g/L}$ and 5 $\mu\text{g/L}$.

Diesel-range TPH at concentrations above Method A cleanup levels was also reported in monitoring wells MW-3 and MW-5. These wells are located within 60 feet and 40 feet, respectively, to the northeast and north of the former spill area and were placed near the northern property boundary.

Supplemental Site Characterization, AEG – September 2012

Bulk Plant Facility

AEG advanced a total of seven borings (refer to Figure 2, *Site Map*), four within the containment area [B-2, B-4, B-5, and B-7] and three outside of the containment area [B-1, B-3, and B-6]), to assess the following: 1) whether residual TPH contamination exists at the fuel spill area beneath and in vicinity area adjacent to the former 70,000-gallon AST; 2) further characterize areas immediately outside the containment wall area to assess whether the subsurface (soil and groundwater) remains impacted by diesel-range TPH (as formerly reported and confirmed by AECOM); and 3) the potential for migration of TPH and associated VOCs (from the diesel fuel spill on September 17, 2011) to migrate off property.

Laboratory analytical results for groundwater samples collected from within the containment area, specifically below the former 70,000-gallon AST at boring B-2, indicated the presence of diesel-range TPH (75,000 $\mu\text{g/L}$), carcinogenic polycyclic aromatic hydrocarbons (cPAHs) (3.3 $\mu\text{g/L}$), and benzene (35 $\mu\text{g/L}$). At boring B-4, adjacent south of the former AST, diesel-range TPH (28,000 $\mu\text{g/L}$) and cPAHs (3.0 $\mu\text{g/L}$) were also detected. These concentrations are above their respective MTCA Method A groundwater cleanup levels of 500 $\mu\text{g/L}$ for diesel-range TPH, 0.1 $\mu\text{g/L}$ for total cPAHs, and 5 $\mu\text{g/L}$ for benzene.

Diesel-range TPH was not detected in groundwater collected at borings B-1 and B-3, immediately adjacent north and east, respectively, of the former fuel spill area (outside the containment wall). However, gasoline-range TPH (2,600 $\mu\text{g/L}$ at B-1 and 1,700 $\mu\text{g/L}$ at B-3) and benzene (16 $\mu\text{g/L}$ at B-1) were detected. These concentrations are above their respective MTCA Method A groundwater cleanup levels of 800 $\mu\text{g/L}$ and 5 $\mu\text{g/L}$.

Laboratory analytical results for soil samples collected from boring B-6, located east and downgradient of the former spill area, indicated the presence of diesel-range TPH (4,600 mg/Kg),

gasoline-range TPH (830 mg/Kg), and benzene (0.06 mg/Kg). These detections are above their respective MTCA Method A cleanup levels of 2,000 mg/Kg, 30 mg/Kg, and 0.03 mg/Kg.

Groundwater analytical results for AECOM's monitoring wells showed the presence diesel-range TPH and/or benzene at MW-3 (northeast), MW-4 (directly adjacent east-northeast), and MW-5 (north of the containment area) above MTCA Method A cleanup levels during AECOM's September 2011 Groundwater Event. In comparison, during AEG's September 2012 Groundwater Event, only benzene was detected at concentrations above the MTCA Method A cleanup level in MW-4 and MW-5.

The direction of groundwater flow for the Site based on AECOM's and AEG's monitoring events is generally to the north with components to the northeast and east.

Fast Fuel Facility

AEG advanced a total of five borings (B-8 through B-12) to assess the subsurface conditions (soil and groundwater media) at the Fast Fuel facility, adjacent to the dispenser islands and USTs, to assess the fuel station's integrity as an operational retail fuel dispensing facility.

Laboratory analytical results indicated no detectable concentrations of all constituents of concern (COCs) (gasoline-, diesel-, and heavy oil-range TPH; and associated VOCs) in all soil and groundwater samples collected in this area of the Site. Refer to Tables 1 and 2 on Figure 2, *Site Map* for a summary of the soil and groundwater data collected by AEG.

Conclusions

The Supplemental Site Characterization for both areas concluded that groundwater beneath the former spill area/former 70,000-gallon AST showed significant impact due to the former fuel spill on September 17, 2011. The concentrations of diesel-range TPH (up to 75,000 µg/L) and cPAHs (up to 6.5 µg/L) are likely associated with the fuel spill because of the type of contaminants detected (associated with the fuel spilled) and the high concentrations reported (i.e., not indicative of weathered/older fuel). A slight to moderate sheen with strong diesel fuel odor was also observed during groundwater sampling activities at borings B-2 and B-4.

Contamination above MTCA Method A cleanup levels remains at the former fuel spill area beneath the former 70,000-gallon AST despite the fuel recovery and remedial action efforts completed by AECOM. AECOM reported that "*diesel collection via the recovery wells, excavation of impacted soil from all accessible impacted areas has also been completed (except directly beneath the AST and associated piping)*" (AECOM, 2011). Hence, in AEG's professional opinion, the high level of contamination currently present in this area is not unexpected. Additional cleanup action/remedial

action is necessary to remediate the impacted soil and groundwater to concentrations below MTCA Method A cleanup levels.

The elevated diesel-range TPH concentration detected at boring B-6 (located downgradient and east of the former fuel spill area) may be associated with the former fuel spill that had occurred on September 17, 2011.

Laboratory analytical results indicated elevated concentrations of gasoline-range TPH in groundwater at borings B-1 and B-3. The potential sources of this contamination were unclear at this point of investigation since gasoline-range TPH was not detected in groundwater in B-6 or B-8 through B-12.

Based on this data, AEG concluded the potential for off-property migration of the COCs (TPH, benzene, and/or cPAHs) existed due to the direction of groundwater flow and elevated TPH and benzene concentrations detected at perimeter monitoring wells MW-3, MW-4, and MW-5 (AECOM's September 2011 Event).

Turbine Pump and Dispenser Sump Soil Sampling, AEG – July 2013

In July 2013, the Acme Fuel Company observed that compression fittings on two of the gasoline turbines were leaking and that a compression fitting on one of the dispensers was also leaking. To evaluate the potential impacts that may have had occurred to the exposed soil beneath the leakage, and to determine if other turbines and dispensers had leaked, AEG:

- Sampled the exposed soil beneath all of the dispensers and the backfill material adjacent to all of the UST turbine pumps (refer to Figure 2, *Site Map*) at depths ranging from 6 to 12 inches bgs. The backfill material beneath the dispensers and surrounding the turbine pumps was silty sand with some gravel.
- Analyzed the soil samples for gasoline-range TPH, diesel- and oil-range TPH, and benzene, toluene, ethylbenzene, and xylenes (BTEX).

The sample results indicated that:

- Diesel-range TPH was present **above** the MTCA Method A cleanup levels in three of the samples collected. Two of the samples with results above the cleanup levels were collected beneath the dispensers in what is currently the gasoline fueling area, and one sample was from the backfill soil adjacent to the turbine pump located in the southern portion of the UST nest.

- Gasoline-range TPH and total xylenes were present **above** the MTCA Method A cleanup levels in the backfill soil adjacent to the turbine pump located in the northwestern portion of the UST nest.
- Benzene was present **above** the MTCA Method A cleanup level in the backfill soil adjacent to the turbine pump in the southeastern portion of the UST nest.
- Petroleum hydrocarbons were **not detected above** the MTCA Method A cleanup levels in the samples collected from beneath the dispensers in the diesel fueling area located in the northeastern portion of the Site.

Based on the analytical results, AEG concluded that:

- The soil beneath the dispensers and adjacent to the turbine pumps in the gasoline fueling area of the Fast Fuel facility had been contaminated above the MTCA Method A cleanup levels by the leaks observed from the compression fittings and from historical leakage and de minimis drippage.
- The soil beneath the dispensers in the diesel fueling area had been minimally impacted by de minimis drippage and leakage but not above the MTCA Method A cleanup levels.

Remedial Investigation, AECOM – November 2014

In November 2014, AECOM collected additional soil and groundwater samples from 12 borings (GP-1 through GP-12) advanced throughout the Site as part of a Remedial Investigation. Based on the analytical results, AECOM determined the extent of diesel- and gasoline-range TPH in soil and groundwater as illustrated in Figure 3, *Soil Gasoline Plume Map*, Figure 4, *Soil Diesel Plume Map*, Figure 5, *Groundwater Gasoline Plume Map*, and Figure 6, *Groundwater Diesel Plume Map*.

Off-Property Investigation, AEG – October & December 2015

In October and December 2015, AEG collected additional soil and groundwater samples from 17 borings (B-13 through B-23 and MW-6 through MW-11) advanced along the Thurston Avenue NE ROW. Based on the analytical results, AEG determined the extent of diesel- and gasoline-range TPH in soil and in groundwater throughout the Site as illustrated in Figure 3, *Soil Gasoline Plume Map*, Figure 4, *Soil Diesel Plume Map*, Figure 5, *Groundwater Gasoline Plume Map*, and Figure 6, *Groundwater Diesel Plume Map*. Figure 7, *Selected Analytical Results Map*, illustrates locations in which laboratory detections have been above Ecology MTCA Method A cleanup levels. AEG also obtained a groundwater sample from a monitoring well (MMW) identified east of MW-5 along Thurston Avenue NE. AEG was unable to identify the owner of this monitoring well; however, the groundwater collected was analyzed for COCs with no constituents present. All soil and

groundwater results are presented in Table 1, *Summary of Soil Analytical Results*, and Table 2, *Summary of Groundwater Analytical Results*.

SITE GEOLOGY AND HYDROGEOLOGY

The Site is located within the southern area of the Puget Lowland in western Washington. The Puget Lowland is a north-south trough that lies from the Canadian Border south to the Willapa Hills and between the Olympic Mountains to the west and the Cascade Mountains to the east. The topography is dominated by north-south trending valleys and low, nearly flat-topped terraces that are less than 1,000 feet in elevation. Terraces are deep and eroded by streams and rivers. The topographic surface of northern Thurston County is largely the result of erosion since the most recent glacial events (Easterbrook, 1970).

According to the *Geologic Map of the Tumwater 7.5-minute Quadrangle, Thurston County, Washington*, the surficial geology at the Site is comprised of fill material. Historical Sanborn Insurance Maps show that several fill events occurred along East Bay of Budd Inlet throughout the late 1800s and early 1900s. Typically, the fill consists of "clay, silt, sand, gravel, organic matter, shells, rip-rap, and debris emplaced to elevate the land surface and reshape surface morphology; includes engineered and non-engineered fills; shown only where fill placement is relatively extensive, sufficiently thick to be of geotechnical significance, and readily verifiable" (Walsh, T.J., Logan, R.L., et al., 2003). This fill is underlain by native soils consisting of sands, silts, and clays, and at deeper depths a regional confining layer, which creates artesian groundwater conditions in Olympia (Pioneer, 2011).

The subsurface conditions at the Site generally consist of fill deposits ranging from medium dense, poorly graded sand to silty sand to medium stiff clay to approximately 10 feet bgs. Weathered wood debris/fragments ranging from several inches to at least 2 feet thick were also observed below the clayey soil at depths of approximately 8 to 10 feet bgs. The nature of the soils in the water-bearing zone appears to be the poorly graded sand (medium grained) to silty sand within the fill deposits. Groundwater was encountered at about 5 to 7 feet bgs throughout the Site during subsurface investigation activities. Subsequent groundwater monitoring well measurements show that depth to groundwater ranges from about 2 to 5.5 feet bgs throughout the year (refer to Table 3, *Summary of Groundwater Elevations*).

The direction of shallow groundwater flow at the Site, as measured during AEG's August 2014 and February 2015 groundwater event based on professional surveyed elevations, was generally to the east-northeast and north, respectively (refer to Figure 8 – *August 2014 Groundwater Contour Map*, and Figure 9 – *February 2015 Groundwater Contour Map*). In comparison, AECOM reported that the general direction of groundwater flow was northerly, and "there are also indications of north-easterly and north-westerly flow" (AECOM, 2011).

The direction of shallow groundwater flow can be highly variable due to the presence of varying depths to shallow groundwater, and tidal influences in the vicinity. In our professional opinion, the direction of regional groundwater flow in the area will likely fluctuate from generally north to northeast and northwest with tangents to the east, based on surface topography and regional discharge points towards the East Bay (approximately 800 feet east of the Site) and the West Bay of Budd Inlet (approximately 1,300 feet west of the Site).

Because of the facility's location near Puget Sound, AEG continuously logged water levels in monitoring wells MW-1, MW-2, and MW-3 over a two week period in September/October 2015 to determine whether local groundwater gradients are influenced by the diurnal tidal cycle in nearby Budd Inlet. The data obtained from this study recorded groundwater elevation changes over time, with maximum groundwater elevation peaks recorded on September 26, 2015, October 2, 2015, and October 7, 2015. The maximum amplitude of the signal was less than 0.2 meters (8 inches). Minor fluctuations were superimposed on the major signal.

These logged water level data provide some evidence that groundwater may be influenced by the local tidal cycle, but that the response may be dampened significantly by the Site's location, 800 feet from the nearest shoreline. A more likely explanation is that the changes in groundwater elevations reflect a response to local rainfall patterns influencing shallow groundwater, or other industrial processes nearby. A total of 0.2 inches of rainfall was recorded on September 25, and 0.46 inches was recorded October 7. However, rainfall alone does not explain the peak detected on October 2, 2015, when no rainfall was recorded nearby, supporting some dampened response to tidal influence at the Site. Groundwater elevation changes may also be related to the Site's proximity to the LOTT Wastewater Treatment Facility, immediately across Thurston Avenue NE.

In summary, while there was limited influence of the tidal cycle on groundwater elevations, there was little effect on gradients as illustrated on Figure 10, *Contour Tidal Influence, Low Tide September 29, 2015*, and Figure 11, *Contour Tidal Influence, High Tide October 2, 2015*.

CONCEPTUAL SITE MODEL

This section provides a conceptual understanding of the Site, derived from the results of the subsurface investigations performed at the Site. The CSM is dynamic and may be refined as additional information becomes available.

Constituents of Concern and Affected Media

Soil and groundwater are the media at the Site currently affected by the constituents of concern (COCs) identified at the Site. The COCs at this Site are gasoline- and diesel-range TPH, cPAHs, and BTEX compounds. The primary conceptual release model for the Site is the 2,600-gallon diesel fuel spill that occurred from the former 70,000-gallon AST. Despite the fuel recovery and remedial action efforts completed by AECOM, residual impacts are still detected in this area. In addition, the soil beneath the dispensers and adjacent to the turbine pumps in the gasoline fueling area of the Fast Fuel facility has been contaminated above the MTCA Method A cleanup levels by the leaks observed from compression fittings, historical leakage, and de minimis drippage. Additional cleanup action/remedial action is necessary to remediate the impacted soil and groundwater to concentrations below MTCA Method A cleanup levels.

Based on the depth of the soil contamination observed and its location downgradient from the source area, it is thought that the deeper and downgradient soil contamination is a result of migration of the TPH with the groundwater away from the release locations. This migration most likely included advective transport as well as dispersion and diffusion in the soil and groundwater.

Environmental Fate of TPH in the Subsurface

TPH constituents are soluble in groundwater and will migrate with the water. As the more soluble components of TPH are dissolved, the heavier components of the TPH remain in the soil. At this Site, groundwater is generally moving to the north, towards Thurston Avenue.

Some TPH constituents are also volatile and can be volatilized under the appropriate conditions. In the subsurface, this volatilization releases contaminants into the soil vapor where, if conditions are right, it can migrate beneath or into structures. As the more volatile components of TPH are volatilized, the heavier components of the TPH remain in the soil. These degraded components are less volatile, and less likely to impact soil vapors.

TPH constituents are also readily biodegraded in the subsurface by naturally occurring aerobic and anaerobic bacteria. The aerobic biodegradation is the most efficient of the biological activities.

Potential Exposure Pathways

As defined in WAC 173-340-200, an exposure pathway describes the mechanism by which a hazardous substance takes or could take a pathway from a source or contaminated medium to an exposed receptor.

Potential Soil Exposure Pathways

Direct ingestion of, or dermal contact with, soil containing COCs is considered a potential exposure pathway. Soil impacts are generally present around the former 70,000-gallon AST and the gasoline dispensers. These areas are currently covered by asphalt, gravel, and/or Site structures and, unless disturbed, are not available for potential direct contact or ingestion.

Potential Groundwater Exposure Pathways

The groundwater in the area of the Site is not used for drinking water. Water is supplied by the City of Olympia (City). However, direct contact with the groundwater is considered a potential exposure pathway as groundwater levels can seasonally be as shallow as 2 to 3 feet bgs.

Potential Air Exposure Pathways

Concentrations of volatile COCs (such as benzene) have been detected in soil and groundwater beneath the Site. As an example, groundwater concentrations of benzene have, at times, exceeded the MTCA Method B Groundwater Screening Level (2.4 µg/L) considered protective of indoor air. As such, inhalation exposure via the soil-to-vapor pathway is considered a potentially complete pathway. However, no enclosed structures currently exist within the 30-foot lateral inclusion zone (ITRC, 2014) of existing contamination that could potentially result in exposure via vapor intrusion. As such, under current Site conditions, no further vapor assessment is warranted.

Potential Human Receptors and Terrestrial Ecological Evaluation

Exposure to COCs in the soil is considered a potential risk to human receptors, including employees, and incidental receptors such as utility workers or Site visitors who may be exposed to soil from the Site.

The majority of the Site is covered by asphalt, gravel, or Site structures, and it is not anticipated that ecological receptors would be at risk. Further, there is currently less than 1.5 acres of contiguous undeveloped land on or within 500 feet of any area of the Site, which would exclude the Site from further terrestrial ecological evaluation under MTCA.

CLEANUP STANDARDS

Remedial Action Objectives

Remedial action objectives (RAOs) define the overall goals of the remedial effort and act as benchmarks for comparative evaluation of any remedial alternative. The RAOs are specific to each

site and each of the contaminants and media affected at a site. The general RAOs for this Site are as follows:

Petroleum-Contaminated Soil

- Control and remove the potential for direct contact to humans and the environment from residual PCS and associated substances, and remediate the impacted soils to concentrations below MTCA Method A soil cleanup levels.
- Reduce the potential for the soils to continue to impact the groundwater via leaching.

Petroleum-Contaminated Groundwater

- Remediate and restore the groundwater quality to concentrations below MTCA Method A groundwater cleanup levels, and minimize the potential for exposure to humans and the environment.

Cleanup Levels

MTCA defines cleanup levels as:

“...the concentration of a hazardous substance in soil, water, air or sediment that is determined to be protective of human health and the environment under specified exposure conditions.”

These levels combined with the location where these cleanup levels must be met (point of compliance [POC]), and other regulatory requirements that apply to a site, define the cleanup standards for a site.

For this Site, AEG intends to use MTCA Method A cleanup levels. The conditions for using the MTCA Method A cleanup levels are met at this Site because numerical standards are available for all indicator hazardous substances in all media of concern [WAC 173-340-704(1)(b)]. In addition, Method A cleanup levels are appropriate because only a few petroleum-related hazardous substances have been found.

The MTCA Method A cleanup levels for the Site COCs are:

Soil:	TPH-Gasoline	30 mg/kg
	TPH-Diesel	2,000 mg/kg
	Total cPAHs	0.1 mg/kg
	Benzene	0.03 mg/kg
	Toluene	7 mg/kg
	Ethylbenzene	6 mg/kg
	Total xylenes	9 mg/kg

Groundwater:	TPH-Gasoline	800 µg/L
	TPH-Diesel	500 µg/L
	Total cPAHs	0.1 µg/L
	Benzene	5 µg/L
	Toluene	1,000 µg/L
	Ethylbenzene	700 µg/L
	Total xylenes	1,000 µg/L

Points of Compliance

For this Site, it is assumed that the standard POC will be applied.

- Soil – Direct Contact: For soil cleanup levels based on human exposure via direct contact, the POC is throughout the Site from the ground surface to 15 feet bgs.
- Soil – Leaching: For soil cleanup levels based on protection of groundwater, the POC is throughout the Site.
- Groundwater: For groundwater, the POC is throughout the Site from the uppermost level of the saturated zone extending vertically to the lowest most depth that could potentially be affected by the Site.
- Indoor Air/Soil Gas: The POC is ambient and indoor air throughout the Site.

INTERIM CLEANUP ACTION PLAN

Under MTCA (WAC 173-340-430), an interim action is:

- *“A remedial action that is technically necessary to reduce a threat to human health or the environment by eliminating or substantially reducing one or more pathways for exposure to a hazardous substance at a facility;*
- *A remedial action that corrects a problem that may become substantially worse or cost substantially more to address if the remedial action is delayed; or*
- *A remedial action needed to provide for completion of a site hazard assessment, remedial investigation/feasibility study or design of a cleanup action.”*

AEG is proposing to perform an interim action consisting of source removal and in-situ bioremediation at this Site, which meets the above definition and other requirements as follows:

- Source removal within the property boundaries to the extent practicable will substantially reduce or eliminate direct contact exposure to PCS beneath the Site, and will aid in reducing COC concentrations in groundwater throughout the Site.

- Delaying source removal would result in continued migration of COCs into the downgradient ROW (which has already been documented) and likely to other properties. In addition, a planned facility upgrade allows for reduced cost in removing source material during the upgrade versus having to remove newly installed infrastructure at a later date.
- Removing the source material will better support completion of a feasibility study for a final cleanup action once it is demonstrated what effect the source removal has had on COC concentrations in groundwater.
- The interim action is expected to achieve cleanup standards for soil (and ultimately groundwater) for a portion of the Site (the ACME Fuel property), and will not foreclose reasonable alternatives for cleanup of the remainder of the Site.

AEG is proposing the interim cleanup efforts be completed in two phases for the Site. The phased approach is summarized as follows:

- Phase #1 – Removal of USTs, including the pump island and dispensers.
- Phase #2 – Excavation of PCS within the property boundary to the maximum extent practicable, and application of a bioremediation amendment prior to backfilling.

The scope of work (SOW) presented below is based on the most effective and economical interim cleanup option for the Site, taking into account: contamination levels, property size, locales of impacted soil/groundwater throughout the Site, current Site usage, as well as future use. The USTs and associated equipment will be decommissioned, and PCS will be excavated to the extent practicable. Excavated soil will be transported off Site for disposal at a regulated landfill.

Based on the summary of sampling data from Site characterization, the majority of the PCS on the property is limited to about the top 5.5 feet of soil; however, other areas will extend deeper to ensure all PCS within the property boundaries is removed to the extent practicable. Excavating beyond the property boundaries and into the City “right-of-way” (ROW) would be cost prohibitive to meet the construction requirements to replace the roadway and any utilities encountered, as would be required by the City. In a discussion AEG had with the City, they’re preference would be a less intrusive remedy for the ROW, such as the use of institutional controls and an environmental covenant (or alternate mechanism) to document the location of any remaining PCS in the ROW to prevent exposure for any contractors working in the ROW in the future.

The lateral and vertical limits to be excavated, along with a summary of soil sample locations, results, and soil types, are illustrated on Figure 12, *Site Map with Geologic Cross Sections A-A’, B-B’, C-C’, D-D’ and E-E’*, Figure 13, *Geologic Cross Section A-A’*, Figure 14, *Geologic Cross*

Section B-B', Figure 15, *Geologic Cross Section C-C'*, Figure 16, *Geologic Cross Section D-D'*, and Figure 17, *Geologic Cross Section E-E'*.

An estimated 4,600 tons of PCS is to be excavated and transported off Site for disposal. For this IRAP, the same volume of soil hauled off Site for disposal will be hauled back to the Site as backfill for the excavation. No separation of clean overburden is proposed due to the lack of space to store and maneuver excavated material.

After excavation is completed to the extent practicable, an amendment will be added to the open excavation prior to backfilling to accelerate the bioremediation of any potential remaining COCs in the saturated soil and groundwater throughout the Site. The locations to apply the amendments will be dependent on the field screening and laboratory results. The amendment to be used is a combination of RegenOx[®] In-Situ Chemical Oxidation (RegenOx[®]) and Pelletized Oxygen Release Compound Advanced[®] (ORC-A[®]) by Regenesis.

According to Regenesis:

“RegenOx[®] in situ chemical oxidation (ISCO) directly oxidizes contaminants while its unique catalytic component generates a range of highly oxidizing free radicals that rapidly and effectively destroy a range of target contaminants including both petroleum hydrocarbons and chlorinated compounds. RegenOx is an injectable, two-part ISCO reagent that combines a solid sodium percarbonate based alkaline oxidant (Part A), with a liquid mixture of sodium silicates, silica gel and ferrous sulfate (Part B), resulting in a powerful contaminant destroying technology.”

“ORC Advanced[®] Pellets are a dust-minimizing, dry application pelletized form of the widely used ORC Advanced controlled-release oxygen compound. They are designed specifically for the treatment of dissolved-phase petroleum hydrocarbons through direct application into excavations, petroleum storage tank pits, trenches and backfill. ORC Advanced Pellets significantly minimize airborne dust associated with the handling and application of dry powders while eliminating the need for mixing equipment and spray-water required for liquid slurry-type applications. After application into an excavation and upon contact with groundwater, calcium oxy-hydroxide based ORC Advanced Pellets produce a controlled-release of molecular oxygen (up to 15% by weight) for periods of up to 12 months on a single application. Oxygen is required by microorganisms to transform organic contaminants (such as petroleum hydrocarbons) into carbon dioxide, water and microbial cell mass. More importantly, the new and readily available oxygen produced by ORC Advanced Pellets accelerates aerobic biodegradation processes up to 100 times faster than their naturally occurring rates. This provides remediation practitioners with a

significantly faster and highly effective means of treating petroleum contaminated areas accessible through excavations, petroleum storage tank pits and trenches.”

In consultation with Regensis, it is estimated that about 13,000 pounds of combined RegenOx[®] and ORC-A[®] would be added to the base of the excavation prior to backfilling.

Phase #1 & Phase #2 SOW

AEG SOW for the UST Decommissioning and Soil Removal:

- Provide consulting services related to Site cleanup and Ecology’s Voluntary Cleanup Program (VCP) process.
- Custodian of any and all permits, notifications, and approvals applicable to the project, including all local, state, and federal requirements.
- Prepare a Site Health & Safety Plan (HASP) to establish policies and procedures to protect all personnel from the potential hazards posed by handling of contaminated soils and/or groundwater during Site cleanup work. The HASP will also detail traffic control provided on Thurston Avenue and Adams Street and associated sidewalks to ensure safety of local citizens/businesses/and personnel associated with the Site work.
- Prepare and submit a SEPA permit.
- Prior to Site work, historical analytical data from groundwater sampling will be used to determine and acquire the permits for the final disposition of the excavation water to be removed, treated, and discharged. The collected groundwater removed will be contained on Site in Baker tanks. The groundwater will be treated by sand/bag filters followed by granulated activated carbon (GAC) media.
- Submit formal grading and excavation plans to the City to acquire ROW access and lane closure along Thurston Avenue and Adams Street to store equipment and Baker tanks.
- Provide oversight to excavate PCS to the maximum extent practicable.
- Collect soil samples as necessary to adequately characterize the extent of contamination and evaluate the extent of the excavation area.
- Submit the soil samples to a Washington State-accredited analytical mobile laboratory for laboratory analyses in accordance with MTCA, *Table 830-1: Required Testing for Petroleum Releases*. Immediate laboratory results will be available to provide direction on the characterization of the PCS and extent of excavation.

- In areas where PCS extends below the water table (average of about 5.5 feet bgs during the summer months), the localized groundwater will be removed and pumped into Baker tanks, and the soil will be excavated to the extent practicable.
- Collect confirmation soil samples from the sidewalls and base of the excavation to ensure that, to the extent possible, there are no detectable concentrations or the concentrations of the COCs are below MTCA Method A soil cleanup levels.
- Submit all confirmation soil samples to a Washington State-accredited analytical laboratory using laboratory-provided containers for analysis for the Site COCs. The containers will be labeled and placed in a portable chilled ice chest and transported to the laboratory following standard chain-of-custody procedures.
- Perform data analysis of laboratory analytical results in comparison to MTCA Method A cleanup levels for soil.
- Prior to backfilling, an estimated 13,000 pounds of RegenOx[®] and ORC-A[®] will be added to the open excavation.
- Backfill the excavation pit with clean fill and resurface the Site.
- Prepare an *Interim Remedial Action Report* documenting the field activities and methodologies, summarizing the analytical results, and conclusions.
- Submit all subsurface investigation data and laboratory data into Ecology's Environmental Information Management System (EIM) database.
- Submit documentation to Ecology in accordance with WAC 173-340-840 in both written and electronic format. All reports generated by AEG will be reviewed by a Washington State licensed hydrogeologist.

Subcontractor's SOW for the UST Decommissioning and Soil Removal:

- Decommission three 8,000-gallon gasoline USTs.
- Decommission one 8,000-gallon diesel UST.
- Remove two existing canopies and store on Site for reinstallation.
- Demolition and removal of existing concrete containment area around the 30,000-gallon AST.
- Demolition and disposal of existing bulk fuel load rack.
- Remove all existing underground product lines and oil/water separator.

- Facilitate transport and disposal of PCS to a regulated landfill. An estimated 4,600 tons of soil may be removed from the subsurface following removal of the USTs. The visibly contaminated soil will be removed to the extent practicable to not compromise the sidewalks or other Site structures (see the attached figures).
- Place excavated soil in temporary stockpiles on the Site or in awaiting trucks and pups for disposal off Site at a regulated landfill. If stockpiled, soils will be placed on top of two layers of chemically resistant polyethylene sheeting.

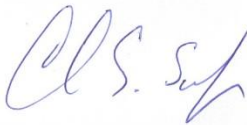
ANTICIPATED SCHEDULE

Following completion of the required Site permits, including local construction permits, SEPA determination with the City, and UST Removal Notification to Ecology, the UST decommissioning can begin. The UST decommissioning and PCS removal is estimated to be completed within five weeks of authorization.

All work will be performed by an Environmental Professional, and a Principal of AEG will provide quality assurance. If there are any changes to the work plan or unforeseen costs that may be incurred beyond the scope of this Proposal, the Client will be contacted for authorization to proceed.

If you have any questions, please contact our office at (360) 352-9835.

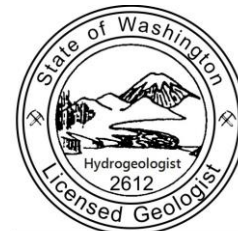
Regards,



Charles S. Swift
Project Manager



Scott Rose, L.G.
Senior Geologist



ADAM H HARRIS



Adam Harris, L.G./L.Hg
Project Hydrogeologist

ATTACHMENTS:

Figure 1 – *Vicinity Map*

Figure 2 – *Site Map*

Figure 3 – *Soil Gasoline Plume Map*

Figure 4 – *Soil Diesel Plume Map*

Figure 5 – *Groundwater Gasoline Plume Map*

Figure 6 – *Groundwater Diesel Plume Map*

Figure 7 – *Selected Analytical Results Map*

Figure 8 – *August 2014 Groundwater Contour Map*

Figure 9 – *February 2015 Groundwater Contour Map*

Figure 10 – *Contour Tidal Influence, Low Tide September 29,*

Figure 11 – *Contour Tidal Influence, High Tide October 2, 2015*

Figure 12 – *Site Map with Geologic Cross Sections A-A', B-B', C-C', D-D' and E-E'*

Figure 13 – *Geologic Cross Section A-A'*

Figure 14 – *Geologic Cross Section B-B'*

Figure 15 – *Geologic Cross Section C-C'*

Figure 16 – *Geologic Cross Section D-D'*

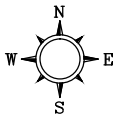
Figure 17 – *Geologic Cross Section E-E'*

Table 1 – *Summary of Soil Analytical Results*

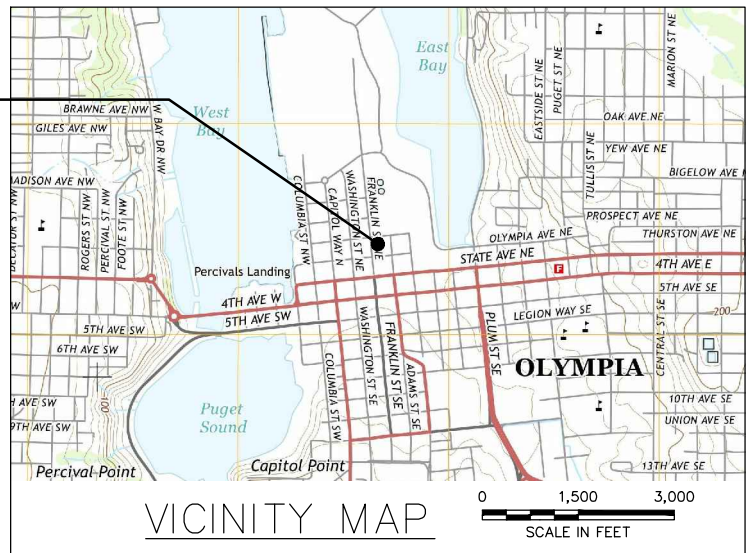
Table 2 – *Summary of Groundwater Analytical Results*

Table 3 – *Summary of Groundwater Elevations*

FILENAME	DRAWN BY	CHECKED BY	APPROVED BY	PROJECT NUMBER
12-114A_1504_1.DWG	ICD	12/4/2015	NP	12/4/2015



PROJECT LOCATION




NOTES

1. THE LOCATIONS OF ALL FEATURES SHOWN ARE APPROXIMATE
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 AND NOTES PROVIDED BY AEG, LLC.
VICINITY IMAGE SOURCE: U.S. GEOLOGICAL SURVEY-2014, 7.5 MINUTE QUADRANGLE MAP TUMWATER, WASHINGTON



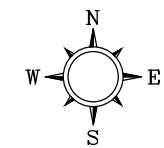


ASSOCIATED ENVIRONMENTAL GROUP, LLC

FIGURE 1
VICINITY MAP

ACME BULK FUEL PLANT
303 THURSTON AVENUE NE
OLYMPIA, WASHINGTON

PROJECT NUMBER 12-114a
 APPROVED BY NP 12/04/2015
 CHECKED BY NP 12/04/2015
 DRAWN BY ICD 12/04/2015
 FILENAME 12-114A_1504_1.DWG



- LEGEND**
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 - MW-6 AEG MONITORING WELL LOCATIONS
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 - B-13 2015 AEG BORING LOCATIONS
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 - GP-2-1114 2014 AECOM GEOPROBE LOCATION
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 - T-1 2014 AEG TURBINE SAMPLE LOCATION
 - CATCH BASIN
 - ELECTRIC LINE
 - WATER LINE
 - SANITARY SEWER
 - GAS LINE
 - STORM DRAIN
 - FENCE
 - 4' CONCRETE WALL WITH 4' CHAIN LINK FENCE
 - RAILROAD

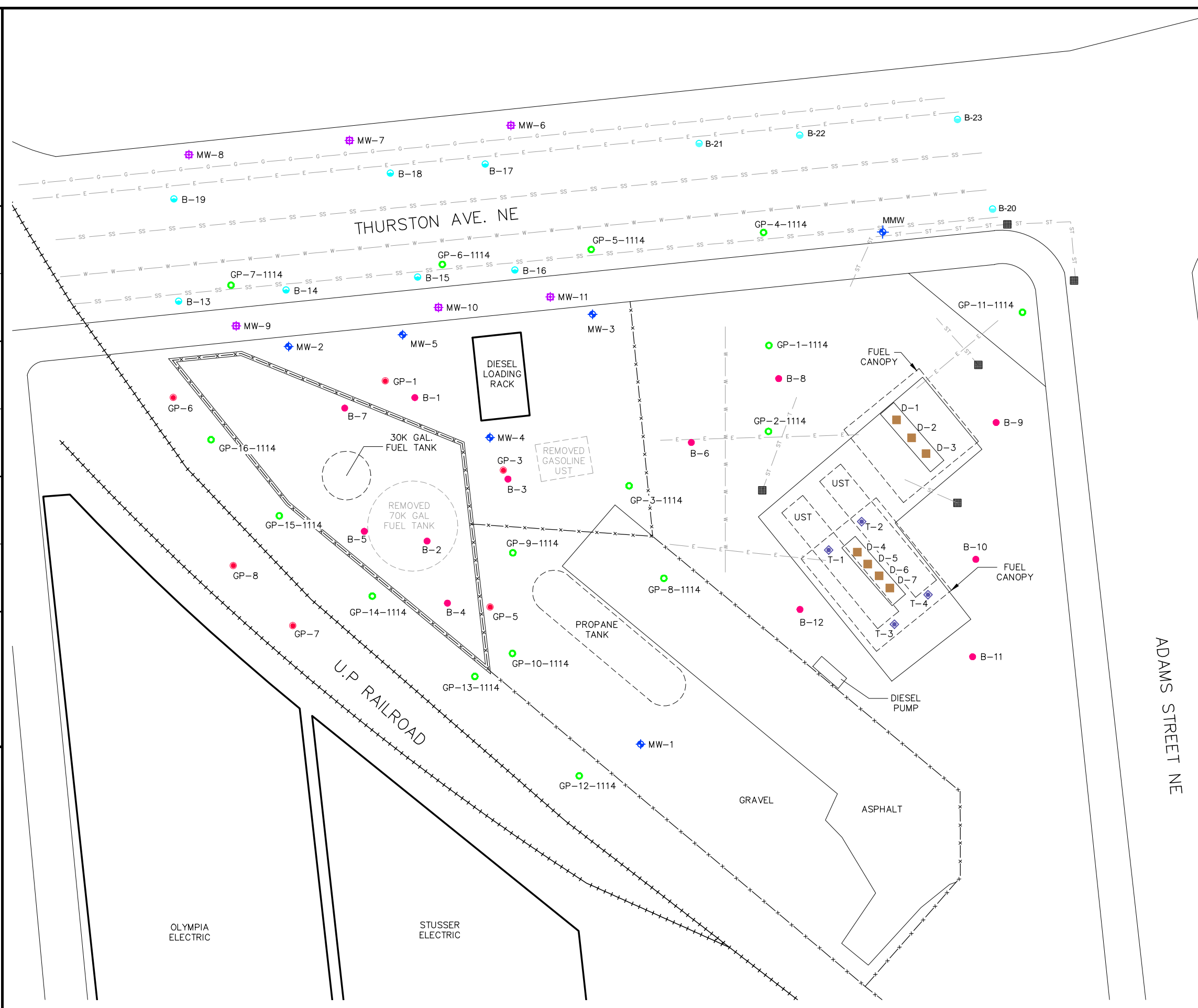
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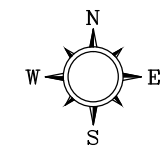


FIGURE 2
SITE MAP

ACME BULK FUEL PLANT
 303 THURSTON AVENUE NE
 OLYMPIA, WASHINGTON



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 - CATCH BASIN
 - ELECTRIC LINE
 - WATER LINE
 - SANITARY SEWER
 - GAS LINE
 - STORM DRAIN
 - FENCE
 - 4' CONCRETE WALL WITH 4' CHAIN LINK FENCE
 - RAILROAD
 - SOIL GASOLINE PLUME

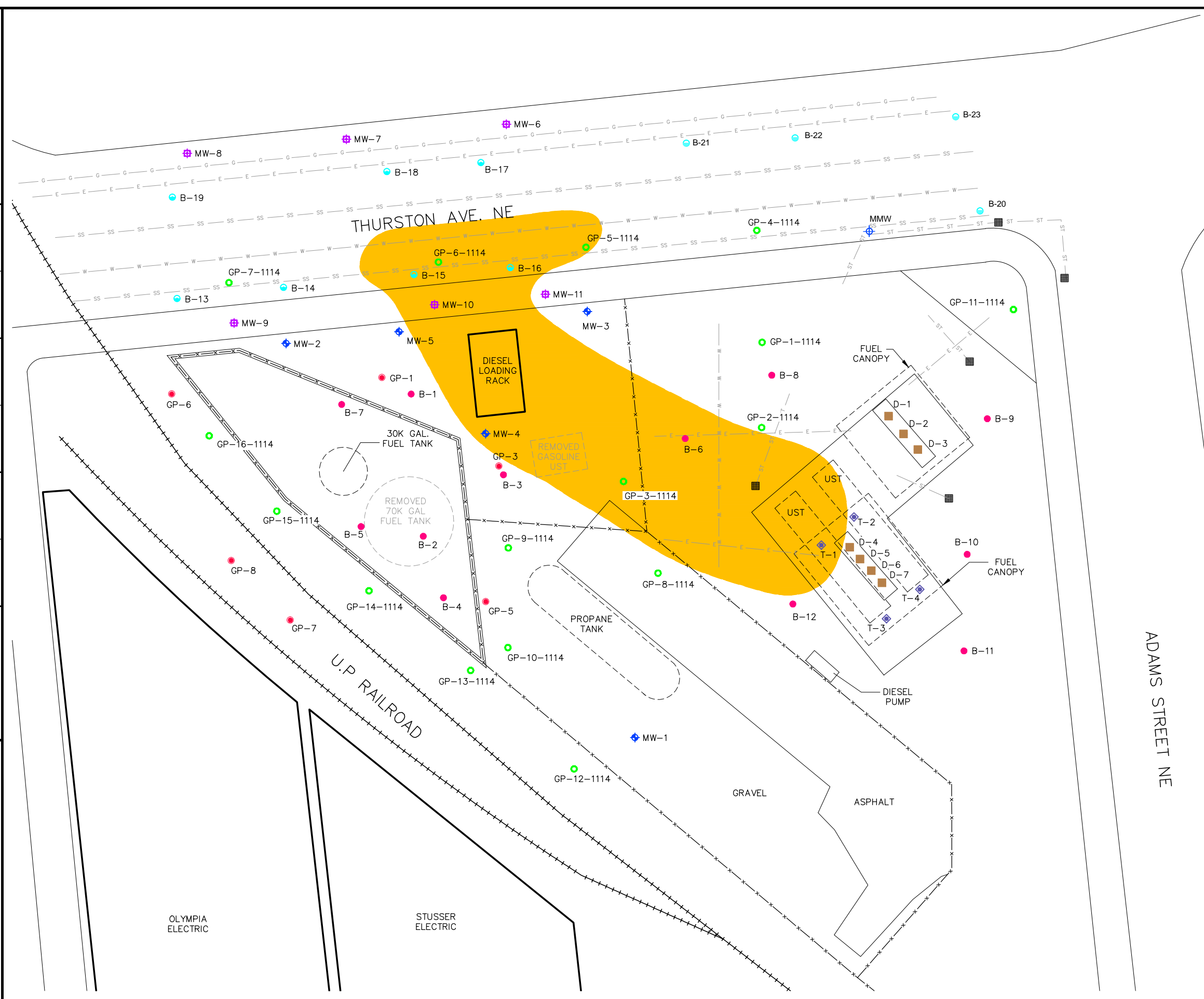
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FIGURE 3
SOIL GASOLINE PLUME MAP

ACME BULK FUEL PLANT
 303 THURSTON AVENUE NE
 OLYMPIA, WASHINGTON



ADAMS STREET NE

OLYMPIA ELECTRIC

STUSSER ELECTRIC

THURSTON AVE. NE

U.P. RAILROAD

DIESEL LOADING RACK

30K GAL. FUEL TANK
 REMOVED 70K GAL FUEL TANK

REMOVED GASOLINE UST

PROpane TANK

DIESEL PUMP

FUEL CANOPY

FUEL CANOPY

GRAVEL

ASPHALT

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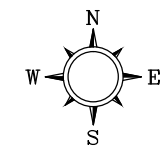
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FILENAME 12-114A_1504_1.DWG
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 PROJECT NUMBER 12-114a



LEGEND

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- T-1 2014 AEG TURBINE SAMPLE LOCATION
- CATCH BASIN
- ELECTRIC LINE
- WATER LINE
- SANITARY SEWER
- GAS LINE
- STORM DRAIN
- FENCE
- 4' CONCRETE WALL WITH 4' CHAIN LINK FENCE
- RAILROAD
- SOIL DIESEL PLUME

NOTES

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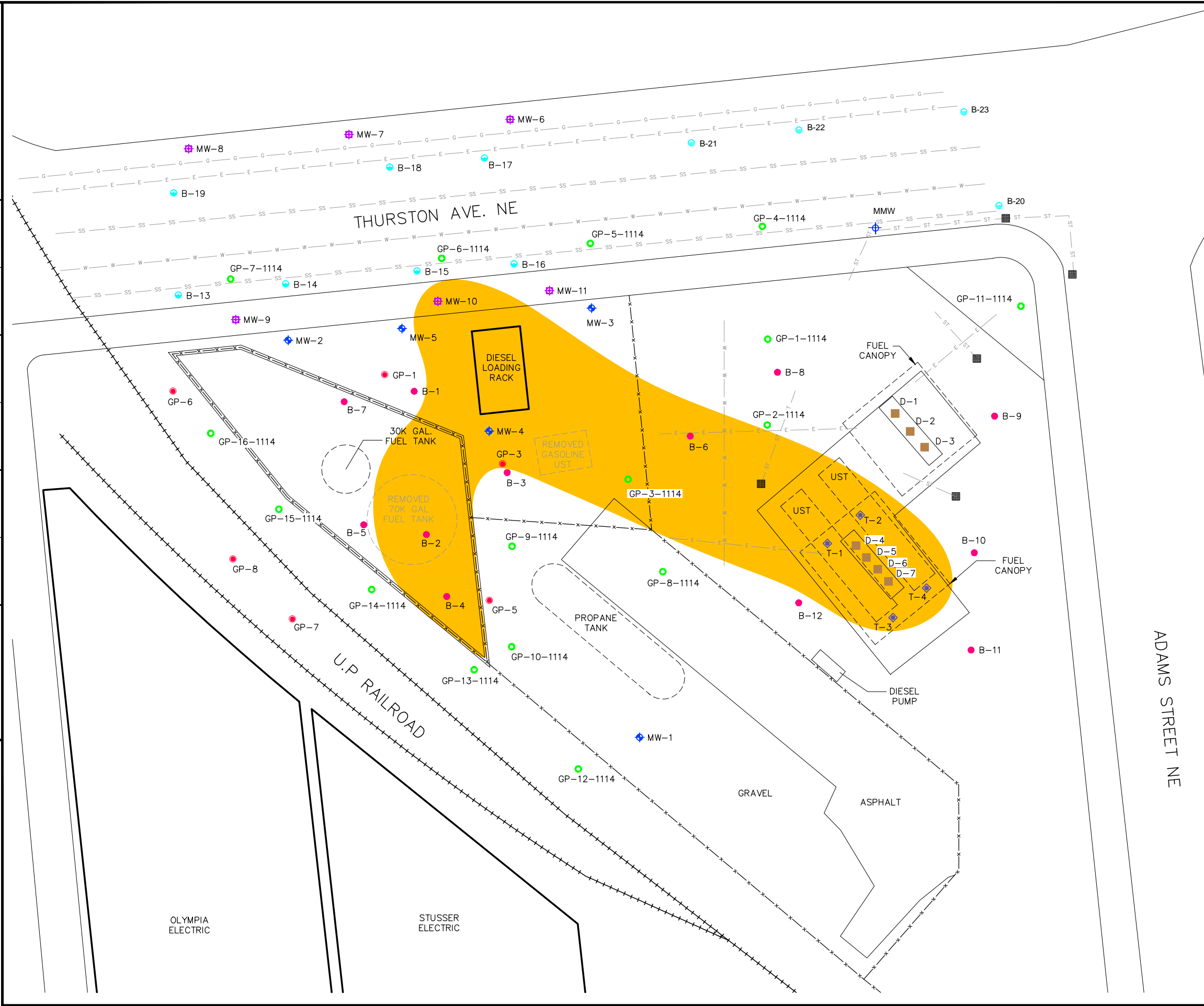
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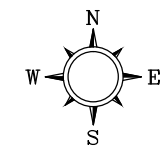
FIGURE 4

SOIL DIESEL PLUME MAP

ACME BULK FUEL PLANT
 303 THURSTON AVENUE NE
 OLYMPIA, WASHINGTON



PROJECT NUMBER 12-114a
 APPROVED BY NP 12/04/2015
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 DRAWN BY ICD 12/04/2015
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LEGEND

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- GP-2-1114 2014 AECOM GEOPROBE LOCATION
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- T-1 2014 AEG TURBINE SAMPLE LOCATION
- CATCH BASIN
- ELECTRIC LINE
- WATER LINE
- SANITARY SEWER
- GAS LINE
- STORM DRAIN
- FENCE
- 4' CONCRETE WALL WITH 4' CHAIN LINK FENCE
- RAILROAD
- GROUNDWATER GASOLINE PLUME

NOTES

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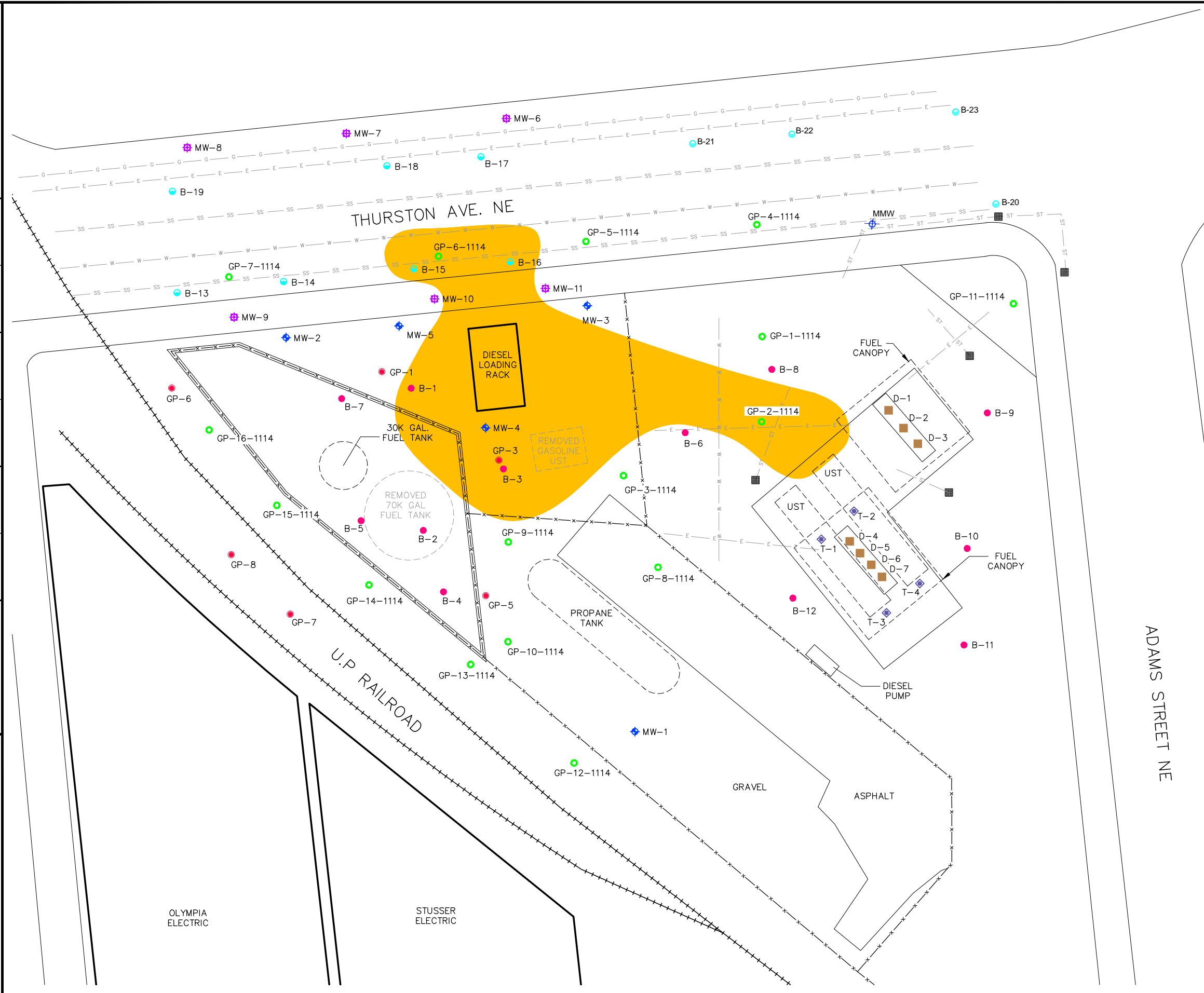
DRAWING CREATED FROM AERIAL PHOTOGRAPH AND NOTES PROVIDED BY AEG, LLC.



FIGURE 5

GROUNDWATER GASOLINE PLUME MAP

ACME BULK FUEL PLANT
 303 THURSTON AVENUE NE
 OLYMPIA, WASHINGTON



OLYMPIA ELECTRIC

STUSSER ELECTRIC

ADAMS STREET NE

THURSTON AVE. NE

U.P. RAILROAD

GRAVEL

ASPHALT

DIESEL LOADING RACK

30K GAL FUEL TANK

REMOVED 70K GAL FUEL TANK

REMOVED GASOLINE UST

PROPANE TANK

DIESEL PUMP

FUEL CANOPY

FUEL CANOPY

UST

UST

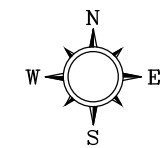
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PROJECT NUMBER 12-114a
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LEGEND

- MW-1 AECOM MONITORING WELL LOCATIONS
- MW-6 AEG MONITORING WELL LOCATIONS
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- B-13 2015 AEG BORING LOCATIONS
- GP-1 2011 AECOM GEOPROBE LOCATION
- GP-2-1114 2014 AECOM GEOPROBE LOCATION
- D-1 2014 AEG DISPENSER SAMPLE LOCATION
- T-1 2014 AEG TURBINE SAMPLE LOCATION
- CATCH BASIN
- ELECTRIC LINE
- WATER LINE
- SANITARY SEWER
- GAS LINE
- STORM DRAIN
- FENCE
- 4' CONCRETE WALL WITH 4' CHAIN LINK FENCE
- RAILROAD
- GROUNDWATER DIESEL PLUME

NOTES

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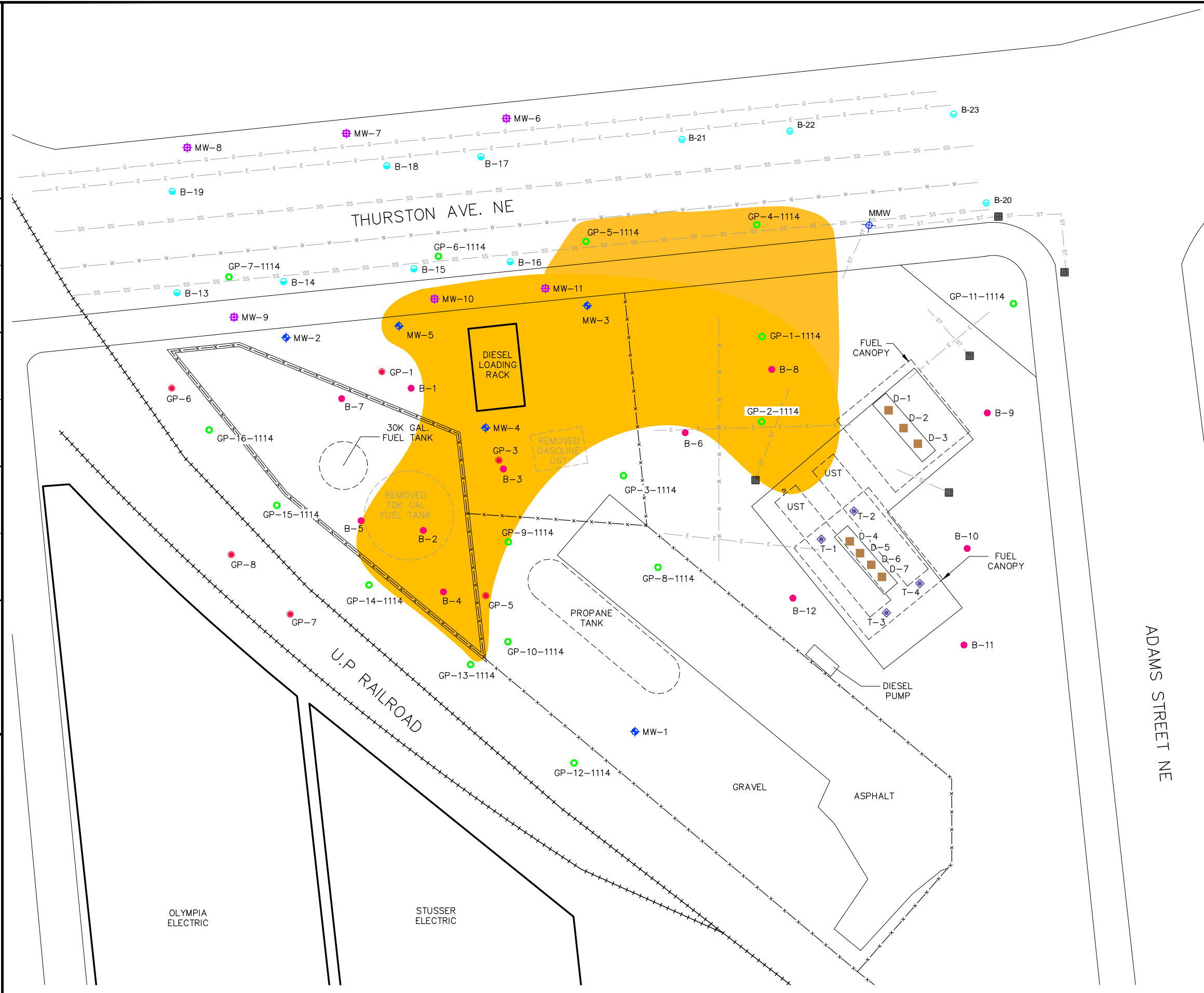
DRAWING CREATED FROM AERIAL PHOTOGRAPH AND NOTES PROVIDED BY AEG, LLC.



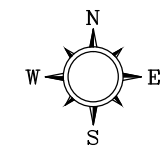
FIGURE 6

GROUNDWATER DIESEL PLUME MAP

ACME BULK FUEL PLANT
 303 THURSTON AVENUE NE
 OLYMPIA, WASHINGTON



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 CHECKED BY NP 12/04/2015
 DRAWN BY ICD 12/04/2015
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- LEGEND**
- MW-1 AECOM MONITORING WELL LOCATIONS
 - MW-6 AEG MONITORING WELL LOCATIONS
 - B-1 2012 AEG BORING LOCATIONS
 - B-13 2015 AEG BORING LOCATIONS
 - GP-1 2011 AECOM GEOPROBE LOCATION
 - GP-2-1114 2014 AECOM GEOPROBE LOCATION
 - D-1 2014 AEG DISPENSER SAMPLE LOCATION
 - T-1 2014 AEG TURBINE SAMPLE LOCATION
 - CATCH BASIN
 - ELECTRIC LINE
 - WATER LINE
 - SANITARY SEWER
 - GAS LINE
 - STORM DRAIN
 - FENCE
 - 4' CONCRETE WALL WITH 4' CHAIN LINK FENCE
 - RAILROAD
 - Gx= GASOLINE
 - Dx= DIESEL
 - SOIL UNITS mg/kg (MILLIGRAMS PER KILOGRAM)
 - WATER UNITS µg/L (MICROGRAMS PER LITER)

- NOTES**
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REFERENCE

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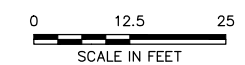
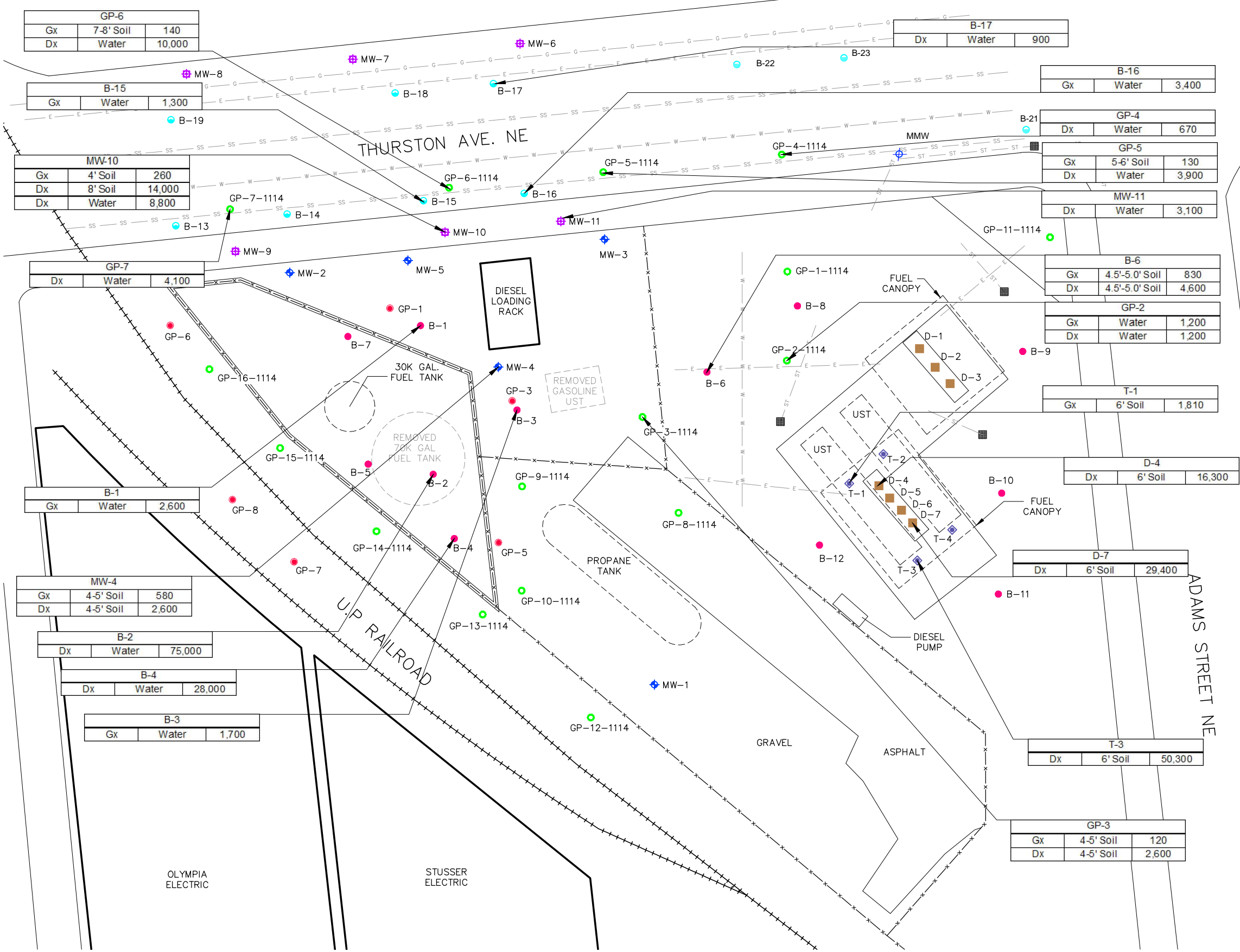


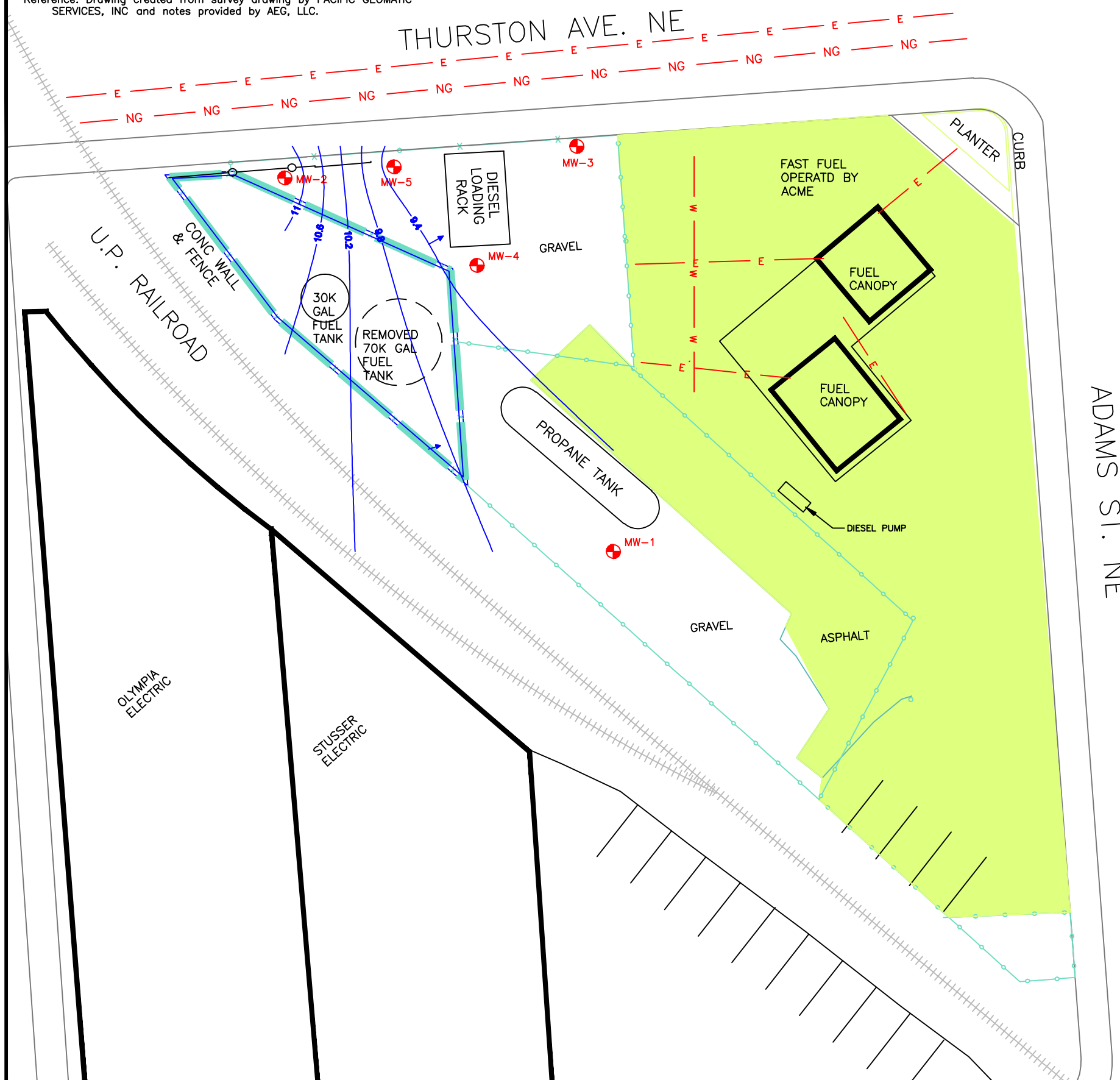
FIGURE 7
SELECTED ANALYTICAL RESULTS MAP

ACME BULK FUEL PLANT
 303 THURSTON AVENUE NE
 OLYMPIA, WASHINGTON



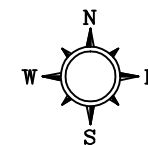
Notes:
 (1) The locations of all features shown are approximate.
 (2) This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document.

Reference: Drawing created from survey drawing by PACIFIC GEOMATIC SERVICES, INC and notes provided by AEG, LLC.



LEGEND

- E — SLATTED CHAIN LINK FENCE
- NG — NATURAL GAS LINE
- W — WATER LINE
- X — 4' CONCRETE WALL WITH 4' CHAIN LINK FENCE
- O — SLATTED CHAIN LINK FENCE
- > GROUNDWATER INFERRED DIRECTION
- MW-1 AECOM MONITORING WELLS
- PAVED AREA OF PROPERTY



0 15 30
SCALE IN FEET

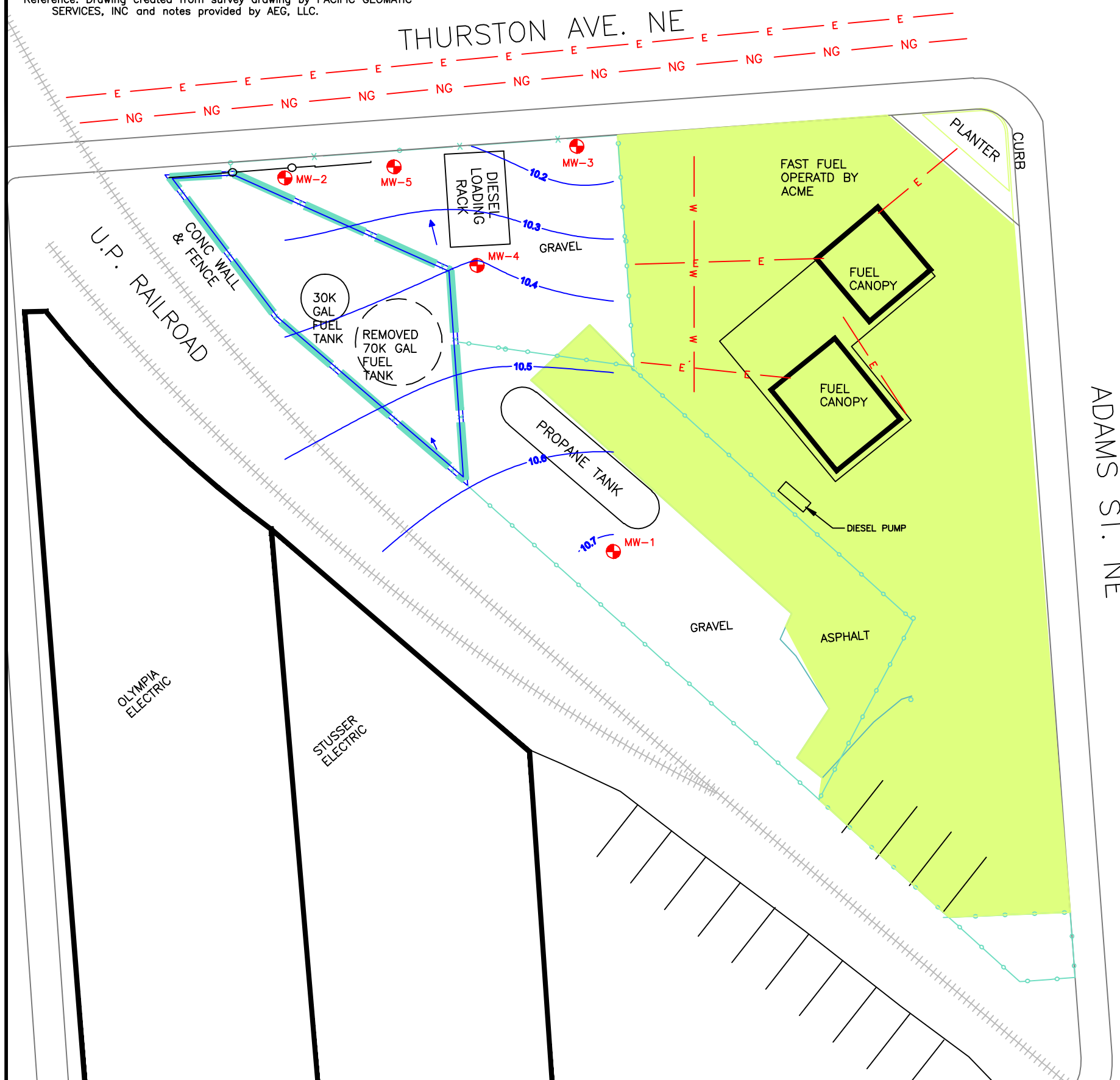


FIGURE 8
 AUGUST 2014
 GROUNDWATER CONTOUR MAP

ACME BULK FUEL SITE
 303 THURSTON AVE
 OLYMPIA, WASHINGTON

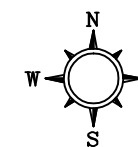
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- O — SLATTED CHAIN LINK FENCE
- GROUNDWATER INFERRED DIRECTION
- ⊕ MW-1 AECOM MONITORING WELLS
- PAVED AREA OF PROPERTY



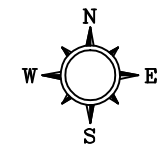
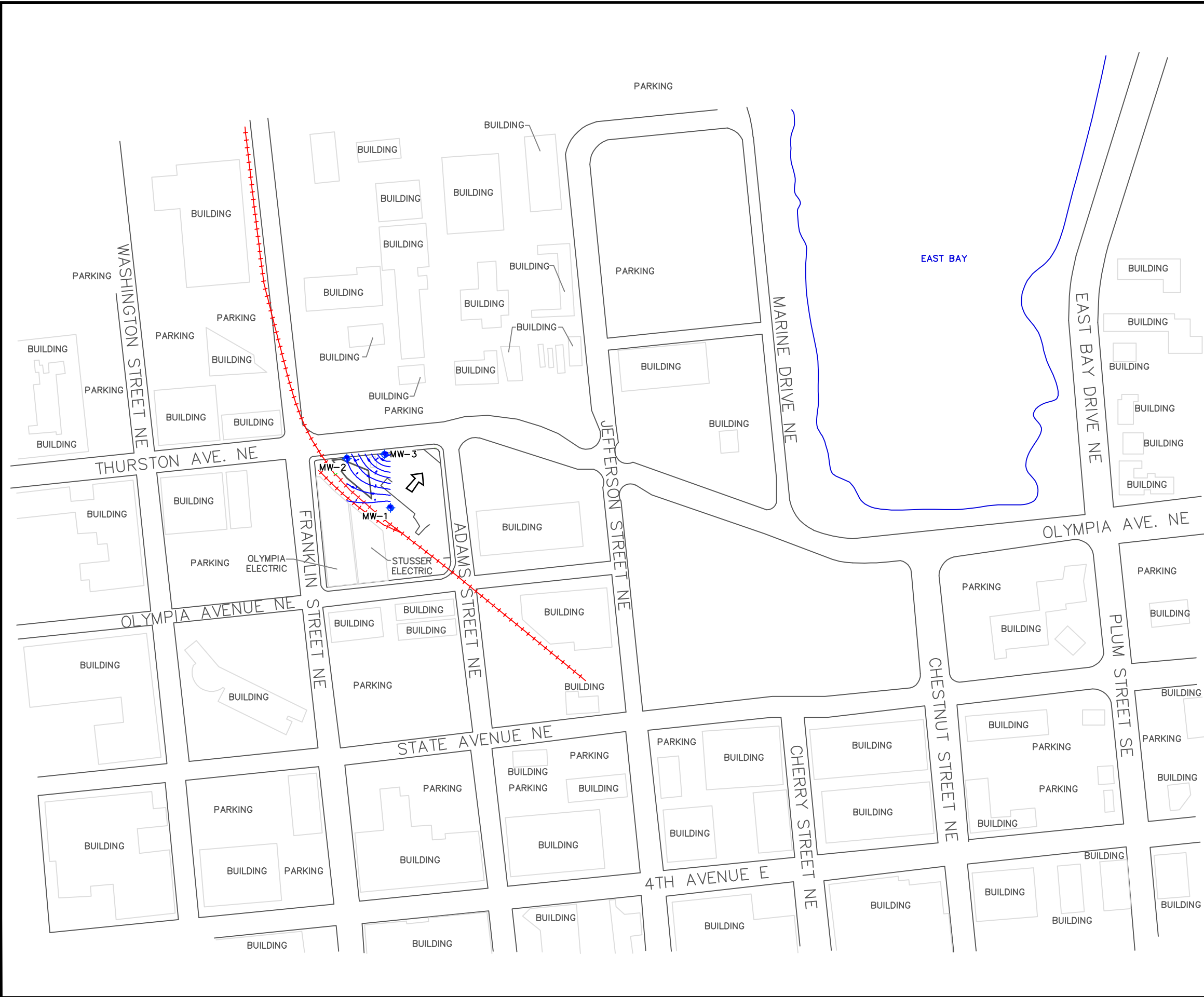
0 15 30
 SCALE IN FEET



FIGURE 9
 FEBRAURY 2015
 GROUNDWATER CONTOUR MAP

ACME BULK FUEL SITE
 303 THURSTON AVE
 OLYMPIA, WASHINGTON

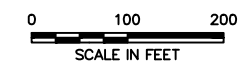
FILENAME 12-114A_1504_3.DWG
 DRAWN BY ICD 1/12/2016
 CHECKED BY NP 1/12/2016
 APPROVED BY NP 1/12/2016
 PROJECT NUMBER 12-114a



LEGEND
 MW-1 AECOM MONITORING WELL LOCATIONS
 GROUNDWATER FLOW DIRECTION

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REFERENCE
 DRAWING CREATED FROM AERIAL PHOTOGRAPH AND NOTES PROVIDED BY AEG, LLC.

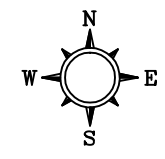


ASSOCIATED ENVIRONMENTAL GROUP, LLC

FIGURE 10
CONTOUR TIDAL INFLUENCE
LOW TIDE SEPTEMBER 29, 2015
APPROX. 1800 HOURS

ACME BULK FUEL PLANT
 303 THURSTON AVENUE NE
 OLYMPIA, WASHINGTON

FILENAME 12-1144_1504_3.DWG
 DRAWN BY ICD 1/12/2016
 CHECKED BY NP 1/12/2016
 APPROVED BY NP 1/12/2016
 PROJECT NUMBER 12-1144a

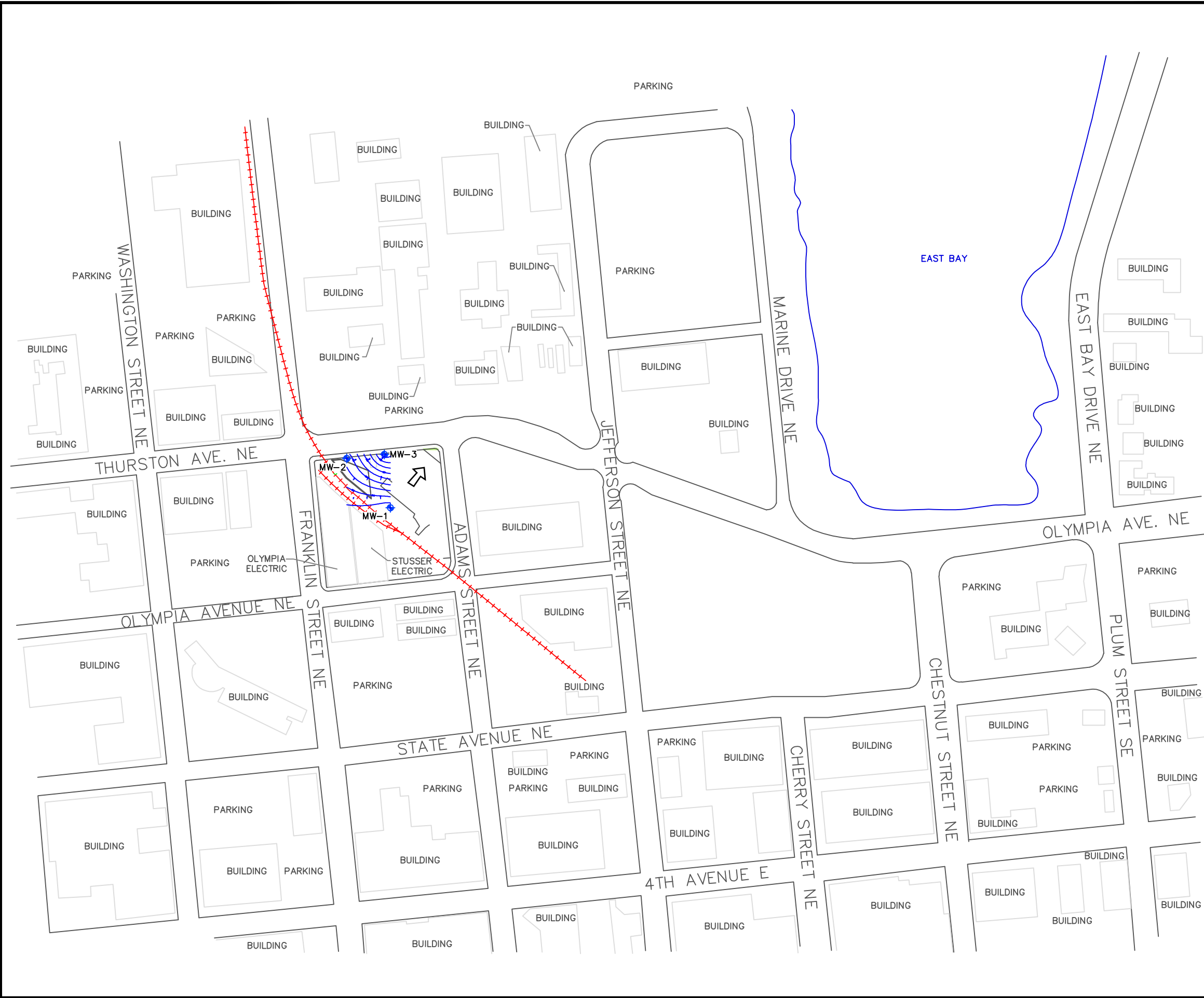


LEGEND
 MW-1 AECOM MONITORING WELL LOCATIONS
 GROUNDWATER FLOW

NOTES
 1. THE LOCATIONS OF ALL FEATURES SHOWN ARE APPROXIMATE
 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 AND NOTES PROVIDED BY AEG, LLC.

0 100 200
 SCALE IN FEET

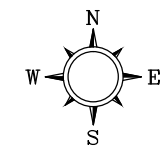


ASSOCIATED ENVIRONMENTAL GROUP, LLC

FIGURE 11
 CONTOUR TIDAL INFLUENCE
 HIGH TIDE OCTOBER 2, 2015
 APPROX. 0500 HOURS

ACME BULK FUEL PLANT
 303 THURSTON AVENUE NE
 OLYMPIA, WASHINGTON

PROJECT NUMBER 12-114a
 APPROVED BY NP 2/08/2016
 CHECKED BY NP 2/08/2016
 DRAWN BY ICD 2/08/2016
 FILENAME 12-114A_XSECTIONS_1.DWG



- LEGEND**
- MW-1 AECOM MONITORING WELL LOCATIONS
 - MW-6 AEG MONITORING WELL LOCATIONS
 - B-1 2012 AEG BORING LOCATIONS
 - B-13 2015 AEG BORING LOCATIONS
 - GP-1 2011 AECOM GEOPROBE LOCATION
 - GP-2-1114 2014 AECOM GEOPROBE LOCATION
 - S-2 SOIL BORING LOCATIONS
 - D-1 2014 AEG DISPENSER SAMPLE LOCATION
 - T-1 2014 AEG TURBINE SAMPLE LOCATION
 - CATCH BASIN
 - ELECTRIC LINE
 - WATER LINE
 - SANITARY SEWER
 - GAS LINE
 - STORM DRAIN
 - FENCE
 - 4' CONCRETE WALL WITH 4' CHAIN LINK FENCE
 - RAILROAD
 - A-A' LINE OF LITHOLOGIC CROSS SECTION AND PROJECTION LINE OR BORING/WELL
 - PROPOSED EXCAVATION LIMITS

- NOTES**
- THE LOCATIONS OF ALL FEATURES SHOWN ARE APPROXIMATE
 - 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 AND NOTES PROVIDED BY AEG, LLC.

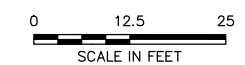
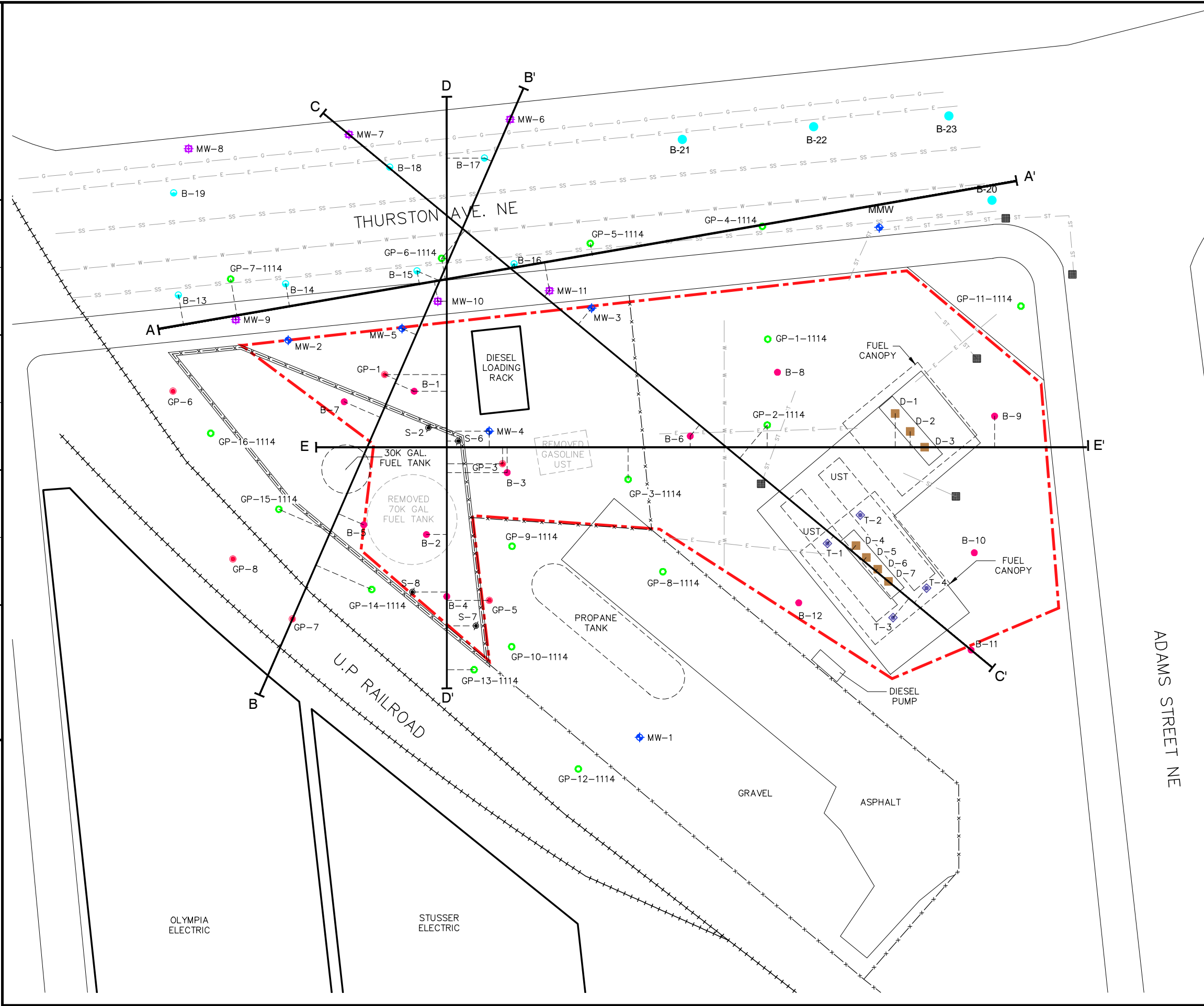
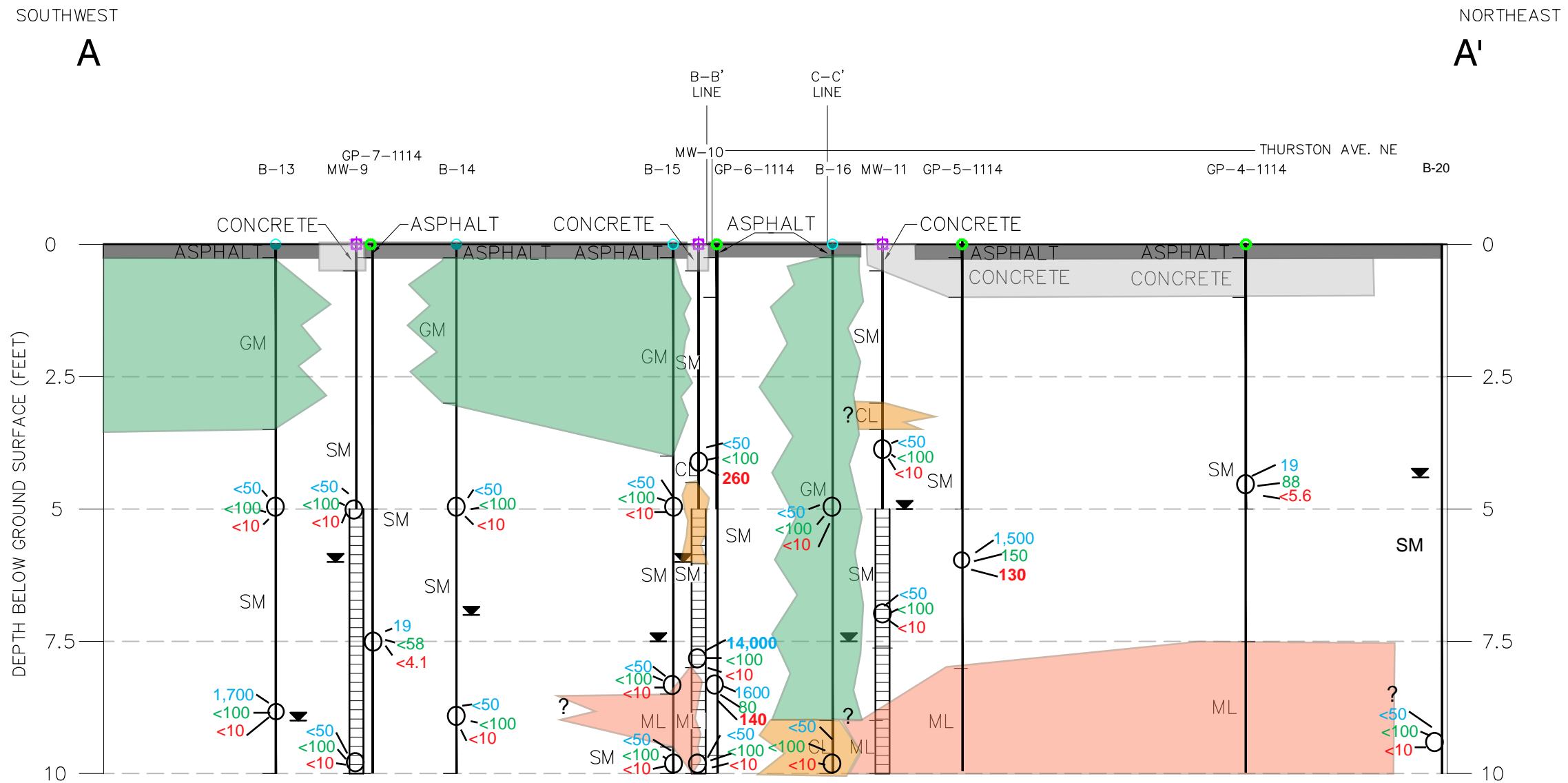


FIGURE 12
SITE MAP WITH GEOLOGIC CROSS SECTIONS A-A', B-B', C-C', D-D' AND E-E'

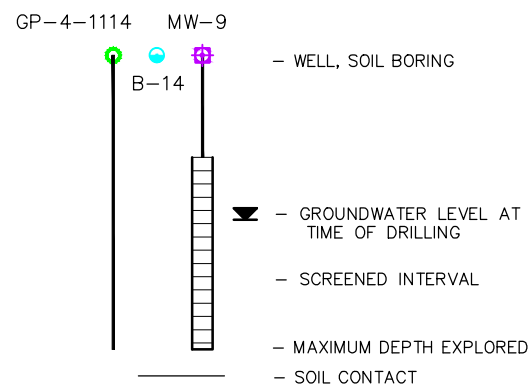
ACME BULK FUEL PLANT
 303 THURSTON AVENUE NE
 OLYMPIA, WASHINGTON



PROJECT NUMBER 12-114g
 APPROVED BY NP 12/15/2015
 CHECKED BY NP 12/15/2015
 DRAWN BY ICD 12/15/2015
 FILENAME 12-114A_XSECTIONS.DWG



LEGEND



- ML INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS, WITH SLIGHT PLASTICITY
- SM SILTY-SANDS, SAND-SILT MIXTURES
- CL INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, LEAN CLAYS, SILT-CLAYS MIXTURES
- GM SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
- SAMPLE LOCATION

- 1,700 GASOLINE-RANGE TOTAL PETROLEUM HYDROCARBON (MG/KG) FOUND IN SOIL ABOVE MTCA
- 2,100 LUBE OIL-RANGE TOTAL PETROLEUM HYDROCARBON (MG/KG) FOUND IN SOIL ABOVE MTCA
- 14,000 DIESEL-RANGE TOTAL PETROLEUM HYDROCARBON (MG/KG) FOUND IN SOIL ABOVE MTCA
- ? ASSUMED GEOLOGY

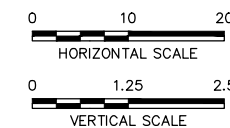
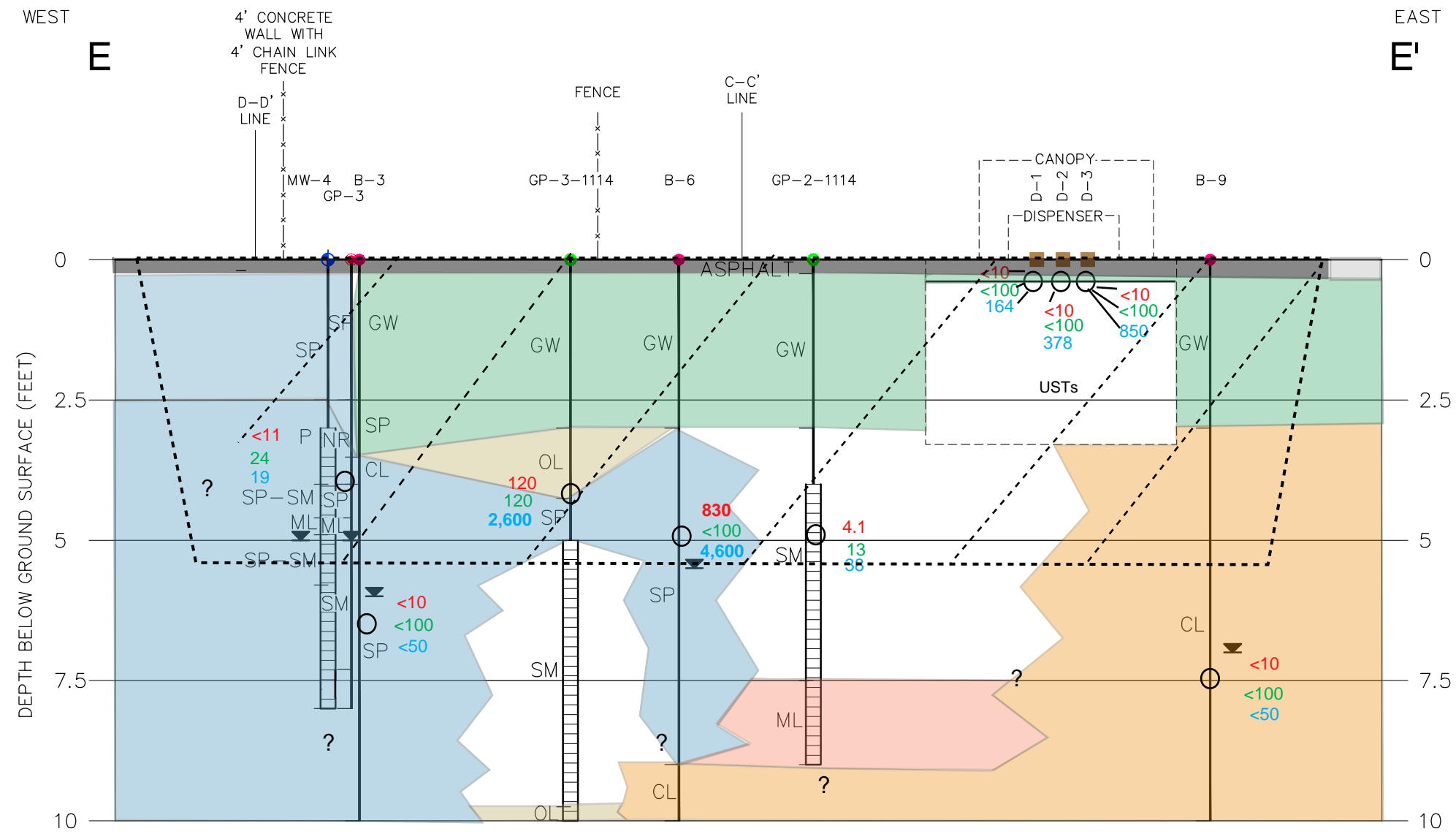


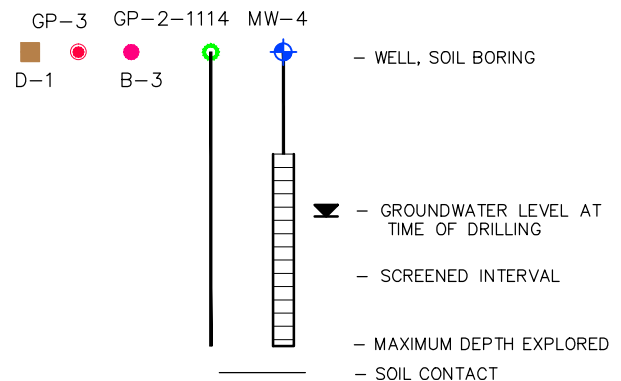
FIGURE 13
 GEOLOGIC CROSS SECTION A-A'

ACME BULK FUEL PLANT
 303 THURSTON AVENUE NE
 OLYMPIA, WASHINGTON

PROJECT NUMBER 12-114a
 APPROVED BY NP 2/08/2016
 CHECKED BY NP 2/08/2016
 DRAWN BY ICD 2/08/2016
 FILENAME 12-114A_XSECTIONS_1.DWG



LEGEND



- ML INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS, WITH SLIGHT PLASTICITY
- SM SILTY-SANDS, SAND-SILT MIXTURES
- CL INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, LEAN CLAYS, SILT-CLAYS MIXTURES
- SP POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
- GW WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
- OL ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY

- 1,700 GASOLINE-RANGE TOTAL PETROLEUM HYDROCARBON (MG/KG) FOUND IN SOIL ABOVE MTCA
 - 2,100 LUBE OIL-RANGE TOTAL PETROLEUM HYDROCARBON (MG/KG) FOUND IN SOIL ABOVE MTCA
 - 14,000 DIESEL-RANGE TOTAL PETROLEUM HYDROCARBON (MG/KG) FOUND IN SOIL ABOVE MTCA
 - SAMPLE LOCATION
 - ? ASSUMED GEOLOGY
 - ∇ VERTICAL EXCAVATION EXTENT
- 0 10 20
HORIZONTAL SCALE
- 0 1.25 2.5
VERTICAL SCALE



FIGURE 17
 GEOLOGIC CROSS SECTION E-E'

ACME BULK FUEL PLANT
 303 THURSTON AVENUE NE
 OLYMPIA, WASHINGTON

**Table 1 - Summary of Soil Analytical Results
Acme Bulk Fuel Plant & Cardlock (Fast Fuel)
Olympia, WA**

Sample Number ¹	Date Sampled	Depth Sampled (feet)	Diesel Extended TPH ² (mg/Kg)		Gasoline TPH ³ (mg/Kg)	Selected Volatile Organic Compounds ⁴ (mg/Kg)			
			Diesel	Heavy Oil		Benzene	Toluene	Ethylbenzene	Total Xylenes
B1-S1-4.5/5.0	9/27/2012	4.5-5.0	<50	<100	<10	<0.02	<0.05	<0.05	<0.15
B3-S2-6.5/7.0	9/27/2012	6.5-7.0	<50	<100	<10	<0.02	<0.05	<0.05	<0.15
B6-S1-4.5/5.0	9/27/2012	4.5-5.0	4,600	<100	830	0.06	0.26	<0.05	0.29
B8-S1-4.5/5.0	9/27/2012	4.5-5.0	<50	<100	<10	<0.02	<0.05	<0.05	<0.15
B9-S2-7.5/8.0	9/27/2012	7.5-8.0	<50	<100	<10	<0.02	<0.05	<0.05	<0.15
B10-S1-4.5/5.0	9/27/2012	4.5-5.0	<50	<100	<10	<0.02	<0.05	<0.05	<0.15
B11-S2-7.0/7.5	9/27/2012	7.0-7/5	<50	<100	<10	<0.02	<0.05	<0.05	<0.15
B12-S1-4.5/5.0	9/27/2012	4.5-5.0	<50	<100	<10	<0.02	<0.05	<0.05	<0.15
B13-5	10/15/2015	5	<50	<100	<10	<0.02	<0.05	<0.05	<0.15
B13-9	10/15/2015	9	1,700	<100	<10	<0.02	<0.05	<0.05	<0.15
B14-5	10/15/2015	5	<50	<100	<10	<0.02	<0.05	<0.05	<0.15
B14-9	10/15/2015	9	<50	<100	<10	<0.02	<0.05	<0.05	<0.15
B15-5	10/15/2015	5	<50	<100	<10	<0.02	<0.05	<0.05	<0.15
B15-8.5	10/15/2015	8.5	<50	<100	<10	<0.02	<0.05	<0.05	<0.15
B15-10	10/15/2015	10	<50	<100	<10	<0.02	<0.05	<0.05	<0.15
B16-5	10/15/2015	5	<50	<100	<10	<0.02	<0.05	<0.05	<0.15
B16-10	10/15/2015	10	<50	<100	<10	<0.02	<0.05	<0.05	<0.15
B17-5*	10/16/2015	5	<50	<100	<10	<0.02	<0.05	<0.05	<0.15
B17-8.5*	10/16/2015	8.5	<50	<100	<10	<0.02	<0.05	<0.05	<0.15
B18-9.0*	10/16/2015	9	<50	<100	<10	<0.02	<0.05	<0.05	<0.15
B19-6.0*	10/16/2015	6	<50	110	<10	<0.02	<0.05	<0.05	<0.15
B19-10*	10/16/2015	10	<50	280	<10	<0.02	<0.05	<0.05	<0.15
MW6-5*	10/16/2015	5	<50	200	<10	<0.02	<0.05	<0.05	<0.15
MW6-8.5*	10/16/2015	8.5	<50	340	<10	<0.02	<0.05	<0.05	<0.15
MW7-5*	10/16/2015	5	<50	<100	<10	<0.02	<0.05	<0.05	<0.15
MW7-9	10/16/2015	9	<50	<100	<10	<0.02	<0.05	<0.05	<0.15
MW8-6.5*	10/16/2015	6.5	<50	<100	<10	<0.02	<0.05	<0.05	<0.15
MW8-9.5*	10/16/2015	9.5	<50	<100	<10	<0.02	<0.05	<0.05	<0.15
MW9-5*	10/20/2015	5	<50	<100	<10	<0.02	<0.05	<0.05	<0.15
M9-10*	10/20/2015	10	<50	<100	<10	<0.02	<0.05	<0.05	<0.15
MW10-4*	10/20/2015	4	<50	<100	260	<0.02	<0.05	<0.05	<0.15

**Table 1 - Summary of Soil Analytical Results
Acme Bulk Fuel Plant & Cardlock (Fast Fuel)
Olympia, WA**

Sample Number ¹	Date Sampled	Depth Sampled (feet)	Diesel Extended TPH ² (mg/Kg)		Gasoline TPH ³ (mg/Kg)	Selected Volatile Organic Compounds ⁴ (mg/Kg)			
			Diesel	Heavy Oil		Benzene	Toluene	Ethylbenzene	Total Xylenes
MW10-8*	10/20/2015	8	14,000	<100	<10	<0.02	<0.05	<0.05	<0.15
MW10-10*	10/20/2015	10	<50	<100	<10	<0.02	<0.05	<0.05	<0.15
MW11-4*	10/20/2015	4	<50	<100	<10	<0.02	<0.05	<0.05	<0.15
MW11-7*	10/20/2015	7	<50	<100	<10	<0.02	<0.05	<0.05	<0.15
B20-9.5	12/15/2015	9.5	<50	<100	<11	<0.02	<0.05	<0.05	<0.15
B21-8	12/15/2015	8	<50	<100	<12	<0.02	<0.05	<0.05	<0.15
B21-9	12/15/2015	9	<50	<100	<13	<0.02	<0.05	<0.05	<0.15
B22-8	12/15/2015	8	<50	<100	<14	<0.02	<0.05	<0.05	<0.15
B22-9.5	12/15/2015	9.5	<50	<100	<15	<0.02	<0.05	<0.05	<0.15
B23-8.5	12/15/2015	8.5	<50	<100	<16	<0.02	<0.05	<0.05	<0.15
B23-10	12/15/2015	10	<50	<100	<17	<0.02	<0.05	<0.05	<0.15
PQL			50	100	10	0.02	0.05	0.05	0.15
Ecology MTCA Method A Cleanup Levels			2,000	2,000	30 ⁵	0.03	7	6	9

Notes:

¹ Approximate sample locations are shown in Figure 2

² Diesel and Heavy Oil range total petroleum hydrocarbons (TPH). Analyzed by Northwest Method NWTPH-Dx/Dx Extended.

³ Gasoline range TPH. Analyzed by Northwest Method NWTPH-Gx.

⁴ Select Volatile Organic Compounds. Analyzed by EPA Method 8260C.

⁵ Cleanup level with presence of benzene

mg/Kg = milligrams per kilograms

MTCA = Model Toxics Control Act

PQL = Practical Quantitation Limits

-- = not analyzed for this constituent

< = not detected above laboratory limits

* Analyzed using NWTPH-Dx Extended with Silica Gel Clean Up

Red Bold indicates the detected concentration exceeds Ecology MTCA Method A cleanup level

Bold indicates the detected concentration is below Ecology MTCA Method A cleanup levels

Table 2 - Summary of Groundwater Analytical Results

Acme Bulk Fuel Plant

Olympia, WA

Well Number	Date Sampled	Total Petroleum Hydrocarbons (ug/L)			Selected Volatile Organic Constituents (ug/L)					cPAH (ug/L)
		Diesel	Heavy Oil	Gasoline	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total Naphthalenes	
B1-W	9/27/2012	<250	<500	2600	16	1.0	72	41	--	--
B2-W	9/27/2012	75000	<500	--	35	2.3	77	340	90	6.5
B3-W	9/27/2012	<250	<500	1700	4.2	1.2	35	120	--	--
B4-W	9/27/2012	28000	<500	--	3.3	4.9	115	390	100	3
B5-W	9/27/2012	<250	<500	--	2.3	1.5	40	110	--	--
B6-W	9/27/2012	<250	<500	<100	<1.0	<1.0	<1.0	<3.0	--	--
B7-W	9/27/2012	<250	<500	--	<1.0	<1.0	<1.0	<3.0	--	--
B8-W	9/27/2012	<250	<500	<100	<1.0	<1.0	<1.0	<3.0	--	--
B10-W	9/27/2012	<250	<500	<100	<1.0	<1.0	<1.0	<3.0	--	--
B11-W	9/27/2012	<250	<500	<100	<1.0	<1.0	<1.0	<3.0	--	--
B12-W	9/27/2012	<250	<500	<100	<1.0	<1.0	<1.0	<3.0	--	--
B13-W	10/15/2015	<250	<500	560	<1.0	<1.0	<1.0	<3.0	--	--
B14-W	10/15/2015	<250	<500	<100	<1.0	<1.0	<1.0	<3.0	--	--
B15-W	10/15/2015	<250	<500	1,300	<1.0	<1.0	<1.0	<3.0	--	--
B16-W	10/15/2015	<250	<500	3,400	<1.0	<1.0	<1.0	<3.0	--	--
B17-W	10/16/2015	900	<500	<100	<1.0	3.3	<1.0	<3.0	--	--
B18-W	10/16/2015	<250	<500	<100	<1.0	<1.0	<1.0	<3.0	--	--
B19-W	10/16/2015	<250	<500	<100	<1.0	<1.0	<1.0	<3.0	--	--
B20-W	12/15/2015	<250	<500	<100	<1.0	<1.0	<1.0	<3.0	--	--
B21-W	12/15/2015	<250	<500	<100	<1.0	<1.0	<1.0	<3.0	--	--
B22-W	12/15/2015	<250	<500	<100	<1.0	<1.0	<1.0	<3.0	--	--
B23-W	12/15/2015	<250	<500	<100	<1.0	<1.0	<1.0	<3.0	--	--
MMW	12/15/2015	<250	<500	<100	<1.0	<1.0	<1.0	<3.0	--	--
MW-1	11/22/2011 ¹	400	<200	--	--	--	--	--	--	--
	9/19/2012	<200	<400	<100	<1.0	<2.0	<1.0	<3.0	--	--
	1/9/2013	<200	<400	<100	<1.0	<2.0	<1.0	<3.0	--	--
	1/29/2014	<200	<400	<100	<1.0	<2.0	<1.0	<2.0	--	--
	8/22/2014	<200	<400	<100	<1.0	<2.0	<1.0	<2.0	--	--
	2/17/2015	<200	<400	<100	<1.0	<2.0	<1.0	<2.0	--	--

Table 2 - Summary of Groundwater Analytical Results

Acme Bulk Fuel Plant
Olympia, WA

Well Number	Date Sampled	Total Petroleum Hydrocarbons (ug/L)			Selected Volatile Organic Constituents (ug/L)					cPAH (ug/L)
		Diesel	Heavy Oil	Gasoline	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total Naphthalenes	
MW-2	11/22/2011 ¹	240	<200	--	--	--	--	--	--	--
	9/19/2012	<200	<400	117	<1.0	<2.0	<1.0	<3.0	--	--
	1/9/2013	<200	<400	149	1.89	<2.0	5.64	15.6	--	--
	8/22/2014	<200	<400	<100	<1.0	<2.0	<1.0	<2.0	--	--
	2/17/2015	<200	<400	<100	<1.0	<2.0	<1.0	<2.0	--	--
MW-3	11/22/2011 ¹	1,200	210	300	<0.2	<0.2	<0.2	<0.2	--	--
	9/19/2012	<200	<400	--	<1.0	<2.0	<1.0	<3.0	<0.100	<0.100
	1/9/2013	<200	<400	<100	<1.0	<2.0	<1.0	<3.0	--	--
	1/29/2014	<200	<400	524	<1.0	<2.0	<1.0	<2.0	--	--
	8/22/2014	<200	<400	<100	<1.0	<2.0	<1.0	<2.0	--	--
	2/17/2015	<200	<400	<100	<1.0	<2.0	<1.0	<2.0	--	--
MW-4	11/22/2011 ¹	1,700	<200	670	17	9.6	14	47	--	--
	9/19/2012	<200	<400	--	7.4	<2.0	64.3	171	6.03	<0.100
	1/9/2013	<200	<400	2,350	3.98	<2.0	77.9	226	--	--
	1/29/2014	<200	<400	4,190	<1.0	<2.0	48.6	96.5	--	--
	8/22/2014	<200	<400	1,910	<1.0	1.3	7.6	13.7	--	--
	2/17/2015	<200	<400	1,580	<1.0	<2.0	6.3	52.1	--	--
MW-5	11/22/2011 ¹	2,900	<200	<250	<0.2	<0.2	<0.2	0.3	--	--
	9/19/2012	<200	<400	--	6.3	<2.0	24.1	14.3	0.441	<0.100
	1/9/2013	<200	<400	<100	<1.0	<2.0	<1.0	<3.0	--	--
	8/22/2014	<200	<400	263	<1.0	<2.0	<1.0	2.5	--	--
	2/17/2015	<200	<400	320	<1.0	<2.0	<1.0	2.6	--	--
MW6-W	10/20/2015	<250	<500	<100	<1.0	<1.0	<1.0	<3.0	--	--

Table 2 - Summary of Groundwater Analytical Results

Acme Bulk Fuel Plant
Olympia, WA

Well Number	Date Sampled	Total Petroleum Hydrocarbons (ug/L)			Selected Volatile Organic Constituents (ug/L)					cPAH (ug/L)
		Diesel	Heavy Oil	Gasoline	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total Naphthalenes	
MW7-W	10/20/2015	<250	<500	<100	<1.0	<1.0	<1.0	<3.0	--	--
MW8-W	10/20/2015	<250	<500	<100	<1.0	<1.0	<1.0	<3.0	--	--
MW9-W	10/20/2015	<250	<500	790	<1.0	<1.0	<1.0	<3.0	--	--
MW10-W	10/20/2015	8,800	<500	<100	<1.0	<1.0	<1.0	<3.0	--	--
MW11-W	10/20/2015	3,100	<500	<100	<1.0	<1.0	<1.0	<3.0	--	--
PQL		200	400	100	0.2 or 1.0	0.2 or 2.0	0.2 or 1.0	0.2, 2.0, or 3.0	0.1	0.100
Ecology MTCA Method A Cleanup Levels		500	500	800 *	5	1,000	700	1,000	160	0.1

Notes:

ug/L= micrograms per liter

-- Not analyzed for constituent

< Not detected at the listed laboratory detection limits

PQL = Practical Quantification Limit (laboratory detection limit)

Red Bold indicates the detected concentration exceeds Ecology MTCA Method A cleanup level

Bold indicates the detected concentration is below Ecology MTCA Method A cleanup levels

* TPH-Gasoline Cleanup Level with the presence of Benzene anywhere at the Site

¹ Groundwater monitoring/sampling conducted by AECOM November 2011.

Table 3 - Summary of Groundwater Elevations

Acme Bulk Fuel Plant

Olympia, Washington

Well Number/ TOC Elevation (feet)	Date of Measurement	Depth to Water (feet)	Depth to Free Product (feet)	Free Product Thickness (feet)	Groundwater Elevation (feet)	Change in Elevation (feet)
MW-1	09/19/12	5.02	--	--	9.11	--
14.13	01/09/13	1.84	--	--	12.29	3.18
	01/29/14	3.67	--	--	10.46	-1.83
	08/22/14	4.58	--	--	9.55	-0.91
	02/17/15	3.41	--	--	10.72	1.17
MW-2	09/19/12	5.23	--	--	8.78	--
14.01	01/09/13	2.62	--	--	11.39	2.61
	01/29/14	4.27	--	--	9.74	-1.65
	08/22/14	4.90	--	--	11.39	1.65
	02/17/15	3.78	--	--	10.23	-1.16
MW-3	09/19/12	5.12	--	--	8.74	--
13.86	01/09/13	3.16	--	--	10.70	1.96
	01/29/14	4.34	--	--	9.52	-1.18
	08/22/14	4.78	--	--	9.08	-0.44
	02/17/15	3.74	--	--	10.12	1.04
MW-4	09/19/12	5.05	--	--	8.83	--
13.88	01/09/13	2.41	--	--	11.47	2.64
	01/29/14	4.01	--	--	9.87	-1.60
	08/22/14	4.67	--	--	9.21	-0.66
	02/17/15	3.47	--	--	10.41	1.20
MW-5	09/19/12	5.29	--	--	8.81	--
14.10	01/09/13	2.71	--	--	11.39	2.58
	01/29/14	4.38	--	--	9.72	-1.67
	08/22/14	4.95	--	--	9.15	-0.57
	02/17/15	3.87	--	--	10.23	1.08

TOC = Top of casing elevation relative to assigned benchmark.

-- = Not applicable