PHASE II - LIMITED SUBSURFACE SAMPLING AND TESTING

Commercial Property
29805 Pacific Highway South
Federal Way, Washington

MR. CURTIS NELSON

ENVIRONMENTAL
ASSOCIATES, INC.

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August 31, 2018 JN-27194-2

Mr. Curtis Nelson
c/o Mr. Sam Morse
Cantu Commercial Properties LLC
1410 North Mullan Road, Suite 110
Spokane Valley, Washington 99206

Subject: **PHASE II - LIMITED SUBSURFACE SAMPLING AND TESTING**
Commercial Property
29805 Pacific Highway South
Federal Way, Washington

Dear Mr. Nelson:

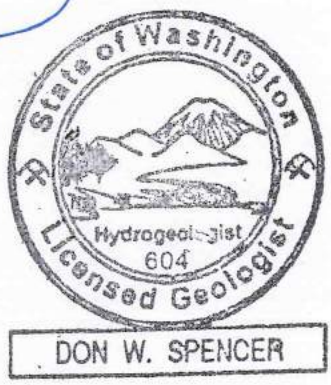
Environmental Associates, Inc. (EAI) has performed sampling and testing of subsurface soils and soil-vapor at selected localities on the subject property. The purpose of the current work was to make a preliminary assessment of current soil conditions in areas underneath the operating auto repair shop, adjacent to sumps, and near exterior material storage areas/surficially stained areas as well as evaluate soil-vapor conditions at the margins of the property. This report, prepared in accordance with the terms of our proposal dated July 11, 2018, summarizes our approach to the project along with results and conclusions.

The contents of this report are confidential and are intended solely for your use and the use of your representatives. No other distribution or discussion of this report will take place without your prior approval in writing.

We appreciate the opportunity to be of service on this assignment. If you have any questions or if we may be of additional service, please do not hesitate to contact us.

Respectfully submitted,
ENVIRONMENTAL ASSOCIATES, INC.

Don W. Spencer, M.Sc., P.G., R.E.A.
Principal



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Commercial Property
29805 Pacific Highway South
Federal Way, Washington

Prepared for:

Mr. Curtis Nelson
c/o Cantu Commercial Properties LLC
1410 North Mullan Road, Suite 110
Spokane Valley, Washington 99206

Questions regarding this investigation, the conclusions reached and the recommendations given should be addressed to one of the following undersigned.

Eric Zuern
Environmental Geologist / Project Manager

Don W. Spencer, M.Sc., R.G., R.E.A.
Principal

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Reference Job Number: JN 27194-2 **August 31, 2018**

TABLE OF CONTENTS

INTRODUCTION/SCOPE OF WORK

SITE/PROJECT DESCRIPTION

The subject property consists of two (2) contiguous parcels (tax parcel numbers 042104-9033 & -9157) covering a combined total of approximately 1.72 acres of land. Existing improvements consist principally of a single-story wood frame commercial office/auto shop building (with an office mezzanine level) enclosing approximately 6,350 square feet of space, which was reportedly constructed in 1970. Additional improvements include an asphalt-paved parking lot/storage yard. The approximate location of the site is shown on the Vicinity/Topographic Map, Plate 1, appended herewith.

Background

On June 21, 2007, Environmental Associates, Inc. (EAI), presented its report summarizing the findings of a Phase 1 Environmental Site Assessment to Niklexi, LLC (current property owners) regarding the subject site which was unoccupied at that time. That report documented numerous prior environmental studies for the property pertaining to an on-site history of petroleum storage and sales and automotive service. The results of those studies and subsequent remediation of petroleum contaminated soils resulted in the Washington Department of Ecology (WDOE) granting the subject site a status of "no further action" (NFA) in 2001. Recognized environmental conditions (RECs) identified in EAI's Phase 1 report included:

- Confirmed past release of petroleum products on the property to subsurface soil related to the historic operation of an on-site gasoline service station from approximately 1920 until the late 1960's and risk/material threat of subsurface environmental impacts to the property related to the historic storage and dispensing of diesel fuel stored in a former 500-gallon capacity UST on the southwestern portion of the site and gasoline stored in four (4) additional USTs (1-5,000 gallon capacity, 3-750 gallon capacity) on the northeast/east portion of the site. Following subsurface exploration and subsequent soil remediation activities (including the excavation and lawful off-site disposal of approximately 260 tons of petroleum-impacted soil and diesel/oil "sludge") performed by others in 2000, the WDOE issued a determination of "no further action" (NFA) on May 17, 2001 pertaining to that reported past release of petroleum products to subsurface soil at the property.

  In recognition of the WDOE's authority and regulatory primacy expressed in their May 17, 2001-dated "no further action" letter and further relying upon the information contained in reports prepared by others, EAI had no basis upon which to predicate a recommendation for additional study with respect to the former on-site gasoline service station or the removed 500-gallon capacity diesel UST and the four (4) removed USTs (1-5,000 gallon capacity, 3-750 gallon capacity) at that time.

As an administrative footnote, EAI's 2007 Phase I noted that the subject property remained on the WDOE's listing of "Leaking Underground Storage Tank" (LUST) sites at that time (2007). In the course of interviews with Mr. Joe Hickey of the WDOE, EAI was informed that he would update the status of the property in the LUST database to reflect the "no further action" status and that the subject site would be removed from the WDOE's LUST listing.

- Lingering presence of residual "pockets" of heavy oil-range total petroleum hydrocarbon-impacted subsurface soils (reported concentrations below (i.e. compliant with) the current Model Toxics Control ACT (MTCA) Method A cleanup level of 2,000 parts-per-million for heavy oil; i.e. "Class 2" soil) beneath the northern portion of the property confirmed by others in 2001. Reports reviewed at that time advised that the source(s) of the residual heavy oil-containing soils was not identifiable, though they concluded that "...small pieces of asphalt in the soil samples may have resulted in elevated petroleum hydrocarbon concentrations" (AMEC, 2001). EAI concurred with AMEC's recommendation made in their July 3, 2001-dated report to the extent that if soil excavation activities were conducted at the site, samples of soil planned to be exported from the property should be collected and laboratory tested for lawful off-site disposal/treatment characterization purposes.

- Risk/material threat of subsurface environmental impacts to the property related to the historic use of four (4) sumps within or proximal to the existing 1970-vintage on-site building on the subject office/shop building. Results of previous subsurface soil sampling and testing conducted by others in 2000 proximal to these four (4) sumps and the sump drain discharge point revealed no detectable concentrations of diesel/heavy oil range total petroleum hydrocarbons (ATC, 2001). Relying solely upon the results of that previous work conducted by others (ATC Associates, Inc.), no recommendations for additional study with respect to these four (4) on-site sumps were made by EAI at that time. Depending upon anticipated future uses of the subject property, EAI recommended that these sumps be either properly maintained or decommissioned in an effort to reduce the potential for future environmental impacts related to use of these sumps.

Non-CERCLA conditions of potential environmental significance identified at the subject site by EAI in 2007 consisted of the following:

- Potential PCB-containing fluorescent light ballasts within the subject building.

- Presence of "suspect" asbestos-containing building materials in the form of a "popcorn"-textured ceiling material and the sheetrock wallboard system.

On August 17, 2017, TGE Resources, Inc. (TGE) presented the findings of a "Phase I Environmental Site Assessment" of the subject site to PhiloWilke Partnership. That report summarized the large extent of previous environmental studies (including UST removals and contaminated soil excavation) which resulted in the 2001-NFA status. TGE advised that the site had been re-established as an automotive service shop at the time of their study. TGE identified the following REC's associated with the site:

- Historic site use, absence of details specific to final removal of likely sub-slab waste holding units (tanks, sumps, separators, septic systems, etc.); the unknown presence of fuel storage tanks, tank piping systems, and other operational equipment as well as the presence of non-characterized fill across the site.

- Current site use (at that time) as an auto repair/service/vehicle holding operation.

- The presence of an off-site gas station to the north (listed by TGE as "adjoining" but actually approximately 120 feet north of the site across South Dash Point Road), and a historic dry cleaner approximately 350 feet to the northwest (both off-site operations located in inferred/presumed cross/down-gradient hydrologic positions relative to the subject site according to TGE).

- Historic use of the land approximately 50 feet west of the site as a municipal landfill.

TGE recommended that a complete site inspection, including areas not previously made accessible to their staff, be performed to complete the "All Appropriate Inquiries/AAI" investigative process. TGE notes that such an inspection would precede performance of soil/soil-vapor, and/or groundwater sampling and testing to characterize the site for hazardous substances and/or petroleum.

On September 12, 2017, TGE presented a report titled "Limited Phase II Environmental Site Assessment" to Philo Wilke Partnership and MultiCare Health System regarding the subject site. That study included the installation of five (5) temporary soil borings to depths of 12 to 20 feet below grade at localities corresponding to former UST installations, along the exterior of the service shop, and at an inferred down-gradient portion of the site. Two (2) additional localities were drilled to a depth of 8 feet below grade and utilized for soil-vapor monitoring points. Soils from the five (5) temporary borings were analyzed for petroleum products (gasoline/diesel/oil range total petroleum hydrocarbons/TPH), pesticides/herbicides, volatile organic compounds (VOCs), and/or RCRA-8 metals including arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver. Soil-vapor samples appear to have been tested for VOCs. Groundwater does not appear to have been encountered during this phase of study. TGE advised that gasoline, diesel/residual petroleum products, pesticides/herbicides, VOCs, and RCRA-8 metals were reported by the analytical laboratory as "not in excess of laboratory detection limits and/or respective Ecology screening limits as set forth within the MTCA regulation/statute". Specifically, reported concentrations of various VOC analytes were noted to be below (i.e. compliant with) MTCA guideline limits. The results of soil-vapor analysis revealed that select VOCs including 1,3-butadiene, benzene, and chloroform were detected at concentrations above the MTCA Method-B screening limits. Relying on these findings, TGE calculated potential indoor air concentrations of these VOCs based on their soil-vapor concentrations. TGE concluded "Elevated concentrations of VOCs (specifically 1,3-butadiene, chloroform, and benzene) were detected within Site soil vapor, as established through the installation and sampling of temporary soil vapor monitor points." TGE recommended the design, installation, and performance test of a vapor mitigation system in response to Site-specific findings. TGE also recommended that prior to commencement of planned demolition and earthwork activities, all regulated materials utilized by the on-site business be profiled and submitted for recycling, reuse, and/or disposal.

On November 8, 2017, TGE presented a report titled "Supplemental Phase II Environmental Site Assessment" to Philo Wilke Partnership and MultiCare Health System regarding the subject site. An additional seven (7) temporary soil borings were installed to depths of 10 feet below grade while an eighth boring was installed to a depth of 110 feet below grade in an effort to facilitate examination/sampling of groundwater underlying the property. No groundwater was reportedly encountered. The borings were installed on the central portion of the site in the anticipated footprint of a proposed medical structure. Select soil samples were analyzed for petroleum products (gasoline/diesel/oil range total petroleum hydrocarbons/TPH), volatile organic compounds (VOCs), and/or RCRA-8 metals including arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver. TGE advised that gasoline, diesel, and oil range petroleum hydrocarbons as well as RCRA-8 metals "were reported by the analytical laboratory at concentrations not in excess of laboratory detection limits and/or responsive Ecology screening limits". Various VOCs were detected in soils below their applicable MTCA limits. TGE noted the presence of fill materials on-site and that geotechnical studies performed by others advised that the fill soils were unsuitable for foundation support, further stating that the fill may be recycled and/or shipped to a regulated facility in compliance with applicable federal statute. TGE also restated the recommendation from their earlier work advising that installation and performance testing of a vapor mitigation system as well as regulated materials removal prior to planned demolition and earthwork activities.

Also on November 8, 2017, TGE provided an additional document titled Update of Environmental Conditions, Project Status & Conceptual Remediation Cost Estimates for the subject property to Philo Wilke Partnership. That document presents a scope of work for moving forward with environmental mitigation of soil-vapors as encountered in TGE's prior studies. TGE states:

- "Soil vapor testing has established that soil vapor analytical data collected within the proposed building location exceeds the MTCA regulation(s)/statute(s); specifically, analytes in excess were 1,3-butadiene, benzene, and chloroform. This vapor data requires reporting to Ecology as per WAC 173-340. Like impacted soil, soil vapor above regulatory thresholds will require notice (VCP entry) and corrective action under agency purview. Typically, soil vapor risk conditions can be mitigated coincident with Property redevelopment (building construction)."

- "Laboratory analysis of soil samples collected at the Site during the Limited Phase II ESA did not evidence impact by volatile organic compounds and/or petroleum hydrocarbons above Ecology screening limits (as set forth within the Washington MTCA regulation/statute)...However, until Site demolition occurs, the potential presence of in-ground, hydraulic vehicle lifts or other buried, historically significant equipment/facilities remains unknown (yet is suspect)."

- "Although groundwater assessment was performed, dry conditions (even beyond a vertical investigation depth of 100 feet) precluded collection of sample for characterization...At this time, it is not believed likely that the agency (once notice is made of soil and vapor condition) will require further attempts at groundwater characterization.

The reader is referred to the above reports in all cases where expanded details and documentation are desired.

Current Study

Your expressed interests to conduct evaluation of subsurface conditions to assess current conditions under the currently operating auto service facility as well as analyze soil-vapor from various points across the subject property as memorialized in EAI's proposal dated July 30, 2018, formed the basis for the following scope of work:

- Drill and sample soils from ten (10) borings within and adjacent to the on-site automotive service shop as well as well as collect soil-vapor samples from four (4) localities across the property. Soil samples were obtained from the ten borings at the shop location and a log of subsurface conditions encountered was prepared for those borings by the EAI project geologist.

- Laboratory analysis of selected soil samples for gasoline, diesel, and oil-range petroleum hydrocarbons, volatile organic compounds (VOCs), and RCRA-8 metals including arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver.

- Preparation of this summary report documenting the methodology and results of the investigation.

FINDINGS

SUBSURFACE INVESTIGATION

Soil Boring Sampling

Referring to the attached Site Plan, Plate 2, thirteen (13) borings were made on August 14th and 15th, 2018 at the approximate locations noted as B-1, B-2, B-3, B-4, B-5, B-6, B-7, B-8, B-9, B-10, B-11, B-12, and B-13. Borings B-1 through B-10 were installed in and around the automotive service shop area including within auto bays, adjacent to interior sumps, adjacent to waste material storage containers, and at notable exterior surficial stained areas which were not accessible to TGE during their 2017-subsurface investigations. Additionally, three (3) locations along the west (B-11), north (B-12), and east (B-13) margins of the site were drilled specifically to evaluate soil-vapor at those areas of the property. Borings B-1 through B-10 were extended to depths between six (6) to twenty (20) feet below ground surface (bgs) before subsurface resistance/soil density prevented further penetration by the hydraulic push-probe drill rig utilized for this work. Borings utilized solely for collection of soil-vapor (B-11, B-12, and B-13) were extended to a depth of five (5) feet bgs. Groundwater was not observed within the borings.

Soil Sampling Procedure

Under the observation of the EAI field geologist, a push probe drill rig was brought into position over the borings locations. Following set-up preparations, the push-probe sampling technique consisted of advancing a plastic lined sampler into the ground. The sampler was then withdrawn and the liner was removed and cut open for examination and transfer of the soil sample to laboratory prepared glassware by EPA Method 5035.

Soil samples were transferred directly to sterilized laboratory prepared glassware which were then stored in an iced chest maintained at approximately 4 degrees centigrade at the site and taken to the laboratory in this condition in an effort to preserve sample integrity.

Each sample container was clearly labeled as to boring and sample number/depth, date, time, project, etc. EPA-recommended sample-management protocol was observed at each stage of the project. During drilling, a field log was made by EAI for each boring. Information recorded versus corresponding depth included soil classification (Unified Soil Classification System), color, texture, relative moisture, odors (if present), etc.

Soil-Vapor Sampling Procedure

Upon reaching the allowable depths of approximately 5 feet bgs at localities B-10, B-11, B-12, and B-13, soil- vapor samples were collected through a temporary screen and steel casing rod inserted into the ground by the drill rig. Hydrated bentonite clay was used to seal the annulus of the bore hole around the upper casing rod to inhibit dilution from of atmospheric air in the soil-vapor sample. A "fit-test" to verify the tightness of the seal was performed at each location prior to sample collection. A laboratory-prepared "summa canister" (vacuum cylinder) was then utilized to collect a sample of the subsurface soil-vapor at the specified locations. Utilizing flow controllers and gauge-vacuum, soil-vapor was collected over a span of approximately 5 minutes at each location.

Each sample container was clearly labeled as to sample number/location, date, time, project, etc. EPA-recommended sample-management protocol was observed at each stage of the project.

Subsurface Conditions

Soils encountered within the interior borings generally consisted of various combinations of silt, sand, and/or coarse gravels (till) with matrix density increasing with depth, causing the termination of borings at the depths indicated on the attached well logs. Groundwater was not encountered within the depths explored. Previous explorations by others did not encounter recoverable groundwater within 110 feet below the ground surface.

LABORATORY ANALYSIS

Laboratory analysis of soil and soil-vapor samples was conducted by ESN Northwest of Olympia, Washington and by Friedman & Bruya, Inc., of Seattle, Washington, both being WDOE-accredited analytical laboratory. Select soil samples were submitted for analysis of total petroleum hydrocarbons (TPH) in the boiling range gasoline, diesel, and oil as well as volatile organic compounds (VOCs) and RCRA-8 metals including arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver. Soils from the upper most recoverable portion of the boring were selected for analysis. Soil-vapor samples were submitted for analysis of VOCs.

As summarized in Table 1 attached to this report, no detections of gasoline, diesel, or heavy oil TPH were detected in the soil samples analyzed. Additional no benzene, toluene, ethylbenzene, or xylenes (BTEX) were detected in the soil samples tested.

As depicted in Table 2 and in appended laboratory data (Appendix A) attached to this report, no VOCs were detected in the soil samples analyzed.

As documented in Table 3 of this report, various concentrations of arsenic, barium, and lead were detected in the samples analyzed at concentrations below (i.e. compliant with) their respective cleanup values. Chromium was detected in all soil samples anlayzed between 14 to 57 parts per million (ppm). Those chromium detections may (or may not) be above regulatory levels depending upon what species of chromium is actually present. If the species present were found to be hexavalent chromium, a MTCA cleanup level of 19 ppm would apply. Otherwise, the cleanup level is 2,000 ppm.

Studies conducted by the Washington Department of Ecology published in the document titled Natural Background Soil Metal Concentrations in Washington State (WDOE, October 1994) report an average "background" concentration of chromium in soil in the Puget Sound region on the order of 22 ppm. Other studies of residential and suburban areas in King County (1982; U.S. EPA Grant #P-000161-01, Metro Toxicant Program - Report #2 (Toxicants in Urban Runoff), Galvin, D.V., Moore, R.K.) have documented concentrations of chromium in street dust ranging from approximately 20 to 230 ppm.

In summary, taking into account the relative similitude between the chromium concentrations detected in the samples analyzed in our current study along with the published background data relating to this analyte, it may be reasonable to tentatively presume that the detections are indicative of naturally occurring "background" relating to native soil mineralogy. Further laboratory analysis would be required to determine which "species" of chromium is present in the samples analyzed, if desired.

As documented in Table 4 attached to this report, various VOCs were detected in the soil-vapor samples analyzed. Specifically, 1,3-butadiene and benzene were detected in B-10, B-12, and B-13 at concentrations at concentrations exceeding their respective MTCA Method-B screening limits. Those two compounds had previously been detected in soil-vapor samples collected by TGE during prior site investigations. Other compounds including acrolein (at B-10 and B-13), acrylonitrile (at B-10), and trichloroethene/TCE (at B-10, B-11, and B-13) were detected above their applicable screening limits at select sampling locations. The attached laboratory data lists additional VOCs which were not detected in any of the soil-vapor samples.

CONCLUSIONS / RECOMMENDATIONS

Relying upon the results of limited soil and soil-vapor sampling and laboratory testing documented in this preliminary effort, soils at the locations and depths tested by EAI do not appear to have been impacted by on-site automotive repair/service activities. Several volatile organic compounds (VOCs) including 1,3-butadiene, benzene, acrolein, acrylonitrile, and trichloroethene (TCE) were detected in soil-vapor above their applicable MTCA Method-B "screening limits". Loosely translated from WDOE literature (WDOE's Guidance For Evaluating Soil Vapor Intrusion, April 2015), the "screening limits" or screening level set by WDOE indicate a soil gas/vapor concentration in the soil-vapor just beneath a building expected to not result in exceedance of the air cleanup level in the overlying structure.

Acknowledging the historic use of the property as a gas station as well as the current auto service usage, the detection of benzene is not surprising. While no detections of benzene were found during EAI's current study, prior explorations by TGE encountered compliant detections of benzene in soils at several areas of the site. In an effort to illustrate the relation between soil vapor concentrations related to concentrations in sorbed soils in regard to benzene, the highest soil-vapor concentration in the samples collected was 340 ug/m^3 collected at a depth of 5 feet at B-13. Utilizing a "three-phase partitioning model" (Table 5 attached to this report), such a soil-vapor concentration of benzene could result from concentrations of benzene sorbed to soil at levels below (i.e. compliant with) the WDOE standard Method-A target compliance levels for that media. Therefore, the above benzene soil-vapor data does not necessarily contradict the reported soil laboratory results (i.e a sorbed soil concentration of approximately 0.27 parts per billion (ppb) would be below the laboratory's soil reporting limit of 30 ppb/.03 ppm).

Similar to the discussion above, 1,3-butadiene, acrolein, acrylonitrile, and trichloroethene (TCE) were also detected in soil-vapor samples at concentrations above the WDOE's vapor intrusion risk screening levels. The source of these other VOCs is presently unknown. Detections of 1,3-butadiene are generally related to wood or diesel fuel combustion. That analyte is monitored by the Puget Sound Clean Air Agency as a background low-level contaminant in the Puget Sound region. Detections of 1,3-butadiene found in on-site soil-vapor were present at concentrations generally higher than listed background levels. Similarly, acrolein is a common component of diesel combustion. Trichloroethene (TCE) is a common de-greasing solvent utilized in auto service shops. None of the on-site testing conducted by EAI or TGE discovered concentrations of TCE above its

MTCA Method-A compliance limit or above minimum laboratory reporting limits. In addition, acrylonitrile had not been encountered in soils during prior assessments by TGE at areas proximal to EAI's soil-vapor sampling localities. The exact source of the VOC soil-vapor detections remains unknown at this time.

Acknowledging the collective scope and results of prior soil evaluations as well as the findings of this current sampling and testing event, it does not appear that additional soil sampling and testing would be warranted at this time. Additionally, further evaluation of indoor air quality within the current on-site structure at this time would likely not provide useful data regarding potential soil-vapor migration through the floor slab as the building currently stores many petroleum based chemicals and VOCs which would likely be detectable through indoor air sampling. In an effort to mitigate potential risk of soil-vapor intrusion into any future construction, EAI recommends that a vapor barrier of appropriate composition and material compatibility suitable for use with the contaminants detected be incorporated into the design and construction of the proposed medical office planned for the site. The inclusion of an appropriately designed and constructed vapor barrier in the building design would reduce the potential for encroachment of subsurface VOC vapors into the indoor air within the finished structure.

As a technical footnote, if contaminated soils in areas not previously explored by EAI or others is encountered during construction activities for the planned medical office, EAI would then recommend that such materials be sampled, tested, and properly disposed of by appropriate personnel.

LIMITATIONS

This report has been prepared for the exclusive use of Mr. Curtis Nelson along with Cantu Commercial Properties LLC and their several representatives for specific application to this site. Our work for this project was conducted in a manner consistent with that level of care and skill normally exercised by members of the environmental science profession currently practicing under similar conditions in the area, and in accordance with the terms and conditions set forth in our proposal dated July 11, 2018. The findings and conclusions of this study are based upon the results of laboratory testing of selected samples obtained from separated boring localities and conditions may vary between those locations or at other locations, media, depths, or date. No warranty with respect to results, scope, or opinions made by previous investigators is made here. No other warranty, expressed or implied, is made. If new information is developed in future site work which may include excavations, borings, studies, etc., Environmental Associates, Inc., must be retained to reevaluate the conclusions of this report and to provide amendments as required.

REFERENCES

AMEC Earth & Environmental, Inc. (AMEC), July 3, 2001, Limited Phase II Environmental Site Assessment, Savon Drugs #90TL, 29805 Pacific Highway South, Federal Way, Washington. Prepared for Nicholson Development Properties, LLC. Missing all appendices.

ATC Associates, Inc. (ATC), February 2, 2001, Report of Subsurface Investigation at 29805 Pacific Highway South, Federal Way, Washington. ATC project # 17.17883.0901. Prepared for Union Bank of California. Missing Figure 1, Figure 2, and all appendices.

ATC Associates, Inc. (ATC), February 16, 2001, Underground Storage Tank Site Assessment at the Ruth Evans Trust Site, 29805 Pacific Highway South, Federal Way, Washington 98003. ATC Project # 76.17883.0902. Prepared for Missing Figure 1, Figure 2, and all appendices.

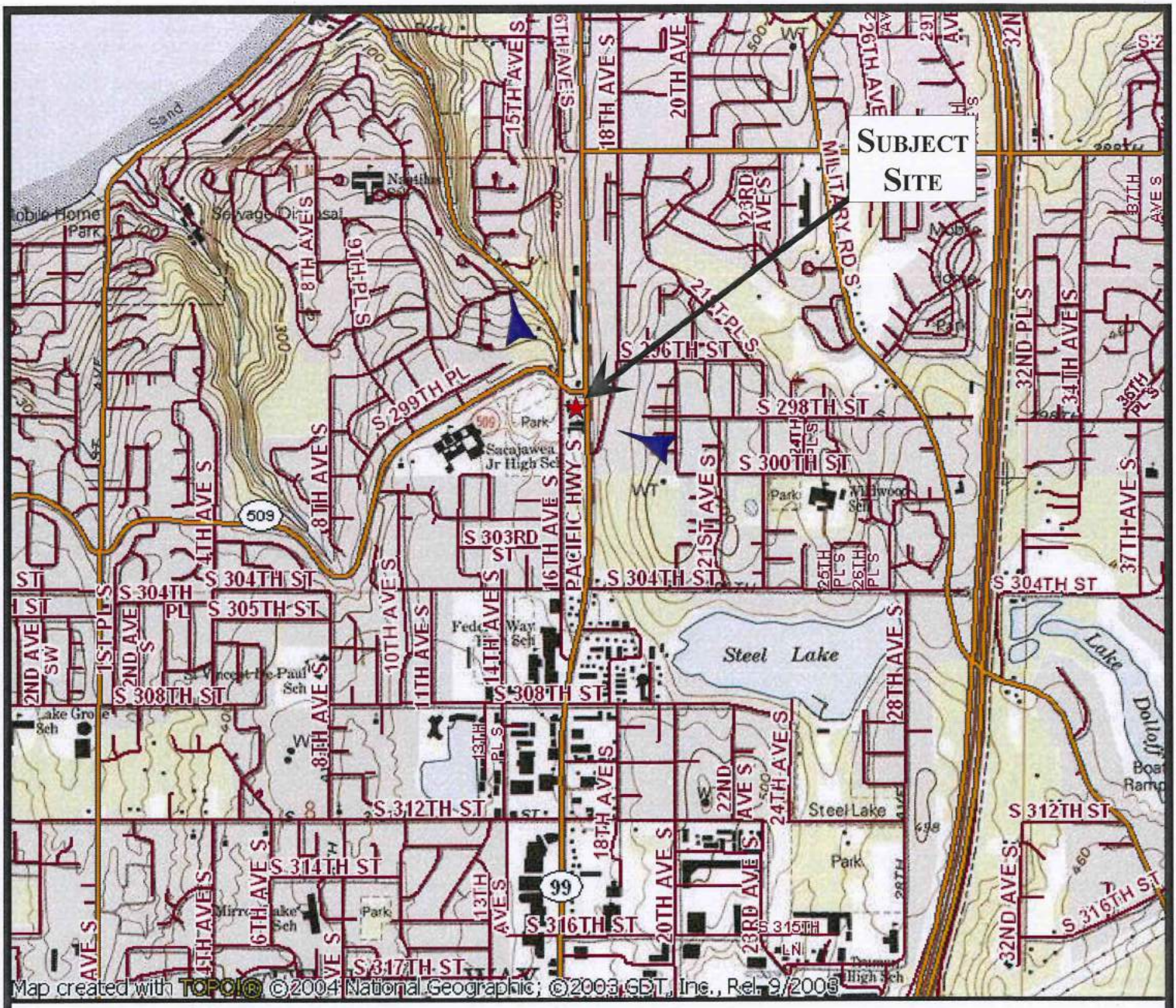
Environmental Associates, Inc. (EAI), June 21, 2007, Phase 1 Environmental Site Assessment, Commercial Property, 29805 Pacific Highway South, Federal Way, Washington.

TGE Resources, Inc. (TGE), August 17, 2017, Phase I Environmental Site Assessment, Payless Auto Sales, Repossession, and Auto Repair, 29805 Pacific Highway South, Federal Way, Washington.

TGE Resources, Inc. (TGE), September 12, 2017, Limited Phase II Environmental Site Assessment, Proposed Star Lake Hospital, 29805 Pacific Highway South, Federal Way, Washington.

TGE Resources, Inc. (TGE), November 8, 2017, Supplemental Phase II Environmental Site Assessment, Proposed Star Lake Hospital, 29805 Pacific Highway South, Federal Way, Washington.

TGE Resources, Inc. (TGE), November 8, 2017, Update of Environmental Conditions, Project Status & Conceptual Remediation Cost Estimates, Future Star Lake Hospital, 29805 Pacific Highway South, Federal Way, Washington.



LEGEND:

Approximate Site Location

Inferred Directions Of Local Shallow-Seated Groundwater Flow

N

Scale

0 — 1/2 — 1 mile

Contour Interval 20 Feet

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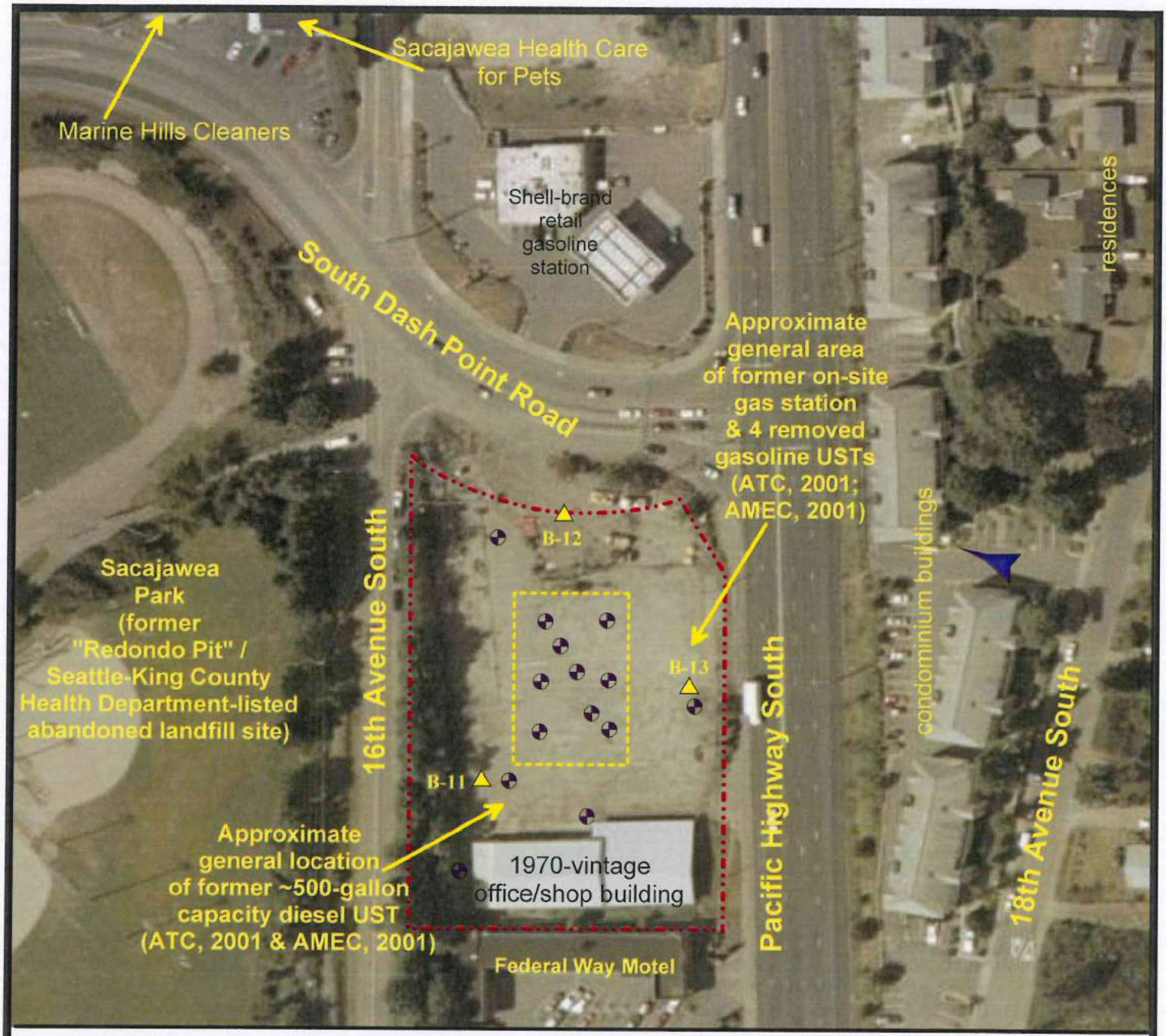
VICINITY/TOPOGRAPHIC MAP

Commercial Property
29805 Pacific Highway South
Federal Way, Washington 98003

Job Number:	*Date:*		*Plate:*
JN 27194-2	August 2018		1



LEGEND:

- Approximate exterior soil-vapor sampling locations explored by EAI 2018
- Approximate locations explored by TGE Resources
- Probable local direction of shallow-seated groundwater flow.
- Approximate limits of subject property.

2002-Dated Image
(Source: U.S. Geological Survey)

N

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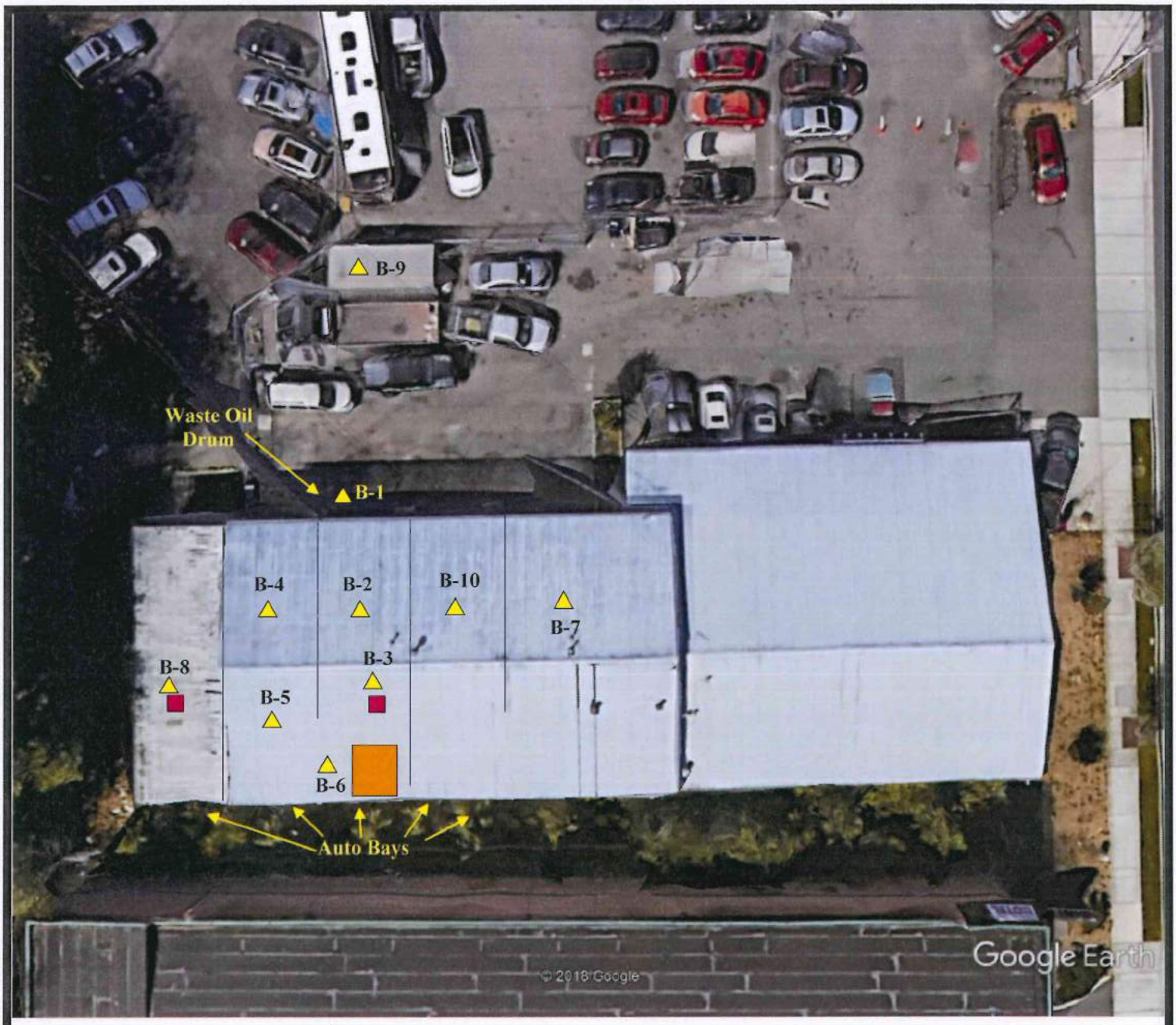
SITE PLAN

Commercial Property
29805 Pacific Highway South
Federal Way, Washington 98003

Job Number:	*Date:*		*Plate:*
JN 27194-2	August 2018		2



△ Approximate Location of Borings/Sample Locations

■ Approximate Location of Interior Sumps

■ Approximate Waste Oil/Parts Washer Storage Area

N

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Bellevue, Washington 98004

SAMPLING PLAN

Commercial Property
29805 Pacific Highway South
Federal Way, Washington 98003

Job Number:	Date:		Plate:
JN 27194-2	August 2018		3

BORING B1

Depth/ Sample	Well Design	Moisture/ Water Table	Blows / Foot	USCS	DESCRIPTION
0					No Recovery
5		Dry		GM	Brown silt and gravels, dry, no odors or discolorations, PID=0 ppm
		Dry		GM	Brown silt and gravels, dry, no odors or discolorations PID=0 ppm
10					Boring refusal at 9 feet below grade on August 14, 2018.
15					
20					
25					
30					
35					
40					

ENVIRONMENTAL ASSOCIATES, INC.

1380 - 112th Avenue N.E., Ste. 300
Bellevue, Washington 98004

Boring: B1

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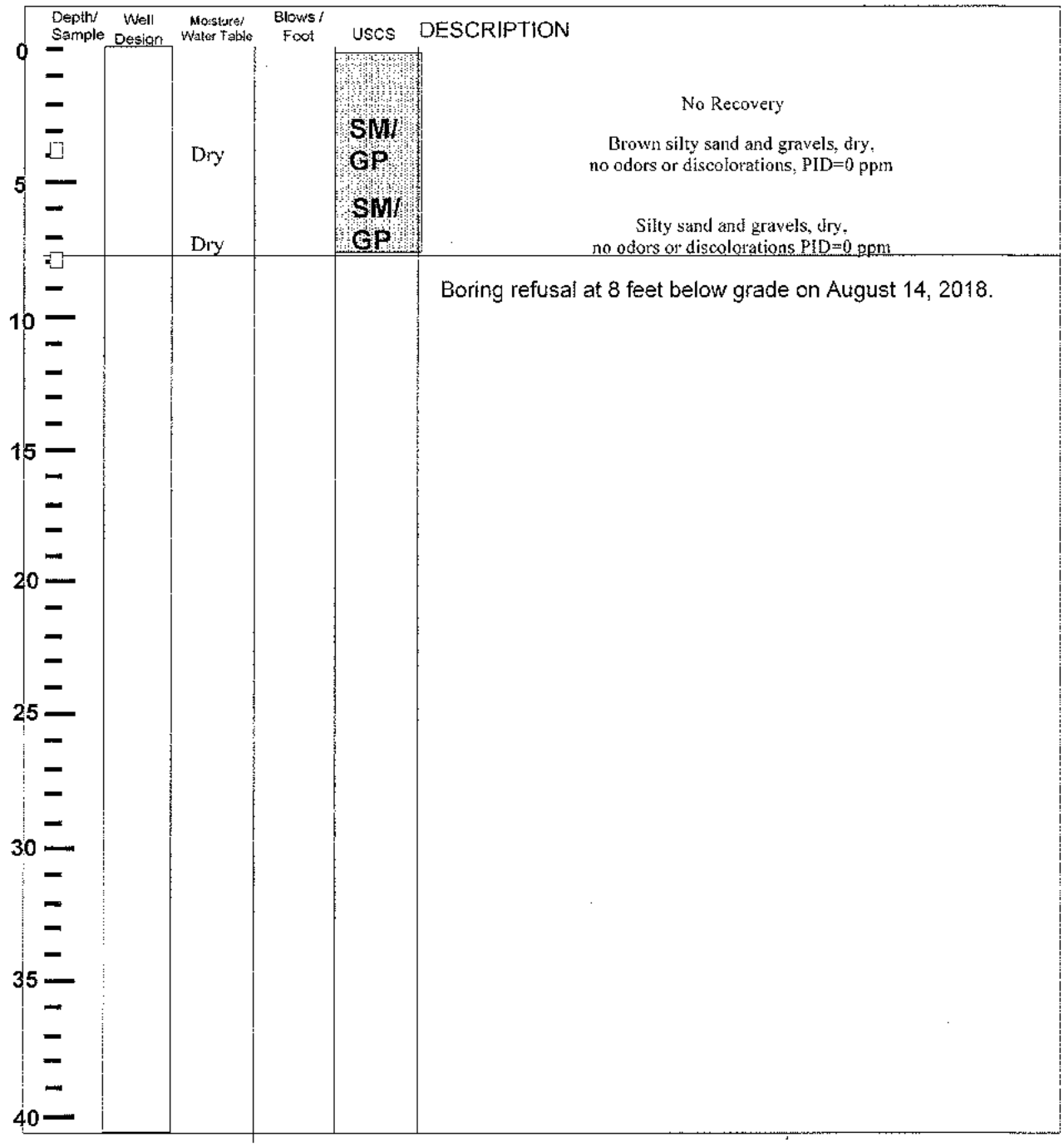
JN 27194-2	August 2018	EAZ	4

BORING B2



ENVIRONMENTAL ASSOCIATES, INC.

1380 - 112th Avenue N.E., Ste. 300
Bellevue, Washington 98004

Boring: B2

Commercial Property
29805 Pacific Highway South
Federal Way, Washington 98003

Job Number:	Date:	Logged by:	Plate:
JN 27194-2	August 2018	EAZ	5

BORING B3

Depth/ Sample	Well Design	Moisture/ Water Table	Blows / Foot	USCS	DESCRIPTION
0					No Recovery
5		Moist		SM/ GP	Brown silty sand and gravels, moist, no odors or discolorations, PID=0 ppm
10		Dry		SM/ GP	Brown silty sand and gravels, dry, no odors or discolorations PID=0 ppm
					Boring refusal at 10 feet below grade on August 14, 2018.
15					
20					
25					
30					
35					
40					

ENVIRONMENTAL ASSOCIATES, INC.

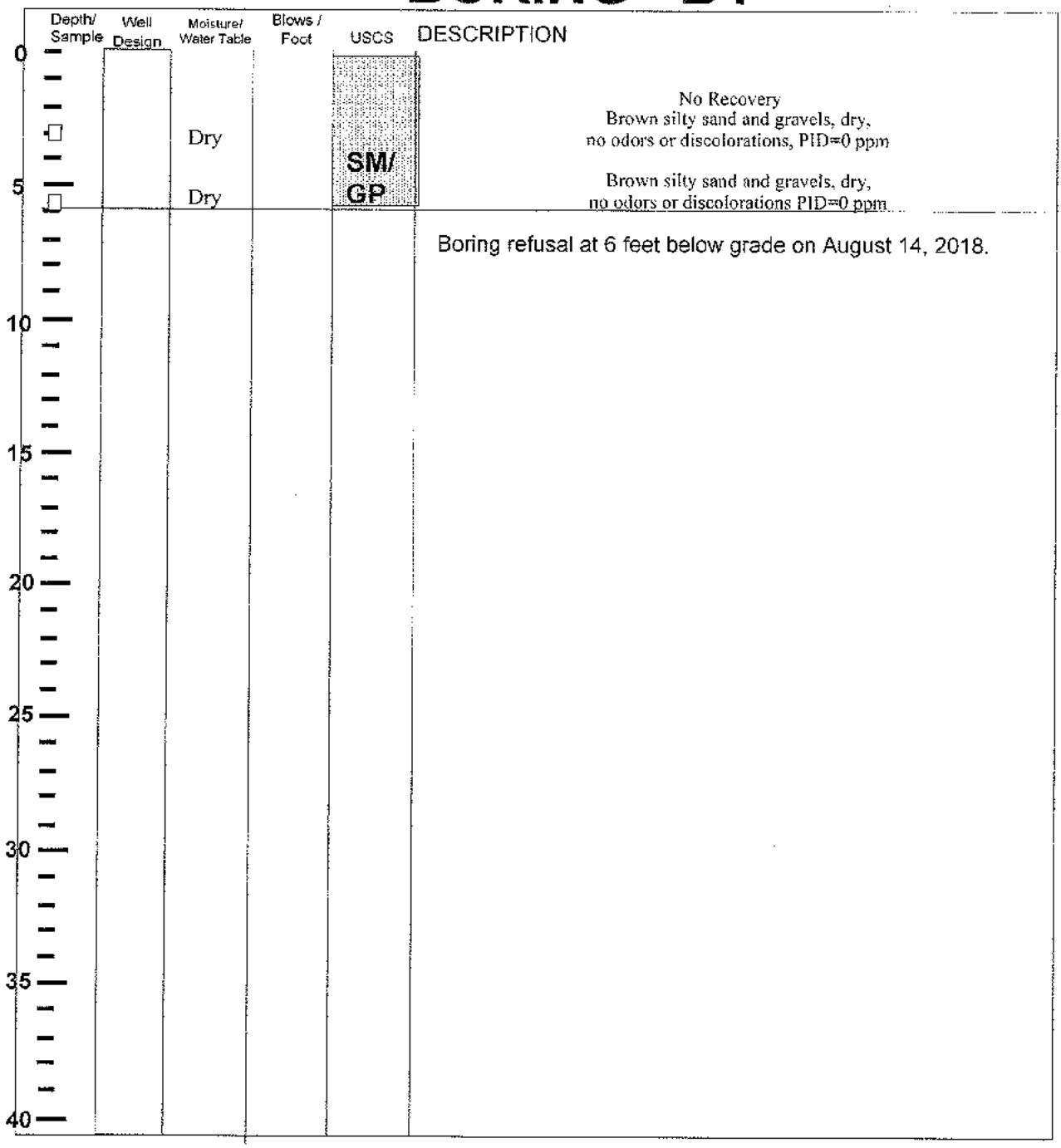
1380 - 112th Avenue N.E., Ste. 300
Bellevue, Washington 98004

Boring: B3

Commercial Property
29805 Pacific Highway South
Federal Way, Washington 98003

Job Number:	Date:	Logged by:	Plate:
JN 27194-2	August 2018	EAZ	6

BORING B4



ENVIRONMENTAL ASSOCIATES, INC.

1380 - 112th Avenue N.E., Ste. 300
Bellevue, Washington 98004

Boring: B4

Commercial Property
29805 Pacific Highway South
Federal Way, Washington 98003

Job Number:	Date:	Logged by:	Plate:
JN 27194-2	August 2018	EAZ	7

BORING B5

Depth/ Sample	Well Design	Moisture/ Water Table	Blows / Foot	USCS	DESCRIPTION
0					No Recovery
		Dry		SM/ GP	Brown silty sand and gravels, dry, no odors or discolorations, PID=0 ppm
5					
		Dry		SM/ GP	Brown sand and gravels, little silt, dry, no odors or discolorations PID=0 ppm
10					Boring refusal at 9 feet below grade on August 14, 2018.
15					
20					
25					
30					
35					
40					

ENVIRONMENTAL ASSOCIATES, INC.

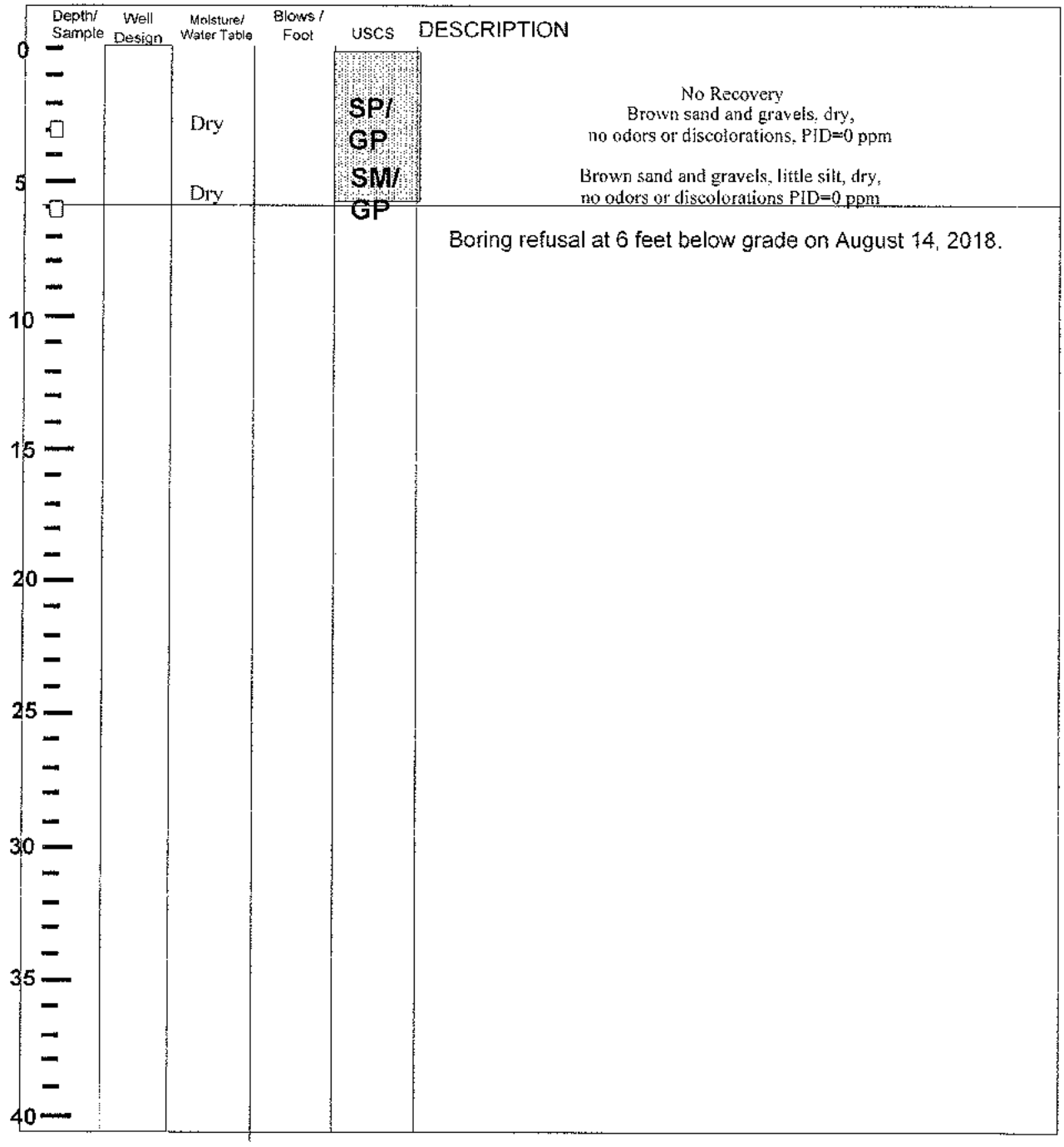
1380 - 112th Avenue N.E., Ste. 300
Bellevue, Washington 98004

Boring: B5

Commercial Property
29805 Pacific Highway South
Federal Way, Washington 98003

Job Number:	Date:	Logged by:	Plate:
JN 27194-2	August 2018	EAZ	8

BORING B6



ENVIRONMENTAL ASSOCIATES, INC.

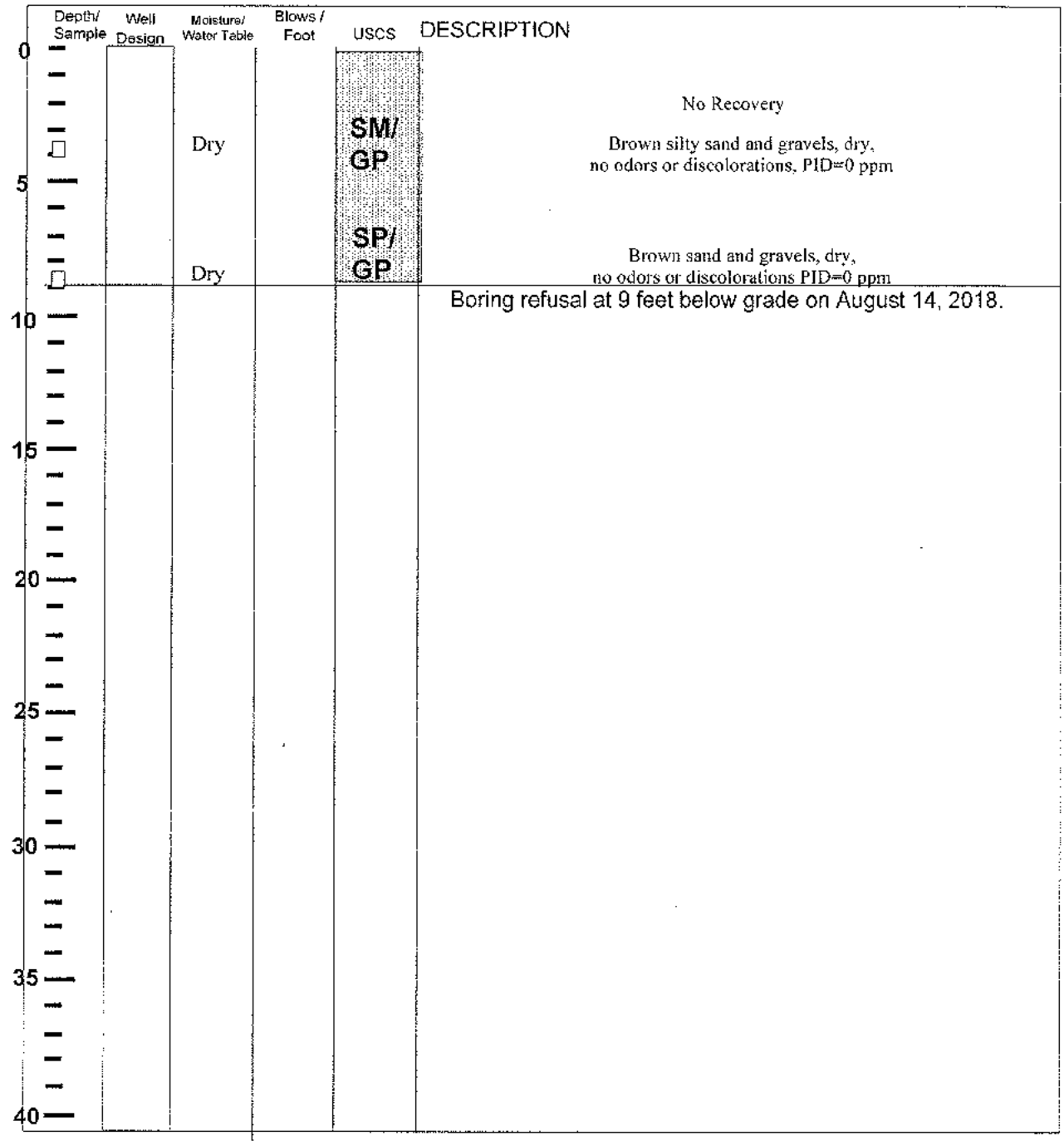
1380 - 112th Avenue N.E., Ste. 300
Bellevue, Washington 98004

Boring: B6

Commercial Property
29805 Pacific Highway South
Federal Way, Washington 98003

Job Number:	Date:	Logged by:	Plate:
JN 27194-2	August 2018	EAZ	9

BORING B7



ENVIRONMENTAL ASSOCIATES, INC.

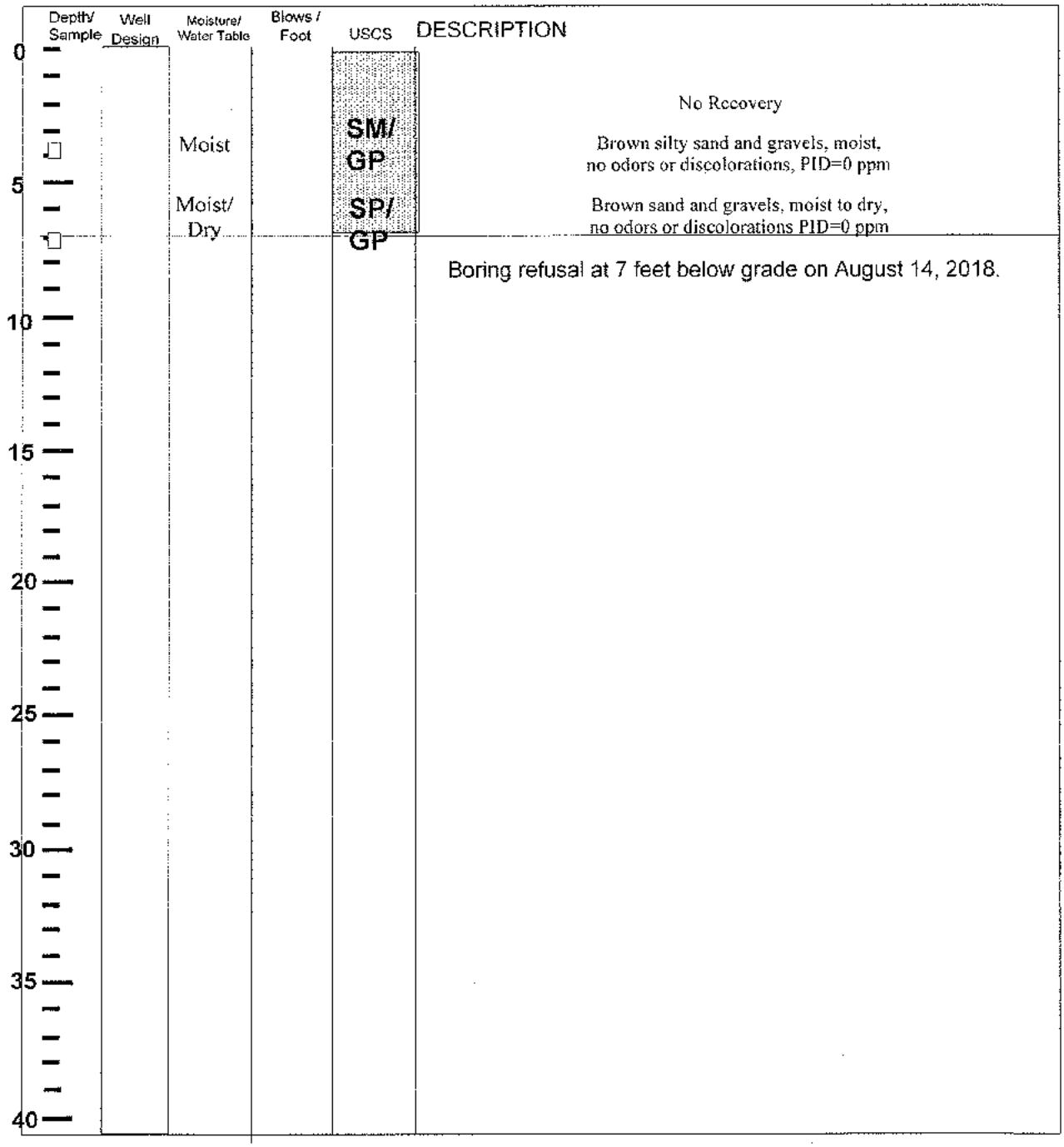
1380 - 112th Avenue N.E., Ste. 300
Bellevue, Washington 98004

Boring: B7

Commercial Property
29805 Pacific Highway South
Federal Way, Washington 98003

Job Number:	Date:	Logged by:	Plate:
JN 27194-2	August 2018	EAZ	10

BORING B8



ENVIRONMENTAL ASSOCIATES, INC.

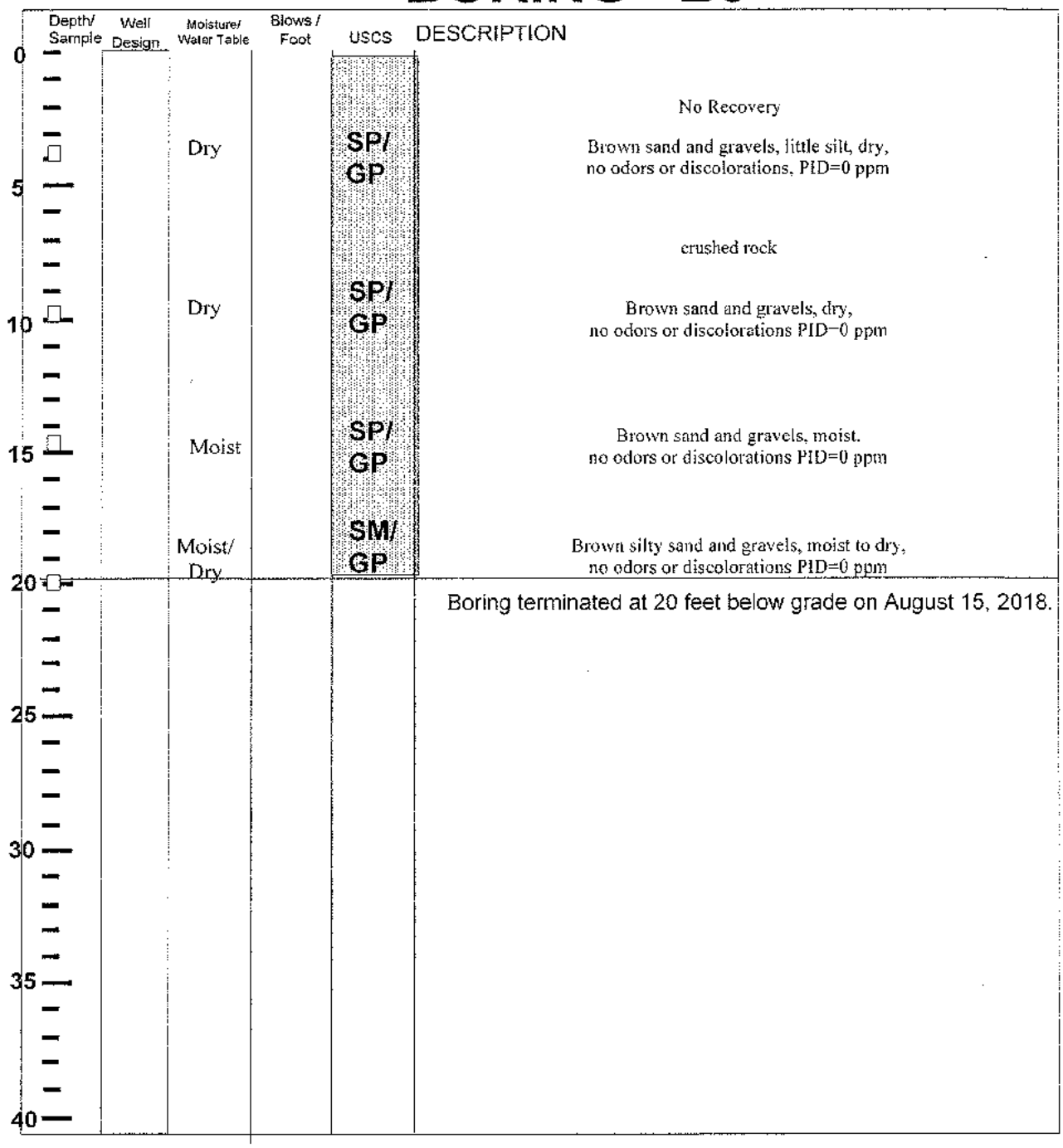
1380 - 112th Avenue N.E., Ste. 300
Bellevue, Washington 98004

Boring: B8

Commercial Property
29805 Pacific Highway South
Federal Way, Washington 98003

Job Number:	Date:	Logged by:	Plate:
JN 27194-2	August 2018	EAZ	11

BORING B9



ENVIRONMENTAL ASSOCIATES, INC.

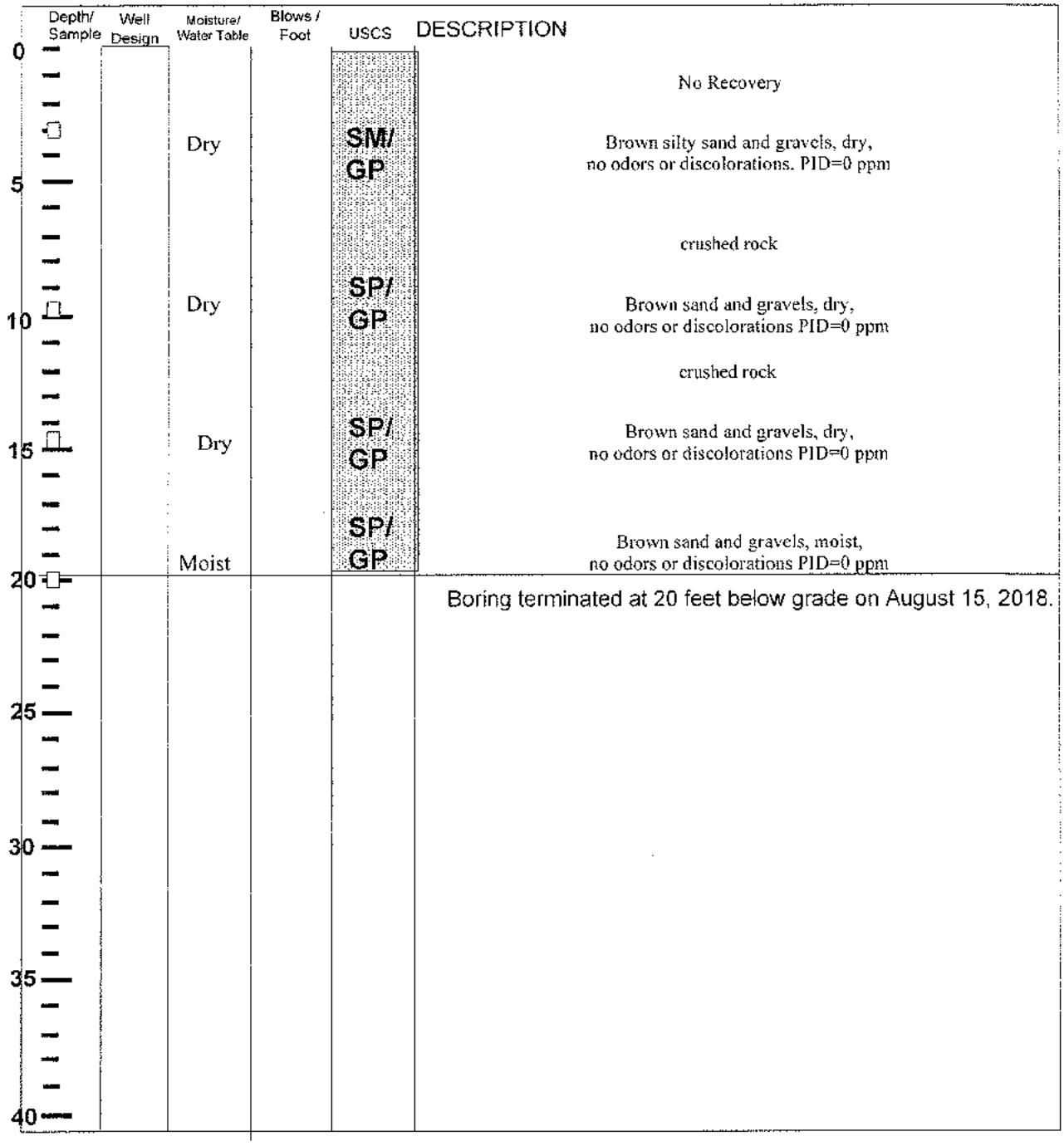
1380 - 112th Avenue N.E., Ste. 300
Bellevue, Washington 98004

Boring: B9

Commercial Property
29805 Pacific Highway South
Federal Way, Washington 98003

Job Number:	Date:	Logged by:	Plate:
JN 27194-2	August 2018	EAZ	12

BORING B10



ENVIRONMENTAL ASSOCIATES, INC.

1380 - 112th Avenue N.E., Ste. 300
Bellevue, Washington 98004

Boring: B10

Commercial Property
29805 Pacific Highway South
Federal Way, Washington 98003

Job Number:	Date:	Logged by:	Plate:
JN 27194-2	August 2018	EAZ	13

TABLE 1 - Petroleum Hydrocarbons and BTEX - Soil Sampling Results
All results and limits in parts per million (ppm)

Sample Name and Depth	Gasoline (TPH)	Diesel	Heavy Oil	Benzene	Toluene	Ethylbenzene	Total Xylenes
B1-4 @ 4'	ND	ND	ND	ND	ND	ND	ND
B1-9 @ 9'	ND	ND	ND	ND	ND	ND	ND
B2-4 @ 4'	ND	ND	ND	ND	ND	ND	ND
B2-8 @ 8'	ND	ND	ND	ND	ND	ND	ND
B3-5 @ 5'	ND	ND	ND	ND	ND	ND	ND
B3-10 @ 10'	ND	ND	ND	ND	ND	ND	ND
B4-3 @ 3'	ND	ND	ND	ND	ND	ND	ND
B4-6 @ 6'	ND	ND	ND	ND	ND	ND	ND
B5-4 @ 4'	ND	ND	ND	ND	ND	ND	ND
B5-9 @ 9'	ND	ND	ND	ND	ND	ND	ND
B6-3 @ 3'	ND	ND	ND	ND	ND	ND	ND
B6-6 @ 6'	ND	ND	ND	ND	ND	ND	ND
B7-4 @ 4'	ND	ND	ND	ND	ND	ND	ND
B7-9 @ 9'	ND	ND	ND	ND	ND	ND	ND
B8-4 @ 4'	ND	ND	ND	ND	ND	ND	ND
B8-7 @ 7'	ND	ND	ND	ND	ND	ND	ND
B9-4 @ 4'	ND	ND	ND	ND	ND	ND	ND
B9-10 @ 10'	ND	ND	ND	ND	ND	ND	ND
B10-3 @ 3'	ND	ND	ND	ND	ND	ND	ND
B10-10 @ 10'	ND	ND	ND	ND	ND	ND	ND
Reporting Limit [3]	10	50	100	0.02	0.05	0.05	0.15
WDOE Target Compliance Level[4]	**30 or 100 [5]**	**2000**	**2000**	**0.03**	**7**	**6**	**9**

Notes:
1 - "ND" denotes analyte not detected at or above listed Reporting Limit.
2- "NA" denotes sample not analyzed for specific analyte.
3- "Reporting Limit" represents the laboratory lower quantitation limit.
4- Soil samples were field screened using a GasTech combustible gas meter to measure the concentration of combustible gas, such as petroleum VOCs. Headspace VOC concentrations were measured after placing the soil sample in a sealed plastic bag and allowing soil and air inside the bag to equilibrate.
5- The MTCA gasoline TPH cleanup level is 30 ppm for soils with benzene or toleune, ethelybenzene, and xylenes = less than 1% if gas detections otherwise it is 100 ppm.

Bold and Italics denotes concentrations above MTCA Method A soil cleanup levels.

BGS - Below ground surface.

TABLE 2- Select VOCs - Soil Sampling Results
All results and limits in parts per million (ppm)

Strataprobe Boring	Tetrachloroethene (PCE)	Trichloroethene (TCE)	(cis) 1,2 Dichloroethene	(trans) 1,2 Dichloroethene	Vinyl Chloride
B1-4 @ 4'	ND	ND	ND	ND	ND
B1-9 @ 9'	ND	ND	ND	ND	ND
B2-4 @ 4'	ND	ND	ND	ND	ND
B2-8 @ 8'	ND	ND	ND	ND	ND
B3-5 @ 5'	ND	ND	ND	ND	ND
B3-10 @ 10'	ND	ND	ND	ND	ND
B4-3 @ 3'	ND	ND	ND	ND	ND
B4-6 @ 6'	ND	ND	ND	ND	ND
B5-4 @ 4'	ND	ND	ND	ND	ND
B5-9 @ 9'	ND	ND	ND	ND	ND
B6-3 @ 3'	ND	ND	ND	ND	ND
B6-6 @ 6'	ND	ND	ND	ND	ND
B7-4 @ 4'	ND	ND	ND	ND	ND
B7-9 @ 9'	ND	ND	ND	ND	ND
B8-4 @ 4'	ND	ND	ND	ND	ND
B8-7 @ 7'	ND	ND	ND	ND	ND
B9-4 @ 4'	ND	ND	ND	ND	ND
B9-10 @ 10'	ND	ND	ND	ND	ND
B10-3 @ 3'	ND	ND	ND	ND	ND
B10-10 @ 10'	ND	ND	ND	ND	ND
Reporting Limit [3]	0.02	0.02	0.05	0.05	0.02
Cleanup Level for Unrestricted Land Use (Method-A)[4]	0.05	0.03	---	---	---
Cleanup Level - (Method-B)[5]	476	12	160	1600.0	0.667

Notes:
1 - "ND" denotes analyte not detected at or above listed Reporting Limit.
2- "NA" denotes sample not analyzed for specific analyte.
3- "Reporting Limit" represents the laboratory lower quantitation limit.
4- Method A soil cleanup levels for unrestricted land use as published in the Model Toxics Control Act (MTCA) 173-340-WAC, Table 740-1.
5- Method-B soil cleanup levels for the "direct contact pathway", as published in Ecology's CLARC May 2014 database.

Bold and Italics denotes concentrations above existing MTCA Method A or B soil cleanup levels.

TABLE 3 - RCRA-8 Metals - Soil Sampling Results
All results and limits in parts per million (ppm)

Sample Name	Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Selenium	Silver
B1-4 @ 4'	ND	51	ND	57	ND	ND	ND	ND
B1-9 @ 9'	ND	50	ND	14	ND	ND	ND	ND
B2-4 @ 4'	ND	55	ND	21	ND	ND	ND	ND
B2-4 @ 4' DUPLICATE	ND	72	ND	26	ND	ND	ND	ND
B2-8 @ 8'	ND	ND	ND	21	ND	ND	ND	ND
B3-5 @ 5'	5.8	50	ND	24	16	ND	ND	ND
B3-10 @ 10'	ND	ND	ND	15	ND	ND	ND	ND
B4-3 @ 3'	ND	ND	ND	19	ND	ND	ND	ND
B4-6 @ 6'	ND	57	ND	34	ND	ND	ND	ND
B5-4 @ 4'	ND	ND	ND	32	ND	ND	ND	ND
B5-9 @ 9'	ND	ND	ND	20	ND	ND	ND	ND
B6-3 @ 3'	ND	ND	ND	20	ND	ND	ND	ND
B6-6 @ 6'	ND	63	ND	36	ND	ND	ND	ND
B7-4 @ 4'	ND	ND	ND	32	ND	ND	ND	ND
B7-9 @ 9'	ND	54	ND	20	ND	ND	ND	ND
B8-4 @ 4'	ND	56	ND	41	72	ND	ND	ND
B8-7 @ 7'	ND	66	ND	16	ND	ND	ND	ND
B8-7 @ 7' DUPLICATE	ND	51	ND	21	ND	ND	ND	ND
B9-4 @ 4'	ND	100	ND	53	ND	ND	ND	ND
B9-4 @ 4' DUPLICATE	ND	87	ND	51	ND	ND	ND	ND
B9-10 @ 10'	ND	66	ND	44	ND	ND	ND	ND
B10-3 @ 3'	ND	94	ND	46	ND	ND	ND	ND
B10-10 @ 10'	ND	59	ND	37	ND	ND	ND	ND
Reporting Limit [3]	5	50	1	5	5	0.5	20	20
Existing Cleanup Level[4]	20 (A)	16,000 (B)	2 (A)	19/2,000 (A)[5]	250 (A)	2 (A)	400 (B)	400 (B)

Notes:
1 - "ND" denotes analyte not detected at or above listed Reporting Limit.
2- "NA" denotes sample not analyzed for specific analyte.
3- "Reporting Limit" represents the laboratory lower quantitation limit.
4- Method A or B cleanup levels as published in the Model Toxics Control Act (MTCA) 173-340-WAC.
5- Hexavalent chromium was not found in the sample analyzed indicating the presence of chromium III.The Method A target compliance level for chromium III is 2,000 ppm

Bold and Italics denotes concentrations above existing MTCA Method A soil cleanup levels.

Table 4 - Select VOCs - Soil-Vapor Sampling Results

Sample Name	B-10	B-11	B-12	B-13	
Location & Depth	Beneath the shop floor at B-10 @ 5 feet below grade	Near the southwestern property line at B-11 @ 5 feet below grade	Near the northern property line at B12 @ 5 feet below grade	Near the eastern property line at B-13 @ 5 feet below grade	WDOE - Soil Gas Screening Levels[3]
Propene	700 ve	<2.3	1800 ve	1800 ve	NA
Dichlorodifluoromethane	2.6	2.9	<1.6	2.4	1520
Chloromethane	3	2.1	6.7	4.6	1,370
Isobutene	360	<3	670 ve	1000 ve	NA
1, 3-Butadiene	***260***	0.72	***210***	***340***	2.78
Ethanol	90	<25	42	26	NA
Acrolein	***18***	<3	<3	***12***	0.35
Acrylonitrile	***42***	<0.72	<0.72	<0.72	1.23
Pentane	480	<9.7	530 ve	250	NA
Acetone	190	100	400 ve	250	NA
Isoprene	36	<0.92	89	130	NA
Iodomethane	2.6	<1.9	<1.9	<1.9	NA
Methacrolein	18	<9.5	17	<9.5	NA
Butanal	20	<9.7	45	38	NA
Methylene Chloride	330	<290	290	880 ve	8330
Carbon Disulfide	28	<21	160	<21	10700
Hexane	340	<12	340	190	10700
Chloroform	0.61	0.52	0.32	0.44	3.62
2-Butanone (MEK)	40	13	110	73	76200
1-Butanol	35	<20	32	<20	NA
Benzene	***150***	3	***180***	***130***	10.7
Cyclohexane	170	<23	140	38	NA
Pentanal	20	<12	33	28	NA
Trichloroethene (TCE)	***13***	***15***	1.7	***18***	12.3
Toluene	360	11	150	130	76200
Hexanal	220	<14	32	27	NA
Tetrachloroethene (PCE)	35	2.7	<2.2	5.7	321
Ethylbenzene	28	2.1	22	25	15200
m,p-Xylene	78	7.4	58	83	1520
o-Xylene	25	2.6	24	24	1520
Styrene	44	<2.8	8.5	9.6	15200
Naphthalene	1.4 fb	1.3 fb	2.4 fb	2.7 fb	2.45
Trichlorofluoromethane	<1.9	1.9	<1.9	4.2	10700
Cyclopentane	<0.95	1.8	39	34	NA
1,3-Dichlorobenzene	<2	2.9	6.6	4	NA
Methyl Vinyl Ketone	<9.5	<9.5	22	<9.5	NA
1,3,5-Trimethylbenzene	<8.1	<8.1	<8.1	9	NA
1,2,4-Trimethylbenzene	<8.1	<8.1	9	30	30.5
1,2-Dichloroethane (EDC)	<0.13	<0.13	<0.13	0.6	4.2
1,1,1-Trichloroethane	<1.8	<1.8	<1.8	2.6	76200

Notes:

1 - "ND" denotes analyte not detected at or above listed Reporting Limit.

2- "NA" Not applicable.

3 - Soil gas screening level that concentrations in the soil gas just beneath a building expected to not result in exceedance of the air cleanup level in the overlying structure, per the WDOE's Guidance For Evaluating Soil Vapor Intrusion - (April, 2015).

ve- The analyte response exceeded teh valid instrument calibration range. The value reported is an estimate.

fb- The analyte was detected in the method blank.

Bold and Italics indicate concentrations of soil vapor that exceed the WDOE soil gas screening levels.

Table 5: Three-Phase Partitioning Model - Benzene
Based on Equation 747-1 MTCA (WAC 173-340)

Soil pore vapor contaminant concentration (ug/M^3-volume)	**Cv =**	**179**
Predicted Groundwater Concentration (ug/L or ppb)	**Cw =**	**0.0**
Sorbed soil concentration (ug/Kg or ppb)	**$C_{R\ and}$ Cs**	**0.27**
Henrys Law Constant at system temperature (15 C)	H'_{TS}	0.228
Unit Conversion Factor (1 mg/Kg	UCF	0.001
Dilution factor (for Cw calculation - unitless - 20 for unsaturated soil)	DF	20
Soil dry bulk density (g/cm^3)	Pb	1.5
Soil water-filled porosity (cm^3/cm^3)	Ow	0.3
Soil-water partition coefficient (cm^3/g)(=Koc x foc) (same as L/Kg)	Kd	0.124
Soil air-filled porosity (cm^3 / cm^3)	Oa	0.13
Soil organic carbon partition coefficient (cm^3/g)	Koc	62
Soil organic carbon weight fraction (0.002 EPA default)	foc	0.002

APPENDIX A

Laboratory Reports

ESN NORTHWEST CHEMISTRY LABORATORY

Environmental Associates, Inc
PROJECT FEDERAL WAY SHOP
PROJECT #27194-2
Federal Way, Washington

ESN Northwest
1210 Eastside Street SE Suite 200
Olympia, WA 98501
(360) 459-4670 (360) 459-3432 Fax
lab@esnnw.com

Analysis of Gasoline Range Organics in Soil
by Method NWTPH-Gx

Sample Number	Date Prepared	Date Analyzed	Surrogate Recovery (%)	Gasoline Range Organics (mg/kg)
Method Blank	8/16/2018	8/16/2018	108	nd
LCS	8/16/2018	8/16/2018	98	102%
B1-4	8/14/2018	8/16/2018	104	nd
B1-4 Duplicate	8/14/2018	8/16/2018	105	nd
B1-9	8/14/2018	8/16/2018	102	nd
B2-4	8/14/2018	8/16/2018	105	nd
B2-8	8/14/2018	8/16/2018	103	nd
B3-5	8/14/2018	8/16/2018	104	nd
B3-10	8/14/2018	8/16/2018	104	nd
B4-3	8/14/2018	8/16/2018	103	nd
B4-6	8/14/2018	8/16/2018	102	nd
B5-4	8/14/2018	8/16/2018	99	nd
B5-9	8/14/2018	8/16/2018	103	nd
B6-3	8/14/2018	8/16/2018	104	nd
B6-6	8/14/2018	8/17/2018	100	nd
B7-4	8/14/2018	8/17/2018	101	nd
B7-4 Duplicate	8/14/2018	8/17/2018	104	nd
B7-9	8/14/2018	8/17/2018	104	nd
B8-4	8/14/2018	8/17/2018	98	nd
B8-7	8/14/2018	8/17/2018	106	nd
Reporting Limits				10

"nd" Indicates not detected at the listed detection limits.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE : 50% TO 150%

ESN NORTHWEST CHEMISTRY LABORATORY

Environmental Associates, Inc
PROJECT Federal Way Shop
PROJECT #27194-2
Federal Way, Washington

ESN Northwest
1210 Eastside Street SE Suite 200
Olympia, WA 98501
(360) 459-4670 (360) 459-3432 Fax
lab@esnnw.com

Analysis of Gasoline Range Organics in Soil
by Method NWTPH-Gx

Sample Number	Date Prepared	Date Analyzed	Surrogate Recovery (%)	Gasoline Range Organics (mg/kg)
Method Blank	8/17/2018	8/17/2018	105	nd
LCS	8/17/2018	8/17/2018	101	94%
B9-4	8/15/2018	8/17/2018	106	nd
B9-10	8/15/2018	8/17/2018	104	nd
B10-3	8/15/2018	8/17/2018	104	nd
B10-10	8/15/2018	8/17/2018	102	nd
Reporting Limits				10

"nd" Indicates not detected at the listed detection limits.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE : 50% TO 150%

ESN NORTHWEST CHEMISTRY LABORATORY

Environmental Associates, Inc
PROJECT FEDERAL WAY SHOP
PROJECT #27194-2
Federal Way, Washington

ESN Northwest
1210 Eastside Street SE Suite 200
Olympia, WA 98501
(360) 459-4670 (360) 459-3432 Fax
lab@esnnw.com

Analysis of Diesel Range Organics & Lube Oil Range Organics in Soil by Method NWTPH-Dx/Dx Extended

Sample Number	Date Prepared	Date Analyzed	Surrogate Recovery (%)	Diesel Range Organics (mg/kg)	Lube Oil Range Organics (mg/kg)
Method Blank	8/17/2018	8/17/2018	94	nd	nd
LCS	8/17/2018	8/17/2018	132	119%	---
B1-4	8/17/2018	8/17/2018	122	nd	nd
B1-4 Duplicate	8/17/2018	8/17/2018	104	nd	nd
B1-9	8/17/2018	8/17/2018	103	nd	nd
B2-4	8/17/2018	8/17/2018	110	nd	nd
B2-8	8/17/2018	8/17/2018	104	nd	nd
B3-5	8/17/2018	8/17/2018	108	nd	nd
B3-10	8/17/2018	8/17/2018	110	nd	nd
B4-3	8/17/2018	8/17/2018	101	nd	nd
B4-6	8/17/2018	8/17/2018	124	nd	nd
B5-4	8/17/2018	8/17/2018	95	nd	nd
B5-9	8/17/2018	8/17/2018	101	nd	nd
B6-3	8/17/2018	8/17/2018	101	nd	nd
B6-6	8/17/2018	8/17/2018	115	nd	nd
B7-4	8/17/2018	8/17/2018	105	nd	nd
B7-9	8/17/2018	8/20/2018	107	nd	nd
B8-4	8/17/2018	8/20/2018	105	nd	nd
B8-7	8/17/2018	8/20/2018	109	nd	nd
B8-7 Duplicate	8/17/2018	8/20/2018	109	nd	nd
Reporting Limits				50	100

"---" Indicates not tested for component.
"nd" Indicates not detected at the listed detection limits.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE : 50% TO 150%

ESN NORTHWEST CHEMISTRY LABORATORY

Environmental Associates, Inc
PROJECT Federal Way Shop
PROJECT #27194-2
Federal Way, Washington

ESN Northwest
1210 Eastside Street SE Suite 200
Olympia, WA 98501
(360) 459-4670 (360) 459-3432 Fax
lab@esnnw.com

Analysis of Diesel Range Organics & Lube Oil Range Organics in Soil by Method NWTPH-Dx/Dx Extended

Sample Number	Date Prepared	Date Analyzed	Surrogate Recovery (%)	Diesel Range Organics (mg/kg)	Lube Oil Range Organics (mg/kg)
Method Blank	8/22/2018	8/22/2018	118	nd	nd
LCS	8/22/2018	8/22/2018	119	121%	---
B9-4	8/22/2018	8/22/2018	104	nd	nd
B9-10	8/22/2018	8/22/2018	98	nd	nd
B10-3	8/22/2018	8/22/2018	90	nd	nd
B10-10	8/22/2018	8/22/2018	87	nd	nd
Reporting Limits				50	100

"---" Indicates not tested for component.
"nd" Indicates not detected at the listed detection limits.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE : 50% TO 150%

ESN NORTHWEST CHEMISTRY LABORATORY

Environmental Associates, Inc
PROJECT FEDERAL WAY SHOP
PROJECT #27194-2
Federal Way, Washington

ESN Northwest
1210 Eastside Street SE Suite 200
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Analysis of Volatile Organic Compounds in Soil by Method 8260C/5035

	RL	MB	LCS	LCSD	B1-4	B1-9	B2-4	B2-8
Date extracted		08/16/18	08/16/18	08/16/18	08/14/18	08/14/18	08/14/18	08/14/18
Date analyzed	(mg/Kg)	08/16/18	08/16/18	08/16/18	08/16/18	08/16/18	08/16/18	08/16/18
% Moisture					5%	6%	7%	5%
Dichlorodifluoromethane	0.05	nd			nd	nd	nd	nd
Chloromethane	0.05	nd			nd	nd	nd	nd
Vinyl chloride	0.02	nd	107%	109%	nd	nd	nd	nd
Bromomethane	0.05	nd			nd	nd	nd	nd
Chloroethane	0.05	nd			nd	nd	nd	nd
Trichlorofluoromethane	0.05	nd			nd	nd	nd	nd
Acetone	0.25	nd			nd	nd	nd	nd
1,1-Dichloroethene	0.05	nd	71%	79%	nd	nd	nd	nd
Methylene chloride	0.05	nd			nd	nd	nd	nd
Methyl-t-butyl ether (MTBE)	0.05	nd			nd	nd	nd	nd
trans-1,2-Dichloroethene	0.05	nd			nd	nd	nd	nd
1,1-Dichloroethane	0.05	nd			nd	nd	nd	nd
2-Butanone (MEK)	0.25	nd			nd	nd	nd	nd
cis-1,2-Dichloroethene	0.05	nd			nd	nd	nd	nd
2,2-Dichloropropane	0.05	nd			nd	nd	nd	nd
Chloroform	0.05	nd	75%	82%	nd	nd	nd	nd
Bromochloromethane	0.05	nd			nd	nd	nd	nd
1,1,1-Trichloroethane	0.05	nd			nd	nd	nd	nd
1,2-Dichloroethane (EDC)	0.05	nd			nd	nd	nd	nd
1,1-Dichloropropene	0.05	nd			nd	nd	nd	nd
Carbon tetrachloride	0.05	nd			nd	nd	nd	nd
Benzene	0.02	nd	84%	89%	nd	nd	nd	nd
Trichloroethene (TCE)	0.02	nd	90%	97%	nd	nd	nd	nd
1,2-Dichloropropane	0.05	nd	91%	98%	nd	nd	nd	nd
Dibromomethane	0.05	nd			nd	nd	nd	nd
Bromodichloromethane	0.05	nd			nd	nd	nd	nd
4-Methyl-2-pentanone (MIBK)	0.25	nd			nd	nd	nd	nd
cis-1,3-Dichloropropene	0.05	nd			nd	nd	nd	nd
Toluene	0.05	nd	86%	92%	nd	nd	nd	nd
trans-1,3-Dichloropropene	0.05	nd			nd	nd	nd	nd
1,1,2-Trichloroethane	0.05	nd			nd	nd	nd	nd
2-Hexanone	0.25	nd			nd	nd	nd	nd
1,3-Dichloropropane	0.05	nd			nd	nd	nd	nd
Dibromochloromethane	0.05	nd			nd	nd	nd	nd
Tetrachloroethene (PCE)	0.02	nd	93%	98%	nd	nd	nd	nd
1,2-Dibromoethane (EDB)	0.05	nd			nd	nd	nd	nd
Chlorobenzene	0.05	nd	88%	94%	nd	nd	nd	nd
1,1,1,2-Tetrachloroethane	0.05	nd			nd	nd	nd	nd
Ethylbenzene	0.05	nd	107%	113%	nd	nd	nd	nd
Xylenes	0.15	nd	110%	115%	nd	nd	nd	nd
Styrene	0.05	nd			nd	nd	nd	nd
Bromoform	0.05	nd			nd	nd	nd	nd
1,1,2,2-Tetrachloroethane	0.05	nd			nd	nd	nd	nd
Isopropylbenzene	0.05	nd			nd	nd	nd	nd
1,2,3-Trichloropropane	0.05	nd			nd	nd	nd	nd
Bromobenzene	0.05	nd			nd	nd	nd	nd

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	RL	MB	LCS	LCSD	B1-4	B1-9	B2-4	B2-8
Date extracted		08/16/18	08/16/18	08/16/18	08/14/18	08/14/18	08/14/18	08/14/18
Date analyzed	(mg/Kg)	08/16/18	08/16/18	08/16/18	08/16/18	08/16/18	08/16/18	08/16/18
% Moisture					5%	6%	7%	5%
n-Propylbenzene	0.05	nd			nd	nd	nd	nd
2-Chlorotoluene	0.05	nd			nd	nd	nd	nd
4-Chlorotoluene	0.05	nd			nd	nd	nd	nd
1,3,5-Trimethylbenzene	0.05	nd			nd	nd	nd	nd
tert-Butylbenzene	0.05	nd			nd	nd	nd	nd
1,2,4-Trimethylbenzene	0.05	nd			nd	nd	nd	nd
sec-Butylbenzene	0.05	nd			nd	nd	nd	nd
1,3-Dichlorobenzene	0.05	nd			nd	nd	nd	nd
1,4-Dichlorobenzene	0.05	nd			nd	nd	nd	nd
Isopropyltoluene	0.05	nd			nd	nd	nd	nd
1,2-Dichlorobenzene	0.05	nd			nd	nd	nd	nd
n-Butylbenzene	0.05	nd			nd	nd	nd	nd
1,2-Dibromo-3-Chloropropane	0.05	nd			nd	nd	nd	nd
1,2,4-Trichlorobenzene	0.05	nd			nd	nd	nd	nd
Naphthalene	0.05	nd			nd	nd	nd	nd
Hexachloro-1,3-butadiene	0.05	nd			nd	nd	nd	nd
1,2,3-Trichlorobenzene	0.05	nd			nd	nd	nd	nd
Surrogate recoveries								
Dibromofluoromethane		105%	89%	97%	100%	101%	100%	102%
Toluene-d8		109%	99%	100%	104%	105%	105%	109%
4-Bromofluorobenzene		108%	104%	103%	104%	102%	105%	103%

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits
Acceptable Recovery limits: 65% TO 135%
Acceptable RPD limit: 35%

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Analysis of Volatile Organic Compounds in Soil by Method 8260C/5035

	RL	B3-5	B3-10	B4-3	B4-6	B5-4	B5-9	B6-3	B6-6
Date extracted		08/14/18	08/14/18	08/14/18	08/14/18	08/14/18	08/14/18	08/14/18	08/14/18
Date analyzed	(mg/Kg)	08/16/18	08/16/18	08/16/18	08/16/18	08/16/18	08/16/18	08/16/18	08/17/18
% Moisture		7%	4%	6%	7%	6%	9%	7%	7%
Dichlorodifluoromethane	0.05	nd	nd	nd	nd	nd	nd	nd	nd
Chloromethane	0.05	nd	nd	nd	nd	nd	nd	nd	nd
Vinyl chloride	0.02	nd	nd	nd	nd	nd	nd	nd	nd
Bromomethane	0.05	nd	nd	nd	nd	nd	nd	nd	nd
Chloroethane	0.05	nd	nd	nd	nd	nd	nd	nd	nd
Trichlorofluoromethane	0.05	nd	nd	nd	nd	nd	nd	nd	nd
Acetone	0.25	nd	nd	nd	nd	nd	nd	nd	nd
1,1-Dichloroethene	0.05	nd	nd	nd	nd	nd	nd	nd	nd
Methylene chloride	0.05	nd	nd	nd	nd	nd	nd	nd	nd
Methyl-t-butyl ether (MTBE)	0.05	nd	nd	nd	nd	nd	nd	nd	nd
trans-1,2-Dichloroethene	0.05	nd	nd	nd	nd	nd	nd	nd	nd
1,1-Dichloroethane	0.05	nd	nd	nd	nd	nd	nd	nd	nd
2-Butanone (MEK)	0.25	nd	nd	nd	nd	nd	nd	nd	nd
cis-1,2-Dichloroethene	0.05	nd	nd	nd	nd	nd	nd	nd	nd
2,2-Dichloropropane	0.05	nd	nd	nd	nd	nd	nd	nd	nd
Chloroform	0.05	nd	nd	nd	nd	nd	nd	nd	nd
Bromochloromethane	0.05	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-Trichloroethane	0.05	nd	nd	nd	nd	nd	nd	nd	nd
1,2-Dichloroethane (EDC)	0.05	nd	nd	nd	nd	nd	nd	nd	nd
1,1-Dichloropropene	0.05	nd	nd	nd	nd	nd	nd	nd	nd
Carbon tetrachloride	0.05	nd	nd	nd	nd	nd	nd	nd	nd
Benzene	0.02	nd	nd	nd	nd	nd	nd	nd	nd
Trichloroethene (TCE)	0.02	nd	nd	nd	nd	nd	nd	nd	nd
1,2-Dichloropropane	0.05	nd	nd	nd	nd	nd	nd	nd	nd
Dibromomethane	0.05	nd	nd	nd	nd	nd	nd	nd	nd
Bromodichloromethane	0.05	nd	nd	nd	nd	nd	nd	nd	nd
4-Methyl-2-pentanone (MIBK)	0.25	nd	nd	nd	nd	nd	nd	nd	nd
cis-1,3-Dichloropropene	0.05	nd	nd	nd	nd	nd	nd	nd	nd
Toluene	0.05	nd	nd	nd	nd	nd	nd	nd	nd
trans-1,3-Dichloropropene	0.05	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-Trichloroethane	0.05	nd	nd	nd	nd	nd	nd	nd	nd
2-Hexanone	0.25	nd	nd	nd	nd	nd	nd	nd	nd
1,3-Dichloropropane	0.05	nd	nd	nd	nd	nd	nd	nd	nd
Dibromochloromethane	0.05	nd	nd	nd	nd	nd	nd	nd	nd
Tetrachloroethene (PCE)	0.02	nd	nd	nd	nd	nd	nd	nd	nd
1,2-Dibromoethane (EDB)	0.05	nd	nd	nd	nd	nd	nd	nd	nd
Chlorobenzene	0.05	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-Tetrachloroethane	0.05	nd	nd	nd	nd	nd	nd	nd	nd
Ethylbenzene	0.05	nd	nd	nd	nd	nd	nd	nd	nd
Xylenes	0.15	nd	nd	nd	nd	nd	nd	nd	nd
Styrene	0.05	nd	nd	nd	nd	nd	nd	nd	nd
Bromoform	0.05	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-Tetrachloroethane	0.05	nd	nd	nd	nd	nd	nd	nd	nd
Isopropylbenzene	0.05	nd	nd	nd	nd	nd	nd	nd	nd
1,2,3-Trichloropropane	0.05	nd	nd	nd	nd	nd	nd	nd	nd
Bromobenzene	0.05	nd	nd	nd	nd	nd	nd	nd	nd

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Analysis of Volatile Organic Compounds in Soil by Method 8260C/5035

	RL	B3-5	B3-10	B4-3	B4-6	B5-4	B5-9	B6-3	B6-6
Date extracted		08/14/18	08/14/18	08/14/18	08/14/18	08/14/18	08/14/18	08/14/18	08/14/18
Date analyzed	(mg/Kg)	08/16/18	08/16/18	08/16/18	08/16/18	08/16/18	08/16/18	08/16/18	08/17/18
% Moisture		7%	4%	6%	7%	6%	9%	7%	7%
n-Propylbenzene	0.05	nd	nd	nd	nd	nd	nd	nd	nd
2-Chlorotoluene	0.05	nd	nd	nd	nd	nd	nd	nd	nd
4-Chlorotoluene	0.05	nd	nd	nd	nd	nd	nd	nd	nd
1,3,5-Trimethylbenzene	0.05	nd	nd	nd	nd	nd	nd	nd	nd
tert-Butylbenzene	0.05	nd	nd	nd	nd	nd	nd	nd	nd
1,2,4-Trimethylbenzene	0.05	nd	nd	nd	nd	nd	nd	nd	nd
sec-Butylbenzene	0.05	nd	nd	nd	nd	nd	nd	nd	nd
1,3-Dichlorobenzene	0.05	nd	nd	nd	nd	nd	nd	nd	nd
1,4-Dichlorobenzene	0.05	nd	nd	nd	nd	nd	nd	nd	nd
Isopropyltoluene	0.05	nd	nd	nd	nd	nd	nd	nd	nd
1,2-Dichlorobenzene	0.05	nd	nd	nd	nd	nd	nd	nd	nd
n-Butylbenzene	0.05	nd	nd	nd	nd	nd	nd	nd	nd
1,2-Dibromo-3-Chloropropane	0.05	nd	nd	nd	nd	nd	nd	nd	nd
1,2,4-Trichlorobenzene	0.05	nd	nd	nd	nd	nd	nd	nd	nd
Naphthalene	0.05	nd	nd	nd	nd	nd	nd	nd	nd
Hexachloro-1,3-butadiene	0.05	nd	nd	nd	nd	nd	nd	nd	nd
1,2,3-Trichlorobenzene	0.05	nd	nd	nd	nd	nd	nd	nd	nd
Surrogate recoveries									
Dibromofluoromethane		103%	101%	100%	104%	101%	103%	100%	102%
Toluene-d8		107%	107%	106%	109%	108%	105%	104%	106%
4-Bromofluorobenzene		104%	104%	103%	102%	99%	103%	104%	100%

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits
Acceptable Recovery limits: 65% TO 135%
Acceptable RPD limit: 35%

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Analysis of Volatile Organic Compounds in Soil by Method 8260C/5035

	RL	B7-4	B7-9	B8-4	B8-7
Date extracted		08/14/18	08/14/18	08/14/18	08/14/18
Date analyzed	(mg/Kg)	08/17/18	08/17/18	08/17/18	08/17/18
% Moisture		7%	7%	10%	4%
Dichlorodifluoromethane	0.05	nd	nd	nd	nd
Chloromethane	0.05	nd	nd	nd	nd
Vinyl chloride	0.02	nd	nd	nd	nd
Bromomethane	0.05	nd	nd	nd	nd
Chloroethane	0.05	nd	nd	nd	nd
Trichlorofluoromethane	0.05	nd	nd	nd	nd
Acetone	0.25	nd	nd	nd	nd
1,1-Dichloroethene	0.05	nd	nd	nd	nd
Methylene chloride	0.05	nd	nd	nd	nd
Methyl-t-butyl ether (MTBE)	0.05	nd	nd	nd	nd
trans-1,2-Dichloroethene	0.05	nd	nd	nd	nd
1,1-Dichloroethane	0.05	nd	nd	nd	nd
2-Butanone (MEK)	0.25	nd	nd	nd	nd
cis-1,2-Dichloroethene	0.05	nd	nd	nd	nd
2,2-Dichloropropane	0.05	nd	nd	nd	nd
Chloroform	0.05	nd	nd	nd	nd
Bromochloromethane	0.05	nd	nd	nd	nd
1,1,1-Trichloroethane	0.05	nd	nd	nd	nd
1,2-Dichloroethane (EDC)	0.05	nd	nd	nd	nd
1,1-Dichloropropene	0.05	nd	nd	nd	nd
Carbon tetrachloride	0.05	nd	nd	nd	nd
Benzene	0.02	nd	nd	nd	nd
Trichloroethene (TCE)	0.02	nd	nd	nd	nd
1,2-Dichloropropane	0.05	nd	nd	nd	nd
Dibromomethane	0.05	nd	nd	nd	nd
Bromodichloromethane	0.05	nd	nd	nd	nd
4-Methyl-2-pentanone (MIBK)	0.25	nd	nd	nd	nd
cis-1,3-Dichloropropene	0.05	nd	nd	nd	nd
Toluene	0.05	nd	nd	nd	nd
trans-1,3-Dichloropropene	0.05	nd	nd	nd	nd
1,1,2-Trichloroethane	0.05	nd	nd	nd	nd
2-Hexanone	0.25	nd	nd	nd	nd
1,3-Dichloropropane	0.05	nd	nd	nd	nd
Dibromochloromethane	0.05	nd	nd	nd	nd
Tetrachloroethene (PCE)	0.02	nd	nd	nd	nd
1,2-Dibromoethane (EDB)	0.05	nd	nd	nd	nd
Chlorobenzene	0.05	nd	nd	nd	nd
1,1,1,2-Tetrachloroethane	0.05	nd	nd	nd	nd
Ethylbenzene	0.05	nd	nd	nd	nd
Xylenes	0.15	nd	nd	nd	nd
Styrene	0.05	nd	nd	nd	nd
Bromoform	0.05	nd	nd	nd	nd
1,1,2,2-Tetrachloroethane	0.05	nd	nd	nd	nd
Isopropylbenzene	0.05	nd	nd	nd	nd
1,2,3-Trichloropropane	0.05	nd	nd	nd	nd
Bromobenzene	0.05	nd	nd	nd	nd

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Analysis of Volatile Organic Compounds in Soil by Method 8260C/5035

	RL	B7-4	B7-9	B8-4	B8-7
Date extracted		08/14/18	08/14/18	08/14/18	08/14/18
Date analyzed	(mg/Kg)	08/17/18	08/17/18	08/17/18	08/17/18
% Moisture		7%	7%	10%	4%
n-Propylbenzene	0.05	nd	nd	nd	nd
2-Chlorotoluene	0.05	nd	nd	nd	nd
4-Chlorotoluene	0.05	nd	nd	nd	nd
1,3,5-Trimethylbenzene	0.05	nd	nd	nd	nd
tert-Butylbenzene	0.05	nd	nd	nd	nd
1,2,4-Trimethylbenzene	0.05	nd	nd	nd	nd
sec-Butylbenzene	0.05	nd	nd	nd	nd
1,3-Dichlorobenzene	0.05	nd	nd	nd	nd
1,4-Dichlorobenzene	0.05	nd	nd	nd	nd
Isopropyltoluene	0.05	nd	nd	nd	nd
1,2-Dichlorobenzene	0.05	nd	nd	nd	nd
n-Butylbenzene	0.05	nd	nd	nd	nd
1,2-Dibromo-3-Chloropropane	0.05	nd	nd	nd	nd
1,2,4-Trichlorobenzene	0.05	nd	nd	nd	nd
Naphthalene	0.05	nd	nd	nd	nd
Hexachloro-1,3-butadiene	0.05	nd	nd	nd	nd
1,2,3-Trichlorobenzene	0.05	nd	nd	nd	nd
Surrogate recoveries					
Dibromofluoromethane		103%	97%	107%	99%
Toluene-d8		104%	103%	109%	102%
4-Bromofluorobenzene		101%	104%	98%	106%

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits
Acceptable Recovery limits: 65% TO 135%
Acceptable RPD limit: 35%

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Analysis of Volatile Organic Compounds in Soil by Method 8260C/5035

	RL	MB	LCS	LCSD	B9-4	B9-10	B10-3	B10-10
Date extracted		08/17/18	08/17/18	08/17/18	08/15/18	08/15/18	08/15/18	08/15/18
Date analyzed	(mg/Kg)	08/17/18	08/17/18	08/17/18	08/17/18	08/17/18	08/17/18	08/17/18
% Moisture					6%	11%	5%	6%
Dichlorodifluoromethane	0.05	nd			nd	nd	nd	nd
Chloromethane	0.05	nd			nd	nd	nd	nd
Vinyl chloride	0.02	nd	105%	113%	nd	nd	nd	nd
Bromomethane	0.05	nd			nd	nd	nd	nd
Chloroethane	0.05	nd			nd	nd	nd	nd
Trichlorofluoromethane	0.05	nd			nd	nd	nd	nd
Acetone	0.25	nd			nd	nd	nd	nd
1,1-Dichloroethene	0.05	nd	75%	73%	nd	nd	nd	nd
Methylene chloride	0.05	nd			nd	nd	nd	nd
Methyl-t-butyl ether (MTBE)	0.05	nd			nd	nd	nd	nd
trans-1,2-Dichloroethene	0.05	nd			nd	nd	nd	nd
1,1-Dichloroethane	0.05	nd			nd	nd	nd	nd
2-Butanone (MEK)	0.25	nd			nd	nd	nd	nd
cis-1,2-Dichloroethene	0.05	nd			nd	nd	nd	nd
2,2-Dichloropropane	0.05	nd			nd	nd	nd	nd
Chloroform	0.05	nd	78%	77%	nd	nd	nd	nd
Bromochloromethane	0.05	nd			nd	nd	nd	nd
1,1,1-Trichloroethane	0.05	nd			nd	nd	nd	nd
1,2-Dichloroethane (EDC)	0.05	nd			nd	nd	nd	nd
1,1-Dichloropropene	0.05	nd			nd	nd	nd	nd
Carbon tetrachloride	0.05	nd			nd	nd	nd	nd
Benzene	0.02	nd	87%	83%	nd	nd	nd	nd
Trichloroethene (TCE)	0.02	nd	95%	92%	nd	nd	nd	nd
1,2-Dichloropropane	0.05	nd	94%	92%	nd	nd	nd	nd
Dibromomethane	0.05	nd			nd	nd	nd	nd
Bromodichloromethane	0.05	nd			nd	nd	nd	nd
4-Methyl-2-pentanone (MIBK)	0.25	nd			nd	nd	nd	nd
cis-1,3-Dichloropropene	0.05	nd			nd	nd	nd	nd
Toluene	0.05	nd	90%	88%	nd	nd	nd	nd
trans-1,3-Dichloropropene	0.05	nd			nd	nd	nd	nd
1,1,2-Trichloroethane	0.05	nd			nd	nd	nd	nd
2-Hexanone	0.25	nd			nd	nd	nd	nd
1,3-Dichloropropane	0.05	nd			nd	nd	nd	nd
Dibromochloromethane	0.05	nd			nd	nd	nd	nd
Tetrachloroethene (PCE)	0.02	nd	98%	94%	nd	nd	nd	nd
1,2-Dibromoethane (EDB)	0.05	nd			nd	nd	nd	nd
Chlorobenzene	0.05	nd	92%	91%	nd	nd	nd	nd
1,1,1,2-Tetrachloroethane	0.05	nd			nd	nd	nd	nd
Ethylbenzene	0.05	nd	110%	106%	nd	nd	nd	nd
Xylenes	0.15	nd	115%	110%	nd	nd	nd	nd
Styrene	0.05	nd			nd	nd	nd	nd
Bromoform	0.05	nd			nd	nd	nd	nd
1,1,2,2-Tetrachloroethane	0.05	nd			nd	nd	nd	nd
Isopropylbenzene	0.05	nd			nd	nd	nd	nd
1,2,3-Trichloropropane	0.05	nd			nd	nd	nd	nd
Bromobenzene	0.05	nd			nd	nd	nd	nd

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PROJECT #27194-2
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Analysis of Volatile Organic Compounds in Soil by Method 8260C/5035

	RL	MB	LCS	LCSD	B9-4	B9-10	B10-3	B10-10
Date extracted		08/17/18	08/17/18	08/17/18	08/15/18	08/15/18	08/15/18	08/15/18
Date analyzed	(mg/Kg)	08/17/18	08/17/18	08/17/18	08/17/18	08/17/18	08/17/18	08/17/18
% Moisture					6%	11%	5%	6%
n-Propylbenzene	0.05	nd			nd	nd	nd	nd
2-Chlorotoluene	0.05	nd			nd	nd	nd	nd
4-Chlorotoluene	0.05	nd			nd	nd	nd	nd
1,3,5-Trimethylbenzene	0.05	nd			nd	nd	nd	nd
tert-Butylbenzene	0.05	nd			nd	nd	nd	nd
1,2,4-Trimethylbenzene	0.05	nd			nd	nd	nd	nd
sec-Butylbenzene	0.05	nd			nd	nd	nd	nd
1,3-Dichlorobenzene	0.05	nd			nd	nd	nd	nd
1,4-Dichlorobenzene	0.05	nd			nd	nd	nd	nd
Isopropyltoluene	0.05	nd			nd	nd	nd	nd
1,2-Dichlorobenzene	0.05	nd			nd	nd	nd	nd
n-Butylbenzene	0.05	nd			nd	nd	nd	nd
1,2-Dibromo-3-Chloropropane	0.05	nd			nd	nd	nd	nd
1,2,4-Trichlorobenzene	0.05	nd			nd	nd	nd	nd
Naphthalene	0.05	nd			nd	nd	nd	nd
Hexachloro-1,3-butadiene	0.05	nd			nd	nd	nd	nd
1,2,3-Trichlorobenzene	0.05	nd			nd	nd	nd	nd
Surrogate recoveries								
Dibromofluoromethane		99%	98%	93%	97%	99%	99%	102%
Toluene-d8		105%	99%	98%	104%	105%	108%	108%
4-Bromofluorobenzene		105%	99%	105%	106%	104%	104%	102%

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits
Acceptable Recovery limits: 65% TO 135%
Acceptable RPD limit: 35%

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Total Metals in Soil by EPA-6020 Series

Sample Number	Date Analyzed	Lead (Pb) (mg/kg)	Cadmium (Cd) (mg/kg)	Chromium (Cr) (mg/kg)	Arsenic (As) (mg/kg)	Silver (Ag) (mg/kg)	Barium (Ba) (mg/kg)	Selenium (Se) (mg/kg)	Mercury (Hg) (mg/kg)
Method Blank	8/15/2018	nd	nd	nd	nd	nd	nd	nd	nd
B1-4	8/15/2018	nd	nd	**57**	nd	nd	**51**	nd	nd
B1-9	8/15/2018	nd	nd	**14**	nd	nd	**50**	nd	nd
B2-4	8/15/2018	nd	nd	**21**	nd	nd	**55**	nd	nd
B2-4 Duplicate	8/15/2018	nd	nd	**26**	nd	nd	**72**	nd	nd
B2-8	8/15/2018	nd	nd	**21**	nd	nd	nd	nd	nd
B3-5	8/15/2018	**16**	nd	**24**	**5.8**	nd	**50**	nd	nd
B3-10	8/15/2018	nd	nd	**15**	nd	nd	nd	nd	nd
B4-3	8/15/2018	nd	nd	**19**	nd	nd	nd	nd	nd
B4-6	8/15/2018	nd	nd	**34**	nd	nd	**57**	nd	nd
B5-4	8/15/2018	nd	nd	**32**	nd	nd	nd	nd	nd
B5-9	8/15/2018	nd	nd	**20**	nd	nd	nd	nd	nd
B6-3	8/15/2018	nd	nd	**20**	nd	nd	nd	nd	nd
B6-6	8/15/2018	nd	nd	**36**	nd	nd	**63**	nd	nd
B7-4	8/15/2018	nd	nd	**32**	nd	nd	nd	nd	nd
B7-9	8/15/2018	nd	nd	**20**	nd	nd	**54**	nd	nd
B8-4	8/15/2018	**72**	nd	**41**	nd	nd	**56**	nd	nd
B8-7	8/15/2018	nd	nd	**16**	nd	nd	**66**	nd	nd
B8-7 Duplicate	8/15/2018	nd	nd	**21**	nd	nd	**51**	nd	nd
Reporting Limits		5.0	1.0	5.0	5.0	20	50	20	0.5

"nd" Indicates not detected at listed detection limits.

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Total Metals in Soil by EPA-6020 Series

Sample Number	Date Analyzed	Lead (Pb) (mg/kg)	Cadmium (Cd) (mg/kg)	Chromium (Cr) (mg/kg)	Arsenic (As) (mg/kg)	Silver (Ag) (mg/kg)	Barium (Ba) (mg/kg)	Selenium (Se) (mg/kg)	Mercury (Hg) (mg/kg)
Method Blank	8/22/2018	nd	nd	nd	nd	nd	nd	nd	nd
B9-4	8/22/2018	nd	nd	53	nd	nd	109	nd	nd
B9-4 Duplicate	8/22/2018	nd	nd	51	nd	nd	87	nd	nd
B9-10	8/22/2018	nd	nd	44	nd	nd	66	nd	nd
B10-3	8/22/2018	nd	nd	46	nd	nd	94	nd	nd
B10-10	8/22/2018	nd	nd	37	nd	nd	59	nd	nd
Reporting Limits		5.0	1.0	5.0	5.0	20	50	20	0.5

"nd" Indicates not detected at listed detection limits.

QA/QC Data - Total Metals EPA-6020

Sample Number: B9-4

	Matrix Spike			Matrix Spike Duplicate			RPD
	Spiked Conc. (mg/kg)	Measured Conc. (mg/kg)	Spike Recovery (%)	Spiked Conc. (mg/kg)	Measured Conc. (mg/kg)	Spike Recovery (%)	(%)
Lead	81.6	80.1	98.2	95.7	96.6	101	2.8
Cadmium	81.6	70.8	86.8	95.7	85.2	89.0	2.6
Chromium	81.6	109	134M	95.7	118	123	8.0
Arsenic	81.6	82.6	101	95.7	99.5	104	2.7
Silver	81.6	71.5	87.6	95.7	87.7	91.6	4.5
Barium	81.6	97.4	119	95.7	106	111	7.5
Selenium	81.6	59.9	73.4M	95.7	75.0	78.4	6.5
Mercury	8.16	6.65	81.5	9.57	8.06	84.2	3.3

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 75%-125%
ACCEPTABLE RPD IS 20%
M - Matrix Spike recovery failed due to matrix interference.

	Laboratory Control Sample		
	Spiked Conc. (mg/kg)	Measured Conc. (mg/kg)	Spike Recovery (%)
Lead	100	106	106
Cadmium	100	90.1	90.1
Chromium	100	122	122*
Arsenic	100	93.3	93.3
Silver	100	103	103
Barium	100	122	122
Selenium	100	75.4	75.4*
Mercury	10.0	8.32	83.2

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 80%-120%
*LCS recovery failed to meet acceptable recovery limits for Chromium and Selenium. Instrument was maintained and batch was analyzed a second time producing similar results.

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QA/QC Data - Total Metals EPA-6020

Sample Number: B2-4

	Matrix Spike			Matrix Spike Duplicate			RPD
	Spiked Conc. (mg/kg)	Measured Conc. (mg/kg)	Spike Recovery (%)	Spiked Conc. (mg/kg)	Measured Conc. (mg/kg)	Spike Recovery (%)	(%)
Lead	99.0	100	101	91.7	93.1	102	0.4
Cadmium	99.0	98.5	99.5	91.7	90.7	98.9	0.6
Chromium	99.0	111	112	91.7	95.2	104	7.7
Arsenic	99.0	105	106	91.7	96.5	105	0.8
Silver	99.0	94.3	95.3	91.7	86.9	94.8	0.5
Barium	99.0	90.9	91.8	91.7	73.5	80.2	13.6
Selenium	99.0	96.3	97.3	91.7	89.1	97.2	0.1
Mercury	9.90	10.1	102	9.17	9.36	102	0.1

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 75%-125%
ACCEPTABLE RPD IS 20%

	Laboratory Control Sample		
	Spiked Conc. (mg/kg)	Measured Conc. (mg/kg)	Spike Recovery (%)
Lead	100	103	103
Cadmium	100	101	101
Chromium	100	109	109
Arsenic	100	103	103
Silver	100	102	102
Barium	100	104	104
Selenium	100	99.3	99.3
Mercury	10.0	10.2	102

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 80%-120%

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on August 15, 2018 by Friedman & Bruya, Inc. from the Environmental Associates Federal Way Shop 27194-2, F&BI 808364 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Environmental Associates
808364 -01	B-10
808364 -02	B-11
808364 -03	B-12
808364 -04	B-13

Several analytes exceeded the calibration range of the instrument. The data were flagged accordingly.

Naphthalene was detected in the TO-15 method blank at a level within 10 times the concentration detected in the samples. The data were flagged accordingly.

All other quality control requirements were acceptable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	B-10	Client:	Environmental Associates
Date Received:	08/15/18	Project:	Federal Way Shop 27194-2
Date Collected:	08/15/18	Lab ID:	808364-01 1/3.3
Date Analyzed:	08/22/18	Data File:	082123.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	MS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	102	70	130

Compounds:	Concentration ug/m3	Concentration ppbv	Compounds:	Concentration ug/m3	Concentration ppbv
Chlorodifluoromethane	<1.2	<0.33	1-Butanol	35	11
Propene	700 ve	410 ve	Carbon tetrachloride	<2.1	<0.33
Dichlorodifluoromethane	2.6	0.53	Benzene	150	46
Chloromethane	3.0	1.4	Cyclohexane	170	50
F-114	<2.3	<0.33	2-Pentanone	<12	<3.3
Isobutene	360	160	3-Pentanone	<12	<3.3
Acetaldehyde	<30	<16	Pentanal	20	5.5
Vinyl chloride	<0.84	<0.33	1,2-Dichloropropane	<0.76	<0.16
1,3-Butadiene	260	120	1,4-Dioxane	<1.2	<0.33
Bromomethane	<5.1	<1.3	Bromodichloromethane	<0.22	<0.033
Chloroethane	<0.87	<0.33	Trichloroethene	13	2.4
Ethanol	90	48	cis-1,3-Dichloropropene	<1.5	<0.33
Acetonitrile	<5.5	<3.3	4-Methyl-2-pentanone	<14	<3.3
Acrolein	18	8.1	trans-1,3-Dichloropropene	<1.5	<0.33
Acrylonitrile	42	19	Toluene	360	94
Pentane	480	160	1,1,2-Trichloroethane	<0.18	<0.033
Trichlorofluoromethane	<1.9	<0.33	3-Hexanone	<14	<3.3
Acetone	190	81	2-Hexanone	<14	<3.3
2-Propanol	<28	<12	Hexanal	220	53
Isoprene	36	13	Tetrachloroethene	35	5.2
Iodomethane	2.6	0.45	Dibromochloromethane	<0.28	<0.033
1,1-Dichloroethene	<1.3	<0.33	1,2-Dibromoethane (EDB)	<0.25	<0.033
Methacrolein	18	6.4	Chlorobenzene	<1.5	<0.33
trans-1,2-Dichloroethene	<1.3	<0.33	Ethylbenzene	28	6.4
Cyclopentane	<0.95	<0.33	1,1,2,2-Tetrachloroethane	<0.45	<0.066
Methyl vinyl ketone	<9.5	<3.3	m,p-Xylene	78	18
Butanal	20	6.7	o-Xylene	25	5.8
Methylene chloride	330	95	Styrene	44	10
CFC-113	<2.5	<0.33	Bromoform	<6.8	<0.66
Carbon disulfide	28	9.0	Benzyl chloride	<0.17	<0.033
Methyl t-butyl ether (MTBE)	<5.9	<1.6	1,3,5-Trimethylbenzene	<8.1	<1.6
Vinyl acetate	<23	<6.6	1,2,4-Trimethylbenzene	<8.1	<1.6
1,1-Dichloroethane	<1.3	<0.33	1,3-Dichlorobenzene	<2	<0.33
cis-1,2-Dichloroethene	<1.3	<0.33	1,4-Dichlorobenzene	<0.79	<0.13
Hexane	340	96	1,2,3-Trimethylbenzene	<8.1	<1.6
Chloroform	0.61	0.13	1,2-Dichlorobenzene	<2	<0.33
2-Butanone (MEK)	40	14	1,2,4-Trichlorobenzene	<2.4	<0.33
1,2-Dichloroethane (EDC)	<0.13	<0.033	Naphthalene	1.4 fb	0.26 fb
1,1,1-Trichloroethane	<1.8	<0.33	Hexachlorobutadiene	<0.7	<0.066

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	B-11	Client:	Environmental Associates
Date Received:	08/15/18	Project:	Federal Way Shop 27194-2
Date Collected:	08/15/18	Lab ID:	808364-02 1/3.3
Date Analyzed:	08/22/18	Data File:	082124.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	MS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	95	70	130

Compounds:	Concentration ug/m3	Concentration ppbv	Compounds:	Concentration ug/m3	Concentration ppbv
Chlorodifluoromethane	<1.2	<0.33	1-Butanol	<20	<6.6
Propene	<2.3	<1.3	Carbon tetrachloride	<2.1	<0.33
Dichlorodifluoromethane	2.9	0.58	Benzene	3.0	0.95
Chloromethane	2.1	1.0	Cyclohexane	<23	<6.6
F-114	<2.3	<0.33	2-Pentanone	<12	<3.3
Isobutene	<3	<1.3	3-Pentanone	<12	<3.3
Acetaldehyde	<30	<16	Pentanal	<12	<3.3
Vinyl chloride	<0.84	<0.33	1,2-Dichloropropane	<0.76	<0.16
1,3-Butadiene	0.72	0.32	1,4-Dioxane	<1.2	<0.33
Bromomethane	<5.1	<1.3	Bromodichloromethane	<0.22	<0.033
Chloroethane	<0.87	<0.33	Trichloroethene	15	2.8
Ethanol	<25	<13	cis-1,3-Dichloropropene	<1.5	<0.33
Acetonitrile	<5.5	<3.3	4-Methyl-2-pentanone	<14	<3.3
Acrolein	<3	<1.3	trans-1,3-Dichloropropene	<1.5	<0.33
Acrylonitrile	<0.72	<0.33	Toluene	11	3.0
Pentane	<9.7	<3.3	1,1,2-Trichloroethane	<0.18	<0.033
Trichlorofluoromethane	1.9	0.33	3-Hexanone	<14	<3.3
Acetone	100	44	2-Hexanone	<14	<3.3
2-Propanol	<28	<12	Hexanal	<14	<3.3
Isoprene	<0.92	<0.33	Tetrachloroethene	2.7	0.40
Iodomethane	<1.9	<0.33	Dibromochloromethane	<0.28	<0.033
1,1-Dichloroethene	<1.3	<0.33	1,2-Dibromoethane (EDB)	<0.25	<0.033
Methacrolein	<9.5	<3.3	Chlorobenzene	<1.5	<0.33
trans-1,2-Dichloroethene	<1.3	<0.33	Ethylbenzene	2.1	0.49
Cyclopentane	1.8	0.64	1,1,2,2-Tetrachloroethane	<0.45	<0.066
Methyl vinyl ketone	<9.5	<3.3	m,p-Xylene	7.4	1.7
Butanal	<9.7	<3.3	o-Xylene	2.6	0.60
Methylene chloride	<290	<82	Styrene	<2.8	<0.66
CFC-113	<2.5	<0.33	Bromoform	<6.8	<0.66
Carbon disulfide	<21	<6.6	Benzyl chloride	<0.17	<0.033
Methyl t-butyl ether (MTBE)	<5.9	<1.6	1,3,5-Trimethylbenzene	<8.1	<1.6
Vinyl acetate	<23	<6.6	1,2,4-Trimethylbenzene	<8.1	<1.6
1,1-Dichloroethane	<1.3	<0.33	1,3-Dichlorobenzene	2.9	0.49
cis-1,2-Dichloroethene	<1.3	<0.33	1,4-Dichlorobenzene	<0.79	<0.13
Hexane	<12	<3.3	1,2,3-Trimethylbenzene	<8.1	<1.6
Chloroform	0.52	0.11	1,2-Dichlorobenzene	<2	<0.33
2-Butanone (MEK)	13	4.6	1,2,4-Trichlorobenzene	<2.4	<0.33
1,2-Dichloroethane (EDC)	<0.13	<0.033	Naphthalene	1.3 fb	0.24 fb
1,1,1-Trichloroethane	<1.8	<0.33	Hexachlorobutadiene	<0.7	<0.066

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	B-12	Client:	Environmental Associates
Date Received:	08/15/18	Project:	Federal Way Shop 27194-2
Date Collected:	08/15/18	Lab ID:	808364-03 1/3.3
Date Analyzed:	08/22/18	Data File:	082125.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	MS

Compounds:	Concentration ug/m3	Concentration ppbv	Compounds:	Concentration ug/m3	Concentration ppbv
Chlorodifluoromethane	<1.2	<0.33	1-Butanol	32	11
Propene	1,800 ve	1,000 ve	Carbon tetrachloride	<2.1	<0.33
Dichlorodifluoromethane	<1.6	<0.33	Benzene	180	57
Chloromethane	6.7	3.3	Cyclohexane	140	41
F-114	<2.3	<0.33	2-Pentanone	<12	<3.3
Isobutene	670 ve	290 ve	3-Pentanone	<12	<3.3
Acetaldehyde	<30	<16	Pentanal	33	9.4
Vinyl chloride	<0.84	<0.33	1,2-Dichloropropane	<0.76	<0.16
1,3-Butadiene	210	96	1,4-Dioxane	<1.2	<0.33
Bromomethane	<5.1	<1.3	Bromodichloromethane	<0.22	<0.033
Chloroethane	<0.87	<0.33	Trichloroethene	1.7	0.32
Ethanol	42	22	cis-1,3-Dichloropropene	<1.5	<0.33
Acetonitrile	<5.5	<3.3	4-Methyl-2-pentanone	<14	<3.3
Acrolein	<3	<1.3	trans-1,3-Dichloropropene	<1.5	<0.33
Acrylonitrile	<0.72	<0.33	Toluene	150	40
Pentane	530 ve	180 ve	1,1,2-Trichloroethane	<0.18	<0.033
Trichlorofluoromethane	<1.9	<0.33	3-Hexanone	<14	<3.3
Acetone	400 ve	170 ve	2-Hexanone	<14	<3.3
2-Propanol	<28	<12	Hexanal	32	7.8
Isoprene	89	32	Tetrachloroethene	<2.2	<0.33
Iodomethane	<1.9	<0.33	Dibromochloromethane	<0.28	<0.033
1,1-Dichloroethene	<1.3	<0.33	1,2-Dibromoethane (EDB)	<0.25	<0.033
Methacrolein	17	5.9	Chlorobenzene	<1.5	<0.33
trans-1,2-Dichloroethene	<1.3	<0.33	Ethylbenzene	22	5.0
Cyclopentane	39	14	1,1,2,2-Tetrachloroethane	<0.45	<0.066
Methyl vinyl ketone	22	7.7	m,p-Xylene	58	13
Butanal	45	15	o-Xylene	24	5.6
Methylene chloride	290	83	Styrene	8.5	2.0
CFC-113	<2.5	<0.33	Bromoform	<6.8	<0.66
Carbon disulfide	160	53	Benzyl chloride	<0.17	<0.033
Methyl t-butyl ether (MTBE)	<5.9	<1.6	1,3,5-Trimethylbenzene	<8.1	<1.6
Vinyl acetate	<23	<6.6	1,2,4-Trimethylbenzene	9.0	1.8
1,1-Dichloroethane	<1.3	<0.33	1,3-Dichlorobenzene	6.6	1.1
cis-1,2-Dichloroethene	<1.3	<0.33	1,4-Dichlorobenzene	<0.79	<0.13
Hexane	340	96	1,2,3-Trimethylbenzene	<8.1	<1.6
Chloroform	0.32	0.066	1,2-Dichlorobenzene	<2	<0.33
2-Butanone (MEK)	110	36	1,2,4-Trichlorobenzene	<2.4	<0.33
1,2-Dichloroethane (EDC)	<0.13	<0.033	Naphthalene	2.4 fb	0.45 fb
1,1,1-Trichloroethane	<1.8	<0.33	Hexachlorobutadiene	<0.7	<0.066

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	B-13	Client:	Environmental Associates
Date Received:	08/15/18	Project:	Federal Way Shop 27194-2
Date Collected:	08/15/18	Lab ID:	808364-04 1/3.3
Date Analyzed:	08/22/18	Data File:	082126.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	MS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	104	70	130

Compounds:	Concentration ug/m3	Concentration ppbv	Compounds:	Concentration ug/m3	Concentration ppbv
Chlorodifluoromethane	<1.2	<0.33	1-Butanol	<20	<6.6
Propene	1,800 ve	1,000 ve	Carbon tetrachloride	<2.1	<0.33
Dichlorodifluoromethane	2.4	0.48	Benzene	130	39
Chloromethane	4.6	2.2	Cyclohexane	38	11
F-114	<2.3	<0.33	2-Pentanone	<12	<3.3
Isobutene	1,000 ve	440 ve	3-Pentanone	<12	<3.3
Acetaldehyde	<30	<16	Pentanal	28	8.1
Vinyl chloride	<0.84	<0.33	1,2-Dichloropropane	<0.76	<0.16
1,3-Butadiene	340	150	1,4-Dioxane	<1.2	<0.33
Bromomethane	<5.1	<1.3	Bromodichloromethane	<0.22	<0.033
Chloroethane	<0.87	<0.33	Trichloroethene	18	3.3
Ethanol	26	14	cis-1,3-Dichloropropene	<1.5	<0.33
Acetonitrile	<5.5	<3.3	4-Methyl-2-pentanone	<14	<3.3
Acrolein	12	5.2	trans-1,3-Dichloropropene	<1.5	<0.33
Acrylonitrile	<0.72	<0.33	Toluene	130	34
Pentane	250	85	1,1,2-Trichloroethane	<0.18	<0.033
Trichlorofluoromethane	4.2	0.75	3-Hexanone	<14	<3.3
Acetone	250	110	2-Hexanone	<14	<3.3
2-Propanol	<28	<12	Hexanal	27	6.5
Isoprene	130	48	Tetrachloroethene	5.7	0.84
Iodomethane	<1.9	<0.33	Dibromochloromethane	<0.28	<0.033
1,1-Dichloroethene	<1.3	<0.33	1,2-Dibromoethane (EDB)	<0.25	<0.033
Methacrolein	<9.5	<3.3	Chlorobenzene	<1.5	<0.33
trans-1,2-Dichloroethene	<1.3	<0.33	Ethylbenzene	25	5.8
Cyclopentane	34	12	1,1,2,2-Tetrachloroethane	<0.45	<0.066
Methyl vinyl ketone	<9.5	<3.3	m,p-Xylene	83	19
Butanal	38	13	o-Xylene	24	5.4
Methylene chloride	880 ve	250 ve	Styrene	9.6	2.2
CFC-113	<2.5	<0.33	Bromoform	<6.8	<0.66
Carbon disulfide	<21	<6.6	Benzyl chloride	<0.17	<0.033
Methyl t-butyl ether (MTBE)	<5.9	<1.6	1,3,5-Trimethylbenzene	9.0	1.8
Vinyl acetate	<23	<6.6	1,2,4-Trimethylbenzene	30	6.1
1,1-Dichloroethane	<1.3	<0.33	1,3-Dichlorobenzene	4.0	0.67
cis-1,2-Dichloroethene	<1.3	<0.33	1,4-Dichlorobenzene	<0.79	<0.13
Hexane	190	54	1,2,3-Trimethylbenzene	<8.1	<1.6
Chloroform	0.44	0.089	1,2-Dichlorobenzene	<2	<0.33
2-Butanone (MEK)	73	25	1,2,4-Trichlorobenzene	<2.4	<0.33
1,2-Dichloroethane (EDC)	0.60	0.15	Naphthalene	2.7 fb	0.52 fb
1,1,1-Trichloroethane	2.6	0.48	Hexachlorobutadiene	<0.7	<0.066

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	Method Blank	Client:	Environmental Associates
Date Received:	Not Applicable	Project:	Federal Way Shop 27194-2
Date Collected:	Not Applicable	Lab ID:	08-1793 mb
Date Analyzed:	08/21/18	Data File:	082110.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	MS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	96	70	130

Compounds:	Concentration ug/m3	Concentration ppbv	Compounds:	Concentration ug/m3	Concentration ppbv
Chlorodifluoromethane	<0.35	<0.1	1-Butanol	<6.1	<2
Propene	<0.69	<0.4	Carbon tetrachloride	<0.63	<0.1
Dichlorodifluoromethane	<0.49	<0.1	Benzene	<0.32	<0.1
Chloromethane	<0.21	<0.1	Cyclohexane	<6.9	<2
F-114	<0.7	<0.1	2-Pentanone	<3.5	<1
Isobutene	<0.92	<0.4	3-Pentanone	<3.5	<1
Acetaldehyde	<9	<5	Pentanal	<3.5	<1
Vinyl chloride	<0.26	<0.1	1,2-Dichloropropane	<0.23	<0.05
1,3-Butadiene	<0.022	<0.01	1,4-Dioxane	<0.36	<0.1
Bromomethane	<1.6	<0.4	Bromodichloromethane	<0.067	<0.01
Chloroethane	<0.26	<0.1	Trichloroethene	<0.27	<0.05
Ethanol	<7.5	<4	cis-1,3-Dichloropropene	<0.45	<0.1
Acetonitrile	<1.7	<1	4-Methyl-2-pentanone	<4.1	<1
Acrolein	<0.92	<0.4	trans-1,3-Dichloropropene	<0.45	<0.1
Acrylonitrile	<0.22	<0.1	Toluene	<0.38	<0.1
Pentane	<3	<1	1,1,2-Trichloroethane	<0.055	<0.01
Trichlorofluoromethane	<0.56	<0.1	3-Hexanone	<4.1	<1
Acetone	<4.8	<2	2-Hexanone	<4.1	<1
2-Propanol	<8.6	<3.5	Hexanal	<4.1	<1
Isoprene	<0.28	<0.1	Tetrachloroethene	<0.68	<0.1
Iodomethane	<0.58	<0.1	Dibromochloromethane	<0.085	<0.01
1,1-Dichloroethene	<0.4	<0.1	1,2-Dibromoethane (EDB)	<0.077	<0.01
Methacrolein	<2.9	<1	Chlorobenzene	<0.46	<0.1
trans-1,2-Dichloroethene	<0.4	<0.1	Ethylbenzene	<0.43	<0.1
Cyclopentane	<0.29	<0.1	1,1,2,2-Tetrachloroethane	<0.14	<0.02
Methyl vinyl ketone	<2.9	<1	m,p-Xylene	<0.87	<0.2
Butanal	<2.9	<1	o-Xylene	<0.43	<0.1
Methylene chloride	<87	<25	Styrene	<0.85	<0.2
CFC-113	<0.77	<0.1	Bromoform	<2.1	<0.2
Carbon disulfide	<6.2	<2	Benzyl chloride	<0.052	<0.01
Methyl t-butyl ether (MTBE)	<1.8	<0.5	1,3,5-Trimethylbenzene	<2.5	<0.5
Vinyl acetate	<7	<2	1,2,4-Trimethylbenzene	<2.5	<0.5
1,1-Dichloroethane	<0.4	<0.1	1,3-Dichlorobenzene	<0.6	<0.1
cis-1,2-Dichloroethene	<0.4	<0.1	1,4-Dichlorobenzene	<0.24	<0.04
Hexane	<3.5	<1	1,2,3-Trimethylbenzene	<2.5	<0.5
Chloroform	<0.049	<0.01	1,2-Dichlorobenzene	<0.6	<0.1
2-Butanone (MEK)	<2.9	<1	1,2,4-Trichlorobenzene	<0.74	<0.1
1,2-Dichloroethane (EDC)	<0.04	<0.01	Naphthalene	0.12	0.023 lc
1,1,1-Trichloroethane	<0.55	<0.1	Hexachlorobutadiene	<0.21	<0.02

Date of Report: 08/27/18
Date Received: 08/15/18
Project: Federal Way Shop 27194-2, F&BI 808364

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD TO-15

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Chlorodifluoromethane	ppbv	5	110	70-130
Propene	ppbv	5	95	70-130
Dichlorodifluoromethane	ppbv	5	103	70-130
Chloromethane	ppbv	5	101	70-130
F-114	ppbv	5	105	70-130
Isobutene	ppbv	5	98	70-130
Acetaldehyde	ppbv	5	94	70-130
Vinyl chloride	ppbv	5	103	70-130
1,3-Butadiene	ppbv	5	109	70-130
Bromomethane	ppbv	5	126	70-130
Chloroethane	ppbv	5	101	70-130
Ethanol	ppbv	5	94	70-130
Acetonitrile	ppbv	5	94	70-130
Acrolein	ppbv	5	113	70-130
Acrylonitrile	ppbv	5	128	70-130
Pentane	ppbv	5	107	70-130
Trichlorofluoromethane	ppbv	5	107	70-130
Acetone	ppbv	5	103	70-130
2-Propanol	ppbv	5	106	70-130
Isoprene	ppbv	5	111	70-130
Iodomethane	ppbv	5	105	70-130
1,1-Dichloroethene	ppbv	5	106	70-130
Methacrolein	ppbv	5	105	70-130
trans-1,2-Dichloroethene	ppbv	5	107	70-130
Cyclopentane	ppbv	5	113	70-130
Methyl vinyl ketone	ppbv	5	115	70-130
Butanal	ppbv	5	106	70-130
Methylene chloride	ppbv	5	101	70-130
CFC-113	ppbv	5	104	70-130
Carbon disulfide	ppbv	5	99	70-130
Methyl t-butyl ether (MTBE)	ppbv	5	108	70-130
Vinyl acetate	ppbv	5	103	70-130
1,1-Dichloroethane	ppbv	5	108	70-130
cis-1,2-Dichloroethene	ppbv	5	107	70-130
Hexane	ppbv	5	113	70-130
Chloroform	ppbv	5	108	70-130
2-Butanone (MEK)	ppbv	5	108	70-130
1,2-Dichloroethane (EDC)	ppbv	5	110	70-130
1,1,1-Trichloroethane	ppbv	5	111	70-130

Date of Report: 08/27/18
Date Received: 08/15/18
Project: Federal Way Shop 27194-2, F&BI 808364

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD TO-15

Laboratory Code: Laboratory Control Sample (continued)

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
1-Butanol	ppbv	5	104	70-130
Carbon tetrachloride	ppbv	5	107	70-130
Benzene	ppbv	5	108	70-130
Cyclohexane	ppbv	5	105	70-130
2-Pentanone	ppbv	5	104	70-130
3-Pentanone	ppbv	5	112	70-130
Pentanal	ppbv	5	107	70-130
1,2-Dichloropropane	ppbv	5	104	70-130
1,4-Dioxane	ppbv	5	107	70-130
Bromodichloromethane	ppbv	5	110	70-130
Trichloroethene	ppbv	5	101	70-130
cis-1,3-Dichloropropene	ppbv	5	103	70-130
4-Methyl-2-pentanone	ppbv	5	113	70-130
trans-1,3-Dichloropropene	ppbv	5	108	70-130
Toluene	ppbv	5	100	70-130
1,1,2-Trichloroethane	ppbv	5	104	70-130
3-Hexanone	ppbv	5	101	70-130
2-Hexanone	ppbv	5	109	70-130
Hexanal	ppbv	5	99	70-130
Tetrachloroethene	ppbv	5	101	70-130
Dibromochloromethane	ppbv	5	112	70-130
1,2-Dibromoethane (EDB)	ppbv	5	109	70-130
Chlorobenzene	ppbv	5	105	70-130
Ethylbenzene	ppbv	5	107	70-130
1,1,2,2,-Tetrachloroethane	ppbv	5	116	70-130
m,p-Xylene	ppbv	10	110	70-130
o-Xylene	ppbv	5	116	70-130
Styrene	ppbv	5	110	70-130
Bromoform	ppbv	5	109	70-130
Benzyl chloride	ppbv	5	127	70-130
1,3,5-Trimethylbenzene	ppbv	5	114	70-130
1,2,4-Trimethylbenzene	ppbv	5	111	70-130
1,3-Dichlorobenzene	ppbv	5	112	70-130
1,4-Dichlorobenzene	ppbv	5	121	70-130
1,2,3-Trimethylbenzene	ppbv	5	111	70-130
1,2-Dichlorobenzene	ppbv	5	116	70-130
1,2,4-Trichlorobenzene	ppbv	5	108	70-130
Naphthalene	ppbv	5	105	70-130
Hexachloro-1,3-butadiene	ppbv	5	110	70-130

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The compound is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

808364

SAMPLE CHAIN OF CUSTODY

MC 08/15/18

Page 1 of 1

Report To Eric Zuern
Company Environmental Associates
Address 13380 - 112th ave NE #300
City, State, ZIP Bellevue, WA 98004
Phone 425-453-9025 Email eric@environmentalassociates.com

SAMPLERS (signature)

PROJECT NAME: Federal Way Shop
PO #: 27194-2

REPORTING LEVEL
☐ Indoor Air ☐ Deep Soil Gas
☑ Sub Slab/Soil Gas ☐ SVE/Grab

INVOICE TO: Carlo Comm. Prop. see attached sheet

TURNAROUND TIME
☑ Standard
☐ RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
☐ Dispose after 30 days
☐ Archive Samples
☐ Other

ANALYSIS REQUESTED

Sample Name	Lab ID	Canister ID	Flow Contr. ID	Date Sampled	Field Initial Press. (Hg)	Field Initial Time	Field Final Press. (Hg)	Field Final Time	TO-15 Full Scan	TO-15 BTEXN	TO-15 cVOCs		Notes
B-10	01	3674	101	8-15-18	30	10:10	3	10:15	X				
B-11	02	3672	108	8-15-18	29	11:35	3	11:40	X				
B-12	03	3671	105	8-15-18	29	12:10	3	12:15	X				
B-13	04	3669	106	8-15-18	30	~~12:45~~ 12:50	3	12:55	X				
												Samples received at 23 °C	

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Eric Zuern	EAI	8-15-18	2:45
Received by:	Nhan Pham	Fed Ex	8/15/18	2:45
Relinquished by:				
Received by:				

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

APPENDIX B

Certifications

National Registry of Environmental Professionals

Be it known to all persons that the following individual pursuant to the requirements for education, experience and examination established by the National Registry of Environmental Professionals is entitled to all of the rights and privileges by the body and to be duly registered by it.

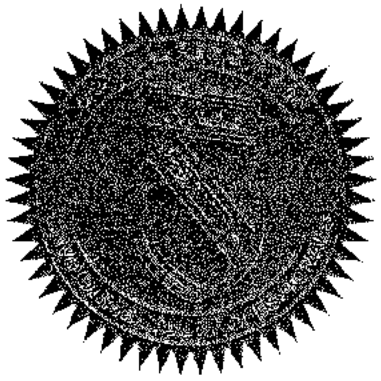
This is to certify that

Don W Spencer

is a

Registered Environmental Property Assessor

This certificate will remain valid only if it bears the seal of the current year, unless revoked, suspended or invalidated by order of the Board of Directors of the National Registry of Environmental Professionals.



Witness our hand

This Day **09/17/2013**

REPA 418290

Richard Young, PhD

Executive Director

Registration Number: _____

This certificate is the property of the National Registry of Environmental Professionals and must upon demand be returned.

The State of Washington

THE DEPARTMENT OF LICENSING

It is hereby certified that Don W. Spencer

has satisfactorily complied with and completed the statutory requirements set forth in title 18 revised code of Washington to engage in practice as a

Geologist

And is hereby authorized, empowered and granted the right to engage in that practice within the State of Washington subject to the state laws.

And is licensed as a qualified

Hydrogeologist

Given under the hand and seal of the director this fourteenth day of March, 2002.

Fred Stephens
DIRECTOR

Geologist Licensing Board

CHAIR

No. 604

Certificate of Completion

This is to certify that

Don W. Spencer

has satisfactorily completed
8 hours of refresher training in

Hazardous Waste Operation and Emergency Response

to comply with the training requirements of
OSHA 29 CFR 1910.120 & WAC 296-843

167354
Certificate Number

ARGUS PACIFIC
TRAINING • CONSULTING
A Terracon COMPANY

May 10, 2018 — Expires in 1 year.
Date(s) of Training

Exam Score: N/A
If appropriate:

Instructor

ARGUS PACIFIC, INC / 1900 WEST NICKERSON ST, SUITE 315 / SEATTLE, WASHINGTON 98119 / 206.285.3373 / ARGUSPACIFIC.COM

Certificate of Completion

This is to certify that

Eric A. Zuern

has satisfactorily completed
8 hours of refresher training in

Hazardous Waste Operation and Emergency Response

to comply with the training requirements of
OSHA 29 CFR 1910.120 & WAC 296-843

168066
Certificate Number

ARGUS PACIFIC
TRAINING • CONSULTING
A Terracon COMPANY

Jun 14, 2018 Expires in 1 year.
Date(s) of Training

Exam Score: N/A
If appropriate:

Instructor

ARGUS PACIFIC, INC / 1900 WEST NICKERSON ST. SUITE 315 / SEATTLE, WASHINGTON 98119 / 206.285.3373 / ARGUSPACIFIC.COM