ENVIRONMENTAL • GEOTECHNICAL
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October 23, 2019

Mr. Ed Ralston
Program Manager – Remediation Management
Phillips 66 Company
76 Broadway
Sacramento, CA, 95818

RE: Data Gaps Work Plan
Phillips 66 Facility No. 255353 (AOC #1396)
600 Westlake Ave North
Seattle, Washington
ATC Project No. Z076000073
Washington Department of Ecology Facility ID 46445373
Washington Department of Ecology VCP #NW1714

Dear Mr. Ralston:

ATC Group Services LLC (ATC) is pleased to submit this Work Plan to Phillips 66 Company (Phillips 66) for the above referenced facility, located at 600 Westlake Avenue North in Seattle, Washington (Site). The objective of this work plan is to present a scope of work to conduct site investigation activities in order to further assess current conditions at the Site and fill data gaps as requested by the Washington State Department of Ecology (Ecology) in their opinion email dated August 21, 2018. For the purposes of this proposed investigation, the scope of work will be limited to releases relating to the former Unocal station at 600 Westlake Ave North.

SITE DESCRIPTION

The former service station property is located on the southwest portion of the Seattle City block bordered by Westlake Avenue to the west, Terry Avenue to the East, Valley Street to the North and Mercer Street to the South. The service station on the parcel in the southwest corner of the block was originally constructed by Union Oil Company of California (Unocal) in 1965 and was referred to as the Westlake 76 station, Tosco Corporation acquired the Westlake 76 station from Unocal in 1997. Tosco subsequently was acquired by Phillips Petroleum in 2001, which ultimately merged with Conoco to form ConocoPhillips (COP) in 2002, Phillips 66 was spun off from COP in 2012. The station was demolished in 2009. The Property is referred to herein as the former Unocal station.

The former Unocal station property is located in a primarily commercial area with apartment units. The former Unocal station property is currently vacant, and is used as a construction staging area for redevelopment work occurring at adjacent properties to the east and south. The northern half of the city block is covered with asphalt. The City block is shown on **Figure 1**.

The west-adjacent property is occupied by the Allen Institute. The east-adjacent property is a Google property. To the north is museum of history and industry (MOHAI) and Lake Union Park, and to the south are multi-story commercial buildings.

Historical research indicates that the former Unocal station included four 10,000-gallon fuel underground storage tanks (USTs), two pump islands with product dispensers, and the station building (which had been converted into a convenience store). Additional former features include four hoists and one catch basin in the former service station building, three 550-gallon heating oil USTs located to the northeast (1 UST) and southeast (2 USTs) of the former service building, and two 550-gallon waste oil USTs located to the southeast of the service building. One of the waste oil USTs was upgraded from a 280-gallon to a 550-gallon UST. An incinerator and dumpster enclosure were located to the north of the former service building, along the northern station boundary. Historical features associated with the former station are depicted on Figure 1. The parcel immediately adjacent to and east of the service station was also owned by COP. It was formerly occupied by a "Denny's" restaurant with an associated parking area, and is now used for construction support and contained ATC's AS/SVE system compound (demolished in April 2019). Historical uses of the COP-owned parcels also include a lumber mill (which occupied the entire block), and subsequently a creamery and a brewery.

The entire City block is currently owned by City Investors, and the Site is currently zoned SM-SLU 85/65-160 (Seattle Mixed-South lake Union). The 85 refers to the maximum allowed non-residential height, 65 ft is the base residential height, and 160 ft is the maximum allowed residential height.

SITE HISTORY

City Investors XI, LLC (City Investors) is the current owner of the Property that includes all of City Block #77. The eastern portion of the north half of City Block #77 was formerly occupied by the Brace Lumber Mill. The eastern half of the southern portion of the block was previously occupied by a Denny's restaurant. A former Union 76-branded gasoline service station (previously owned by Unocal) previously occupied the southwest portion of City Block #77. The City currently holds easements for public rights-of-way on the streets and avenues surrounding the block.

All previous facilities on City Block #77 have been removed and/or demolished. The southern half of the block is used by GLY Construction as a construction staging area and the north half of the block is currently used as a parking lot, as noted above. The ATC AS/SVE system compound was present in the southeastern corner of the Property block (decommissioned in April 2019). As part of the Mercer Cleanup Project (MCP), the City acquired a 70-foot wide strip of land from P66 located along the north side of Mercer Street between Terry Avenue North and Westlake Avenue North. The approximate western two-thirds of the former Unocal station property is occupied by construction equipment and several above ground storage/treatment tanks utilized as part of a construction dewatering system associated with the development of adjacent properties.

ADJOINING PROPERTIES/FACILITIES

The Site is located in a mixed-use district that includes various businesses (both retail and commercial land uses), open space (Public Park), public use property (museum), and transportation corridors. Most surrounding properties are zoned either "Seattle Mixed" (SM) or "Commercial 2" (C2).

- North – bordered by Valley Street; with South Lake Union Park across Valley Street
- South – bordered by Mercer Street; with office buildings across Mercer Street
- East – bordered by Terry Avenue N; with a construction Site across Terry Avenue N
- West – bordered by Westlake Avenue N; with the Allen Institute for Brain Science across Westlake Avenue N.

Underground City sanitary sewer and storm sewer lines are located beneath Westlake and Terry Avenues N. Electrical conduits run beneath Westlake Avenues N, and Valley and Mercer Streets. Communication and gas lines run beneath Valley and Mercer Streets.

A search of Ecology water well records was performed in January 2018 by ATC utilizing the Washington State Department of Ecology well reports database. The search included water wells located within a one- mile radius of the Site. The search identified no domestic wells within one mile from the Site.

PROPERTY LAND USE HISTORY

The entire city block is currently owned by City Investors. Prior to its initial development as a lumber mill, most, if not all of the city block that includes the former Unocal station property, as well as the surrounding City street rights-of-way, were within the Lake Union shoreline. The area was reclaimed using undocumented fill materials.

In 2006 and 2007, in conjunction with MCP, the City widened Mercer Street, narrowed Valley Street, and made other major modifications in City ROW abutting the former Unocal station property and the City Investors property.

Southern Parcels

The former service station on the previously COP-owned parcel in the southwest corner of the block, referred to as the Westlake 76 station, was originally constructed by Union Oil Company of California in 1965. The station included four 10,000-gallon fuel underground storage tanks (USTs), two pump islands with product dispensers, and the station building (which had been converted into a convenience store). The parcel immediately adjacent to and east of the service station was also owned by COP. It was formerly occupied by a Denny's restaurant with associated parking, and was used for construction support and the AS/SVE system compound. Historical uses of the COP-owned parcels include a lumber mill (which occupied the entire block), a creamery, and a brewery.

Northern Parcels

Historical uses of the northern parcels include development and operation of lumber mills as early as 1904 and retail gasoline and automobile service stations as early as 1930 (SCS Engineers, "Underground Storage Tank Investigation, Westlake Avenue UST Site, Site Investigation and Tank Removal Summary Report," June 18, 1990). The northwest portion of the block included an operating Union 76 service station from about 1930 to at least 1964, and possibly to 1972, when the City of Seattle acquired the Property from Unocal. At some time around 1950, the station was called McKale's, and also was a used car sales, service and detailing business. The USTs associated with the former service station were not removed until 1990.

According to the SCS report: "All of the underground tanks on the Property, except for the 500-gallon waste oil tank, were abandoned and not in use since at least 1972, when the City of Seattle acquired the Site. Based on available information, it appears that the USTs were abandoned sometime between 1959 and 1972. The former 500- gallon waste oil tank was actively used by the [then] current property tenant until its removal in January 1990."

Automobile service and detailing operations occupied the former service station buildings intermittently during the period between the City's acquisition of the Property and the City's sale of the Property to City Investors in 2001. Buildings and other aboveground structures associated with the former service station were demolished in June 2005, and the area was paved with asphalt. A vacant building, formerly associated with the lumber mill, was removed from the eastern half of the City Investors property in 2005, which is paved with asphalt.

RELEASE DISCOVERY

In May 1980, a release of approximately 80,000 gallons of supreme leaded gasoline at the Westlake 76 station was confirmed by Unocal following inventory discrepancies over an approximate 4-month period. The release occurred from a leaking product line just south of the western pump island. Upon discovery of the release, the USTs and product piping were immediately replaced, two product recovery trenches were installed on the service station property, and product recovery and monitoring wells were installed. Recovery of free product began in June 1980 and continued until October 1982, when it was discontinued due to minimal recovery.

Tosco Corporation subsequently acquired the Westlake 76 station from Unocal in 1997. Tosco subsequently was acquired by Phillips Petroleum in 2001, which ultimately merged with Conoco to form ConocoPhillips in 2002, and Phillips 66 was spun off from ConocoPhillips in 2012. In May 2001, a contractor broke a gasoline product line during removal of the waste oil and heating oil USTs at the station. An estimated 600 gallons of unleaded gasoline was released. The contractor had a vacuum truck on Site and recovery of free product was initiated immediately from the UST excavation. Approximately 500 gallons of free product were removed from the excavation at that time.

Other investigations have confirmed the presence of petroleum products released from historical operations on other parts of the city block, including the service station formerly located on the

northwestern portion and the lumber mill formerly located on the northeastern portion of the block.

HISTORICAL INVESTIGATION AND REMEDIATION ACTIVITIES

In May 1980, Unocal discovered that approximately 80,000 gallons of supreme leaded gasoline was released from a product line south of the western pump islands at the Westlake 76 Station to the subsurface over a four-month period. In response to the release the USTs and product lines were replaced. Two recovery trenches and numerous recovery wells installed at the Property removed a total of approximately 41,900 gallons of liquid phase hydrocarbons (LPH) between June 1980 and October 1992.

In 1988, an initial SVE system was installed utilizing the then existing recovery wells and trenches. Approximately 4,262 pounds of gasoline was recovered by the SVE system between June 1998 and August 1990, when the system was shut down due to decreasing extracted vapor concentrations. In February 1990, five USTs were removed from the former Unocal service station on the City Investors property located at the southeast corner of Westlake Avenue North and Valley Street. The USTs ranged from 550 gallons to 5,000 gallons in capacity and were previously used to store used motor oil and gasoline. Approximately 800 cubic yards of petroleum contaminated soil was excavated during removal of the USTs.

Between January 1991 and July 1993, approximately 465 gallons of LPH was recovered during periodic manual/passive LPH removal efforts. The initial SVE system continued to operate through May 1995.

In May 2001, a gasoline product line was ruptured during the removal of waste oil and heating oil USTs at the Westlake 76 Station. As noted above, an estimated 600 gallons of supreme unleaded gasoline was released. Approximately 500 gallons of product was immediately removed from the excavation utilizing a vacuum truck. Throughout the year, vacuum trucks and hand bailing were used for fluid recovery from adjacent monitoring wells. Approximately 4 gallons of LPH was manually recovered. Approximately 12,100 gallons of impacted groundwater was removed by vacuum truck.

In 2003, a new AS/SVE system was installed at the Westlake 76 Station that included an AS/SVE trench, SVE wells, and several deep AS wells. The system became operational in August 2003. Approximately 1,410 tons of petroleum impacted soil was removed and transported for treatment during the installation of the remediation system trenches and wells.

Further investigations conducted in 2004 and 2005 indicated petroleum impacts remained in soil and groundwater in various areas of the Site. In addition to residual impacts from the 1980 release on the Westlake 76 Station, these investigations indicated the presence of petroleum products on the City Investors property, including the McKale's/Union 76-branded gasoline service station and the former Brace Lumber Mill and Denny's restaurant. Additional investigation also indicated that petroleum products were released during past operations of service station and/or fuel storage facilities formerly located on neighboring properties, including the former Rosen property located at 961-965 Mercer Street, south of the former COP property.

Releases of petroleum products on and from these properties and potentially other sources had impacted the City street and utility ROWs surrounding the Block.

Between July 2006 and April 2007, pursuant to the April 2007 Settlement Agreement between COP and the City, COP implemented the first phase of the Westlake/Mercer Cleanup Project (herein referred to as Phase I). Phase I was performed as an independent remedial action and designed and completed on an expedited basis, as required to meet the City's timeline for construction of the South Lake Union Streetcar line and to avoid disruption of the Streetcar line due to remedial action at the Site. The Phase I remedial activities included; 1) installation of steel shoring, excavation and off-Site disposal of petroleum-impacted soil from the eastern lanes of Westlake Avenue North, and installation of AS/SVE wells and associated conveyance piping back to the P66 property boundary and connection to the then existing above ground AS/SVE system; 2) installation of SVE and enhanced fluid recovery (EFR) wells in Terry Avenue North and installation of associated conveyance piping back to the P66 property and connection to the then existing above ground AS/SVE system; 3) soil and groundwater sampling and analysis; and 4) backfilling and surface restoration. A total of approximately 16,172 tons of soil was excavated from the Westlake and Terry Avenue North ROWs, between Mercer and Valley Streets. Influent vapor samples indicated that the petroleum hydrocarbon impact was highest in those SVE wells completed in Terry Avenue North.

Between November 2007 and August 2008, biweekly enhanced fluid recovery was performed utilizing the recovery wells in Terry Avenue North. A total of 28,142 gallons of impacted groundwater was removed from the wells during this time. Cumulative petroleum hydrocarbon removal from September 2003 through March 2008 was approximately 1,940 pounds. Total LPH recovered from June 1980 through the end of the third quarter 2008 was approximately 43,632 gallons.

In September 2008, the Westlake 76 Station was demolished, all above-ground structures were removed, and all of the existing conveyance piping for the remediation wells were cut and capped in their respective ROWs to facilitate Phase II of the MCP excavation activities (herein referred to as Phase II).

Between November 2008 and June 2009, Phase II of the MCP was implemented, whereas City Block #77 (with the exception of the southeast corner) was excavated to depths up to 25 feet bgs. A soil/cement/bentonite (SCB) gravity wall was installed along the south, east, and north boundaries of City Block #77. The SCB gravity wall, in conjunction with the previously installed sheet pile wall along the west property boundary, provided shoring for Phase II excavation activities and continues to serve as a hydraulic barrier to shallow groundwater. Backfill and surface restoration activities were completed in July 2009. A total of approximately 54,450 tons of soil was excavated from the Site during the Phase II excavation activities and transported off-Site for disposal.

Confirmation soil sampling was conducted during the Phase II excavation activities to document conditions at the base of the excavation and to assess whether additional excavation was required to achieve cleanup levels or other project requirements. A total of 244 samples were collected from 65 sampling cells. Cells in the southeast corner of the excavation extended to 15

feet bgs, and the remaining excavation continued downward until residual concentrations were below Ecology's MTCA Method A Cleanup Levels.

As part of the MCP, numerous SVE and AS wells were installed in Terry Avenue North, Mercer Street, Valley Street, and Westlake Avenue North. In July 2013, numerous remediation wells were installed in the Valley Street ROW under the oversight of SDOT as part of the MCP. Between August and November 2013, all of the remediation wells/conveyance piping located in the Mercer and Valley Street ROWs and the Westlake and Terry Avenue ROWs were connected to a new above ground AS/SVE treatment system located on the southeast portion of the block.

Historical remedial actions performed during the MCP construction included removal of petroleum hydrocarbon impacted soil within the P66 designated Area of Mercer and Valley Streets and Westlake and Terry Avenues North. Soil removal actions were completed during installation and/or upgrades of various subsurface utilities, including electrical and transmission duct banks and vaults, water, storm, and sanitary sewer systems.

Additionally, numerous AS/SVE remediation wells and associated conveyance piping (installed within excavated trenches) were completed in the P66 designated Area of Mercer and Valley Streets prior to the MCP construction. P66 also excavated soil along Terry Avenue during the MCP construction in order to install conveyance piping connected to the AS/SVE remediation wells installed in Valley Street.

FORMER AS/SVE REMEDIATION SYSTEM

The former AS/SVE system consisted of two blowers capable of extracting soil vapors from a total of 36 vertical wells (19 in Mercer Street, 17 in Terry Avenue) and 16 horizontal wells (7 in Valley Street, 9 in Westlake Avenue). The AS system was capable of supplying compressed air to a total of 62 air sparge wells (27 in Mercer Street, 14 in Valley Street, 21 in Westlake Avenue). The SVE blowers discharged vapors to an off-gas treatment system that used granular activated carbon (GAC) to reduce air emissions to permitted levels (under Puget Sound Clean Air Agency [PSSCA] permit Registration No. 29548). Recovered water from the SVE moisture separators was treated with GAC before discharging to the King County sewer system (under Discharge Authorization No. 4262-01, expiration: 6/30/2019).

The total petroleum hydrocarbon (TPH) mass recovered to date is 3,127 lbs. The SVE/AS system was most recently in operation in late 2018 in an effort to mitigate potential rebounding vapor concentrations. Due to diminished returns, the AS/SVE system has recovered the majority of mass possible. ATC oversaw decommissioning of the remediation system in April 2019.

GROUNDWATER MONITORING

Groundwater monitoring has been conducted at the Site since 1988. The current monitoring well network consists of 14 wells, including MWR-1 through MWR-6, MW-41, MW-45, MW-50, MW-54, MW-209 through MW-218, and SMW-3. All other wells have either been destroyed or decommissioned due to construction activities. Depth to groundwater typically fluctuates between 9 and 12 feet bgs over much of the area. Based on depth to groundwater measurements, groundwater flow primarily appears to flow towards the north to northeast

(towards South lake Union), with a less frequent flow direction to the southeast (ATC RI/FS/CAP, 2018). Groundwater flow direction is likely impacted by subsurface hydrogeologic barriers installed during remedial excavation activities completed in 2008 and/or dewatering activities taking place at or near the Site.

REGULATORY STATUS

The Site is currently enrolled in Ecology's Voluntary Cleanup Program (VCP) and has been assigned VCP No. NW1714.

GEOLOGIC AND HYDROGEOLOGIC SETTING

Historically, the subject Site was a wetland and shoreland area of Lake Union. The land was reclaimed in the 1800s using undocumented fill material to bring the surface grade as much as 15-20 feet above the elevation of the Lake. The areas addressed in this RI/FS/CAP are located as close as approximately 200 feet south of Lake Union, and are at a surface elevation of approximately 20 to 30 feet above Mean Sea Level (MSL).

The former COP parcels are relatively flat and level and are covered by asphalt, concrete, and unpaved areas. The northern parcels are of mixed elevations and are covered entirely by asphalt and concrete. The City street rights-of-way are flat and covered entirely by asphalt and concrete.

Soils encountered during investigation and remediation activities generally consisted of sandy fill down to depths of at least 5 feet bgs. Fill between 5 feet to 25 feet bgs consisted of highly variable compositions of silty sand, sandy silt, sand, silt to silty clay, clayey silt, sand with clay, sandy gravel, and intermittent thin layers of peat/clay. The fill material also includes variable proportions of wood or wood chips/wood debris, and sawdust, as thick as 5 to 11 feet.

DATA GAP INVESTIGATION SCOPE OF WORK

In February 2018, ATC submitted an RI/FS/CAP for the Site. In August 2018 Ecology issued an opinion letter based on its review of the document. Among other requests, Ecology requested that additional characterization of on-site soil and groundwater was necessary.

Specifically, Ecology's letter stated:

> *The soil and ground water at the Site has not been analyzed for all COCs.*
>
> *Considering the past land uses on the Site and possible impacts from off-Site contamination sources, the COCs may include petroleum hydrocarbons, heavy metals, volatile organic compounds (VOCs) including HVOCs, and polycyclic aromatic hydrocarbons (PAHs) including cPAHs. A* ***majority of the soil and ground water samples collected at the Site were not analyzed for all possible COCs, especially HVOCs, cPAHs, and heavy metals. Additional soil and ground water characterization is needed for all possible COCs at the Site****.*

The objective of the proposed scope of work outlined below is to address Ecology's request to conduct further evaluation of soil and groundwater conditions at the Site, and close data gaps in the understanding of the vertical and horizontal distribution of site COCs.

All former Site-related features are shown on the attached **Figure 1**. ATC reviewed historical data, and determined that the required analyses for gasoline releases at the former Unocal station site have been adequately characterized in both soil and groundwater. The required analytes for gasoline releases as recommended in Table 830-1 of the MTCA Cleanup Regulation (TPH-Gx, BTEX, naphthalenes, and fuel additives) have been analyzed at most sample locations at the Site. In most historical soil samples at the Site, and in all of the post-excavation samples of the Phase I and Phase II excavations, soil samples were analyzed for TPH-G, TPH-D, TPH-O, BTEX, MTBE, naphthalenes, and lead, Two additives, EDB and EDC, were not analyzed in soil samples. However, these two compounds were analyzed in groundwater samples in 2014, with no results above detection limits.

Other features at the former Unocal Station have not been fully characterized as recommended in Table 830-1. These non-gasoline-related features also require analysis for HVOCs, cPAHs, and PCBs. Specifically, the four former hoists, the three former heating oil USTs, and the two former waste oil USTs at the former Unocal Station require additional assessment.

Groundwater at the Site has been analyzed on a regular basis since 1988. As with soil data collection, groundwater samples collected at non-gasoline-related features will also include analysis for HVOCs, cPAHs, and PCBs. If non-gasoline related impacts are detected in groundwater samples at the non-gasoline related former site features, additional samples may be collected to laterally characterize the detected compounds.

Additionally, several previous sample locations have had soil concentrations above Method A cleanup levels that were not subsequently over-excavated. Eight of these were at monitoring well soil borings, and the remainder were post-excavation samples from Phase I and II of the Westlake/Mercer cleanup project. All remaining soil impacts are shown on Figure 5 of ATCs Response to Ecology August 21, 018 Opinion Letter. All remaining impacted soil locations are limited to TPH-G, BTEX, and lead compounds, are shown on **Figure 1**, and are summarized on **Table 1**.

ATC proposes to advance five soil borings at the Site in the areas identified at the former Unocal service station in order to collect additional soil and groundwater samples for laboratory analyses. As all locations are in the area excavated during Phase II remediation activities, all borings will be advanced to up to 10 feet below the base of the Phase II backfill.

ATC also proposes to advance up to seven soil borings at the Site in the areas identified from Phase I/II post-excavation sample locations in order to collect additional soil samples for laboratory analyses. Sample locations will be determined based on highest previous analytical results, usefulness for delineation, utility locations, and relevant permissions. Several of the locations will potentially be angle drilled to access soil beneath the right-of-way. These locations will allow for location of samples at adjacent Phase I and II cells, as well as beyond the former excavation boundaries, to collect lateral delineation samples. Proposed locations are shown on Figure 1, but may be changed based on accessibility, permissions, or site conditions. All

locations in the area excavated during Phase I/II remediation activities will be advanced to 5 to 10 feet below the base of the Phase I/II backfill.

Soil sampling data will be collected from the borings from below the Phase I/II backfill. Groundwater samples will be collected from select locations to evaluate groundwater impacts from the former site features noted above. Soil data will be compared to MTCA Method A cleanup levels, and groundwater sampling data from the borings will be compared to both MTCA Method A cleanup levels and Method B cleanup levels protective of surface water (whichever is most conservative).

The execution of the field work may be changed if warranted by field conditions. ATC will notify Phillips 66 of any substantial changes to the field work before proceeding. The proposed scope of work consists of 3 tasks, each described below.

T**ask 1 – Pre-Field Activities**

At least 72 hours prior to the beginning of subsurface soil work, ATC will physically mark the location of the proposed borings to aid in underground utility locating. Underground utilities and piping in the vicinity of the proposed borings will be identified in advance of fieldwork by requesting underground locating (One Call) by the Public Utility Notification Service and by contracting a private utility locator. Additionally, it will be necessary to notify and coordinate with the current property owners and station manager.

A safe work plan (SWP) will be prepared, and the site-and-project-specific health and safety plan (HASP) will be updated to identify potential physical and chemical hazards associated with the proposed field activities, and to specify personal protective equipment and safety monitoring requirements. The HASP will be kept on file at ATC's Seattle, Washington office and on Phillips 66 electronic database (LiveLink) and a copy will be made available onsite during field activities.

Task 2 – Field Activities – Advancement of Soil Borings

The proposed borings will be advanced using hand auger, direct push, and/or hollow-stem auger drilling techniques. Hand auger drilling will be used should surface conditions require it (i.e. access may inhibit heavy equipment drilling). Hollow stem auger drilling will be used should subsurface conditions require it (i.e. dense or gravelly soils may inhibit direct push drilling). Angle-drilling may be used to access ROW locations. Angle borings will be positioned to avoid intersecting the barrier walls. The drilling will be conducted by a Washington State licensed driller, under the direction of an ATC field representative.

As required by P66, proposed soil borings will be cleared to a depth of five feet using an air knife/vacuum truck prior to drilling activities. If any soil samples are required at depths shallower than five feet bgs, a hand-auger will be used once the desired depth is attained with the air knife/vacuum truck. It is anticipated each boring will be advanced to depths between 15 and 35 feet bgs.

Field Screening and Soil and Groundwater Sampling Activities

Soil samples will be collected from the soil borings for lithologic profiling, field screening and chemical analysis. Where possible, samples will be collected continuously from ground surface to total depth using a 4 or 5-foot long direct-push sampler equipped with acrylic sleeves. Where hollow stem auger drilling is required, samples will be collected using a 2.5 inch split spoon sampler at depths based on previously collected data and observations made in the field. Samples will be field-screened for the presence of volatile organic constituents (VOCs) using a portable photoionization detector (PID). Field screening will be conducted by placing a portion of the collected soil into a sealable plastic bag and then monitoring headspace vapor concentrations using a PID. Soil lithology will be described in general accordance with ASTM D2488.

Grab groundwater samples, if available, will be collected from select borings using a peristaltic pump and disposable polyethylene tubing via a 10-foot long temporary well screen installed in the boring. Shallow groundwater is found in wells at the Site at depths of approximately 10 feet bgs. Samples will be collected after stabilization of parameters, if sufficient volume is available.

Reusable soil sampling equipment will be cleaned with a Liquinox wash, tap water rinse, and a distilled water rinse between each sampling attempt.

Soil samples will be collected from each sampling sleeve and placed in laboratory prepared VOA vials with septum lids or jars with Teflon lids. Following Ecology requirements, soil samples collected for BTEX/Gx will be obtained from the macro-core sampler using a hand-held plunger set to collect the appropriate volume of soil for subsequent analysis using EPA Method 8260B. Soil collected in the plunger will be transferred to laboratory-prepared VOA vials equipped with septum lids. Samples for remaining analysis will be transferred to laboratory-prepared jars equipped with Teflon lids. Groundwater samples will be collected by filling laboratory supplied containers.

All soil and groundwater samples will be labeled and immediately placed in an ice chest and kept cool until delivery to the laboratory. Standard chain-of-custody procedures will be observed during transport of the samples to the laboratory.

Soil and groundwater samples from each boring will be analyzed for one or more of the following constituents of concern (COCs) per Table 830-1 of WAC 173-340-900 using the following methods:

- BTEX using the Environmental Protections Agency (EPA) Method 8260B; and
- Ethylene dibromide (EDB), 1,2-dichloroethane (EDC), and Methyl tertiary-butyl ether (MTBE) by EPA Method 8260B
- Napthalenes by EPA Method 8260B 8270/cPAHSIM
- Gasoline-range hydrocarbons (TPH-G), TPH as Kerosene (TPH-K), and diesel- and heavy oil-range hydrocarbons (TPH-D and TPH-O) using Northwest Methods NWTPH-Gx and NWTPH-Dx, respectively.

- MTCA 5 Metals by EPA 6010D/6020B/200.7/200.8
- Total and dissolved lead by EPA Method 6010
- Carcinogenic polycyclic aromatic hydrocarbons (PAHs) by cPAHSIM
- Polychlorinated biphenyls (PCBs) by EPA Method 8082
- Halogenated volatile organic compounds (HVOCs) by EPA Method 8260B

Phase I/II Post-Excavation sample locations - In order to evaluate current gasoline-range hydrocarbon concentrations, soil borings will be advanced at select post-excavation sample locations. Up to two soil samples will be collected from each boring. Soil samples will be analyzed for TPH-G, TPH-K, BTEX, and lead.

Former Hoists – In order to evaluate potential impacts for the former hoists, soil borings will be advanced at the four former hoist locations. Up to two soil and one groundwater samples will be collected from each boring. Soil samples will be analyzed for TPH-G, TPH-K, TPH-D, TPH-O, BTEX, EDB, EDC, MTBE, MTCA 5 Metals, cPAHs, and naphthalenes.

Former Waste Oil USTs – In order to evaluate potential impacts for the former waste oil USTs, soil borings will be advanced at each of the former waste oil UST locations. Up to two soil and one groundwater samples will be collected from each boring. Soil and groundwater samples will be analyzed for TPH-G, TPH-K, TPH-D, TPH-O, BTEX, EDB, EDC, MTBE, MTCA 5 Metals, cPAHs, naphthalenes, PCBs, and HVOCs.

Former Heating Oil USTs - In order to evaluate potential impacts for the former heating oil USTs, soil borings will be advanced at each of the former heating oil USTs locations. Up to two soil and one groundwater samples will be collected from each boring. Soil and groundwater samples will be analyzed for TPH-G, TPH-D, TPH-K, TPH-O, BTEX, cPAHs, and naphthalenes.

Investigative-Derived Waste

All investigation-derived waste (IDW) generated during the field activities will be placed into labeled 55-gallon drums and temporarily stored on-site pending characterization and disposal at a P66 approved facility. IDW will include soil (soil cuttings) and liquid (decontamination and purge water). Waste profiling samples will be collected from the drummed IDW in order to properly dispose the waste. Laboratory analysis of the IDW will be subject to the requirements of the waste retention facility and Phillips 66 criteria.

Task 3 - Reporting

ATC personnel will observe and document all subsurface investigation activities at the project site. After receipt of the final analytical report, all results will be summarized in a draft report that will be submitted to Phillips 66 for review, then, after incorporating any comments, will be submitted to the Washington State Department of Ecology. The report will document any soil/groundwater impacts encountered during the soil boring/well installation. Conclusions regarding the results of the field activities will be included in the report. The report will include tables, maps, photos showing pre-activity site conditions, figures, field notes, where appropriate,

and appendices pertinent to the data collected during the field activities. The report will be prepared and signed by a Washington licensed professional geologist or engineer.

WORK SCHEDULE

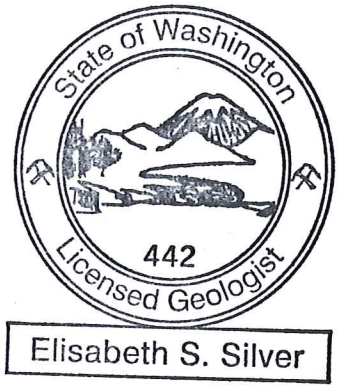
ATC anticipates completing the field work associated with the assessment and decommissioning work during the third and fourth quarters of 2019. The assessment field work will be completed in approximately fifteen days. Soil samples will be submitted on a standard turn-around time. The draft report will be provided within six (6) weeks of completing the field work.

We appreciate the opportunity to be of service in this matter. If you have questions regarding this Well Installation Work Plan, please contact me at (206) 781-1449.

Sincerely,

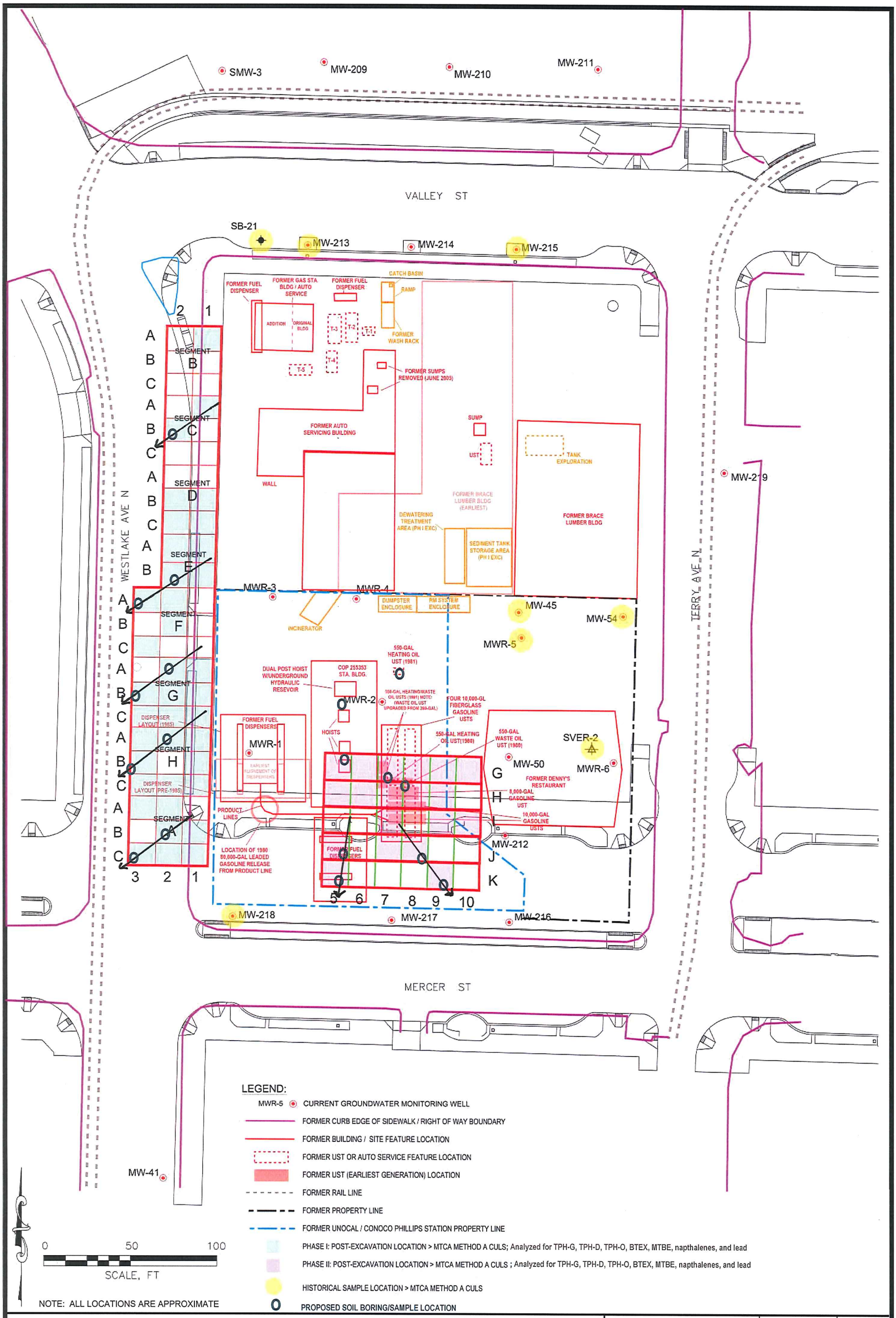
ATC Group Services LLC

Elisabeth Silver, L.G.
Senior Project Manager



Enc: Figure 1 – Remaining Impacts and Historical Site Features
Table 1 – Summary of Current Soil Impacts

cc: Jing Song (Ecology NWRO)



REMAINING SOIL IMPACTS AND HISTORICAL SITE FEATURES

PHILLIPS 66 FACILITY NO. 255353 (AOC 1396)
600 WESTLAKE AVENUE NORTH
SEATTLE, WA

PROJECT NUMBER: Z076000073		DATE: 06/11/19	FIGURE 1
APPROVED BY: ES		DRAWN BY: LB	

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Table 1
Summary of Current Soil Impacts
Phillips 66 Facility No. 255353 (AOC 1396)
600 Westlake Avenue North
Seattle, Washington

Sample ID	Sample Depth (feet)	Sample Date	TPH-G[1] (mg/kg)	VOCs[2] (mg/kg)				Lead[3] (mg/Kg)
				Benzene	Toluene	Ethylbenzene	Total Xylenes	
MTCA Method A Cleanup Level			**100[4]/30[5]**	**0.03**	**7.0**	**6.0**	**9.0**	**250**
Pre-Westlake/Mercer Cleanup Project								
MW-45-3	7.5	10/29/91	**1,900**	**6.1**	**56**	**63**	**370**	**980**
MW-45-5	15.0	10/29/91	24	**1.8**	**3.5**	**2.6**	**15**	--
MW-54-5	5	06/07/05	**37**	**1.9**	3.8	1.2	4.2	91.5
MW-54-10	10	06/07/05	12	**0.95**	0.21J	0.19J	0.76	94.1
SB-21-10	10	07/21/05	22.5	**1.02**	<0.221	2.61	1.53	3.87
Phase I Westlake Cleanup Project								
B-A1-15	15	11/14/06	**103**	0.00307	<0.00133	0.0116	<0.00888	8.25
C-A1-15	15	11/27/06	**55.7**	0.0134	0.0618	0.191	1.88	18.7
C-B2-15	15	11/27/06	<4.55	**0.0359**	<0.00176	<0.00468	<0.0117	4.27
D-B1-15	15	01/10/07	<4.22	**0.147**	<0.0844	<0.0844	<0.253	2.68
D-B2-15	15	01/10/07	<5.50	**0.301**	<0.110	<0.110	<0.330	31.1
D-C1-15	15	01/10/07	**103**	**0.251**	1.20	2.11	8.87	8.44
D-C2-15	15	01/10/07	**32.5**	**0.0462**	0.146	0.623	2.99	4.73
E-A1-15	15	01/10/07	<4.15	**0.645**	<0.0829	<0.0829	<0.249	9.16
E-A2-15	15	01/10/07	6.28	**0.0661**	<0.0836	0.115	0.266	4.21
E-B1-15	15	01/10/07	<5.06	**0.0466**	<0.101	<0.101	<0.304	7.92
E-B2-15	15	01/10/07	13.0	**0.0677**	0.169	0.216	1.01	8.37
F-A2-15	15	01/15/07	**127**	<0.0248	<0.0826	0.3250	4.53	12.1
F-A3-15	15	01/15/07	**121**	**0.0852**	<0.0878	0.747	6.00	21.1
F-B2-15	15	01/15/07	**101**	**0.105**	<0.0937	<0.0937	2.21	7.16
F-C3-15	15	01/15/07	17.2	**0.0943**	<0.0881	0.121	0.663	12.9
G-A1-15	15	01/17/07	25.7	**0.0564**	<0.0972	0.194	0.463	4.39
G-A2-15	15	01/17/07	**442**	**0.340**	0.991	**6.72**	**19.8**	13.8
G-B1-15	15	01/17/07	**138**	**0.374**	0.424	1.12	4.05	12.7
G-B2-15	15	01/17/07	**212**	**0.552**	2.86	2.65	13.4	13.0
G-B3-15	15	01/16/07	6.85	**0.892**	<0.0908	<0.0908	<0.272	34.9
G-C1-15	15	01/17/07	**589**	**0.714**	**8.04**	**6.95**	**23.4**	32.9
G-C2-15	15	01/17/07	**332**	**2.82**	**7.85**	4.63	**18.9**	5.15
G-C3-15	15	01/16/07	**120**	**0.164**	1.05	1.51	**9.15**	13.2
H-A1-15	15	01/18/07	**1,070**	**1.32**	**15.0**	**14.5**	**79.0**	11.7
H-A2-15	15	01/18/07	**67**	**0.446**	**1.26**	0.995	5.63	3.96
H-A3-15	15	01/18/07	**1,760**	**1.77**	**25.6**	**26.9**	**145**	16.6
H-B1-15	15	01/18/07	**2,550**	**1.71**	**32.5**	**34.6**	**211**	4.89
H-B3-15	15	01/18/07	**1,800**	**2.79**	**45.2**	**35.2**	**198**	8.23
H-C1-15	15	01/18/07	**298**	**1.43**	1.19	5.85	**15.3**	17.0
H-C2-15	15	01/18/07	**5,520**	**9.23**	<0.0951	**119**	**592**	8.13
H-C3-15	15	01/18/07	**38**	**0.134**	0.756	0.568	3.09	11.6
A-A1-14	14	12/14/06	22.0	**0.427**	0.347	0.548	1.87	4.22
A-A2-15.5	15.5	12/14/06	**190**	<0.833	3.6	**10.8**	**43.1**	10.2
A-A3-15.5	15.5	12/14/06	**194**	<0.869	4.42	**10.4**	**41.7**	17.2
A-B1-15.5	15.5	12/14/06	**216**	<0.415	0.837	3.90	**12.7**	3.81
A-B2-15.5	15.5	12/14/06	**324**	<0.891	**12.5**	**10.6**	**49.5**	81.0
A-C1-15.5	15.5	12/14/06	**390**	<0.499	<0.499	**8.37**	**14.1**	12.3
A-C2-15.5	15.5	12/14/06	**91.9**	**0.862**	1.28	1.58	6.75	55.3
A-C3-15.5	15.5	12/14/06	**34.8**	**0.115**	0.369	0.395	1.20	2.92
Phase II Westlake/Mercer Cleanup Project								
G5	14*	03/25/09	**1,120J**	**2.73J**	**14.9J**	**11.7J**	**49.0J**	161
G6	14*	03/25/09	**306J**	**0.468J**	1.79J	3.40J	**13.5J**	188
G7	14*	03/24/09	**145J**	**0.0938**	0.669	1.18	4.64	55.2J
G8	14*	03/24/09	**553J**	**0.201J**	2.02	3.80	**16.5J**	58.4J
G9	14*	03/24/09	**895J**	**0.297J**	4.24J	5.08J	**27.1J**	85.1J
G10	14*	03/23/09	**181J**	**0.0317**	0.669	2.70	4.93	88.0
H5	14*	03/19/09	**51.0J/172J**	**0.298J/0.703J**	0.453J/2.08J	0.784J/2.98J	2.80J/**10.9J**	59.6J/30.0J
H6	14*	03/24/09	245J	**0.129**	1.15	2.10	8.11	55.5J
H7	14*	03/24/09	214J	**0.0874**	0.768	1.58	5.89	96.3J
H8	14*	03/24/09	**528J**	**0.157**	2.17	3.91	**17.3**	156J
H9	14*	03/19/09	**139J**	<0.235	<1.17	<1.17	4.56	15.4J
I7	14*	03/19/09	**44.7**	0.0115	0.107	0.115	2.93	11.6J
I9	14*	03/24/09	**609J**	**0.0772**	3.03	4.66	**23.6**	91.1J
I10	14*	03/23/09	**111J**	**0.0642**	<1.16	<1.16	<3.48	76.7
J5	14*	03/24/09	**520**	0.0102	0.0303	1.36	**11.5**	52.3J

Table 1
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Seattle, Washington

Sample ID	Sample Depth (feet)	Sample Date	TPH-G[1] (mg/kg)	VOCs[2] (mg/kg)				Lead[3] (mg/Kg)
				Benzene	Toluene	Ethylbenzene	Total Xylenes	
MTCA Method A Cleanup Level			**100[4]/30[5]**	**0.03**	**7.0**	**6.0**	**9.0**	**250**
J7	14*	03/19/09	**84.4J**	0.0283	0.177	0.192	0.739	192J
J8	14*	03/19/09	18.2J	0.0140	0.0104	0.0122	0.102	**298J**
K5	14*	03/20/09	**56.2J**	**0.056J**	0.186	0.632J	1.58J	74.9
K9	14*	03/23/09	**132**	0.00539	<0.285	0.919	2.72	**386J**
C8	14*	04/16/09	7.07J/13.1J	**0.0460/**0.0214	0.00798/0.00246	0.0954J/0.0317	0.458/0.554	3.23J/3.73J
Post-Westlake/Mercer Cleanup Project								
MWR-5@10'	10	11/03/10	**255**	**0.134**	3.860	**7.670**	**31.600**	21.4
SVER-2@2.5'	2.5	10/29/10	<6.7	<0.0034	<0.0034	<0.0034	<0.0103	**410**
B-213-10'	10.0	10/01/14	**130**	<0.0547	<0.0547	<0.0547	<0.164	35.9
B-215-10'	10.0	10/01/14	<9.3	**0.274**	<0.963	<0.963	<0.289	6.9
B-218-10'	10.0	10/03/14	**635**	<0.0578	<0.0578	<0.0578	<0.173	11.2
B-218-15'	15.0	10/03/14	**55.5**	0.0092	0.009	<0.0048	<0.0145	54.2
B-218-20'	20.0	10/03/14	**272**	0.0129	0.0418	<0.0064	0.973	74

Notes:

1. Total Petroleum Hydrocarbons as gasoline range hydrocarbons (TPH-G) by NWTPH-Gx/8021.
2. Volatile Organic Compounds (VOCs) by EPA Method 8260, prepared by EPA Method 5035/5030B.
3. Total lead analyzed by EPA Method 6010, prepared by EPA Method 3050.
4. MTCA Method A Cleanup Level for gasoline mixtures without benzene and the total of ethylbenzene, toluene and xylene are less than 1% of the gasoline mixture.
5. MTCA Method A Cleanup Level for all other mixtures of gasoline.

Gasoline-range hydrocarbon and total lead results reported in milligrams per kilogram (mg/kg). VOCs reported in micrograms per kilogram (µg/kg).

< = less than stated laboratory method reporting limit.

184 / 148 = Primary / Duplicate sample.

NA = Not Analyzed.

J = Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

14* = Sample depth shown is elevation in feet above City of Seattle datum.

Bold values indicate the reported concentration exceeds the corresponding MTCA Method A Cleanup Level.