INTERIM ACTION REPORT

Former Chevron Service Station No. 90129

4700 Brooklyn Avenue NE, Seattle, WA

Prepared for: FH Brooklyn, LLC & Chevron Environmental Management Company

Project No. 160092 • January 4, 2019 Final

Aspect CONSULTING

earth + water

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Executive Summary

An interim action was performed at the former Chevron Service Station No. 90129 property located at 4700 Brooklyn Avenue NE in Seattle, Washington (Site) to remove petroleum-contaminated soil and groundwater and allow the redevelopment of the Property. The interim action was completed by FH Brooklyn, LLC under an Agreed Order No. DE 13815 (Agreed Order), effective January 11, 2017, with the Washington State Department of Ecology (Ecology). All activities taken during the interim action were completed in full accordance with the Ecology-approved Final Interim Action Work Plan (Aspect 2018) and applicable Ecology regulations. These activities fully satisfy the interim action requirements under the Agreed Order, and are a significant remedial action component to the final cleanup action for the Site.

A November 2016 on-Property remedial investigation (RI) was conducted to design an interim action to address petroleum-contaminated soil and groundwater at the Property. Three groundwater monitoring wells in the southwest and one monitoring well in the northwest corners of the Property exhibited free product indicating that a significant release of petroleum contamination had migrated vertically downward until it encountered the water table (at approximately 15 feet below ground surface [bgs]). These areas of free product on the water table spread laterally and smeared vertically with seasonal groundwater changes (smear zone) creating large known areas of petroleum-contaminated soil. The RI results served as the basis of the Interim Action Work Plan (Aspect, 2018), which identified these two areas with free product and other areas of petroleum-contaminated soil that exceeded applicable cleanup levels to be completely removed through remedial excavation.

Soil Removal

Interim action soil removal was completed in conjunction with the mass excavation planned for Property redevelopment. Contaminated soil comprised a subset of the total excavation volume, but where necessary to meet applicable cleanup levels and comply with the Interim Action Work Plan, excavation extended beyond redevelopment depths to achieve remedial action goals. A total of 6,837 tons of petroleum-contaminated soil exceeding Model Toxics Control Act (MTCA) Method A cleanup levels and a total of 1,259 tons of impacted soil (petroleum-contaminant concentrations below MTCA Method A cleanup levels) were removed from the Property and transported to Cadman's permitted facility in Everett, Washington, for treatment and disposal.

Aspect Consulting, LLC (Aspect) monitored soil excavation activities and performed field screening and soil sampling during construction. A total of 119 samples were collected during the interim action from soil stockpiles, test pits, and the final limits of the remedial excavation for characterization and performance monitoring purposes. The performance monitoring samples collected from the final extent of the remedial excavation show that all soil exceeding MTCA Method A (unrestricted use) cleanup levels was removed from the Property during the interim action and that all other

substantive requirements of the Interim Action Work Plan related to soil excavation were met.

Remedial excavation extended deeper than the planned development depth in several areas. The Final IAWP (Aspect, 2018) identified three isolated, deeper remedial excavations that were successfully completed to elevations as deep as 183 feet (depth of almost 34 feet bgs). The remedial excavation final depth was greater than construction subgrade elevation at approximately one-third of the Property. Where the final remedial excavation depth extended below the construction subgrade elevation, controlled density fill (CDF) was used to backfill to the construction subgrade as recommended by the geotechnical engineer of record in order to comply with City of Seattle Department of Construction and Inspections requirements given the allowable bearing pressure of the subject redevelopment, and to address geotechnical concerns related to the variable depth of the final remedial excavation and relevant seismic considerations.

A basic excavation dewatering system was necessary for the development including pretreatment for certain petroleum and solvent constituents. Dewatering system enhancements and longer operation timeframes were required to complete excavation of petroleum contaminated soils below the development depth. These dewatering system enhancements were pretreatment, permitted discharge conditions, and a supplemental dewatering sump necessary to excavate deep petroleum contaminated soils. Dewatering fluids were disposed of by permitted discharge to surface water via the storm sewer. Pretreatment and discharge was permitted by Ecology Water Quality issuance of a Construction Stormwater General Permit (CSWGP WAR No. 306191) and an Administrative Order Docket No.15705. All dewatering, pretreatment, and discharge operations were in full accordance with permit conditions.

Groundwater Monitoring and Chemical Vapor Barrier

Aspect monitored the seven off-Property monitoring wells during construction of the interim action as required by the Final IAWP (Aspect, 2018) and Ecology's letter from April 23, 2018 (Ecology, 2018a). Consistent with the January 2018 preliminary Site-wide RI monitoring results, petroleum hydrocarbons (sourced from the Property) and chlorinated volatile organic compounds (CVOCs; from an off-Property source) were detected at concentrations that exceeded groundwater cleanup levels and applicable Ecology groundwater screening levels for vapor intrusion. A chemical vapor barrier was selected as the appropriate engineering control on all exterior below-grade foundation walls and beneath the lowest parking-garage floor slab to protect future occupants at the Property against exposure from potential vapor intrusion from residual concentrations of petroleum and CVOCs remaining in groundwater in accordance with Ecology guidance on vapor intrusion (Ecology, 2016b).

Summary Statement

This interim action resulted in the removal of all petroleum-contaminated soil exceeding MTCA Method A (unrestricted use) cleanup levels from the Property. The removal of the source of petroleum contamination in soil (in addition to contaminated groundwater removal via dewatering) from the Property will enhance the natural degradation of petroleum-contaminated groundwater off-Property. The installed chemical vapor barrier will prevent any potential recontamination from residual petroleum- and CVOC-

contaminated groundwater off-Property, as well as protect future occupants of the Property. Based on the successful completion of the interim action, this Interim Action Report documents the interim action implementation and satisfies interim action reporting requirements of the Agreed Order. Additional remedial investigation and if necessary, cleanup action(s) are required off-Property to satisfy the remaining requirements of the Agreed Order and comprise the final remedy for the Site.

1 Introduction

Aspect Consulting, LLC, (Aspect) prepared this Interim Action Report to summarize the remedial excavation activities comprising the 2018 interim action that was completed at the former Chevron Service Station No. 90129 located at 4700 Brooklyn Avenue NE in Seattle, Washington (herein referred as the Property). The approximate location of the Site relative to surrounding physical features is shown on Figure 1.

FH Brooklyn, LLC (FH Brooklyn) and Chevron Environmental Management Company (CEMC) are signatories to Agreed Order No. DE 13815 (Agreed Order) with the Washington State Department of Ecology (Ecology), effective January 11, 2017. Under Washington Administrative Code (WAC) 173-340-430, Ecology permits implementation of interim actions, when warranted. The Agreed Order scope of work required FH Brooklyn and CEMC to complete remedial investigation (RI) activities that identified needed interim actions and defined the scope and schedule requirements for implementing those interim action(s). The Agreed Order also requires FH Brooklyn and CEMC to complete a Site-wide RI and feasibility study (FS), and to prepare a draft cleanup action plan (DCAP) for the Site, which will be completed after this interim action.

The first RI activities under the Agreed Order were completed in November 2016 by Aspect and documented in the On-Property Remedial Investigation Data Report, dated January 17, 2017 (Aspect, 2017). These RI activities were completed in accordance with the Ecology-approved Preliminary Draft Remedial Investigation Work Plan (Aspect, 2016) and consisted of investigations on the Property necessary to design the interim action; specifically, to establish the extent of petroleum-contaminated soil that exceeds MTCA Method A cleanup levels. These results served as a design basis of the interim action as defined in the Final Interim Action Work Plan (IAWP; Aspect, 2018).

A Final Remedial Investigation Work Plan (RIWP) was submitted to Ecology on May 26, 2017, by Leidos, Inc. (Leidos) on behalf of CEMC, describing Site-wide RI activities (Leidos, 2017). The objectives of these investigations were to define the nature and extent of petroleum and chlorinated volatile organic compound (CVOC) contamination in soil, groundwater, and soil vapor at the Site, and to comply with the requirements of the Agreed Order. The RI activities described in the Final RIWP were initiated in January 2018 and are ongoing. In a letter, dated April 23, 2018, Ecology approved a schedule extension request for implementing the Final RIWP, in addition to identifying additional RI scope to be completed based on the January 2018 results (Ecology, 2018).

Aspect prepared a Final IAWP that was approved by Ecology on March 8, 2018 (Aspect, 2018). This Final IAWP was prepared after completion of the public-comment period held from December 22, 2017, to January 22, 2018, and included a Public Review Draft IAWP and the State Environmental Policy Act (SEPA) Determination of Non-Significance (DNS). The Final IAWP described the design and requirements of the

interim action that entailed removal of soil and groundwater impacted by petroleum hydrocarbons.

1.1 Location and Description

The interim action occurred at King County Tax Parcel No. 8816400985, located at 4700 Brooklyn Ave NE, within the University District neighborhood in Seattle, Washington (herein referred as the Property). The Property totals 0.38 acres and the legal description is *University Heights Addition less the portion for Alley per Deed Rec #20160711000108* and situated in the SE Quarter – Section 8 – Township 25 – Range 4. The approximate location of the Site relative to surrounding features is shown on Figure 1.

The zoning is classified as commercial/mixed use (Seattle Mixed U-District [SM-U 75-240]) by the City of Seattle (City). The topography is relatively flat, with ground surface ranging in elevation from approximately 214 to 217 feet above mean sea level (amsl: North Atlantic Vertical Datum [NAVD] 88 vertical datum).

A gasoline service station began operating at the Property in the 1910s and ceased in November 2016. The most recent service-station configuration (former convenience store, former pump islands with a canopy, and historical fuel underground storage tanks [USTs]) is shown on Figure 2. The known USTs were removed in February 2017, and the convenience store, pump islands, and canopy were demolished in April/May 2018.

The Site is identified in Ecology's database as Cleanup Site ID: 10632 and Facility Site ID: 81966648.

1.2 Interim Action Objectives

The interim action was designed on behalf of FH Brooklyn in accordance with the Agreed Order and MTCA regulation found in WAC 173-340, which "establishes administrative processes and standards to identify, investigate, and clean up facilities where hazardous substances have come to be located." The purpose of the interim action was to remove soil and groundwater impacted by petroleum hydrocarbons to allow for Property redevelopment; the specific interim action elements are described in the Ecology-approved Final IAWP (Aspect, 2018).

1.3 Project Organization and Responsibilities

The parties involved in the interim action are as follows:

- **Ecology.** The interim action was performed under the Agreed Order with Ecology. This Interim Action Report is an Agreed Order-required deliverable and documents completion of the interim action.
- **Potentially Liable Parties (PLPs).** FH Brooklyn and CEMC are responsible for remedial investigation and cleanup activities at the Site under the Agreed Order. The current Property owner, FH Brooklyn, was the party that performed the interim action in conjunction with Property redevelopment.
- **Environmental Engineer.** Aspect prepared the Final IAWP (Aspect, 2018) and oversaw the implementation of the interim action as FH Brooklyn's

representative. Leidos, as CEMC's representative, provided oversight of the interim action on behalf of CEMC.

- **Geotechnical Engineer.** GeoEngineers, Inc., (GeoEngineers) was the geotechnical engineer of record for FH Brooklyn.
- **Construction Contractor.** Exxel Pacific was the general construction contractor to FH Brooklyn for the interim action construction.
- **Earthwork Contractors.** Elk Heights Excavation, LLC (Elk Heights) and their subcontractor River's Edge Environmental Services, Inc. (Rivers Edge) were the earthwork subcontractors responsible for excavation, transport, and disposal of soils. Exxel Pacific subcontracted the earthwork to Elk Heights. Additionally, Rivers Edge subcontracted Dixon Environmental Services (Dixon), a certified UST decomissioner, to permanently decommission USTs discovered during earthwork activities.
- **Shoring/Dewatering Contractor.** Kulchin Foundation Drilling Co. (Kulchin) installed the construction shoring and operated the dewatering system, and was subcontracted to Exxel Pacific.
- **Dewatering, Pretreatment, and Discharge Contractor.** Clear Water Services (Clear Water) was subcontracted to Exxel Pacific and designed, installed, and operated the temporary pretreatment and discharge system, and ensured conformance with conditions of the Ecology-issued Construction Stormwater General Permit (CSWGP).
- **Contaminated Soil Disposal.** All contaminated and impacted soil removed during the interim action was transported to Cadman's permitted facility in Everett, Washington, for treatment and/or disposal.

2 Pre-Interim Action Activities

This section summarizes the planning and reporting activities completed prior to the commencement of the interim action.

2.1 Construction Stormwater General Permit

FH Brooklyn applied for an industrial waste water discharge permit from the King County Industrial Waste Program (King County) in early 2017 for discharge to the public sanitary sewer during the interim action. King County, in coordination with the City, issued a Major Discharge Authorization No. 4422-01 (permit) to FH Brooklyn on May 17, 2017. However, the City's policy changed in early 2018 that required discharge to surface water via the public storm sewer and National Pollutant Discharge Elimination System (NPDES) permitting administered by the Ecology Water Quality Program.

FH Brooklyn applied to Ecology for a CSWGP in February 2018. Subsequently, Ecology issued a CSWGP (WAR306191) and an Administrative Order Docket No.15705, dated

February 22, 2018. The Administrative Order established the indicator levels for known Site contaminants for compliance with water quality standards for surface water of the State of Washington. Also, the Administrative Order defined the conditions and actions necessary to comply with CSWGP conditions that included installation of a temporary pretreatment system to treat water to below indicator levels, and discharge monitoring and reporting. Together, the CSWGP and the Administrative Order are referred to herein as the discharge permit.

A copy of the discharge permit is attached as Appendix A.

2.2 Environmental Construction Management Plan

Following Ecology's approval of the Final IAWP on March 8, 2018, Aspect prepared an Environmental Construction Management Plan (ECMP) dated March 19, 2018. The ECMP was consistent with the IAWP and complied with all Ecology requirements however was not an Ecology deliverable. The ECMP was prepared for use by the contractor and earthworks subcontractors and defined the soil categories (Clean, Impacted, and Contaminated), soil excavation and handling requirements for all soil categories, protocol to characterize unanticipated contaminated soil, water management, and construction worker safety and training requirements (Appendix B). The soil categories defined as:

- **Clean Soil**. Contaminants were not detected and no physical evidence of contamination (sheen, odor, or staining). Meets any additional acceptance criteria of receiving location, if transported off-Site.
- **Impacted Soil**. One or more contaminants are detected at a concentration below their respective MTCA Method A cleanup levels. Meets all acceptance criteria of the receiving permitted treatment/disposal facility.
- **Contaminated Soil**. Contaminant concentrations for any analyte exceed MTCA Method A cleanup levels. Meets all acceptance criteria of the receiving permitted treatment/disposal facility.

The ECMP described the measures to be implemented for excavation dewatering and managing contaminated groundwater related to the interim action and redevelopment construction activities completed at the Site. According to the ECMP:

- Dewatered liquids were to be managed, including stormwater runoff, contaminated groundwater from the excavation, and well dewatering.
- Excavation dewatering was designed by the Bender Consulting, LLC on behalf of FH Brooklyn. The construction contractors Kulchin and Elk Heights (both subcontracted to Exxel Pacific) were responsible for conducting dewatering to allow removal of contaminated soils. Dewatering was performed using perimeter vacuum well-point system and sumps, if needed.
- All dewatered liquids were to be pumped to tanks before pretreatment and discharge by Clear Water (also subcontracted to Exxel Pacific). Water was pretreated on-Site and discharged as surface water via the storm sewer in

accordance with the discharge permit. All monitoring conditions and discharge limits were met during operation of permitted discharge.

All actions mentioned in the ECMP complied with the Agreed Order, the Final IAWP (Aspect, 2018), and other applicable regulatory requirements. The ECMP is included as Appendix B.

3 Interim Action

The purpose of the interim action was to remove soil contaminated by petroleum hydrocarbons, allowing for subsequent redevelopment of the Property. The interim action activities were conducted in full accordance with the MTCA regulation found in WAC 173-340 concurrently with the redevelopment construction activities.

The average total excavation depth for the redevelopment was approximately 21 feet below the ground surface (bgs) (the average surface elevation is about 216 feet while the approximate average bottom excavation elevation was 195 feet). However, as required by the IAWP the remedial excavation was advanced deeper at select locations where exceedances of soil cleanup levels were identified during the RI activities, and where performance monitoring during the interim action indicated cleanup level exceedances.

Excavated soils were characterized for off-Site disposal. Soils above cleanup levels that were excavated below the final development depth were backfilled with controlled density fill (CDF) for development requirements.

The following sections summarize each completed interim action element.

3.1 Monitoring Well Decommissioning

A total of 17 wells (16 groundwater monitoring wells and 1 recovery well) located within the Property boundary were decommissioned by chipping-in-place in February 2017 and March 2018, in accordance with WAC 173-160-460. Holt Services, Inc., a driller licensed in the State of Washington performed the well decommissioning and recorded the decommissioning with Ecology. All decommissioning logs are included in Appendix C.

3.2 Soil Excavation and Disposal

3.2.1 UST Discovery, Removal and Assessment

Decommissioning of the three documented fuel USTs in the southwestern corner of the Property (Figure 2) was completed in February 2017 and was described in the Final IAWP (Aspect, 2018). During the interim action excavation activities, Rivers Edge discovered an additional eight steel USTs ranging from 125 to 5,250 gallons, (six [UST 1 through UST 6] on June 19, 2018, and two [UST 7 and UST 8] on July 9, 2018) and associated piping/fill ports, at the Property. The approximate location of each tank is shown on Figure 2. All USTs were associated with historical service-station operations

that included five generations of UST infrastructure and date back to 1919 (Aspect, 2016). The details of the discovered and removed USTs are tabulated below.

Tank ID	Tank Type	Approx. Storage Capacity (gallons)	Removal Date	Approx. Tank Base Elevation	Physical Evidence of a Release
UST 1	Steel	1,000	June 22, 2018	206	Yes
UST 2		400		208	Yes
UST 3		125		208	Yes
UST 4		3,000		200	No
UST 5		2,200		200	No
UST 6		1,100		208	No
UST 7		4,500	July 12, 2018	202	No
UST 8		5,250		202	No

UST 1 through UST 6 and associated piping/fill ports were removed on June 22, 2018. UST 7 and UST 8 and associated piping/fill ports were discovered later and removed on July 12, 2018. Aspect obtained a 30-day notification waiver from Ecology prior to the tank removals. Dixon, a certified UST decommissioner, requested that a marine chemist from U.S. Marine Chemists and a Fire Marshall from the City of Seattle's fire department be present at the time of tank removals. Aspect completed the UST site assessments, per Ecology requirements. A copy of the UST site assessment Checklists and tank removal documents are presented as Appendix D.

Each of the eight tanks were triple rinsed and inerted prior to their removal. Following completion of rinsing and inerting activities, the Fire Marshall issued a hot work permit that allowed Dixon to remove the tanks from the ground.

The four smaller tanks (USTs 1, 2, 3, and 6) were cut by Rivers Edge and transported off-Property as scrap metal. The four larger tanks (USTs 4, 5, 7, and 8) were loaded on flat-bed trailers by Rivers Edge and transported off-Site for disposal.

Aspect performed the UST site assessment on both days after the tanks were removed from the Property, in accordance with the Ecology's Guidance[1]. Aspect performed soil field screening by using water sheen testing, measuring headspace vapor with a photo-ionization detector (PID), and visual observations to identify physical evidence of contamination. Soil samples were collected to verify the field screening results and confirm whether or not a release had occurred. The soil samples were submitted to Friedman & Bruya, an Ecology-certified chemical analytical laboratory in Seattle, Washington, for chemical analysis of analytes listed in Table 6-1 of Ecology's Guidance (Ecology, 2016a). The following sections summarize the UST site assessments.

[1] Guidance for Site Checks and Site Assessments for Underground Storage Tanks, Department of Ecology, Underground Storage Tank Program, Publication #90-52, Revised April 2003.

3.2.1.1 UST Site Assessment – June 22, 2018 (USTs 1 through 6)

Aspect field screened overburden that was removed to access the USTs and the soil at the base of the tank pits (glacial deposits consisting of grey silty sand with gravel) for physical evidence of contamination using water sheen testing, visual/odor observations, and headspace vapor measurements (using a PID).

Field screening results of soil beneath USTs 1, 2, and 3 yielded physical evidence of contamination (moderate to heavy sheen and up to 535 parts per million [ppm] headspace readings).

Field screening results of the overburden at each of the tank locations and soil from the base of USTs 4, 5, and 6 yielded no physical evidence of contamination (no sheen, no odor, and 0 ppm headspace readings).

Aspect collected soil samples to confirm a potential release and to verify the field screening results as follows (see Figure 2 for the tank locations):

- A soil sample was obtained from the bottom of the UST 1 tank pit.
- A soil sample was obtained from the bottom of the UST 6 tank pit.
- Because USTs 2 and 3 were near each other, Aspect collected one sample from their tank pit.
- Similarly, because USTs 4 and 5 were near each other, Aspect collected one sample from their tank pit.

Sidewall samples from the tank pits were not collected because soils adjacent to and beneath the discovered USTs were excavated, characterized, and disposed off-Site accordingly, regardless of UST assessment sample results.

The UST assessment analytical results are summarized below:

- **UST 1.** Gasoline- and diesel-range hydrocarbons were detected at concentrations (1,900 milligrams per kilogram [mg/kg] and 13,000 mg/kg, respectively) exceeding their MTCA Method A cleanup levels in the sample obtained from the UST 1 tank pit (Table 1).
- **UST 2 and 3.** Gasoline-, diesel-, and motor oil-range hydrocarbons, benzene, and xylene were all detected at concentrations exceeding their respective MTCA Method A cleanup levels in the sample obtained from the USTs 2 and 3 location (Table 1).
- **USTs 4, 5, and 6.** Analytes were not detected in soil samples from USTs 4, 5, and 6 pits.

3.2.1.2 UST Site Assessment – July 12, 2018

Field screening of the overburden at each of the tank locations, and soil from the base of the USTs 7 and 8, yielded no physical evidence of contamination (no sheen, no odor, and 0 ppm headspace readings). A soil sample was obtained from the bottom of each tank pit (UST 7 and UST 8) and no contaminants were detected (Table 1).

The chemical analytical results of the soil samples obtained during the UST site assessments are summarized in Table 1. The approximate location of the discovered USTs 1 through 8 is shown on Figure 2. A copy of the UST site assessment Checklists and tank-removal documents are presented as Appendix D. A copy of the laboratory analytical reports are included in Appendix E.

3.2.2 Remedial Excavations

The primary objective of the interim action was to remove contaminated soil exceeding cleanup levels (MTCA Method A) from the Property. The performance monitoring samples collected from the final extent of all excavations (construction subgrade and remedial excavations) show that soil exceeding cleanup levels for unrestricted use were successfully removed from the Property during the interim action. Remedial excavation activities commenced on June 19, 2018 and were completed on September 13, 2018.

Quantities of 6,300 tons of Contaminated soil (petroleum-contaminant concentrations exceeding MTCA Method A cleanup levels) and 4,900 tons of Impacted soil (petroleum contaminant concentrations below MTCA Method A cleanup levels) were estimated in the Final IAWP (Aspect, 2018) – prior to the interim action and based on available characterization data.

At the conclusion of the interim action, a total of 6,837 tons of Contaminated soil and a total of 1,259 tons of Impacted soil was removed from the Property.

The final excavation grade varied across the Property based on the depth required to attain remedial action goals specified in the IAWP. The remedial excavation final depth was greater than construction-grade elevation at approximately one-third of the Property.

3.2.2.1 Field Oversight and Sampling Methods

Aspect monitored excavation activities, including overseeing Elk Heights and their subcontractor River's Edge in segregating soils as defined in the ECMP during excavation. The ECMP was used to guide Elk Heights and River's Edge for known areas of Contaminated soil and approximate extents, but also outline methods of identifying, characterizing, and handling unanticipated Contaminated soil.

The characterization of unanticipated potentially contaminated soils entailed field screening by using water sheen testing, measuring headspace vapor with a PID, and visual/odor observations. If field screening indicated the soil was potentially Contaminated, soil samples were collected for laboratory analysis to categorize the soil for disposal. Additionally, laboratory analysis was used for performance monitoring to advance the remedial excavation to removal all soils above cleanup levels.

Soil samples were obtained using U.S. Environmental Protection Agency (EPA) Method 5035 sampling kits and submitted to Friedman & Bruya Laboratory in Seattle, Washington, for chemical analysis of benzene, toluene, ethylbenzene, and xylenes (BTEX) by EPA Method 8021B and gasoline-range hydrocarbons by Method NWTPH-Gx. Select samples were analyzed for diesel- and oil-range hydrocarbons by Method NWTPH-Dx, and volatile organic compounds (VOCs) by EPA Method 8260C. The scope of soil sampling and analysis was driven by the field screening results, Contaminated soil volume, and treatment/disposal facility profiling requirements.

3.2.2.2 Known and Unanticipated Contamination Excavated

The mass excavation successfully achieved remedial action goals and involved removal of contaminated soil based on the RI (Aspect, 2017) and additional unanticipated contamination discovered as the excavation progressed.

Remedial excavation consisted of the following elements:

- **Known Contamination - West Half of Property.** The largest areas of known Contaminated soil (Figures 6 and 7 in the ECMP) was associated with two areas of light nonaqueous phase liquid (LNAPL) identified along the west and southwest portions of the Property. These areas of known contamination were beneath fuel islands and former USTs located in this part of the Property. The lateral and vertical extents of these known areas of contamination were refined during remedial excavation with test-pits and soil sampling prior to excavation as designed in the ECMP (Appendix B). Additionally, the Final IAWP (Aspect, 2018) identified three locations greater than (>) 24 feet bgs deep that exceeded cleanup levels and were successfully excavated during the interim action and confirmed through performance monitoring.

- **Unanticipated Contamination – Expanded portions of the West Half of Property and East Half of the Property Where USTs Were Discovered.** Additional areas of unanticipated Contaminated soil were discovered and removed during the remedial excavation. These unanticipated areas of contamination were characterized using a field screening, stockpiled soil and in-situ grab sample testing procedure that was outlined in the IAWP and ECMP prior to excavation. The two largest areas of unanticipated contamination on the eastern half of the Property were associated with the discovered USTs (Figure 4).

  Additionally, below the LNAPL smear zone at elevations approximately deeper than 198 feet, the excavation was advanced deeper (overexcavation) to achieve cleanup levels and confirmed through final performance monitoring.

The following sections describe the remedial excavation activities according to these three elements of excavation activities.

3.2.2.1.1 Known Contamination – West Half of Property

Based on the RI explorations that were completed prior to the interim action, the approximate extent of the known Contaminated soil areas was estimated in the ECMP (Appendix B). The removal extents of these known areas of contamination identified in ECMP are consolidated as the red, non-hatched areas shown on Figure 4.

As the excavation reached the top elevation (approximately 202 feet) of the two known largest areas of contamination with LNAPL (the west half of the Property where the former USTs and pump islands were), the removal areas were refined by 15 test pits (TP-1 through TP-15, Figure 3) completed at the perimeter and within those predefined areas.

- The test pits were excavated approximately 3 to 7 feet deep from subgrade (from Elevations 200 down to 193 feet).

- Aspect obtained 25 soil samples from the 15 test pits for chemical analysis.

- According to the chemical analytical results, there were three locations where gasoline (6,500 mg/kg in TP-7 only) and benzene (0.038 to 0.093 mg/kg in TP-3, TP-8, and TP-13) was detected at concentrations exceeding MTCA Method A cleanup levels (Table 3).
- These results were used to redefine the areas of known Contaminated soil, as shown on Figure 4 and provided to the contractor for excavation.

Additionally, there were four smaller areas where known deep contamination existed (the AB-02, AB-06, AB-07, and AB-09 locations), and isolated remedial excavation was planned, as described in Section 3.1 of the Final IAWP. These small areas are shown on Figure 4 and were either completed as isolated excavation (AB-02, AB-07, AB-09), or were incorporated into expanded known excavations (AB-06).

The test pit sample analytical results are summarized in Table 3. The approximate location of the test pits and historical explorations along with the exceedances of cleanup levels are shown on Figure 3. The removal extents of the known Contaminated soil are shown on Figure 4 as the red nonhatched areas. Cross-section profiles of construction excavation are shown on Figures 6 and 7. Copies of the laboratory analytical reports is presented in Appendix E.

3.2.2.2 Unanticipated Contamination – East Half of Property (and expanded portions of Known Contamination Areas)

Additional areas of contaminated soil were encountered during the mass excavation, characterized using the method described in the Final IAWP (Aspect 2018) and ECMP (Appendix B), and removed and disposed off-Site. These locations were unanticipated as limited investigation data existed in these areas prior to remedial excavation. However, the protocol that was established in the ECMP regarding how to evaluate potentially contaminated soil while mass construction excavation was ongoing consisted of: physical observation, field screening of soil samples, potentially contaminated soil stockpiling sampling/testing, and discrete grab soil sampling/testing from the construction excavation.

Areas of unanticipated Contaminated soil identified during mass construction excavation are shown as red, hatched areas on Figure 4. The unanticipated Contaminated soil that was discovered included the following areas:

1. Contaminated soil around undocumented USTs that were discovered; seven along the East half of the Property (Figure 2). These are illustrated as the hatched areas shown on Figure 4 and are summarized as:
    - Where USTs 1, 2, and 3 were discovered (Figure 2), sample locations E9S3 and E11S1 confirmed gasoline-range and diesel-range concentrations exceeded cleanup levels (Figure 4). This area was excavated to the construction subgrade elevation of 195 feet.
    - Where USTs 4, 5, 7 and were discovered in the southeastern corner of the Property (Figure 2), sample locations E16S3, E18S2, and E19S1 confirmed gasoline-range and BTEX concentrations exceeded cleanup levels (Figure 4). This area was excavated to the construction

subgrade elevation of 195 feet north of E19, and below the construction subgrade to 195 feet south of E19 to the southern wall (Figure 4).

Overexcavation of these unanticipated Contaminated soils was halted when field screening results indicated no evidence of contamination and performance monitoring samples confirmed all analytical results were nondetect or detections were below the cleanup levels. These data are presented in Table 4 and the deepest exceedances are presented on Figure 4.

2. Contaminated soil from shallow depths of the mass construction excavation and from drill cuttings of soldier piles installed around the perimeter of the Property.

   Thirteen stockpiles of potentially contaminated soils were generated between June 19 and August 3, 2018 from mass excavation of shallow soils and included soldier pile drill cuttings, limited areas of known Contamination soils identified in the ECMP (Appendix B), and larger areas of unanticipated contamination. Aspect collected 45 soil samples from 12 stockpiles (SS-1 through SS-7 and SS-9 through SS-13) for characterization after field screening suggested they were potentially contaminated (slight to heavy sheen and PID readings ranging from 5 to >1,000 ppm). No samples were obtained from the stockpile SS-8 because field screening results yielded no evidence of contamination (no sheen, no odor, and 0 ppm).

   According to the chemical analytical results, stockpiles were characterized and disposed as:

   - Stockpiles SS-1, SS-5, SS-8, SS-10, and SS-13 were Clean and were transported off-Site as Clean soil.
   - Stockpile SS-4 was characterized as Impacted and was disposed off-Site.
   - Stockpiles SS-2, SS-3, SS-6, SS-7, SS-9, and SS-11 exceeded the MTCA Method A cleanup levels and were disposed off-Site as Contaminated soil.

   Off-Site disposal is reported below in Section 3.2.4. The analytical results of soil stockpile samples are summarized in Table 2. A copy of the laboratory analytical reports is presented in Appendix E.

3. Contaminated soil from deeper areas than originally anticipated.

   There were two areas where Known contamination extended to depths greater than planned in the ECMP:

   - In the northwestern area of the Property where remedial excavation was planned to elevation 193 feet, soil at locations W16N4 and W18N4 was overexcavated to elevations 189.5 and 188 feet, respectively, to achieve cleanup levels (Figure 5).

- In the southwestern area of the Property where remedial excavation was planned to elevation 194 feet, soil at location W3S10 was overexcavated to 192 feet to achieve cleanup levels (Figure 5).

Overexcavation of Contaminated soils (both Known and/or Unanticipated) was halted when field screening results indicated no evidence of contamination, and performance monitoring samples confirmed all analytical results were non-detect or detections were below the cleanup levels.

3.2.3 Final Performance Monitoring

Aspect presents analytical results of 30 soil samples representing the base of the final excavation to demonstrate compliance with cleanup levels across the full extent of the Property (Figure 5). This base of excavation includes the final extents of the construction mass excavation and areas where the remedial excavation extended below the construction subgrade as required by the IAWP. All performance samples used for confirmation in Figure 5 were collected prior to any backfilling activities. Based on the analytical results of final performance monitoring soil samples, all soil exceeding cleanup levels was successfully excavated and removed from the Property as shown in Figure 5.

3.2.4 Contaminated Soil Disposal

Contaminated and Impacted soil excavated from the Property was transported to Cadman's permitted facility in Everett, Washington, for treatment/disposal. According to the Soil Disposal Tracking Sheet provided by Cadman, a total of 6,837 tons of Contaminated soil and a total of 1,260 tons of Impacted soil were removed from the Property for off-Site disposal.

A copy of the Cadman Soil Disposal Tracking Sheet is presented in Appendix F.

3.2.5 Backfill

Excavation of Contaminated soils extended deeper than the construction-design grade along most of the north and south Property boundary and at four other locations (AB-02, AB-07, and AB-09) on the Property. All these areas were backfilled using CDF as recommended by the geotechnical engineer of record in order to comply with City of Seattle Department of Construction and Inspections requirements given the allowable bearing pressure of the subject redevelopment, and to address geotechnical concerns related to the variable depth of the final remedial excavation and relevant seismic considerations.

3.3 Excavation Dewatering and Pretreatment

3.3.1 Dewatering Plan

A basic excavation dewatering system was necessary for the development including pretreatment for certain petroleum and solvent constituents. Dewatering system enhancements and longer operation timeframes were required to complete excavation of petroleum contaminated soils below the development depth. These dewatering system enhancements were pretreatment, permitted discharge conditions, and the supplemental dewatering sump necessary to excavate deep petroleum contaminated soils. The average total excavation depth for the redevelopment was approximately 21 feet bgs and the

average depth-to-groundwater was approximately 17 feet bgs, based on the groundwater measurements obtained from the former monitoring wells, at the Property.

A Dewatering Plan was prepared by Bender Consulting, LLC on behalf of FH Brooklyn and consisted of a series of vacuum well points installed through the shoring along the perimeter of the Property to an approximate depth of 30 feet bgs. The well points were connected to a header piping for conveyance to the pretreatment system. Kulchin installed the dewatering system. Rivers Edge utilized the dewatering sump approach locally at the AB-07 location where the remedial excavation was deeper than vacuum well points at an approximate depth of 34 feet bgs. Rivers Edge constructed the sump by installing a perforated PVC casing that housed the dewatering pump and the casing was surrounded by gravel to minimize clogging and enhance local dewatering.

In accordance with the Final IAWP (Aspect, 2018) and Ecology's letter dated April 23, 2018 (Ecology, 2018a), Aspect monitored groundwater levels in off-Property monitoring wells located in the rights-of-way (Brooklyn Avenue NE and NE 47th Ave Street) to observe the propagation of drawdown during the construction dewatering in August and September 2018. Based on the groundwater measurements, the dewatering system operation was successful in dewatering all soils targeted for remedial excavation. The off-Property groundwater monitoring results are discussed in the Section 3.4 of this report.

Dewatering observation monitoring at off-Property monitoring wells is summarized in Table 5. The approximate location of the monitoring wells utilized for dewatering observation is shown on Figure 8.

3.3.2 Treatment and Permitted Discharge

All water generated through dewatering was to be pumped to tanks, pretreated on-Site, and discharged to surface water via storm sewer in accordance with the discharge permit. The on-Site pretreatment system was installed and operated by Clear Water. The dewatering treatment consisted of a settling tank for initial storage, a treatment train comprised of 100 gallons per minute (gpm) nominal flow chitosan-enhanced sand filtration (CESF) with granular activated carbon, and a real-time computerized discharge-quality monitoring interface.

The treatment system monitoring data was acquired by Clear Water technicians, as well as computerized collection via a programmable logic controller (PLC). Effluent water quality was monitored and reported by Clear Water, and was in compliance with permit conditions during all events. The PLC recorded data at 15-minute intervals and was monitored in real time by Clear Water (Appendix G). Daily Operations Logs were recorded digitally and automatically saved to Clear Water's account.

A total of 1,842,284 gallons of water was treated and discharged to Portage Bay between August 13 and October 29, 2018 (Appendix G). The discharge met applicable local and state water quality parameters specified in the discharge permit issued by Ecology. The dewatering system was turned off and permitted discharge ceased on October 29, 2018.

3.4 Off-Property Groundwater Monitoring

Aspect performed off-Property groundwater monitoring during the interim action in accordance with the Final IAWP (Aspect, 2018) and Ecology's April 23, 2018, letter (Ecology, 2018a). The off-Property groundwater monitoring was conducted at monitoring wells installed by Leidos in January 2018 as part of the Site-wide RI (Leidos, 2017); monitoring well logs are included in Appendix H.

The depth to groundwater was measured from the top of casing in the accessible monitoring wells daily to monitor the propagation of drawdown. LNAPL was consistently observed in MW-27, and MW-28 located in the NE 47th Avenue adjacent to the south Property boundary. The LNAPL thickness ranged from 0.01 feet to 0.15 feet in these monitoring wells (Table 5). The depth to groundwater increased significantly in the wells after commencement of dewatering operations on August 13, 2018, with up to 10 feet of drawdown observed at MW-19. The drawdown reached steady-state conditions by the second week of dewatering on August 27, 2018, with groundwater elevations ranging from 189.69 (MW-26) to 195.29 feet (MW-25), as shown in Table 5. Further, with this amount of drawdown, the four monitoring wells installed to 25 feet bgs went dry (MW-17, MW-18, MW-27 and MW-28). The locations MW-19, MW-25, and MW -26 are completed deeper and had sufficient water column for gauging and sampling during maximum drawdown conditions.

Ecology identified MW-17, MW-25, MW-26, and MW-28 in the April 23 letter for groundwater monitoring (Ecology, 2018a). However, the drawdown conditions didn't allow sampling of MW-17 and MW-28 after dewatering operations. Ecology was notified of this condition and the change in monitoring locations during the monthly email status updates required by the Agreed Order.

Groundwater samples were collected from four off-Property wells MW-17, MW-18, MW-25, and MW-26 in August 2018. The first groundwater monitoring event was completed on August 2, 2018, when samples were collected from wells MW-17 and MW-25 prior to dewatering operations. The second groundwater monitoring event was completed on August 22, 2018, when samples were collected from wells MW-18, MW-25, and MW-26 following commencement of continuous dewatering operations. The third groundwater monitoring event was completed on August 31, 2018, when samples were collected from wells MW-18, MW-25, and MW-26 after the drawdown approached steady state. Based on the steady-state drawdown, Aspect requested Ecology to approve a reduction in the groundwater monitoring frequency from weekly to monthly. Ecology approved the request via email dated September 17, 2018 (Ecology, 2018b).

All groundwater samples collected from the off-Property monitoring wells were submitted to Friedman & Bruya, an Ecology-accredited chemical analytical laboratory, for chemical analysis of gasoline-range organics (GRO), diesel-range organics (DRO), oil-range organics (ORO) and CVOCs. The analytical results are presented in Table 6 and summarized as:

- **MW-17 Results**. Benzene (45 micrograms per liter [µg/L]), GRO (2,800 µg/L), DRO (860 µg/L), tetrachloroethene (PCE, 110 µg/L), trichloroethene (TCE, 27

µg/L) and cis-1,2-Dichloroethene (cis-1,2 DCE, 39 µg/L) were detected at concentrations exceeding their respective cleanup levels in MW-17.

- **MW-18 Results.** Analytes were either not detected or were detected at concentrations below their respective cleanup levels in MW-18.
- **MW-25 Results.** Benzene (9.7 to 32 µg/L), PCE (26 to 59 µg/L), TCE (270 to 480 µg/L), cis-1,2 DCE (230 to 540 µg/L), and vinyl chloride (9.5 to 78 µg/L) were detected at concentrations exceeding their respective MTCA Method A cleanup levels in MW-25. Additionally, GRO was detected at 1,200 µg/L in MW-25, exceeding the cleanup level during the first monitoring event. GRO was detected at concentrations below the cleanup level in MW-25 during subsequent monitoring events.
- **MW-26 Results.** GRO (940 to 1,300 µg/L), Benzene (23 to 28 µg/L), PCE (7.5 to 43 µg/L), TCE (810 to 1,400 µg/L), cis-1,2 DCE (430 to 660 µg/L), and vinyl chloride (5.2 to 26 µg/L) were detected at concentrations exceeding their respective cleanup levels in MW-26.

The dewatering observation monitoring is summarized in Table 5. The analytical results are summarized in Table 6. The approximate location of the groundwater monitoring wells and the exceedances of cleanup levels for the August 2018 monitoring events is shown on Figure 8. A copy of the laboratory analytical reports is presented in Appendix E.

The off-Property groundwater monitoring will continue, as required by Ecology, for the RI in accordance with their April 23 letter (Ecology, 2018a) and in accordance with the Agreed Order.

4 Chemical Vapor Barrier Design and Construction

The potential for vapor intrusion at the planned redevelopment on the Property was evaluated by Aspect in September 2018 on behalf of FH Brooklyn, and the results were reported in a Technical Memorandum Re: Vapor Intrusion Evaluation dated September 20, 2018 (Appendix J). Aspect utilized all groundwater quality results from the off-Property monitoring for this vapor intrusion evaluation, including the preliminary results from January 2018 reported by Leidos.

Except for MW-19, all monitoring wells (MW-11, MW-18, MW-25, MW-25, MW-26, MW-27, and MW-28) exhibited at least one exceedance of groundwater screening levels for vapor intrusion for benzene and TCE, which indicates a potential vapor intrusion concern via the groundwater-to-soil gas-to indoor air exposure pathway per Ecology's Guidance (Ecology, 2016b). Exceedances of total xylenes, PCE, and vinyl chloride also occur (Appendix J).

Therefore, based on exceedances of Ecology's established conservative screening levels and MTCA's implementing regulations, Aspect recommended a chemical vapor barrier

as the selected engineering control to protect future occupants of the building at the Property against exposure from vapor intrusion.

The chemical vapor barrier product selection, engineering design, installation, and installation inspection was completed by others at the direction of FH Brooklyn. The chemical vapor barrier consists of two products: PrePrufe® 300R was installed on all exterior below-grade foundation walls and VaporBlock ® Plus™ VBP20 was installed beneath the slab-on-grade (floor) sections of the building garage. It was not installed on the 9-feet-thick concrete foundation mat set at elevation 191.5 feet in the center of the Property, and less than 20% of the total aerial building footprint. Chemical vapor-barrier product information and installation requirements are presented in Appendix K.

The installed chemical vapor barrier will prevent potential recontamination from residual petroleum and CVOC-contaminated groundwater off-Property, as well as prevent potential vapor intrusion into the building.

5 Conclusions

An interim action was completed at the former Chevron Service Station No. 90129 Property located at 4700 Brooklyn Avenue NE to remove petroleum-contaminated soil and groundwater and allow the redevelopment of the Property. All activities taken during the interim action were completed in full accordance with the Ecology-approved Final Interim Action Work Plan (Aspect 2018) and applicable Ecology regulations.

Interim action soil removal was completed in conjunction with the mass excavation planned for Property redevelopment. A total of 6,837 tons of petroleum-contaminated soil exceeding Model Toxics Control Act (MTCA) Method A cleanup levels and a total of 1,259 tons of impacted soil (petroleum-contaminant concentrations below MTCA Method A cleanup levels) were removed from the Property and transported to Cadman's permitted facility in Everett, Washington, for treatment and disposal. Excavation dewatering was necessary and all dewatering, pretreatment, and discharge operations were in full accordance with Ecology's CSWGP WAR No. 306191 permit conditions. The performance monitoring samples collected from the final extent of the remedial excavation show that all soil exceeding MTCA Method A (unrestricted use) cleanup levels was removed from the Property during the interim action.

Aspect monitored the seven off-Property monitoring wells during construction of the interim action as required by the Final IAWP (Aspect, 2018) and Ecology's letter from April 23, 2018 (Ecology, 2018a). Consistent with the January 2018 preliminary Site-wide RI monitoring results, petroleum hydrocarbons (sourced from the Property) and chlorinated volatile organic compounds (CVOCs; from an off-Property source) were detected at concentrations that exceeded groundwater cleanup levels and groundwater screening levels for vapor intrusion. A chemical vapor barrier was selected as an appropriate engineering control to protect future occupants at the Property against exposure from potential vapor intrusion in accordance with Ecology guidance on vapor intrusion (Ecology, 2016b).

This interim action resulted in the removal of all petroleum-contaminated soil exceeding MTCA Method A (unrestricted use) cleanup levels from the Property. The removal of the source of petroleum contamination in soil (in addition to contaminated groundwater removal via dewatering) from the Property will enhance the natural degradation of petroleum-contaminated groundwater off-Property. The installed chemical vapor barrier will prevent recontamination from residual petroleum- and CVOC-contaminated groundwater off-Property, as well as protect future occupants of the Property. Additional remedial investigation is required off-Property as defined by Ecology in their April 23, 2018, letter and required by the Agreed Order.

Based on the successful completion of the interim action, Ecology's approval of this Interim Action Report is requested to document the interim action implementation and satisfy interim action reporting requirements of the Agreed Order.

6 References

Aspect Consulting, LLC (Aspect), 2018, Final Interim Action Work Plan, 4700 Brooklyn Avenue NE, Seattle, Washington, March 8, 2018.

Aspect Consulting, LLC (Aspect), 2017, Technical Memorandum to Washington State Department of Ecology (D. Myers) Re: On-Property Remedial Investigation Data Report, 4700 Brooklyn Avenue NE, Seattle, Washington, January 17, 2017.

Aspect Consulting, LLC (Aspect), 2016, Preliminary Draft Remedial Investigation Work Plan, 4700 Brooklyn Ave., Seattle, Washington, November 4, 2016

Leidos, 2017, Final Remedial Investigation Work Plan, Former Chevron Station No. 90129, May 26, 2017.

Washington State Department of Ecology (Ecology), 2018a, Agreed Order DE 13815, Formal Notification of Extension for Remedial Investigation Field Activities, April 23, 2018.

Washington State Department of Ecology (Ecology), 2018b. Email correspondence between Adam Griffin and Ecology Project Manager, September 12, 2018.

Washington State Department of Ecology (Ecology), 2016a, Guidance for Remediation of Petroleum Contaminated Sites, Ecology Publication No. 10-09-057, Revised June 2016.

Washington State Department of Ecology (Ecology), 2016b, Guidance for Evaluating Soil Vapor Intrusion in Washington State: Investigation and Remedial Action, Toxics Cleanup Program Publication No. 09-09-047, Review Draft Revised February 2016.

7 Limitations

Work for this project was performed for FH Brooklyn (Client), and this report was prepared in accordance with generally accepted professional practices for the nature and conditions of work completed in the same or similar localities, at the time the work was performed. This report does not represent a legal opinion. No other warranty, expressed or implied, is made.

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TABLES

Table 1. Soil Analytical Results - UST Site Assessments

Project No. 160092, Seattle, Washington

	Sample Location	UST1 Tank Pit	UST2&3 Tank Pit*	UST4&5 Tank Pit	UST6 Tank Pit	UST7 Tank Pit	UST8 Tank Pit
	Sample Date	06/22/2018	06/22/2018	06/22/2018	06/22/2018	07/12/2018	07/12/2018
	Sample Identification	UST1-BASE-206	UST2&3-BASE-208	UST4&5-BASE-200	UST6-BASE-208	UST7-B-202	UST8-B-202
	Sample Elevation (ft)	206	208	200	208	202	202
Chemical Name	**Cleanup Level (mg/kg)**	**Samples were obtained during the Interim Action in 2018**					
Total Petroleum Hydrocarbons in mg/kg							
Gasoline-Range Organics	30**	**1900 J**	**1200**	< 5 U	< 5 U	< 5 U	< 5 U
Diesel-Range Organics	2000	**13000**	**9500 X**	< 50 U	< 50 U	< 50 U	< 50 U
Motor Oil-Range Organics	2000	< 250 U	**33000**	< 250 U	< 250 U	< 250 U	< 250 U
BTEX Compounds in mg/kg							
Benzene	0.03	< 0.03 U	**0.12**	< 0.03 U	< 0.03 U	< 0.02 U	< 0.02 U
Toluene	7	**0.48**	**1.7**	< 0.05 U	< 0.05 U	< 0.02 U	< 0.02 U
Ethylbenzene	6	**1**	**2.2**	< 0.05 U	< 0.05 U	< 0.02 U	< 0.02 U
Total Xylenes	9	**7.3**	**25.5**	< 0.1 U	< 0.1 U	< 0.06 U	< 0.06 U
Volatile Organic Compounds (VOCs) in mg/kg							
Tetrachloroethene (PCE)	0.05	< 0.025 U	< 0.025 U	< 0.025 U	< 0.025 U	--	--
Trichloroethene (TCE)	0.03	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	--	--
cis-1,2-Dichloroethene (DCE)	160	< 0.05 U	< 0.05 U	< 0.05 U	< 0.05 U	--	--
trans-1,2-Dichloroethene	1600	< 0.05 U	< 0.05 U	< 0.05 U	< 0.05 U	--	--
Methylene Chloride	0.02	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	--	--
Vinyl Chloride	0.67	< 0.05 U	< 0.05 U	< 0.05 U	< 0.05 U	--	--
1,2-Dibromoethane (EDB)	0.005	< 0.05 U	< 0.05 U	< 0.05 U	< 0.05 U	--	--
1,2-Dichloroethane (EDC)	480	< 0.05 U	< 0.05 U	< 0.05 U	< 0.05 U	--	--
Methyl tert-butyl ether (MTBE)	0.1	< 0.05 U	< 0.05 U	< 0.05 U	< 0.05 U	--	--
1,2,4-Trimethylbenzene	NE	**10**	**27**	< 0.05 U	< 0.05 U	--	--
1,3,5-Trimethylbenzene	NE	**4**	**7.8**	< 0.05 U	< 0.05 U	--	--
Isopropylbenzene	NE	**1.3**	**1.2**	< 0.05 U	< 0.05 U	--	--
n-Propylbenzene	NE	**1.8**	**2.9**	< 0.05 U	< 0.05 U	--	--
p-Isopropyltoluene	NE	**1.7**	**1.2**	< 0.05 U	< 0.05 U	--	--
sec-Butylbenzene	NE	**2.9**	**0.72**	< 0.05 U	< 0.05 U	--	--
tert-Butylbenzene	NE	**0.11**	**0.16**	< 0.05 U	< 0.05 U	--	--

Notes

ft = Sample elevation in feet (North Atlantic Vertical Datum, 1988).

mg/kg = milligrams per kilogram

-- = Not analyzed

* = Sample was additionally analyzed for MTCA 5 Metals, polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs). Metals were detected at concentrations less than the Puget Sound Natural Background Concentrations. PCBs were not detected. PAHs were detected at concentrations that were less than the MTCA Cleanup Level.

** = Cleanup level for gasoline-range hydrocarbons when benzene is present.

U = Analyte not detected atbove the listed reporting limit

X = Chromatographic pattern does not match quantitation standard. However, the listed values are considered detections based on field screening evidence (moderate sheen and slight odor).

J = Listed value is an estimate.

NE = Not Established

Select VOCs are listed in the table. Other VOCs were not detected. Please refer to the laboratory report in Appendix D.

MTCA = Model Toxics Control Act

Bolded value indicates analyte detected at the listed concentration.

Blue shading indicates analyte detected at a concentration greater than the corresponding cleanup level.

Soil represented by the samples with MTCA exceedances (blue shaded cells) was excavated from the Property and transported to Cadman's facility in Everett for permitted disposal.

Table 2. Soil Analytical Results - Stockpiles

Project No. 160092, Seattle, Washington

Sample Location		SS-1	SS-1	SS-1	SS-1	SS-1	SS-1	SS-1	SS-1	SS-1	SS-1	SS-2	SS-2	SS-2
Sample Date		06/19/2018	06/19/2018	06/19/2018	06/19/2018	06/19/2018	06/19/2018	06/19/2018	06/19/2018	06/19/2018	06/19/2018	06/19/2018	06/19/2018	06/22/2018
Sample Identification		SS1-1-061918	SS1-2-061918	SS1-3-061918	SS1-4-061918	SS1-5-061918	SS1-6-061918	SS1-7-061918	SS1-8-061918	SS1-9-061918	SS1-10-061918	SS2-1-061918	SS2-2-061918	SS2-3-062218
Chemical Name	**Cleanup Level (mg/kg)**													
Total Petroleum Hydrocarbons in mg/kg														
Gasoline-Range Organics	30**	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	**310**	**360**	< 5 U
Diesel-Range Organics	2000	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	**200 X**	**160 X**	< 50 UJ
Motor Oil-Range Organics	2000	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U	**420**	< 250 UJ
BTEX Compounds in mg/kg														
Benzene	0.03	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U
Toluene	7	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.1 U	< 0.02 U	< 0.02 U
Ethylbenzene	6	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	**0.79**	< 0.02 U	< 0.02 U
Total Xylenes	9	< 0.06 U	< 0.06 U	< 0.06 U	< 0.06 U	< 0.06 U	< 0.06 U	< 0.06 U	< 0.06 U	< 0.06 U	< 0.06 U	**3.1**	**2.4**	< 0.06 UJ

Notes

mg/kg = milligrams per kilogram

* = Sample was additionally analyzed for volatile organic compounds (VOCs). VOCs were not detected. Please refer to the laboratory report in Appendix D.

** = Cleanup level for gasoline-range hydrocarbons when benzene is present.

U = Analyte not detected at or above the listed reporting limit.

X = Chromatographic pattern does not match quantitation standard. However, the listed values are considered detections based on field screening evidence (moderate sheen and slight odor).

J = Listed value is an estimate.

NE = Not Established

MTCA = Model Toxics Control Act

Bolded value indicates analyte detected at the listed concentration.

Blue shading indicates analyte detected at a concentration greater than the corresponding cleanup level.

Soil stockpiles with MTCA exceedances (blue shaded cells) of at least 1 sample were removed from the Property and transported to Cadman's facility in Everett for permitted disposal.

Table 2. Soil Analytical Results - Stockpiles

Project No. 160092, Seattle, Washington

Sample Location		SS-3*	SS-3*	SS-3*	SS-3*	SS-3*	SS-3*	SS-4	SS-4	SS-4	SS-5	SS-5	SS-6	SS-6
Sample Date		06/28/2018	06/28/2018	06/28/2018	06/28/2018	06/28/2018	06/28/2018	06/29/2018	06/29/2018	06/29/2018	07/02/2018	07/03/2018	07/02/2018	07/03/2018
Sample Identification		SS3-1-062818	SS3-2-062818	SS3-3-062818	SS3-4-062818	SS3-5-062818	SS3-6-062818	SS4-1-062918	SS4-2-062918	SS4-3-062918	SS5-1-070218	SS5-2-070318	SS6-1-070218	SS6-2-070318
Chemical Name	**Cleanup Level (mg/kg)**	**Samples were obtained during the Interim Action in 2018**												
Total Petroleum Hydrocarbons in mg/kg														
Gasoline-Range Organics	30**	**58 J**	**95 J**	**240 J**	**140 J**	**96 J**	**140 J**	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Diesel-Range Organics	2000	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
Motor Oil-Range Organics	2000	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U
BTEX Compounds in mg/kg														
Benzene	0.03	< 0.03 U	< 0.03 U	**0.069**	< 0.03 U	< 0.03 U	< 0.03 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	**0.036**	**0.041**
Toluene	7	**0.18**	**0.17**	**0.13**	**0.16**	**0.21**	**0.18**	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U
Ethylbenzene	6	**1.1**	**0.98**	**1.3**	**0.77**	**1.1**	**2.8**	**0.067**	**0.066**	**0.065**	< 0.02 U	< 0.02 U	< 0.02 U	**0.033**
Total Xylenes	9	**3.25**	**2.88**	**2.73**	**2.58**	**3.64**	**7.73**	**0.23**	**0.2**	**0.21**	< 0.06 U	< 0.06 U	< 0.06 U	< 0.06 U

Table 2. Soil Analytical Results - Stockpiles

Project No. 160092, Seattle, Washington

Sample Location	SS-7	SS-7	SS-7	SS-9	SS-9	SS-9	SS-9	SS-9	SS-10	SS-11	SS-11	SS-11
Sample Date	07/05/2018	07/05/2018	07/05/2018	07/06/2018	07/06/2018	07/09/2018	07/09/2018	07/09/2018	07/06/2018	08/03/2018	08/03/2018	08/03/2018
Sample Identification	SS7-1-070518	SS7-2-070518	SS7-3-070518	SS9-1-070618	SS9-2-070618	SS9-3-070918	SS9-4-070918	SS9-5-070918	SS10-1-070618	SS11-1-080318	SS11-2-080318	SS11-3-080318
Chemical Name	**Cleanup Level (mg/kg)**											
Total Petroleum Hydrocarbons in mg/kg												
Gasoline-Range Organics	30**	**110**	**130**	**77**	< 5 U	< 5 U	**530**	**170**	**250**	< 5 U	< 5 U	**21**	**100**
Diesel-Range Organics	2000	< 50 U	**69 X**	< 50 U	< 50 U	< 50 U	**310 X**	**160 X**	**75 X**	< 50 U	< 50 U	< 50 U	**140 X**
Motor Oil-Range Organics	2000	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U
BTEX Compounds in mg/kg													
Benzene	0.03	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	**0.39**	**0.062**	**0.13**	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U
Toluene	7	**0.026**	**0.046**	< 0.02 U	< 0.02 U	< 0.02 U	**2.8**	**0.61**	**1**	< 0.02 U	< 0.02 U	**0.027**	< 0.1 U
Ethylbenzene	6	**0.18**	**0.34**	**0.14**	< 0.02 U	**0.029**	**4.6**	**1.2**	**2**	< 0.02 U	< 0.02 U	**0.052**	< 0.1 U
Total Xylenes	9	**0.48**	**0.72**	**0.33**	< 0.06 U	< 0.06 U	**15**	**2.7**	**5.9**	< 0.06 U	< 0.06 U	**0.37**	**1.3**

Table 2. Soil Analytical Results - Stockpiles

Project No. 160092, Seattle, Washington

	Sample Location	SS-11	SS-11	SS-13	SS-13
	Sample Date	08/03/2018	08/03/2018	08/03/2018	08/03/2018
	Sample Identification	SS11-4-080318	SS11-5-080318	SS13-1-080318	SS13-2-080318
Chemical Name	**Cleanup Level (mg/kg)**				
Total Petroleum Hydrocarbons in mg/kg					
Gasoline-Range Organics	30**	**1800**	**69**	< 5 U	< 5 U
Diesel-Range Organics	2000	**620 X**	**97 X**	< 50 U	< 50 U
Motor Oil-Range Organics	2000	< 250 U	< 250 U	< 250 U	< 250 U
BTEX Compounds in mg/kg					
Benzene	0.03	< 2 U	< 0.02 U	< 0.02 U	< 0.02 U
Toluene	7	**3.3**	**0.17**	< 0.02 U	< 0.02 U
Ethylbenzene	6	**4.4**	**0.081**	< 0.02 U	< 0.02 U
Total Xylenes	9	**75**	**0.99**	< 0.06 U	< 0.06 U

Table 3. Soil Analytical Results - Test Pits

Project No. 160092, Seattle, Washington

	Sample Location	TP-01	TP-01	TP-02	TP-02	TP-03	TP-03	TP-04	TP-04	TP-05
	Sample Date	08/10/2018	08/10/2018	08/10/2018	08/10/2018	08/10/2018	08/10/2018	08/13/2018	08/13/2018	08/13/2018
	Sample Identification	TP1-200-081018	TP1-197-081018	TP2-200-081018	TP2-197-081018	TP3-200-081018	TP3-197-081018	TP4-200-081318	TP4-197-081318	TP5-200-081318
	Sample Elevation (ft)	200	197	200	197	200	197	200	197	200
Chemical Name	**Cleanup Level (mg/kg)**									
Total Petroleum Hydrocarbons in mg/kg										
Gasoline-Range Organics	30**	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Diesel-Range Organics	2000	--	--	--	--	--	--	--	--	--
Motor Oil-Range Organics	2000	--	--	--	--	--	--	--	--	--
BTEX Compounds in mg/kg										
Benzene	0.03	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	**0.038**	< 0.02 U	< 0.02 U	< 0.02 U
Toluene	7	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U
Ethylbenzene	6	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	**0.042**	< 0.02 U
Total Xylenes	9	< 0.06 U	< 0.06 U	< 0.06 U	< 0.06 U	< 0.06 U	< 0.06 U	< 0.06 U	< 0.06 U	< 0.06 U

Notes

ft = Sample elevation in feet (North Atlantic Vertical Datum, 1988).

mg/kg = milligrams per kilogram

-- = Not analyzed

** = Cleanup level for gasoline-range hydrocarbons when benzene is present.

U = Analyte not detected atbove the listed reporting limit

MTCA = Model Toxics Control Act

Bolded value indicates analyte detected at the listed concentration.

Blue shading indicates analyte detected at a concentration greater than the corresponding cleanup level.

Soil represented by the samples with MTCA exceedances (blue shaded cells) was excavated from the Property and transported to Cadman's facility in Everett for permitted disposal.

Table 3. Soil Analytical Results - Test Pits

Project No. 160092, Seattle, Washington

	Sample Location	TP-05	TP-06	TP-06	TP-07	TP-07	TP-08	TP-08	TP-09
	Sample Date	08/13/2018	08/13/2018	08/13/2018	08/15/2018	08/15/2018	08/15/2018	08/15/2018	08/15/2018
	Sample Identification	TP5-197-081318	TP6-200-081318	TP6-193-081318	TP7-200-081518	TP7-197-081518	TP8-200-081518	TP8-197-081518	TP9-200-081518
	Sample Elevation (ft)	197	200	193	200	197	200	197	200
Chemical Name	**Cleanup Level (mg/kg)**	**Test Pits were completed during the Interim Action in 2018**							
Total Petroleum Hydrocarbons in mg/kg									
Gasoline-Range Organics	30**	< 5 U	< 5 U	< 5 U	**6500**	< 5 U	**6.6**	**8**	**6.6**
Diesel-Range Organics	2000	--	--	--	--	--	--	--	--
Motor Oil-Range Organics	2000	--	--	--	--	--	--	--	--
BTEX Compounds in mg/kg									
Benzene	0.03	< 0.02 U	< 0.02 U	< 0.02 U	< 0.4 U	< 0.02 U	< 0.02 U	**0.084**	< 0.02 U
Toluene	7	< 0.02 U	< 0.02 U	< 0.02 U	< 0.4 U	< 0.02 U	**0.036**	**0.5**	< 0.02 U
Ethylbenzene	6	**0.066**	< 0.02 U	< 0.02 U	**36**	< 0.02 U	**0.065**	**0.16**	**0.048**
Total Xylenes	9	**0.13**	< 0.06 U	< 0.06 U	**70**	< 0.06 U	**0.19**	**0.97**	**0.14**

Table 3. Soil Analytical Results - Test Pits

Project No. 160092, Seattle, Washington

	Sample Location	TP-09	TP-10	TP-11	TP-12	TP-13	TP-13	TP-14	TP-15
	Sample Date	08/15/2018	08/16/2018	08/16/2018	08/16/2018	08/16/2018	08/16/2018	08/16/2018	08/16/2018
	Sample Identification	TP9-196-081518	TP10-198-081618	TP11-197-081618	TP12-197-081618	TP13-197-081618	TP13-193-081618	TP14-197-081618	TP15-198-081618
	Sample Elevation (ft)	196	198	197	197	197	193	197	198
Chemical Name	**Cleanup Level (mg/kg)**								
Total Petroleum Hydrocarbons in mg/kg									
Gasoline-Range Organics	30**	< 5 U	< 5 U	< 5 U	< 5 U	**13**	< 5 U	< 5 U	**10**
Diesel-Range Organics	2000	--	--	--	--	--	--	--	--
Motor Oil-Range Organics	2000	--	--	--	--	--	--	--	--
BTEX Compounds in mg/kg									
Benzene	0.03	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	**0.093**	< 0.02 U	< 0.02 U
Toluene	7	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	**0.069**	< 0.02 U	< 0.02 U	**0.033**
Ethylbenzene	6	**0.14**	< 0.02 U	< 0.02 U	< 0.02 U	**0.21**	**0.24**	< 0.02 U	**0.24**
Total Xylenes	9	**0.7**	< 0.06 U	< 0.06 U	< 0.06 U	**2**	**0.088**	< 0.06 U	**0.16**

Table 4. Soil Analytical Results - Performance Monitoring

Project No. 160092, Seattle, Washington

Sample Date		**AB-01 11/09/2016**	**AB-01 11/09/2016**	**AB-01 11/09/2016**	**AB-02 11/08/2016**	**AB-02 11/08/2016**	**AB-02 09/04/2018**	**AB-02 09/04/2018**	**AB-02 09/04/2018**	**AB-02 09/04/2018**	**AB-02 09/04/2018**	**AB-03 11/07/2016**
Sample Identification		**AB-1-24**	**AB-1-29**	**AB-1-35**	**AB-2-24**	**AB-2-28**	**AB02-BTM-090418**	**AB02-SW1-090418**	**AB02-SW2-090418**	**AB02-SW3-090418**	**AB02-SW4-090418**	**AB-3-24***
Sample Depth		**24 ft bgs**	**29 ft bgs**	**35 ft bgs**	**24 ft bgs**	**28 ft bgs**	**25.5 ft bgs**	**25 ft bgs**	**25 ft bgs**	**25 ft bgs**	**25 ft bgs**	**24 ft bgs**
Sample Elevation (ft)		**194**	**189**	**183**	**192**	**188**	**190.5**	**191**	**191**	**191**	**191**	**193**
Chemical Name	**Cleanup Level (mg/kg)**											
Total Petroleum Hydrocarbons in mg/kg												
Gasoline-Range Organics	30**	< 2 U	< 2 U	< 2 U	**6.6**	< 2 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 2 U
Diesel-Range Organics	2000	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	--	--	--	--	--	< 50 U
Motor Oil-Range Organics	2000	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U	--	--	--	--	--	< 250 U
BTEX Compounds in mg/kg												
Benzene	0.03	< 0.02 U	< 0.02 U	< 0.02 U	**0.053**	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U
Toluene	7	< 0.02 U	< 0.02 U	< 0.02 U	**0.05**	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U
Ethylbenzene	6	< 0.02 U	< 0.02 U	< 0.02 U	**0.33**	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U
Total Xylenes	9	< 0.06 U	< 0.06 U	< 0.06 U	**1**	< 0.06 U	< 0.06 U	< 0.06 U	**0.081**	< 0.06 U	< 0.06 U	< 0.06 U

Notes

ft = Sample elevation in feet (North Atlantic Vertical Datum, 1988).

ft bgs = feet below ground surface

mg/kg = milligrams per kilogram

-- = Not analyzed

* = Sample was additionally analyzed for MTCA 5 Metals, and volatile organic compounds (VOCs). Metals were either were not detected or were detected at concentrations less than the Puget Sound Natural Background Concentrations. VOCs were not detected. These results are reported in the Final IAWP (Aspect, 2018).

** = Cleanup level for gasoline-range hydrocarbons when benzene is present.

*** = Sample was additionally analyzed for MTCA 5 Metals, VOCs, and polycyclic aromatic hydrocarbons (PAHs). Metals either were not detected or detected at concentrations less than the Puget Sound Natural Background Concentrations. PAHs and VOCs either were not detected or detected at concentrations that were less than the MTCA Cleanup Level. These results are reported in the Final IAWP (Aspect, 2018).

U = Analyte not detected atbove the listed reporting limit

X = Chromatographic pattern does not match quantitation standard. However, the listed values are considered detections based on field screening evidence (moderate to heavy sheen and petroleum odor).

J = Listed value is an estimate.

MTCA = Model Toxics Control Act

Bolded value indicates analyte detected at the listed concentration.

Blue shading indicates analyte detected at a concentration greater than the corresponding cleanup level.

Soil represented by the performance samples with MTCA exceedances (blue shaded cells) was over-excavated from the Property and transported to Cadman's facility in Everett for permitted disposal.

Green shading indicates samples that were obtained form the over-excavated areas. Analytes either were not detected or detected at a concentration less than the corresponding MTCA cleanup level. The green shaded samples and the lised historical samples (no shading) represent the final soi conditions at the Property following completion of the Interim Action.

Table 4. Soil Analytical Results - Performance Monitoring

Project No. 160092, Seattle, Washington

Sample Date		AB-04 11/08/2016	AB-04 11/08/2016	AB-05 11/08/2016	AB-05 11/08/2016	AB-05 11/08/2016	AB-06 11/09/2016	AB-06 11/09/2016	AB-06 11/09/2016	AB-07 11/09/2016	AB-07 11/09/2016	AB-07 11/09/2016	AB-07 09/10/2018	AB-07 09/10/2018
Sample Identification		AB-4-24*	AB-4-29*	AB-5-24***	AB-5-29*	AB-5-32*	AB-6-24***	AB-6-29	AB-6-33	AB-7-24	AB-7-29	AB-7-33	AB07-BTM-091018	AB07-SW1-091018
Sample Depth		24 ft bgs	29 ft bgs	24 ft bgs	29 ft bgs	32 ft bgs	24 ft bgs	29 ft bgs	33 ft bgs	24 ft bgs	29 ft bgs	33 ft	34 ft bgs	33 ft bgs
Sample Elevation (ft)		192	187	191	186	183	193	188	184	193	188	184	183	184
Chemical Name	**Cleanup Level (mg/kg)**													
Total Petroleum Hydrocarbons in mg/kg														
Gasoline-Range Organics	30**	< 2 U	< 2 U	**5.3**	< 2 U	< 2 U	**3.9**	< 2 U	< 2 U	< 2 U	< 2 U		< 5 U	< 5 U
Diesel-Range Organics	2000	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	--	--
Motor Oil-Range Organics	2000	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U	--	--
BTEX Compounds in mg/kg														
Benzene	0.03	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	**0.12 J**	< 0.02 U	< 0.02 U	**0.024**	< 0.02 U	**0.09**	< 0.02 U	< 0.02 U
Toluene	7	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	**0.074**	< 0.02 U	< 0.02 U
Ethylbenzene	6	**0.068**	**0.041**	**0.14**	< 0.02 U	< 0.02 U	**0.39 J**	**0.087**	< 0.02 U	**0.16**	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U
Total Xylenes	9	**0.09**	< 0.06 U	< 0.06 U	< 0.06 U	< 0.06 U	**0.073**	< 0.06 U	< 0.06 U	< 0.06 U	< 0.06 U	< 0.06 U	< 0.06 U	< 0.06 U

Table 4. Soil Analytical Results - Performance Monitoring

Project No. 160092, Seattle, Washington

Sample Date		**AB-07 09/10/2018**	**AB-08 11/09/2016**	**AB-08 11/09/2016**	**AB-08 11/09/2016**	**AB-09 11/07/2016**	**AB-09 09/06/2018**	**E11S1 08/14/2018**	**E11S1 08/21/2018**	**E16S3 08/14/2018**	**E16S3 08/21/2018**
Sample Identification		**AB07-SW2-091018**	**AB-8-24**	**AB-8-29**	**AB-8-33**	**AB-9-27**	**AB09-BTM-090618**	**E11S1-198-081418**	**E11S1-195-082118**	**E16S3-200-081418**	**E16S3-195-082118**
Sample Depth		**33 ft bgs**	**24 ft bgs**	**29 ft bgs**	**33 ft bgs**	**27 ft bgs**	**28 ft bgs**	**17 ft bgs**	**20 ft bgs**	**15 ft bgs**	**20 ft bgs**
Sample Elevation (ft)		**184**	**193**	**188**	**184**	**188**	**187**	**198**	**195**	**200**	**195**
Chemical Name	**Cleanup Level (mg/kg)**										
Total Petroleum Hydrocarbons in mg/kg											
Gasoline-Range Organics	30**	< 5 U	< 2 U	< 2 U	< 2 U	< 2 U	< 5 U	**1200**	< 5 U	**640**	< 5 U
Diesel-Range Organics	2000	--	< 50 U	< 50 U	< 50 U	< 50 U	--	**1300 X**	< 50 U	**62 X**	< 50 U
Motor Oil-Range Organics	2000	--	< 250 U	< 250 U	< 250 U	< 250 U	--	**3000**	< 250 U	< 250 U	< 250 U
BTEX Compounds in mg/kg											
Benzene	0.03	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	**0.06**	< 0.02 U	< 0.02 UJ	< 0.02 U	< 0.2 U	< 0.02 U
Toluene	7	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.1 U	< 0.02 U	< 0.2 U	< 0.02 U
Ethylbenzene	6	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	**0.91**	< 0.02 U	**0.88**	< 0.02 U
Total Xylenes	9	< 0.06 U	< 0.06 U	< 0.06 U	< 0.06 U	< 0.06 U	< 0.06 U	**3.3**	< 0.06 U	**3.5**	< 0.06 U

Table 4. Soil Analytical Results - Performance Monitoring

Project No. 160092, Seattle, Washington

Sample Date		**E18S2 08/14/2018**	**E18S2 08/21/2018**	**E19S1 08/21/2018**	**E19S1 08/21/2018**	**E19S3 08/21/2018**	**E19S3 08/21/2018**	**E2N10 7/11/2018**	**EX2 7/12/2018**
Sample Identification		**E18S2-200-081418**	**E18S2-195-082118**	**E19S1-199-082118**	**E19S1-196-082118**	**E19S3-199-082118**	**E19S3-196-082118**	**E2N10-210-07118**	**EX2-2-212**
Sample Depth		**15 ft bgs**	**20 ft bgs**	**16 ft bgs**	**19 ft bgs**	**16 ft bgs**	**19 ft bgs**	**5 ft bgs**	**4 ft bgs**
Sample Elevation (ft)		**200**	**195**	**199**	**196**	**199**	**196**	**210**	**212**
Chemical Name	**Cleanup Level (mg/kg)**								
Total Petroleum Hydrocarbons in mg/kg									
Gasoline-Range Organics	30**	**6400**	< 5 U	**210**	< 5 U	< 5 U	< 5 U	**8**	**--**
Diesel-Range Organics	2000	**1100 X**	< 50 U	**670 X**	< 50 U	< 50 U	< 50 U	**5700 X**	**180 X**
Motor Oil-Range Organics	2000	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U	**22000**	**1300**
BTEX Compounds in mg/kg									
Benzene	0.03	**1.1**	< 0.02 U	< 0.03 UJ	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	**--**
Toluene	7	**15**	< 0.02 U	< 0.2 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	**--**
Ethylbenzene	6	**35**	< 0.02 U	**0.53**	< 0.02 U	< 0.02 U	**0.025**	< 0.02 U	**--**
Total Xylenes	9	**140**	< 0.06 U	**1.3**	< 0.06 U	< 0.06 U	< 0.06 U	< 0.06 U	**--**

Table 4. Soil Analytical Results - Performance Monitoring

Project No. 160092, Seattle, Washington

		EX2	E9S3	E9S3	W10N5	W10N6	W11.5N2	W11N4	W15N2
Sample Date		**7/12/2018**	**08/14/2018**	**08/21/2018**	**08/30/2018**	**08/30/2018**	**08/28/2018**	**08/29/2018**	**08/27/2018**
Sample Identification		**EX2-3-212**	**E9S3-198-081418**	**E9S3-195-082118**	**W10N5-191.5-083018**	**W10N6-193.5-083018**	**W11.5N2-196-082818**	**W11N4-195.5-082918**	**W15N2-192-082718**
Sample Depth		**4 ft bgs**	**17 ft bgs**	**20 ft bgs**	**25.5 ft bgs**	**23.5 ft bgs**	**21 ft bgs**	**21.5 ft bgs**	**25 ft bgs**
Sample Elevation (ft)		**212**	**198**	**195**	**191.5**	**193.5**	**196**	**195.5**	**192**
Chemical Name	**Cleanup Level (mg/kg)**								
Total Petroleum Hydrocarbons in mg/kg									
Gasoline-Range Organics	30**	**--**	**840**	< 5 U	< 5 U	< 5 U	**280**	**22**	< 5 U
Diesel-Range Organics	2000	**91 X**	**5900**	< 50 U	--	--	--	--	--
Motor Oil-Range Organics	2000	**730**	< 250 U	< 250 U	--	--	--	--	--
BTEX Compounds in mg/kg									
Benzene	0.03	**--**	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.2 U	**0.025**	< 0.02 U
Toluene	7	**--**	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.2 U	**0.1**	< 0.02 U
Ethylbenzene	6	**--**	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	**0.77**	**0.35**	< 0.02 U
Total Xylenes	9	**--**	< 0.06 U	< 0.06 U	< 0.06 U	< 0.06 U	**2.6**	**2.4**	< 0.06 U

Table 4. Soil Analytical Results - Performance Monitoring

Project No. 160092, Seattle, Washington

Sample Date		**W16N4 08/28/2018**	**W16N4 09/05/2018**	**W16N7 09/05/2018**	**W17N2 08/27/2018**	**W17N2 08/27/2018**	**W18N4 08/27/2018**	**W18N4 08/27/2018**	**W18N4 09/05/2018**
Sample Identification		**W16N4-190-082818**	**W16N4-189.5-090518**	**W16N7-192-090518**	**W17N2-192-082718**	**W17N2-190-082718**	**W18N4-192-082718**	**W18N4-190-082718**	**W18N4-189.5-090518**
Sample Depth		**27 ft bgs**	**27.5 ft bgs**	**25 ft bgs**	**25 ft bgs**	**27 ft bgs**	**25 ft bgs**	**28 ft bgs**	**28.5 ft bgs**
Sample Elevation (ft)		**190**	**189.5**	**192**	**192**	**190**	**192**	**190**	**189.5**
Chemical Name	**Cleanup Level (mg/kg)**								
Total Petroleum Hydrocarbons in mg/kg									
Gasoline-Range Organics	30**	< 5 U	< 5 U	< 5 U	**11**	< 5 U	**13**	**13**	< 5 U
Diesel-Range Organics	2000	--	--	--	--	--	--	--	--
Motor Oil-Range Organics	2000	--	--	--	--	--	--	--	--
BTEX Compounds in mg/kg									
Benzene	0.03	**0.038**	< 0.02 U	< 0.02 U	**0.49**	**0.33**	**1.9**	**0.87**	**0.046**
Toluene	7	< 0.02 U	< 0.02 U	< 0.02 U	**0.075**	< 0.02 U	**0.096**	**0.034**	< 0.02 U
Ethylbenzene	6	**0.026**	< 0.02 UJ	< 0.02 UJ	**0.85**	**0.39**	**0.54**	**1.2**	**0.19 J**
Total Xylenes	9	< 0.06 U	< 0.06 U	< 0.06 U	**0.68**	< 0.06 U	**0.72**	**1.1**	**0.1**

Table 4. Soil Analytical Results - Performance Monitoring

Project No. 160092, Seattle, Washington

Sample Date		**W18N4 09/06/2018**	**W18N4 09/10/2018**	**W18N6 08/27/2018**	**W18N6 08/27/2018**	**W18N6 09/05/2018**	**W18N7 09/05/2018**	**W1S10 08/24/2018**	**W1S12 08/24/2018**
Sample Identification		**W18N4-189-090618**	**W18N4-188-091018**	**W18N6-196-082718**	**W18N6-193-082718**	**W18N6-189.5-090518**	**W18N7-192-090518**	**W1S10-193.5-082418**	**W1S12-193.5-082418**
Sample Depth		**29 ft bgs**	**30 ft bgs**	**22 ft bgs**	**25 ft bgs**	**28.5 ft bgs**	**26 ft bgs**	**24.5 ft bgs**	**25.5 ft bgs**
Sample Elevation (ft)		**189**	**188**	**196**	**193**	**189.5**	**192**	**193.5**	**193.5**
Chemical Name	**Cleanup Level (mg/kg)**								
Total Petroleum Hydrocarbons in mg/kg									
Gasoline-Range Organics	30**	--	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Diesel-Range Organics	2000	--	--	--	--	--	--	--	--
Motor Oil-Range Organics	2000	--	--	--	--	--	--	--	--
BTEX Compounds in mg/kg									
Benzene	0.03	**0.5**	< 0.02 U	**0.034**	**0.32**	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U
Toluene	7	**0.024**	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U
Ethylbenzene	6	**0.17**	< 0.02 U	**0.13**	**0.96**	< 0.02 UJ	< 0.02 UJ	< 0.02 U	< 0.02 U
Total Xylenes	9	**0.3**	< 0.06 U	< 0.06 U	**0.12**	< 0.06 U	< 0.06 U	< 0.06 U	< 0.06 U

Table 4. Soil Analytical Results - Performance Monitoring

Project No. 160092, Seattle, Washington

		W1S8	W3S10	W3S10	W5S12	W6S8	W9N4	W9N8
Sample Date		**08/24/2018**	**08/27/2018**	**08/27/2018**	**08/27/2018**	**09/13/2018**	**08/30/2018**	**09/13/2018**
Sample Identification		**W1S8-193.5-082418**	**W3S10-193.5-082718**	**W3S10-192-082718**	**W5S12-193.5-082718**	**W6S8-191.5-091318**	**W9N4-193.5-083018**	**W9N8-191.5-091318**
Sample Depth		**22.5 ft bgs**	**22.5 ft bgs**	**24 ft bgs**	**22.5 ft bgs**	**24.5 ft bgs**	**23.5 ft bgs**	**25.5 ft bgs**
Sample Elevation (ft)		**193.5**	**193.5**	**192**	**193.5**	**191.5**	**193.5**	**191.5**
Chemical Name	**Cleanup Level (mg/kg)**							
Total Petroleum Hydrocarbons in mg/kg								
Gasoline-Range Organics	30**	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Diesel-Range Organics	2000	--	--	--	--	--	--	--
Motor Oil-Range Organics	2000	--	--	--	--	--	--	--
BTEX Compounds in mg/kg								
Benzene	0.03	< 0.02 U	**0.04**	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U
Toluene	7	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U
Ethylbenzene	6	**0.066**	**0.046**	**0.047**	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U
Total Xylenes	9	< 0.06 U	**0.09**	< 0.06 U	< 0.06 U	< 0.06 U	< 0.06 U	< 0.06 U

Table 5. Dewatering Observation Monitoring

Project No. 160092, Seattle, Washington

Date	Monitoring Well ID	TOC Elevation (ft amsl)	DTW (fbtoc)	GW Elevation (ft amsl)	LNAPL Thickness (ft.)	Monitoring Well ID	TOC Elevation (ft amsl)	DTW (fbtoc)	GW Elevation (ft amsl)	LNAPL Thickness (ft.)	Monitoring Well ID	TOC Elevation (ft amsl)	DTW (fbtoc)	GW Elevation (ft amsl)	LNAPL Thickness (ft.)	Monitoring Well ID	TOC Elevation (ft amsl)	DTW (fbtoc)	GW Elevation (ft amsl)	LNAPL Thickness (ft.)
8/2/2018	MW-17	215.4	16.71	198.69	-	MW-18	215.95	-	-	-	MW-19	216.36	-	-	-	MW-25	212.81	15.53	197.28	-
8/13/2018			18.10	197.30	-			18.46	197.49	-			19.06	197.3	-			-	-	-
8/15/2018			18.13	197.27	-			18.47	197.48	-			19.01	197.35	-			-	-	-
8/16/2018			17.93	197.47	-			18.38	197.57	-			19.05	197.31	-			15.99	196.82	-
8/17/2018			24.27	191.13	-			19.25	196.7	-			20.43	195.93	-			16.20	196.61	-
8/20/2018			22.98	192.42	-			21.09	194.86	-			22.98	193.38	-			16.67	196.14	-
8/21/2018			24.52	190.88	-			21.81	194.14	-			23.67	192.69	-			-	-	-
8/22/2018			24.51	190.89	-			22.86	193.09	-			-	-	-			16.96	195.85	-
8/23/2018			24.22	191.18	-			22.6	193.35	-			23.99	192.37	-			17.1	195.71	-
8/24/2018			DRY		-			DRY		-			23.31	193.05	-			17.26	195.55	-
8/27/2018			DRY		-			DRY		-			23.92	192.44	-			17.52	195.29	-
8/28/2018			DRY		-			DRY		-			24.42	191.94	-			-	-	-
8/29/2018			DRY		-			DRY		-			24.55	191.81	-			17.61	195.2	-
8/30/2018			DRY		-			DRY		-			25.56	190.8	-			17.41	195.4	-
8/31/2018			DRY		-			DRY		-			-	-	-			17.65	195.16	-
9/1/2018			DRY		-			DRY		-			27.91	188.45	-			-	-	-
9/6/2018			DRY		-			DRY		-			28.09	188.27	-			-	-	-
9/7/2018			DRY		-			DRY		-			28.2	188.16	-			-	-	-

Notes

TOC = Top of the well casing
DTW = Depth-to-groundwater
GW = Groundwater
fbtoc - feet below top of casing
LNAPL = Light non-aqueous phase liquid
ft amsl = Elevation in feet above mean sea level

Table 5. Dewatering Observation Monitoring

Project No. 160092, Seattle, Washington

Date	Monitoring Well ID	TOC Elevation (ft amsl)	DTW (fbtoc)	GW Elevation (ft amsl)	LNAPL Thickness (ft.)	Monitoring Well ID	TOC Elevation (ft amsl)	DTW (fbtoc)	GW Elevation (ft amsl)	LNAPL Thickness (ft.)	Monitoring Well ID	TOC Elevation (ft amsl)	DTW (fbtoc)	GW Elevation (ft amsl)	LNAPL Thickness (ft.)
8/2/2018	MW-26	213.45	15.62	197.83	0.1	MW-27	214.43	-	-	-	MW-28	214.44	16.26	198.18	0.06
8/13/2018			17.10	196.35	-			-	-	-			17.82	196.62	-
8/15/2018			16.69	196.76	-			-	-	-			17.49	196.95	-
8/16/2018			16.56	196.89	-			17.42	197.01	-			17.29	197.15	-
8/17/2018			19.79	193.66	-			19.76	194.67	0.15			22.86	191.58	0.02
8/20/2018			20.76	192.69	-			22.71	191.72	0.1			23.07	191.37	0.04
8/21/2018			22.46	190.99	-			23.78	190.65	0.1			24.09	190.35	0.01
8/22/2018			22.72	190.73	-			24.23	190.20	0.08			24.41	190.03	0.02
8/23/2018			24.25	189.20	-			23.84	190.59	0.08			23.7	190.74	-
8/24/2018			24.35	189.10	-			DRY		-			DRY		-
8/27/2018			23.76	189.69	-			DRY		-			DRY		-
8/28/2018			23.21	190.24	-			DRY		-			DRY		-
8/29/2018			22.36	191.09	-			DRY		-			DRY		-
8/30/2018			22.88	190.57	-			DRY		-			DRY		-
8/31/2018			22	191.45	-			DRY		-			DRY		-
9/1/2018			22.35	191.10	-			DRY		-			DRY		-
9/6/2018			22.61	190.84	-			DRY		-			DRY		-
9/7/2018			22.6	190.85	-			DRY		-			DRY		-

Table 6. Off-Property Groundwater Analytical Results

Project No. 160092, Seattle, Washington

	Sample Location	MW-17	MW-18	MW-18	MW-25	MW-25	MW-25	MW-26	MW-26
	Sample Date	08/02/2018	08/22/2018	08/31/2018	08/02/2018	08/22/2018	08/31/2018	08/22/2018	08/31/2018
	Sample Identification	MW-17-080218	MW-18-082218	MW-18-083118	MW-25-080218	MW-25-082218	MW-25-083118	MW-26-082218	MW-26-083118
Chemical Name	**Cleanup Level (ug/L)**								
Total Petroleum Hydrocarbons in ug/L									
Gasoline-Range Organics	800*	**2800**	< 100 U	< 100 U	**1200**	**420**	**440**	**940**	**1300**
Diesel-Range Organics	500	**860 X**	**99 X**	**180 X**	**210 X**	**58 X**	< 50 U	**130 X**	**120 X**
Motor Oil-Range Organics	500	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U	< 150 U
BTEX Compounds in ug/L									
Benzene	5	**45**	< 0.35 U	< 0.35 U	**32**	**9.7**	**12**	**28**	**23**
Toluene	1000	**4**	< 1 U	< 1 U	**2.7**	< 1 U	< 1 U	**1.9**	< 1 U
Ethylbenzene	700	**27**	< 1 U	< 1 U	**9.3**	< 1 U	< 1 U	**14**	< 1 U
Total Xylenes	1000	**87**	< 2 U	< 2 U	**6.9**	< 2 U	< 2 U	**1.2**	< 2 U
Volcatile Organic Compounds in ug/L									
Tetrachloroethene (PCE)	5	**110**	**2.9**	**1.6**	**26**	**59**	**42**	**7.5**	**43**
Trichloroethene (TCE)	5	**27**	R	< 1 U	**480**	**270 E**	**360**	**810**	**1400**
cis-1,2-Dichloroethene (DCE)	16	**39**	< 1 U	< 1 U	**540**	**230**	**280**	**430**	**660**
trans-1,2-Dichloroethene	160	**1.7**	< 1 U	< 1 U	**100**	**28**	**24**	**110**	**98**
Methylene Chloride	5	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Vinyl Chloride	0.2	< 0.2 U	< 0.2 U	< 0.2 UJ	**78**	**13**	**9.5 J**	**26**	**5.2 J**
1,2-Dibromoethane (EDB)	0.01	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,2-Dichloroethane (EDC)	5	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,1-Dichloroethene	400	< 1 U	< 1 U	< 1 U	**1.8**	< 1 U	< 1 U	< 1 U	< 1 U
Methyl tert-butyl ether (MTBE)	20	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U

Notes

ug/L = micrograms per liter

* = Cleanup level for gasoline-range hydrocarbons when benzene is present.

U = Analyte not detected atbove the listed reporting limit

X = Chromatographic pattern does not match quantitation standard.

J = Listed value is an estimate.

E - exceeded calibration range (insufficient volume for reanalysis at dilution). Analyte is clearly present at a high concentration in sample, but numeric value is not viable for quantitative purposes.

R - Result is rejected. Unable to determine if analyte is present. Result is not usable for quantitative or qualitative purposes.

Select VOCs are listed in the table. Other VOCs either were not detected or detected at concentrations below the MTCA cleanup levels. Please refer to the laboratory report in Appendix D.

MTCA = Model Toxics Control Act

Bolded value indicates analyte detected at the listed concentration.

Blue shading indicates analyte detected at a concentration greater than the corresponding cleanup level.

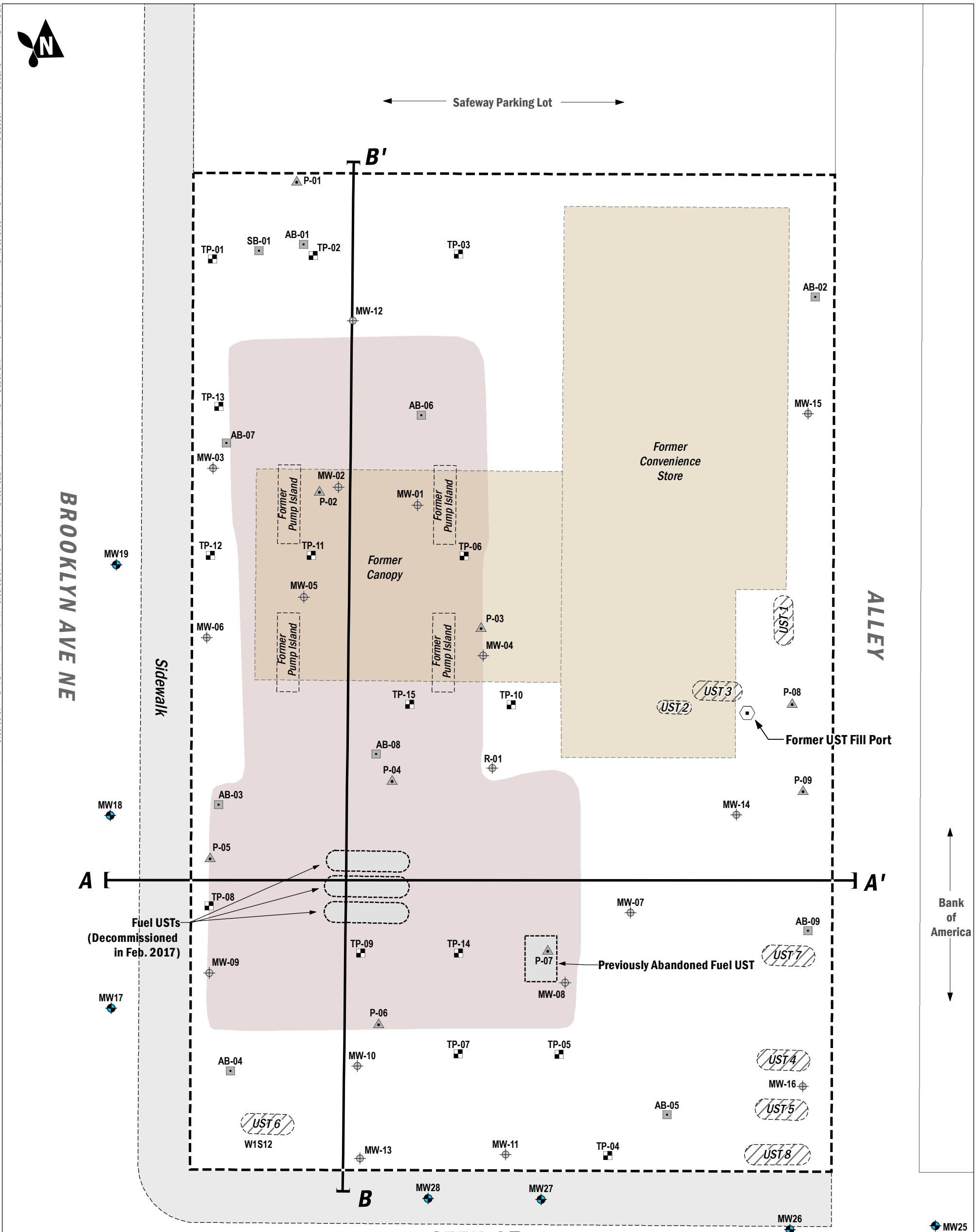
FIGURES

Site Location Map

Interim Action Report
4700 Brooklyn Avenue NE
Seattle, Washington

Aspect CONSULTING	OCT-2018	BY: DLC / EAC	FIGURE NO. 1
	PROJECT NO. 160092	REVISED BY: FK / TDR	

GIS Path: T:\projects_8\4700 Brooklyn 160092\Delivered\InterimActionReport2018\01 Site Location Map.mxd || Coordinate System: NAD 1983 StatePlane Washington North FIPS 4601 Feet || Date Saved: 10/24/2018 || User: trullen || Print Date: 10/24/2018



Abandoned on-Property Monitoring Well

Existing off-Property Monitoring Well

Test Pit (Aspect, 2018)
Completed during the Interim Action

Soil Boring (Aspect, 2016)

Test Probe (Riley, 2015)

Property Boundary

1990 Soil Excavation

Cross Section

USTs Discovered and Removed During Interim Action in 2018

Former UST

UST: Underground Storage Tank

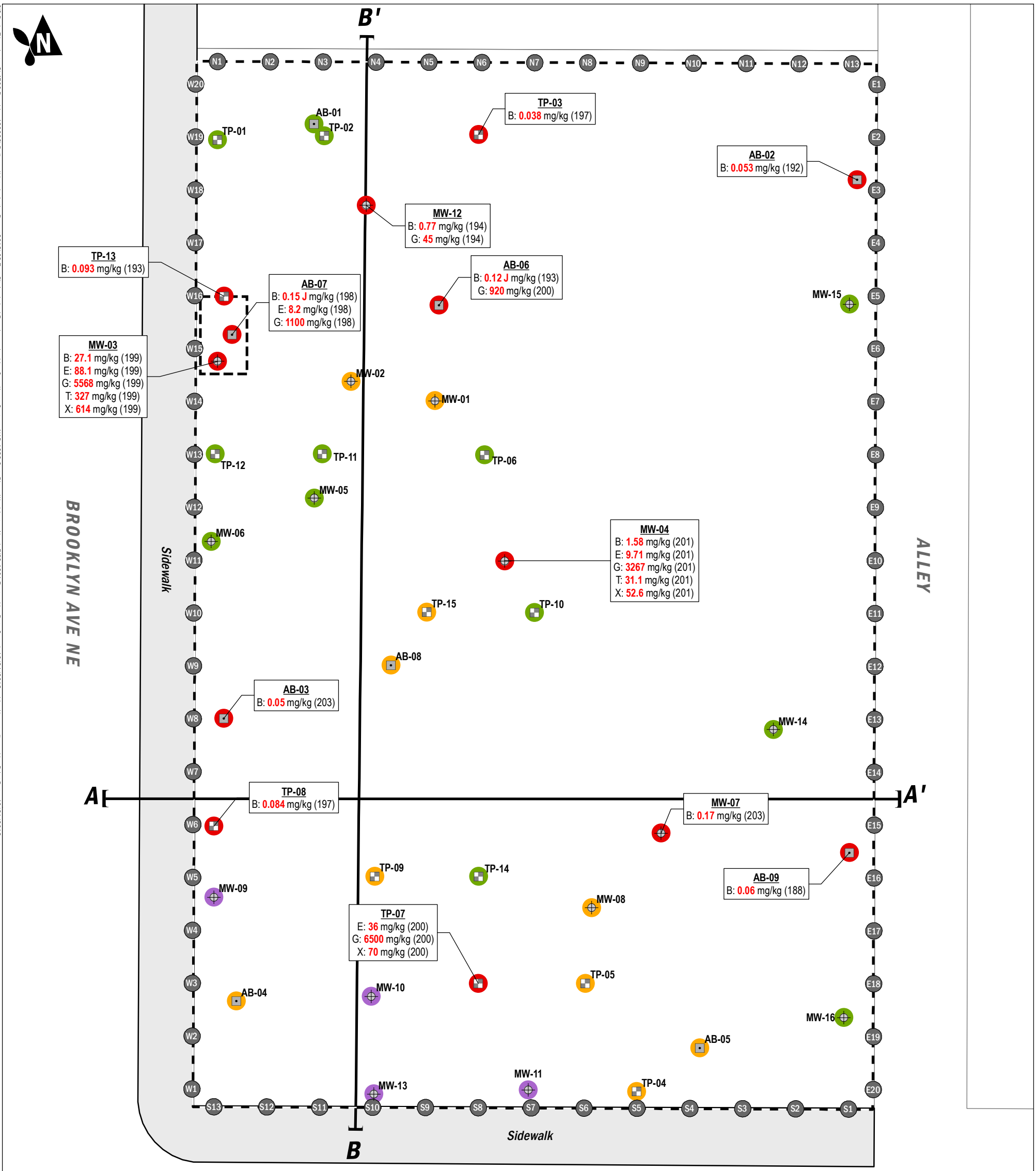
0 7.5 15
Feet

Site Plan

Interim Action Report
4700 Brooklyn Avenue NE
Seattle, Washington

Aspect CONSULTING

OCT-2018	BY: DAH / EAC	FIGURE NO. 2
PROJECT NO. 160092	REVISED BY: ---	



LNAPL Occured at this Monitoring Well Location and Supersedes Any Soil Analytical Data Collected During Well Installation in 1990

One or More Contaminant Detected Above Cleanup Level

One or More Contaminant Detected Below Cleanup Level

No Detections

Explorations

Abandoned on-Property Monitoring Well

Existing off-Property Monitoring Well

Test Pit (Aspect, 2018)
Completed during the Interim Action

Soil Boring (Aspect, 2016)

Site Features Legend

Face of Soldier Pile Wall

Soldier Pile

Cross Section

Tax Parcel

LNAPL: Light non-aqueous phase liquid

Exploration Name (Sample Elevation In Feet)
G: Gasoline Range Organics (mg/kg)
B: Benzene (mg/kg)
E: Ethylbenzene (mg/kg)
T: Toluene (mg/kg)
X:Total Xylenes (mg/kg)
mg/kg: Milligrams per kilogram

Results in **red bold** indicate concentration exceeds proposed cleanup levels.

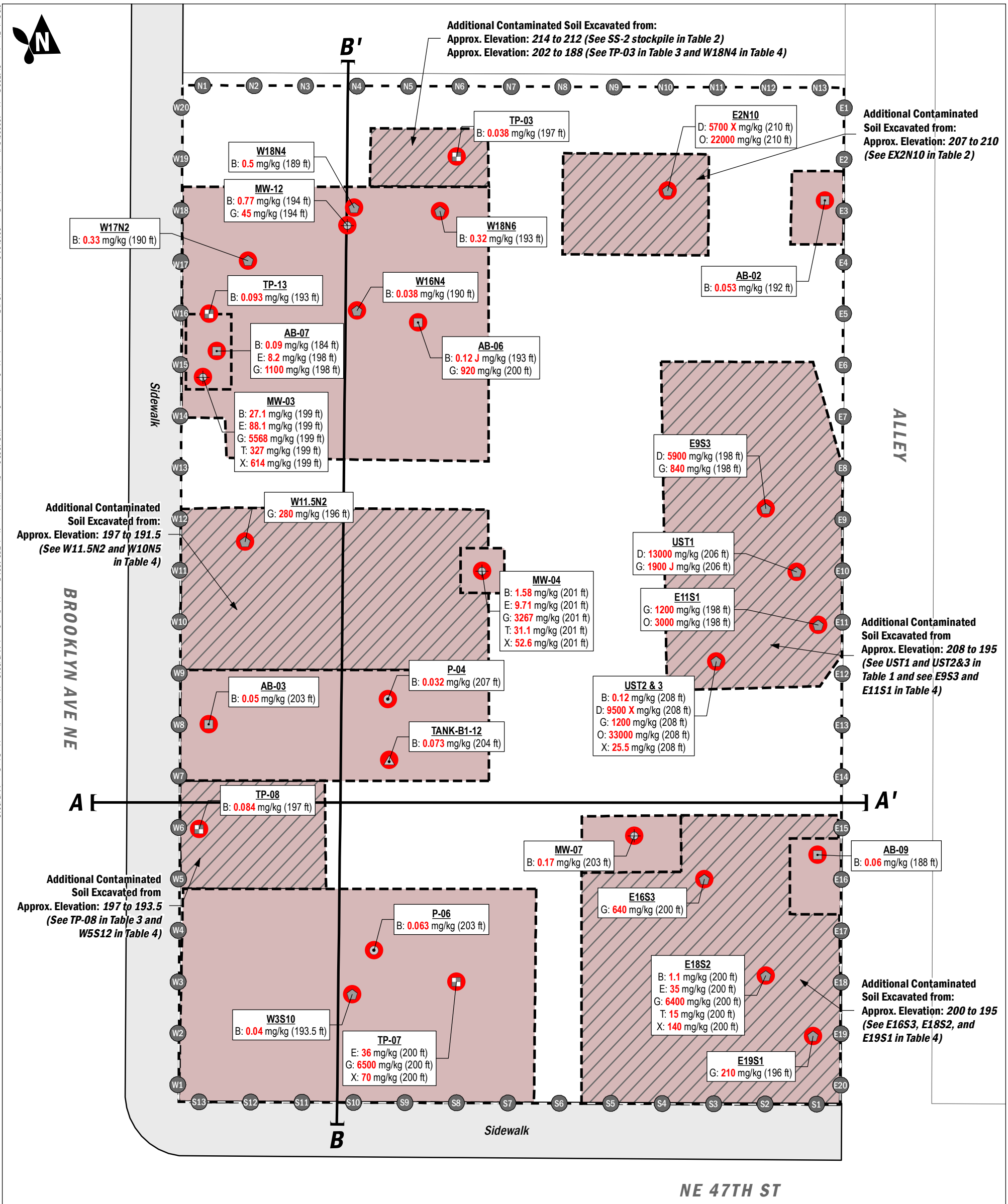
Note:
1. Soldier pile locations shown are taken from the Temporary Shoring Wall Plans (Rev. 1) by Ground Support PLLC date November 3, 2017.

0 7.5 15
Feet

Test Pits and Historical Explorations Soil Analytical Results

Interim Action Report
4700 Brooklyn Ave NE
Seattle, Washington

Aspect Consulting	OCT-2018	BY: ACG / RAP	FIGURE NO. 3
	PROJECT NO. 160092	REVISED BY: TDR	



One or More Contaminant Detected Above Cleanup Level

Known Contaminated Soil Area Excavation
Presence of Contaminated Soil was confirmed during RI investigation, prior to the Interim Action

Additional Contaminated Soil Excavation
Contaminated Soil was discovered during Interim Action

Explorations

- Abandoned on-Property Monitoring Well
- Test Pit (Aspect, 2018) *Completed during the Interim Action*
- Soil Sample (Aspect, 2018) *Sampled during the Interim Action*
- UST Site Assessment Soil Sample Location (Aspect, 2018)
- Soil Boring (Aspect, 2016)
- Test Probe (Riley, 2015)

Site Features Legend

- Face of Soldier Pile Wall
- Soldier Pile
- Cross Section
- Tax Parcel

0 7.5 15
Feet

Exploration Name (Sample Elevation In Feet)

G: Gasoline Range Organics (mg/kg)
B: Benzene (mg/kg)
E: Ethylbenzene (mg/kg)
T: Toluene (mg/kg)
X: Total Xylenes (mg/kg)
D: Diesel Range Organics (mg/kg)
O: Oil Range Organics (mg/kg)
mg/kg: Milligrams per kilogram

Results in **red bold** indicate concentration exceeds proposed cleanup levels.

Note:
1. Soldier pile locations shown are taken from the Temporary Shoring Wall Plans (Rev. 1) by Ground Support PLLC date November 3, 2017.

Contaminated Soil Excavation

Interim Action Report
4700 Brooklyn Ave NE
Seattle, Washington

Aspect Consulting	NOV-2018	BY: ACG / RAP	FIGURE NO. 4
	PROJECT NO. 160092	REVISED BY: TDR	

B'

N1 N2 N3 N4 N5 N6 N7 N8 N9 N10 N11 N12 N13

W20 W19 W18 W17 W16 W15 W14 W13 W12 W11 W10 W9 W8 W7 W6 W5 W4 W3 W2 W1

E1 E2 E3 E4 E5 E6 E7 E8 E9 E10 E11 E12 E13 E14 E15 E16 E17 E18 E19 E20

S13 S12 S11 S10 S9 S8 S7 S6 S5 S4 S3 S2 S1

W18N4: 188 ft
W18N7: 192 ft
AB-02: 188 ft
W16N4: 189.5 ft
W16N7: 192 ft
AB-07: 183 ft
TP-12: 197 ft
TP-11: 197 ft
TP-06: 193 ft
MW19
E9S3: 195 ft
W11N4: 195.5 ft
MW-04: 196 ft
W10N5: 191.5 ft
E11S1: 195 ft
W9N4: 193.5 ft
W9N8: 191.5 ft
AB-03: 193 ft
MW18
MW-14: 201 ft
W6S8: 191.5 ft
AB-09: 187 ft
W5S12: 193.5 ft
MW17
TP-07: 197 ft
TP-05: 197 ft
E18S2: 195 ft
W3S10: 192 ft
E19S3: 196 ft
W1S12: 193.5 ft
W1S10: 193.5 ft
W1S8: 193.5 ft
TP-04: 197 ft
MW28
MW27
MW26
MW25

BROOKLYN AVE NE

Sidewalk

ALLEY

A

A'

B

Sidewalk

NE 47TH ST

One or More Contaminant Detected Below Cleanup Level

No Detections

Explorations

- Abandoned on-Property Monitoring Well
- Existing off-Property Monitoring Well
- Test Pit (Aspect, 2018) *Completed during the Interim Action*
- Soil Boring (Aspect, 2016)
- Soil Sample (Riley, 2015)

Site Features Legend

- Face of Soldier Pile Wall
- Soldier Pile
- Cross Section
- Tax Parcel

AB-99: 210 ft — Soil Sample Name; Sample Elevation in Feet

Note:

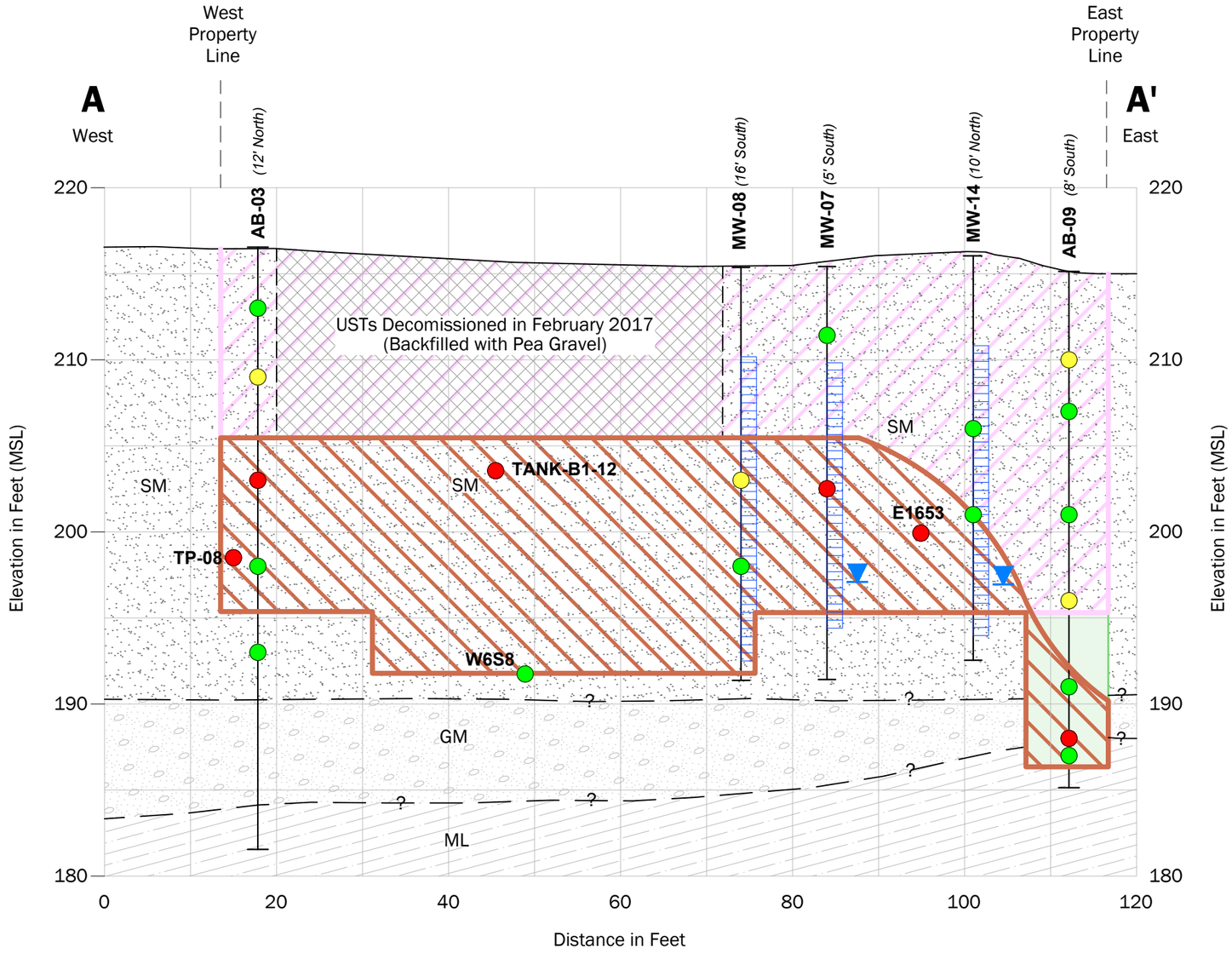
1. Soldier pile locations shown are taken from the Temporary Shoring Wall Plans (Rev. 1) by Ground Support PLLC date November 3, 2017.

0 7.5 15
Feet

Final Performance Soil Sample Results

Interim Action Report
4700 Brooklyn Ave NE
Seattle, Washington

Aspect Consulting	OCT-2018	BY: ACG / RAP	FIGURE NO. 5
	PROJECT NO. 160092	REVISED BY: TDR	



Legend

- Remedial Over-Excavation Backfilled with Controlled Density Fill
- Soil excavated from this area was considered Impacted or Clean
- Soil excavated from this area was considered Contaminated
- Gray fine to medium sand with silt and occasional gravel. Grades from loose to dense with depth (SM).
- Moist gray sandy, silty gravel. Fine to coarse subrounded gravel (GM)
- Medium stiff to hard gray silt (ML).
- Groundwater Elevation (November 2016)

Analytical Results

- Contaminants not detected
- Contaminants detected at concentrations below the MTCA Method A Cleanup Levels
- Contaminants detected at concentrations greater than the MTCA Method A Cleanup Level

Horizontal Scale: 1" = 15'
Vertical Scale: 1" = 7.5'
Vertical Exaggeration 2x

0 15 30 Feet

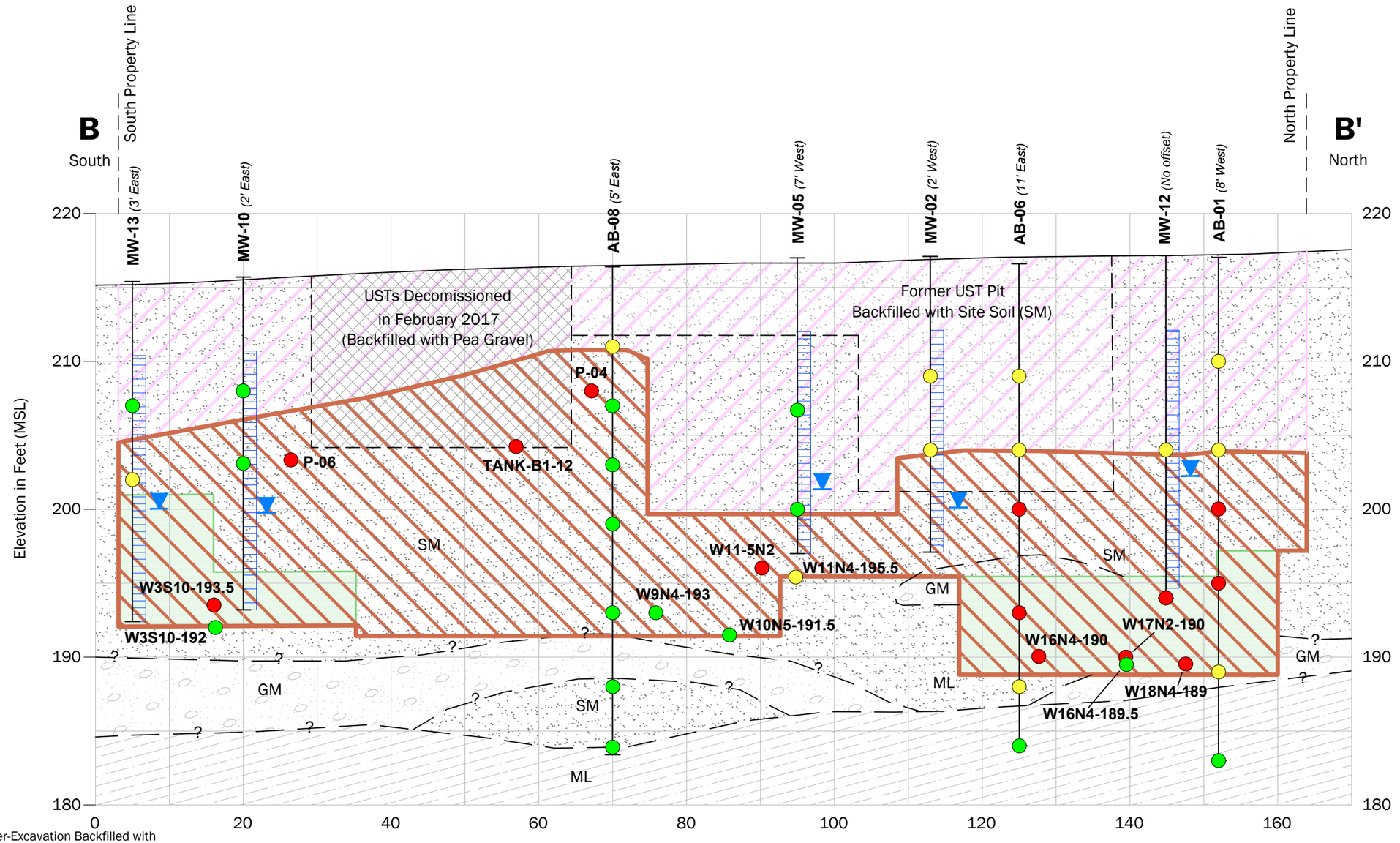
Cross-Section A-A'

Interim Action Report
4700 Brooklyn Avenue NE
Seattle, Washington

Aspect Consulting

Oct-2018	BY: FK/CMV	FIGURE NO. 6
PROJECT NO. 160092	REVISED BY: -	

CAD Path: \\SEASTORE2\Drafting\4700 Brooklyn Avenue NE\160092 Interim Action \2018-10 IA_Oversight and Reporting\160092-AA.dwg Section AA || Date Saved: Nov 01, 2018 9:14am || User: cvanslyke



Legend

- Remedial Over-Excavation Backfilled with Controlled Density Fill
- Soil excavated from this area was considered Impacted or Clean
- Soil excavated from this area was considered Contaminated
- Gray fine to medium sand with silt and occasional gravel. Grades from loose to dense with depth (SM).
- Moist gray sandy, silty gravel. Fine to coarse subrounded gravel (GM)
- Medium stiff to hard gray silt (ML).
- Groundwater Elevation (November 2016)

Analytical Results

- Contaminants not detected
- Contaminants detected at concentrations below the MTCA Method A Cleanup Levels
- Contaminants detected at concentrations greater than the MTCA Method A Cleanup Level

Horizontal Scale: 1" = 15'
Vertical Scale: 1" = 7.5'
Vertical Exaggeration 2x

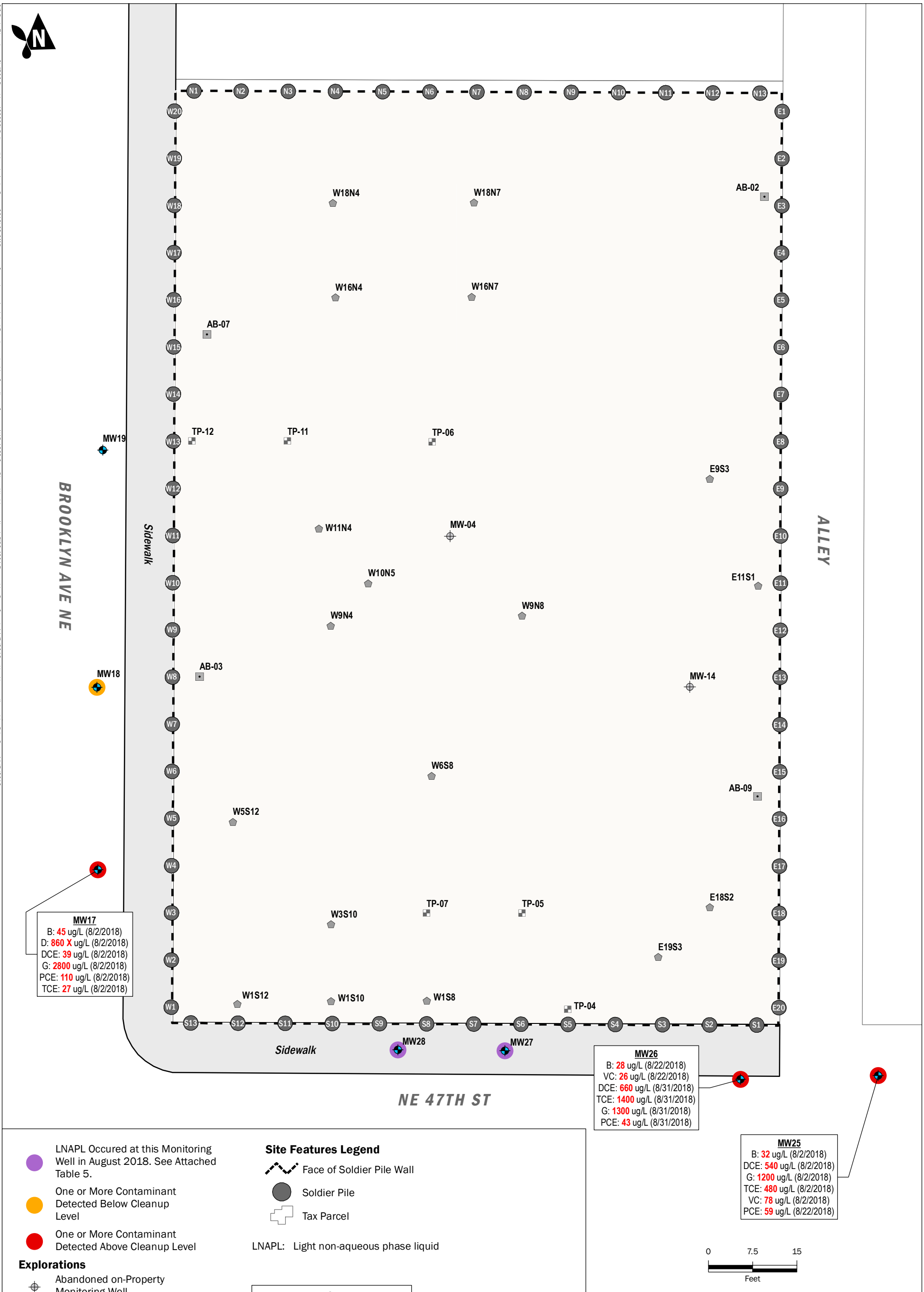
0 15 30 Feet

Cross-Section B-B'

Interim Action Report
4700 Brooklyn Avenue NE
Seattle, Washington

Aspect Consulting	Nov-2018	BY: FK/CMV	FIGURE NO. 7
	PROJECT NO. 160092	REV BY: -	

CAD Path: \\SEASTORE2\Drafting\4700 Brooklyn Avenue NE\160092 Interim Action\2018.10 IA_Oversight and Reporting\160092-BB.dwg Cross Section B-B' || Date Saved: Nov 01, 2018 9:29am || User: cvanslyke



LNAPL Occured at this Monitoring Well in August 2018. See Attached Table 5.

One or More Contaminant Detected Below Cleanup Level

One or More Contaminant Detected Above Cleanup Level

Explorations

- Abandoned on-Property Monitoring Well
- Existing off-Property Monitoring Well
- Test Pit (Aspect, 2018) *Completed during the Interim Action*
- Soil Boring (Aspect, 2016)
- Soil Sample (Riley, 2015)

Site Features Legend

- Face of Soldier Pile Wall
- Soldier Pile
- Tax Parcel

LNAPL: Light non-aqueous phase liquid

Exploration Name
G: Gasoline Range Organics (ug/L)
DCE: cis-1,2-Dichloroethene (ug/L)
B: Benzene (ug/L)
PCE: Tetrachloroethene (ug/L)
TCE: Trichloroethene (ug/L)
VC: Vinyl Chloride (ug/L)
ug/L: Micrograms per liter

Off-Property Groundwater Analytical Results

Interim Action Report
4700 Brooklyn Ave NE
Seattle, Washington

Aspect Consulting	NOV-2018	BY: ACG / RAP	FIGURE NO. 8
	PROJECT NO. 160092	REVISED BY: TDR	

APPENDIX A

Ecology Construction Stormwater General Permit

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
PO Box 47600 • Olympia, WA 98504-7600 • 360-407-6000
711 for Washington Relay Service • Persons with a speech disability can call 877-833-6341

March 21, 2018

Eran Fields
FH Brooklyn LLC
2251 Linda Flora Dr
Los Angeles, CA 90077

RE: Coverage under the Construction Stormwater General Permit (CSWGP)

Permit number:	**WAR306191**
Site Name:	**Formwe Chevron 90129 Station**
Location:	**4700 Brooklyn Ave NE**
	Seattle, WA **County: King**
Disturbed Acres:	**0.37**

Dear Eran Fields:

The Washington State Department of Ecology (Ecology) received your Notice of Intent for coverage under Ecology's Construction Stormwater General Permit (CSWGP). This is your permit coverage letter. Your permit coverage is effective March 21, 2018. **Please retain this permit coverage letter as the official record of permit coverage for your site.**

Ecology has approved use of electronic formats as long as they are easily produced on your construction site. A mobile friendly copy of the CSWGP permit, permit forms, and information related to your permit can be viewed and downloaded at www.ecology.wa.gov/eCoverage-packet. Please contact your Permit Administrator, listed below, if you would like to receive a hard copy of the CSWGP.

Please take time to read the entire permit and contact Ecology if you have any questions.

Electronic Discharge Monitoring Reports (WQWebDMR)
This permit requires that Permittees submit monthly discharge monitoring reports (DMRs) for the full duration of permit coverage (from issuance date to termination). DMRs must be submitted electronically using Ecology's secure online system, WQWebDMR. To sign up for WQWebDMR go to www.ecy.wa.gov/programs/wq/permits/paris/webdmr.html. If you have questions, contact the portal staff at (360) 407-7097 (Olympia area), or (800) 633-6193/option 3, or email WQWebPortal@ecy.wa.gov.

Appeal Process
You have a right to appeal coverage under the general permit to the Pollution Control Hearing Board (PCHB). Appeals must be filed within 30 days of the date of receipt of this letter. Any appeal is limited to the general permit's applicability or non-applicability to a specific discharger. The appeal process is governed by chapter 43.21B RCW and chapter 371-08 WAC. "Date of receipt" is defined in RCW 43.21B.001(2). For more information regarding your right to appeal, go to https://fortress.wa.gov/ecy/publications/SummaryPages/1710007.html to view Ecology's Focus Sheet: *Appeal of General Permit Coverage.*

Ecology Field Inspector Assistance
If you have questions regarding stormwater management at your construction site, please contact Evan Dobrowski of Ecology's Northwest Regional Office in Bellevue at evan.dobrowski@ecy.wa.gov, or (425) 649-7276.

Questions or Additional Information
Ecology is committed to providing assistance. Please review our web page at www.ecology.wa.gov/constructionstormwaterpermit. If you have questions about the Construction Stormwater General Permit, please contact your Permit Administrator, Josh Klimek at josh.klimek@ecy.wa.gov or (360) 407-7451.

Sincerely,

Vincent McGowan, Manager
Program Development Services Section
Water Quality Program

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
Northwest Regional Office • 3190 160th Ave SE • Bellevue, WA 98008-5452 • 425-649-7000
711 for Washington Relay Service • Persons with a speech disability can call 877-833-6341

FEB 22 2018

Mr. Eran Fields
FH Brooklyn, LLC
2251 Linda Flora Drive
Los Angeles, CA 90077-1410

Order Docket No.	15705
Site Location	Former Chevron 90129 Station – 4700 Brooklyn Avenue NE, Seattle, WA 98105

Re: Administrative Order

Dear Mr. Fields:

The Department of Ecology (Ecology) has issued the enclosed Administrative Order (Order) requiring FH Brooklyn, LLC to comply with:

- Chapter 90.48 Revised Code of Washington (RCW) – State of Washington Water Pollution Control Act.
- Chapter 173-201A Washington Administrative Code (WAC) – Water Quality Standards for Surface Waters of the State of Washington.
- National Pollutant Discharge Elimination System (NPDES) Construction Stormwater General Permit, Permit Number WAR306191.

If you have questions please contact Evan Dobrowski at 425-649-7276 or edob461@ecy.wa.gov.

Sincerely,

Rachel McCrea

Rachel McCrea
Water Quality Section Manager
Northwest Regional Office
Washington State Department of Ecology

Enclosure: Administrative Order Docket No. 15705

By Certified Mail No.: 9171 9690 0935 0084 1037 93

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

IN THE MATTER OF AN ADMINISTRATIVE ORDER AGAINST FH Brooklyn, LLC Mr. Eran Fields	)))))	ADMINISTRATIVE ORDER DOCKET NO. 15705

To: Eran Fields
FH Brooklyn, LLC
2251 Linda Flora Drive
Los Angeles, CA 90077-1410

Order Docket No.	15705
Site Location	Former Chevron 90129 Station – 4700 Brooklyn Avenue NE, Seattle, WA 98105

The Washington State Department of Ecology (Ecology) has issued this Administrative Order (Order) requiring the FH Brooklyn, LLC to comply with:

- Chapter 90.48 Revised Code of Washington (RCW) – State of Washington Water Pollution Control Act.
- Chapter 173-201A Washington Administrative Code (WAC) – Water Quality Standards for Surface Waters of the State of Washington.
- Construction Stormwater General Permit WAR306191: National Pollutant Discharge Elimination System (NPDES) and State Waste Discharge General Permit for Stormwater Discharges Associated with Construction Activity.

This is an Administrative Order in accordance with General Condition G13 (Additional Monitoring) as set forth in the Construction Stormwater General Permit. RCW 90.48.120(2) RCW authorizes Ecology to issue Administrative Orders to accomplish the purposes of Chapter 90.48 RCW.

ORDER TO COMPLY

FH Brooklyn, LLC is subject to coverage under NPDES Construction Stormwater General Permit WAR306191 for construction activities associated with the construction site known as Former Chevron 90129 Station. FH Brooklyn, LLC reported that the site contains contaminated groundwater and soil which has the potential to discharge in stormwater and dewatering water due to the proposed construction activity. The Construction Stormwater General Permit does not have water quality sampling or benchmarks for the known constituents of concern listed in Table 1; however, the permit requires compliance with the Water Quality Standards for Surface Water of the State of Washington (Water Quality Standards).

The Order establishes Indicator Levels for the Former Chevron 90129 Station. Indicator Levels express a pollutant concentration used as a threshold, below which a pollutant is considered unlikely to cause a water quality violation, and above which it may. Indicator Levels in this Administrative Order were derived from the WAC 173-201A and the analytical method's minimum quantitation level.

For these reasons and in accordance with RCW 90.48.120(2) it is ordered that FH Brooklyn, LLC take the following actions. These actions are required at the location known as Former Chevron 90129 Station, located at 4700 Brooklyn Avenue NE, Seattle, WA 98105. In the event of a permit transfer to another Permittee, compliance with this Administrative Order and the actions listed below is required.

FH Brooklyn, LLC must take the following actions to remain in compliance with NPDES Permit WAR306191:

- Install all pre-treatment and treatment systems prior to any discharge of dewatering water or contaminated construction stormwater to Portage Bay.
- Capture, contain, and treat all contaminated dewatering or contaminated stormwater prior to discharge to the Portage Bay.
- Use an Ecology-approved treatment system and media filtration to treat any dewatering water or stormwater comingled with dewatering water (dewatering water) or contaminated stormwater.
- All captured sediment from the treatment of the dewatering or contaminated stormwater must be transported to an approved disposal facility based on the level of contamination.
- Contaminated soils excavated during construction will be immediately hauled offsite without stock piling to an approved disposal facility based on the level of contamination. When it is not feasible to immediately haul soils offsite, the soils must be placed in a covered area to minimize contact with stormwater.
- The treatment system must have enough capacity to hold the treated dewatering water or stormwater until it has been tested to determine if any of the Indicator Levels listed in Table 1 have been exceeded. No dewatering water or stormwater may be discharge before it has been tested for the parameters listed in Table 1. If any of the Indicator Levels listed in Table 1 are exceeded, you must stop the discharge of treated dewatering water or contaminated stormwater to Portage Bay, until it has been retested to determine that all parameters are equal to or below the Indicator Levels in Table 1. If any of the Indicator Levels are exceeded after being retested, FH Brooklyn, LLC shall install further Ecology-approved treatment systems or shall discharge to the Municipal Sewer under a separate agreement with the Municipality and provide notice to Ecology.
- Once the effectiveness of the treatment system has been determined, FH Brooklyn, LLC may revert to a flow-through treatment system after the minimum two sampling and testing events and upon written approval from Ecology. The flow-through treatment system design must be submitted to Ecology for review prior to use.
- If a flow-through treatment system is adopted, all dewatering water or contaminated stormwater must be sampled weekly while discharging and tested for the parameters listed in Table 1.
- When using a flow-through treatment system, if any of the Indicator Levels listed in Table 1 are exceeded, FH Brooklyn, LLC must stop the discharge of treated dewatering water or stormwater to Portage Bay until it has been retested to determine that all parameters are equal to or below the Indicator Levels in Table 1. If any of the Indicator Levels are exceeded after being retested, FH Brooklyn, LLC shall modify the existing flow-through treatment system to increase its effectiveness or install an Ecology-approved treatment system or truck the contaminated stormwater or groundwater off-site for disposal in an approved manner.

- All dewatering water or contaminated stormwater must be batch sampled prior to discharging and tested for the parameters listed in Table 1. If any of the Indicator Levels listed in Table 1 are exceeded, you must stop the discharge of treated dewatering water or contaminated stormwater to the Portage Bay, until it has been retested to determine that all parameters are equal to or below the Indicator Levels in Table 1. If any of the Indicator Levels are exceeded after being retested, FH Brooklyn, LLC shall install further Ecology-approved treatment systems or shall discharge to the Municipal Sewer under a separate agreement with the Municipality and provide notice to Ecology.
- Sampling for parameters listed in Table 1 must be reported on the required Discharge Monitoring Report (DMR) according to Permit conditions (S5.B Discharge Monitoring Reports).
- If sampling is conducted more frequently than required by this Order, the results of this monitoring must be included in the calculation and reporting of the data that is submitted in the Discharge Monitoring Reports (DMRs).
- Any discharge to waters of the state above the Indicator Levels for parameters listed in Table 1 must be immediately reported to the Department of Ecology.
- All monitoring data must be prepared by a laboratory registered or accredited under the provisions of, *Accreditation of Environmental Laboratories*, Chapter 137-50 WAC.
- All sampling data must be reported monthly on Discharge Monitoring Reports (DMRs) electronically using Ecology's secure online system WQWebDMR, in accordance to permit condition S5.B. If the measured concentration is below the detection level than FH Brooklyn, LLC shall report single analytical values below detection as "less than the detection level (DL)" by entering "<" followed by the numeric value of the detection level (e.g. "<0.1"). All other values above DL must be reported as the numeric value.
- Noncompliance with permit requirements or the provisions of this Order must be immediately reported to the Northwest Regional Office of the Department of Ecology in accordance with Permit Condition S5.F, Noncompliance Notification.
- The Stormwater Pollution Prevention Plan (SWPPP) prepared for FH Brooklyn, LLC shall be fully implemented and amended as needed for the duration of the project.
- If a modification of the Order is desired, a written request shall be submitted to Ecology and if approved, Ecology will issue an amendment to this Order.

Ecology retains the right to make modifications to this Order through supplemental Order, or amendment to this Order, it if appears necessary to further protect the public interest.

This Order does not exempt FH Brooklyn, LLC from any Construction Stormwater General Permit requirement.

Table 1.

FH Brooklyn, LLC must use the specified analytical methods, detection limits (DLs) and quantitation levels (QLs) in the following table for monitoring unless the method used produces measurable results in the sample and EPA has listed it as an EPA-approved method in 40 CFR Part 136. If the FH Brooklyn, LLC uses an alternative method, not specified in the order and as allowed above, it must report the test method, DL, and QL on the discharge monitoring report.

Pollutant & CAS No. (if available)	Sampling Frequency	Sample Type	Indicator Level, µg/L unless otherwise noted	Required Analytical Protocol	Detection Level, µg/L	Quantitation Level, µg/L
PETROLEUM HYDROCARBONS						
BTEX (benzene, toluene, ethylbezene and O,M,P xylenes)	Batch	Grab	2.0 [a]	SW 846 8021/ 8260	1.0	2.0
Gasoline-Range Hydrocarbons (NWTPH-Gx) [b]	Batch	Grab	250 [a]	NWTPH-Gx	250	250
Diesel and Oil-Range Hydrocarbons (NWTPH-Dx) [c]	Batch	Grab	250 [a]	NWTPH-Dx	250	250
CHLORINATED VOLATILE ORGANIC COUMPOUNDS (cVOCs)						
1,2-Dichloroethane (107-06-2)	Batch	Grab	2.0 [a]	624	1.0	2.0
cis-1,2-Dichloroethene (156-59-2)	Batch	Grab	2.0 [a]	624/8260	1.0	2.0
Vinyl chloride (75-01-4)	Batch	Grab	2.0 [a]	624/SM6200B	1.0	2.0
Naphthalene (91-20-3)	Batch	Grab	0.6 [a]	625	0.3	0.6
METALS						
Lead, Total (7439-92-1)	Batch	Grab	27.47 [d]	200.8	0.1	0.5

Construction Stormwater General Permit Benchmarks				
Parameter			**Benchmark**	**Analytical Method**
Turbidity	Weekly	Grab	25 NTU	SM2130 [h]
pH	Weekly	Grab	6.5 - 8.5 SU	SM4500-H^+ B

a	No surface water standard, value is laboratory quantitation level.
b	NWTPH-Gx = Northwest Total Petroleum Hydrocarbons –Volatile petroleum products (includes aviation and automotive gasolines, mineral spirits, Stoddard solvent and naphtha).
c	NWTPH-Dx = Northwest Total Petroleum Hydrocarbons – Semi-volatile ("diesel") for diesel range organics and heavy oils (includes jet fuels, kerosene, diesel-oils, hydraulic fluids, mineral oils, lubricating oils, and fuel oils).
d	Acute – Freshwater Toxic Substances Criteria (WAC 173-201A-240) Based on Hardness of 46.0 mg/L for Hardness Depended Metals. The Indicator Level for hardness dependent metals is expressed as a dissolved metal value. Meeting the Indicator Level using analytical protocol for total or dissolved metal values meets the water quality standard.

FAILURE TO COMPLY WITH THIS ORDER

Failure to comply with this Order may result in the issuance of civil penalties or other actions, whether administrative or judicial, to enforce the terms of this Order.

YOUR RIGHT TO APPEAL

You have a right to appeal this Order to the Pollution Control Hearing Board (PCHB) within 30 days of the date of receipt of this Order. The appeal process is governed by Chapter 43.21B RCW and Chapter 371-08 WAC. "Date of receipt" is defined in RCW 43.21B.001(2).

To appeal you must do both of the following within 30 days of the date of receipt of this Order:

- File your appeal and a copy of this Order with the PCHB (see addresses below). Filing means actual receipt by the PCHB during regular business hours.
- Serve a copy of your appeal and this Order on Ecology in paper form – by mail or in person (see addresses below). Email is not accepted.

You must also comply with other applicable requirements in Chapter 43.21B RCW and Chapter 371-08 WAC.

Your appeal alone will not stay the effectiveness of this Order. Stay requests must be submitted in accordance with RCW 43.21B.320.

ADDRESS AND LOCATION INFORMATION

Street Addresses	Mailing Addresses
Department of Ecology Attn: Appeals Processing Desk 300 Desmond Drive SE Lacey, WA 98503 **Pollution Control Hearings Board** 1111 Israel Road SW Suite 301 Tumwater, WA 98501	**Department of Ecology** Attn: Appeals Processing Desk PO Box 47608 Olympia, WA 98504-7608 **Pollution Control Hearings Board** PO Box 40903 Olympia, WA 98504-0903

CONTACT INFORMATION

Please direct all questions about this Order to:

Evan Dobrowski
WA State Department of Ecology
Northwest Regional Office
3190 160th Avenue SE
Bellevue, WA 98008-5452

Phone: (425) 649 – 7276
Email: edob461@ecy.wa.gov

MORE INFORMATION

- **Pollution Control Hearings Board Website:** www.eho.wa.gov/Boards_PCHB.aspx
- **Chapter 43.21B RCW – Environmental Hearings Office – Pollution Control Hearings Board:** http://apps.leg.wa.gov/RCW/default.aspz?cite=43.21B
- **Chapter 371-08 WAC – Practice and Procedure:** http://apps.leg.wa.gov/WAC/default.aspx?cite=371-08
- **Chapter 34.05 RCW – Administrative Procedure Act:** http://apps.leg.wa.gov/RCW/default.aspx?cite=34.05
- **Laws:** www.ecy.wa.gov/laws-rules/ecyrcw.html
- **Rules:** www.ecy.wa.gov/laws-rules/ecywac.html

SIGNATURE

Rachel McCrea

Rachel McCrea
Water Quality Section Manager
Northwest Regional Office
Washington State Department of Ecology

2-22-18

Date

APPENDIX B

Final Enviromental Construction Management Plan

ENVIRONMENTAL CONSTRUCTION MANAGEMENT PLAN

Former Chevron Service Station No. 90129
4700 Brooklyn Avenue NE
Seattle, Washington

Prepared for: FH Brooklyn LLC

Project No. 160092 • March 19, 2018 Final

Aspect CONSULTING

earth + water

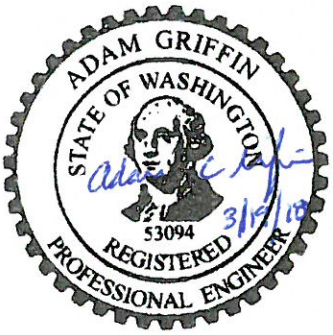
ENVIRONMENTAL CONSTRUCTION MANAGEMENT PLAN

Former Chevron Service Station No. 90129
4700 Brooklyn Avenue NE
Seattle, Washington

Prepared for: FH Brooklyn LLC

Project No. 160092 • March 19, 2018 Final

Aspect Consulting, LLC



Adam C. Griffin, PE
Sr. Remediation Engineer
agriffin@aspectconsulting.com

Dave Cook, LG, CPG
Principal Geologist
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1 Introduction

This Environmental Construction Management Plan (ECMP) presents the handling requirements for excavating clean, impacted, and contaminated soil and managing contaminated groundwater related to the redevelopment construction activities planned at 4700 Brooklyn Avenue NE in Seattle, Washington (Site; Figure 1). The Site was formerly operated as Chevron Service Station No. 90129, and releases resulted in petroleum hydrocarbon contamination of soil and groundwater at the Property. FH Brooklyn, LLC (FH Brooklyn) and Chevron Environmental Management Company (CEMC) are signatories to an Agreed Order (No. DE 13815, effective January 11, 2017) with the Washington State Department of Ecology (Ecology).

The Agreed Order requires FH Brooklyn and CEMC to complete contaminated soil removal and other remedial activities as an interim action. A Final Interim Action Work Plan (IAWP) was approved by Ecology on March 8, 2018 (Appendix A). This Final IAWP describes the contaminated soil and groundwater removal, referred to in this ECMP as the cleanup project (Aspect, 2018). Ecology approved the requested schedule extension for the initiation of the Interim Action to no later than March 15, 2018 (Ecology, 2017a). All actions to be taken under the ECMP are in full compliance with the Agreed Order and applicable regulatory requirements.

The redevelopment project is a 24-story mixed use residential/commercial building with one story of below-grade parking. Contaminated soil removal required by the Agreed Order and the Final IAWP occurs below the depth of the parking garage, so remedial excavation will extend below the parking garage and foundation elements that will be constructed at depth.

This ECMP was developed by Aspect Consulting, LLC (Aspect) to define the soil and groundwater removal and handling requirements consistent with the Ecology-approved Final IAWP (Aspect, 2018). Aspect will have a field representative on-Site during subsurface construction activities to oversee the cleanup project. It is also anticipated that CEMC will also have a representative on-Site during cleanup activities.

Aspect is the Owner's representative for the cleanup project. The Contractor and their subcontractors must immediately report any issues, discovery of new conditions, or request for deviations from this ECMP or the Final IAWP (Appendix A) to Aspect. The Contractor and their subcontractors are solely responsible for creating and ensuring compliance with their own Health and Safety Plan (HASP) that meet the requirements of Ecology, the Agreed Order, and all relevant construction health and safety regulations and requirements.

The soil handling and disposal requirements described in this ECMP are based on available laboratory data and known areas of contamination in the subsurface. For these areas of known contamination, Aspect has developed this ECMP with the intent of minimizing the stockpiling and sampling of soils during construction and allowing the

direct loading based on the categorization herein. However, there are two areas where additional pre-characterization sampling will be conducted at the request of CEMC. This additional sampling is discussed in Section 4.5 of this ECMP. Further, additional pre-characterization sampling may be conducted if field screening doesn't allow segregation by Aspect and CEMC's field representative. Unanticipated contamination in soils will generally require field screening and sampling and laboratory analysis to determine categorization, and handling requirements (see Section 5 for additional details regarding unanticipated contamination).

2 Background

Gasoline service station operations began at the Site in the 1910s and ceased in November 2016. The most recent service station configuration (convenience store, pump islands, and fuel underground storage tanks [USTs]) is shown on Figure 2. The boring and monitoring well logs from Site environmental investigations are also shown on Figure 2; results from these investigations serve as the basis of this ECMP.

Fill is present in areas at the Site to a maximum depth of 15 feet below ground surface (bgs). Fill is primarily associated with station rebuilds and backfill of former UST excavations. Native soils at the Site consist of fine to medium sand with silt and occasional gravel, grading from loose to dense from approximately 15 feet (where maximum fill exists) to between 25 to 30 feet bgs. The native soil (fine to medium sand) occurs at ground surface where no fill exists, generally outside the footprint of former USTs. Underlying the fine to medium sand unit is hard gray silt that occurs at depths of 25 to 33 feet bgs and is greater than 2 feet thick at all boring locations. This hard silt layer is important in that 1) it is present across the property; and 2) it represents a vertical barrier to downward migration of contaminants. The depth to groundwater observed during Site monitoring varies seasonally and typically ranges in depth from 15 to 18 feet bgs or approximately 198 to 202 feet above mean sea level (amsl).

Environmental investigation activities began in 1990 with replacement of the UST system and contaminated soil removal—this excavation boundary is shown on Figure 2. Three USTs were removed from the northern portion of the excavation. While digging the pit to install three new 12,000-gallon USTs (two gasoline and one diesel), a 1,000-gallon UST was encountered in the southeast corner of the pit. That UST, which was previously filled with pea gravel, was left in place when the new USTs were installed. Its approximate location is shown on Figure 2 along with that of the USTs installed in 1990.

The three USTs installed in 1990 were removed in February 2017 in accordance with Ecology UST decommissioning regulations, Washington Administrative Code (WAC) 173-360 (Aspect, 2017b). The previously abandoned 1,000-gallon UST remains and will be removed during cleanup.

In 2016, Aspect conducted a Remedial Investigation under the Agreed Order to collect data necessary to perform the cleanup project. The Remedial Investigation included nine borings installed to the top of the silt unit and 6 to 7 discrete-depth samples collected from each boring and submitted for laboratory analysis. The results were summarized in

the On-Property Remedial Investigation Data Report (Appendix B) and serve as the basis for estimation of contaminated soil extents, presented in the next sections.

3 Soil Categories

As discussed in the Final IAWP (Appendix A), gasoline-range organics (GRO) and benzene (B) are detected in soil at the highest concentrations and exhibit the greatest extent and thus are the drivers for soil categorization, handling, and disposal. Diesel-range and motor-oil range organics have been detected in select samples below their cleanup levels and determine handling and disposal requirements in some cases where GRO and benzene were not detected. Therefore, "contaminants" referred to in the following sections refers to GRO, DRO, ORO, and benzene, toluene, ethylbenzene, and xylene (BTEX).

Naphthalene was detected in three samples (AB-06-17, AB-06-24, and AB-7-19) with one exceedance of the proposed cleanup level; total cPAHs also exceeded proposed cleanup levels at AB-07-06. All of these sample locations will be excavated and handled as contaminated soil, and Aspect will conduct performance monitoring for these analytes according to the compliance monitoring plan (Appendix A). Therefore, these analytes are not included in the contaminants definition for purpose of soil categorization. These results are included in the Final IAWP (Appendix A).

Three categories shall be used to segregate, handle, and dispose of soils excavated during remedial excavation and construction. These categories are: clean soil, impacted soil, and contaminated soil, as defined below.

3.1 Clean Soil

Soils are categorized as "clean" if:

- All contaminants are not detected.
- No physical evidence of contamination (sheen, odor, or staining) is observed.
- Meets any additional acceptance criteria of receiving location if taken off-Site.

3.2 Impacted Soil

Soils are categorized as "impacted" and must be taken to an appropriate permitted treatment/disposal facility if:

- One or more contaminants are detected; however, the concentration of those contaminants are below their respective Model Toxics Control Act (MTCA) Method A cleanup levels.
- Meets all acceptance criteria and requirements of the receiving treatment/disposal facility.

- Additional analytical results are required for waste acceptance for the selected facility, discussed below in Section 4.2.

3.3 Contaminated Soil

Soils will be categorized as "contaminated" and must be taken to an appropriate permitted treatment/disposal facility if:

- Contaminant concentrations for any analyte exceed MTCA Method A Cleanup Levels from available characterization data (presented herein as a basis of known contamination) or additional pre-characterization sampling conducted during construction; or
- Free-phase product, or light non-aqueous phase liquid (LNAPL) is present. LNAPL has been observed in monitoring wells at the Site identified on Figures 6 and 7; or
- Authorized representatives for Aspect and CEMC agree that physical evidence of contamination (e.g., sheen or staining) or field screening results are sufficient to characterize the soil as contaminated; or
- Authorized representatives for Aspect and CEMC agree that pre-characterization soil sampling is not possible or would result in delays to the project schedule, and that existing analytical data is sufficient to characterize the soil as contaminated; and
- Meets all acceptance criteria of the receiving treatment/disposal facility.

4 Soil Excavation and Handling Requirements

The extent of "clean," "impacted," and "contaminated" soil categories defined in the previous section are estimated as a preliminary guide for the excavation. This estimate is presented in plan-view drawings at different elevation intervals in Figures 3 through 7. These soil category extents are based on available characterization data and therefore is an estimate for planning purposes. Actual soil category extents will be refined in the field by Aspect and CEMC, based on the results of pre-characterization soil sampling that will be performed during excavation. The planned pre-characterization sampling method and locations are described in Section 4.5.

To the extent practical and acceptable by the receiving facilities, the impacted and contaminated soils will be direct-loaded for transportation to the disposal facility according to direction provided by Aspect.

The coordinate data and estimated elevations of all environmental data used to generate these figures is included in Table 1 for the Contractor's use.

The soil excavation and handling requirements for each soil category are presented below.

4.1 Clean Soil – GREEN

Locations illustrated in green on Figures 3 through 7 depict soils where contaminants have not been detected. The largest volumes of clean soil occur at elevations shallower than 206 ft amsl; Figures 3 and 4), much of which is imported fill from numerous service station rebuilds. It should be noted that large areas of estimated clean soil exist where limited analytical data is available and unanticipated contamination is possible. The requirements for handling unanticipated contamination is described in Section 5.

The Contractor or subcontractor is responsible for identifying clean soil receiving locations and their acceptance criteria at least 45 days before mobilization to Aspect for approval. If additional information is required for acceptance, Aspect will provide that information to the Contractor if the location is otherwise determined to be acceptable. After Aspect approval, the Contractor or subcontractor is responsible for contracting with the clean soil receiving location.

Any subgrade infrastructure (including piping, debris in fill, or other) shall be removed by the Contractor from clean soil to the extent possible before handling and off-Site transport. Upon Aspect's approval of the clean receiving location, there are no special handling requirements for areas of clean soil. Clean soil shall be direct-loaded into trucks for off-Site transport, to the extent possible.

4.2 Impacted Soil – YELLOW

Locations illustrated in yellow on Figures 3 through 7 depict soils where contaminants were detected in soils at concentrations below MTCA Method A cleanup levels. Impacted soils that are contained within larger areas of contaminated soils will be handled and disposed of as contaminated; segregation of these soils is not practical due to effort and cost. Examples include P-04, Tank-B2-12, Tank-B3-12, and MW-08 (Figures 5, 6, and 7).

The handling and end-use considerations for impacted soils include the following:

Soil Excavation and Segregation: As known impacted soils are excavated, the Contractor shall segregate this soil from the green ("clean") category to prevent contaminating the clean soil. An Aspect representative will be on-Site to support the Contractor in soil segregation by completing soil field screening. Field screening of known impacted soils will consist of identifying clean soil by lack of visual, odor, or sheen indication of contamination, and PID readings.

Temporary Stockpiling: To the extent practical, impacted soil will be direct-loaded into trucks for transport to the selected treatment/disposal facility. Impacted soil may be stockpiled on-Site pending end use/disposal in accordance with stockpile requirements in Section 4.7.

Loading and Transportation: The Contractor should load the impacted soils into trucks and transport it to the selected treatment/disposal facility. All impacted soils transported from the Site must be covered from the point they leave the Site to the receiving facility.

Prior to starting excavation activities, the Contractor must develop a tracking procedure for loading, trucking, and disposal of soils to be approved by Aspect. The Contractor is responsible for implementing the approved tracking procedure, which at a minimum will include transportation and disposal manifests, and a receipt from the receiving facility for every truck of impacted soil.

Disposal/Recycling Facilities: The excavated, impacted soil will be transported to the Cadman, Inc. facility in Everett, WA (Cadman) after approval is granted by the facility. Aspect is responsible for coordinating waste acceptance and contracting with Cadman, on behalf of the Owner. Impacted soil is accepted and disposed at Cadman at a lower unit cost rate than contaminated soil.

Cadman has requested analytical results for TPH-GRO, TPH-Dx, and BTEX from six additional samples for acceptance of impacted soils. These samples will be collected at the beginning of excavation from one of the areas of shallow impacted soils, presented in Figure 3. The Contractor will assist Aspect in the collection of these samples.

Off-Site Reuse Alternative to Disposal/Recycling: The Contractor can propose any alternatives to Cadman for disposal/recycling of impacted soils to Aspect for approval. The excavated impacted soil can be transported to a receiving facility that is prequalified by Aspect and has been provided with the chemical analytical results and agrees (in writing) to accept the soil as-is with acknowledgement that the soil may contain contaminants at low concentrations, below MTCA cleanup levels.

Confirmation Soil Sampling: No confirmation soil sampling is required for the impacted soils unless unanticipated contamination is encountered, discussed in Section 5.

4.3 Contaminated Soil – RED

Locations illustrated in red on Figures 3 through 7 depict soils that are considered likely to be contaminated, based on previous analytical results above MTCA Method A cleanup levels, or where LNAPL has been detected in monitoring wells at the Site. Special handling and end-use considerations are required for contaminated soils and include the following:

Soil Segregation and Excavation: An Aspect representative will be on-Site to field screen soils and collect pre-characterization soil samples to guide segregation of contaminated soil, described in Section 4.4. This work will be performed with input from CEMC's on-site representative. This soil sampling and testing approach may take some time and the Contractor shall halt work and/or change work locations until confirmation soil sample results are received, and Aspect directs the excavation to proceed.

The Contractor should excavate contaminated soils as the excavation advances downward and direct-load this soil into trucks, to the extent possible. Prioritizing the excavation of contaminated soils at each depth will minimize the potential of cross-contaminating clean soils.

Temporary Stockpiling: If contaminated soil cannot be direct-loaded into trucks for off-Site, permitted disposal, it can be stockpiled on-Site pending end use/disposal in accordance with stockpile requirements in Section 4.7.

Loading and Transportation: The Contractor should load the contaminated soils into trucks and transport to the selected treatment/disposal facility. All impacted soils transported from the Site must be covered from the point they leave the Site to the point they are delivered to the receiving facility.

Prior to starting excavation activities, the Contractor must develop a tracking procedure for loading, trucking, and disposal of soils to be approved by Aspect. The Contractor is responsible for implementing the approved tracking procedure which at a minimum will include transportation and disposal manifests, and a receipt from the receiving facility for every truck of contaminated soil.

Disposal/Recycling Facilities: The contaminated soil will be transported to the selected facility after approval is granted by the facility. The selected facility for disposal of contaminated soil is Cadman. Aspect is responsible for coordinating waste acceptance and contracting with Cadman, on behalf of the Owner.

Capacity Limitations: If any capacity or operation limits occur at the Cadman facility, Aspect will obtain waste acceptance for the following facilities to receive contaminated soils. The Contractor shall request approval from Aspect at least 48 hours in advance if they plan to dispose of contaminated soil at these alternate disposal facilities if Cadman is unable to accept:

- Republic Services Roosevelt Regional Landfill located in Klickitat County, Washington, through one of two Seattle transfer stations:
  - 3rd and Lander Facility – 2733 3rd Ave. S
  - Lafarge Facility – 5400 W. Marginal Way SW

Confirmation Soil Sampling: Confirmation soil samples will be collected by Aspect after removal of contaminated soils and at the extents of excavation. The Contractor will assist Aspect in collecting the samples according to the methods described in the Final IAWP (Appendix A). If necessary to prevent project schedule delays, samples will be analyzed according to the Final IAWP on a rush (24-hour) turnaround.

Abandoned in-place UST: A previously-abandoned 1,000-gallon UST shall be permitted for removal by a certified UST removal contractor and disposed at an appropriate disposal or recycling facility. All documents for the UST removal will need to be provided to Aspect. Additionally, old subsurface remediation piping and/or fuel facility infrastructure could be encountered and should be handled and disposed at an approved landfill. The location of this abandoned UST is approximate on Figures 3 and 4.

Soils Generated during Shoring Installation: Excavated soils from soldier pile drilled shafts and any other soils generated during installation of the shoring wall shall be handled consistent with the requirements in this ECMP.

4.4 Contaminated Soil Removal Extents

The most contaminated soils occur in the 202 to 198 ft amsl interval (Figure 6) in the two former fuel UST areas. Below 198 ft amsl, soil contamination in these two areas is based on the occurrence of LNAPL in monitoring wells or soil analytical concentration. The total depth of excavation will be determined based on field screening and laboratory results for confirmation soil samples (Figure 7). The shoring design prepared by others was based on a maximum depth of excavation in these two areas:

- In the northern area encompassing MW-12, AB-06, and AB-07, the maximum depth of cleanup excavation allowed by the shoring system is 193.0 ft amsl.
- In the southern area encompassing wells MW-09, MW-10, MW-11, and MW-13, the maximum depth of cleanup excavation allowed by the shoring system is 194.0 ft amsl.

Additionally, there are three locations (AB-07, AB-02, and AB-09) where deeper contaminated soils were encountered at approximate depths of 33, 24, and 27 ft bgs, respectively. All coordinate data, depths and maximum cleanup excavation depths (as elevation) are presented in Table 2.

The shoring system has been designed to allow deeper excavation at each of these locations within two spans of timber lagging to the maximum depth (as elevation) shown on Figure 7. These excavations will extend into the top of the low-permeability silt unit (discussed in Section 2), and the Contractor shall not excavate beyond the maximum cleanup excavation specified without approval of Aspect.

Aspect will conduct conformational sampling at these locations, which define the maximum extent of excavation, to determine the need for additional excavation, as described in the Final IAWP (Appendix A).

4.5 Pre-Characterization Sampling

Additional pre-characterization sampling will be conducted by Aspect during construction at the request of CEMC. This pre-characterization sampling will be conducted in the two areas with the highest soil concentrations and/or LNAPL occurrence, described in Section 4.4 and shown on Figures 6 and 7.

The pre-characterization sampling will be conducted when the excavation reaches an elevation of 202 ft amsl. The Contractor will install test pits to the approximate elevations of 193.0 in the northern UST area and 194.0 in the southern UST area, defined in the previous Section (4.4) as maximum cleanup excavation elevations. The proposed locations of test pits are shown on Figures 6 and 7 and the locations will be based on the grid of soldier piles, for quick visual reference during construction. A total of fifteen test pits will be installed at an approximate spacing of 16 feet, or two timber lagging spans.

Aspect will identify soils for sampling as the test pit is excavated and it is assumed that an average of two grab samples will be collected from each test pit – one sample from the 202-198 ft amsl interval (Figure 6), and one from the <198 ft amsl interval (Figure 7). The samples will be submitted for expedited turnaround analysis of TPH-GRO and BTEX and

the Contractor will not proceed with excavation in these areas until directed by Aspect. The results will be used to confirm and/or refine the contaminated soil extents. Additional test pits may be necessary to further step-out and refine the extent of contaminated soils.

4.6 Estimated Soil Volumes

Based on the estimated extents of impacted and contaminated soils, Table 3 presents the estimated volumes of known areas of clean, impacted, and contaminated soils. A total of 600 bank cubic yards (BCY) of impacted soil, and 3,500 BCY of contaminated soils are estimated. The balance of the excavation volume, assumed to be clean soil, is estimated as 10,000 BCY. The estimated quantity of contaminated soil includes a 50 percent contingency based on professional experience. The contingency addresses the limitation of using the available characterization data to estimate contaminated soil extents for a mass excavation of the entire property with over 100 years of service station operations. This contingency would include larger extents in known areas of contamination, and also areas of unanticipated contamination.

If unanticipated contamination is encountered in these clean soil areas, the total volumes of impacted and/or contaminated soil will increase based on the results of characterizing unanticipated contamination, described in Section 5.

4.7 Stockpile Requirements

Excavated soils should be direct-loaded to the extent possible to minimize stockpiling and double handling. However, temporary stockpiling may be necessary for:

- Allowing laboratory analytical results to categorize unanticipated contaminated soils as impacted or contaminated, or
- Clean or Impacted soils disturbed in the cleanup over-excavation (deeper than the building excavation) to access contaminated soils. Reuse of these soils is subject to geotechnical engineer of record approval.

Any temporary stockpiles will be below grade (within the excavation) and will meet the following requirements:

- If pavement hasn't been preserved for stockpiles, then all stockpiles will either be lined with plastic sheeting of at least 10-mil minimum thickness, with adjacent sheeting sections overlapping a minimum of 3 feet; or a 4-inch bed of sand should be placed between the stockpile and existing (unpaved) ground surface.
- All stockpiles will be covered with plastic sheeting of at least 6-mil minimum thickness when not in use, and the cover will be anchored to prevent it from being disturbed by wind.

5 Unanticipated Contaminated/Impacted Soil or USTs

Aspect will be on-Site during excavation activities to identify unanticipated, potentially impacted or contaminated soils, or USTs not anticipated (not shown on Figures 3 through 7). The Contractor is also responsible for identifying unanticipated potentially contaminated soils outside of the expected areas of contaminated soil areas presented in red on Figures 3 through 7, ceasing excavation, and notifying Aspect to determine the next steps. Potentially impacted or contaminated soil will initially be field screened by Aspect using the following methods, in order to determine the approximate lateral extent of the impacts/contamination:

- Visual Staining
- Petroleum hydrocarbon odors
- A moderate or heavy sheen when placed in contact with water
- Elevated PID readings measuring headspace vapors

For any soil believed to be potentially contaminated, the soil will be sampled per the following guidelines, which are based on an assumed excavation depth interval of approximately 4 feet.

- For every area of up to 625 square feet (25 feet by 25 feet), three discrete soil samples shall be randomly collected from the cell of potentially contaminated soil.
- For areas greater than 625 square feet, the area shall be divided into the smallest number of approximately equal areas not to exceeding 625 square feet and three discrete soil samples shall be randomly collected from each cells.
- Samples will be analyzed for TPH-Dx, TPH-GRO, and BTEX to determine the soil categorization and disposal requirements.

6 Water Management

Excavation dewatering is designed by others (RGI, 2016; GeoEngineers, 2017). The Contractor is responsible for conducting dewatering to allow removal of contaminated soils and it is anticipated that dewatering will be performed using a dewatering well, sumps, and a perimeter vacuum wellpoint system, if necessary.

Sources of water to be managed include, but are not limited to, stormwater runoff, excavation dewatering, well dewatering, and wheel wash water. All generated water will be pumped to tanks, pretreated on-Site, and discharged to surface water via storm sewer under a Construction Stormwater General Permit (CSWGP) and accompanying Administrative Order Docket No. 15707 (Appendix A) issued through Ecology Water

Quality Section. The CSWGP Permit Number WAR306191 will be issued on or around March 19, 2018, after the public notice period closes. The Administrative Order establishes Indicator Levels for the project based on known Site contaminants for compliance with Water Quality Standards for the Surface Water of the State of Washington. The Administrative Order defines the conditions and actions necessary to comply with CSWGP WAR306191, including the installation of a temporary treatment system to treat water to be discharged to below Indicator Levels (Appendix A).

The on-Site pretreatment system will include a settling tank to remove any LNAPL and granular activated carbon (if required) to remove dissolved-phase contaminants to achieve the Administrative Order Indicator Levels. The discharge will be monitored in accordance with CSWGP WAR306191 and Administrative Order No. 15707. If unanticipated liquid-phase contamination is encountered that is outside the scope of the discharge authorization, Aspect will assist the contractor in evaluating treatment/disposal options that comply with Ecology and local requirements.

The Contractor should be aware that gasoline product may be encountered in the two contaminated soil areas in Figure 6. The dewatering system will remove some of the gasoline product; however, residual product may remain in dewatered soils.

7 Training and Safety Requirements

All Contractor staff that may contact contaminated materials, including petroleum hydrocarbon-impacted soil or groundwater, must have completed Hazardous Waste Operations and Emergency Response (HAZWOPER) training in accordance with the Occupational Safety and Health Administration Part 1910.120 of Title 29 of the Code of Federal Regulations, and be in possession of a current HAZWOPER certification card.

The Contractor and all subcontractors are solely responsible for creating and ensuring compliance with their own Health and Safety Plan (HASP), which shall meet the requirements of Ecology, the Agreed Order, and all relevant construction health and safety regulations. All work must be performed in accordance with the Contractor's site-specific HASP. The HASP should include, but not be limited to, guidelines to reduce the potential for injury, as well as incident preparedness and response procedures, emergency response and evacuation procedures, local and project emergency contact information, appropriate precautions for potential airborne contaminants and Site hazards, and expected characteristics of generated waste.

Because of the high concentrations of gasoline-range hydrocarbons and presence of LNAPL at the Site, the Contractor and their subcontractors should be prepared to modify work conditions per their HASP in managing exposure to vapors during cleanup activities.

Aspect personnel will operate under our specific HASP which will meet all requirements of the General Contractor's HASP and include the specific health and safety protocols for implementing the Interim Action (Appendix A). Aspect personnel will have the authority to stop General Contractor and their sub's work during implementation of the cleanup if conditions warrant.

8 Contact Information

The table below presents the contacts for the environmental cleanup project.

Name	Title	Office Phone	Cell Phone	Email
Owner				
Eran Fields	Managing Member	-	-	efields@fieldsholdings.com
Roth Desko	Construction Oversight	-	760-451-7091	roth@vlkconstruction.com
Aspect Consulting				
Adam Griffin	Project Manager	206-780-7746	865-696-7658	agriffin@aspectconsulting.com
Dave Cook	Principal	206-838-5837	206-372-7637	dcook@aspectconsulting.com
Fasih Khan	Field Engineer	206-838-5836	206-713-2136	fkhan@aspectconsulting.com

9 References

Aspect Consulting, LLC (Aspect), 2018, Final Interim Action Work Plan, 4700 Brooklyn Ave., Seattle, Washington, March 8, 2018.

Aspect Consulting, LLC (Aspect), 2017a, Re: Revised Interim Action Schedule, 4700 Brooklyn Avenue NE, Seattle, Washington, May 10, 2017.

Aspect Consulting, LLC (Aspect), 2017b, Technical Memorandum to Washington State Department of Ecology – UST Section Re: UST Site Assessment Report and Checklist, Chevron 90129 (UST ID No. 5046), 4700 Brooklyn Avenue NE, Seattle, Washington, March 3, 2017.

Washington State Department of Ecology (Ecology), 2017, Formal Notification of Schedule Extension Requested Pursuant to Agreed Order No. DE 13815 for initiation of the Interim Action at the Chevron 90129 Site, located at 4700 Brooklyn Ave NE, Seattle, WA, July 10, 2017.

GeoEngineers, 2017, Geotechnical Engineering Services, 4700 Brooklyn Ave., November 10, 2017.

Riley Group, Inc. (RGI) 2016, Dewatering Plan, 4700 Brooklyn Ave., Seattle, Washington, January 27, 2016.

10 Limitations

Work for this project was performed for FH Brooklyn (Client), and this report was prepared in accordance with generally accepted professional practices for the nature and conditions of work completed in the same or similar localities, at the time the work was performed. This report does not represent a legal opinion. No other warranty, expressed or implied, is made.

All reports prepared by Aspect Consulting for the Client apply only to the services described in the Agreement(s) with the Client. Any use or reuse by any party other than the Client is at the sole risk of that party, and without liability to Aspect Consulting. Aspect Consulting's original files/reports shall govern in the event of any dispute regarding the content of electronic documents furnished to others.

TABLES

Table 1 - Survey Coordinates and Elevations

Project No. 160092, 4700 Brooklyn Avenue NE, Seattle, WA

Name	Type	Northing	Easting	Estimated Ground Surface ELEVATION
AB-01	Soil Boring	245565.8	1275572.3	217.72
AB-02	Soil Boring	245555.2	1275654.2	215.00
AB-03	Soil Boring	245476.3	1275556.3	216.70
AB-04	Soil Boring	245433.5	1275557.1	216.00
AB-05	Soil Boring	245424.6	1275627.0	215.06
AB-06	Soil Boring	245537.9	1275590.5	217.00
AB-07	Soil Boring	245534.3	1275559.1	218.00
AB-08	Soil Boring	245483.7	1275581.8	216.66
AB-09	Soil Boring	245453.5	1275650.4	216.50
MW-01	Abandoned Monitoring Well	245523.5	1275589.5	216.92
MW-02	Abandoned Monitoring Well	245526.7	1275576.9	217.02
MW-03	Monitoring Well	245530.3	1275556.8	217.09
MW-04	Abandoned Monitoring Well	245499.0	1275599.4	216.75
MW-05	Abandoned Monitoring Well	245509.2	1275570.9	217.03
MW-06	Monitoring Well	245503.1	1275555.1	217.08
MW-07	Monitoring Well	245457.2	1275622.0	215.88
MW-08	Abandoned Monitoring Well	245446.2	1275611.2	215.68
MW-09	Abandoned Monitoring Well	245449.3	1275554.1	216.12
MW-10	Monitoring Well	245433.7	1275577.5	215.72
MW-11	Monitoring Well	245418.9	1275600.9	215.05
MW-12	Monitoring Well	245553.3	1275579.9	217.05
MW-13	Monitoring Well	245418.9	1275577.5	215.26
MW-14	Monitoring Well	245472.4	1275639.4	216.16
MW-15	Monitoring Well	245536.5	1275659.5	215.05
MW-16	Monitoring Well	245428.6	1275648.9	214.64
P-01	Test Probe	1275571.5	245576.0	217.97
P-02	Test Probe	1275573.8	245526.1	217.04
P-03	Test Probe	1275599.2	245503.6	216.78
P-04	Test Probe	1275584.2	245479.4	216.56
P-05	Test Probe	1275554.7	245467.8	216.48
P-06	Test Probe	1275581.1	245440.5	215.82
P-07	Test Probe	1275608.5	245451.5	215.82
P-08	Test Probe	1275648.8	245490.2	216.00
P-09	Test Probe	1275650.2	245476.1	215.51
R-01	Product Recovery Well	1275600.4	245481.0	216.47
SB-01	Soil Boring	1275565.1	245565.0	217.91
TANK-B1-12	UST Site Assessment Location	1275584.2	245470.0	216.32
TANK-B2-12	UST Site Assessment Location	1275583.7	245457.9	216.04
TANK-B3-12	UST Site Assessment Location	1275583.9	245449.0	215.91
TANK-SW-1-8	UST Site Assessment Location	1275604.2	245462.0	216.00
TANK-SW-2-8	UST Site Assessment Location	1275576.0	245440.8	215.91
TANK-SW-3-7	UST Site Assessment Location	1275575.9	245478.1	216.62
TANK-SW-4-7	UST Site Assessment Location	1275561.9	245462.9	216.37

Notes:

Horizontal Datum is NAD 1983/2011 Washington State Plane North Zone

Ground Surface Elevation was existing surface topo in NAVD 88.

Table 2 - Cleanup Over-Excavation Locations

Project No. 160092, 4700 Brooklyn Avenue NE, Seattle, WA

Locations Based on Free-Product Observations

Sample ID	Northing[1]	Easting[1]	Maximum Depth To Water			Maximum Cleanup Over-Excavation Depth[2] (ft amsl)
			Max DTW	Date Observed	Groundwater Elevation (ft amsl)	
MW-12	245553.3	1275579.9	21.89	10/18/1994	195.1	193.1
MW-09	245449.3	1275554.1	19.72	12/7/2013	196.7	193.9
MW-10	245433.7	1275577.5	19.06	3/15/2014	196.6	
MW-11	245418.9	1275600.9	18.94	3/15/2014	195.9	
MW-13	245418.9	1275577.5	17.88	12/7/2013	197.6	

Notes:

1 - DTW = depth to water

2 - Horizontal Datum NAD 1983/2011 WA State Plane North Zone

3 - Cleanup excavation elevation is two foot deeper than maximum depth to water

Locations Based on Isolated Deeper Contaminated Soils

Sample ID	Northing[1]	Easting[1]	Contaminated Sample Depth (ft)	Maximum Cleanup Over-Excavation Elevation[2] (ft amsl)
AB-07	245534.3	1275559.1	33	184.0
AB-09	245453.5	1275650.4	27	188.5
AB-02	245555.2	1275654.2	24	190.0
AB-06[3]	245555.2	1275654.2	24	192.0

Notes:

1 - Horizontal Datum NAD 1983/2011 WA State Plane North Zone

2 - Proposed maximum cleanup excavation elevation is one foot deeper than contaminated soil sample depth

3 - Not shown on maps as it is within center of excavation and not considered for shoring design

Table 3 - Estimated Known Soil Quantites

Project No. 160092, 4700 Brooklyn Avenue NE, Seattle, WA

Elevation Interval (Corresponding Figure #)	Soil Quantity (bankcubic yards)		
	Clean Soil	Impacted Soil	Contaminated Soil
Ground Surface to 210 ft. elevation (Figure 3)	4,000	100	70
<210 to 206 ft. elevation (Figure 4)	2,100	300	50
<206 to 202 ft. elevation (Figure 5)	1,800	200	600
<202 to 198 ft. elevation (Figure 6)	1,400	0	1,200
<198 ft. elevation to Bottom (Figure 7)	1,000	0	1,600
Total (BCY):	**10,000**	**600**	**3,500**

Notes:

1) The estimated quantities are based on available characterization information and the extents estimated in Figures 3 through 7. Actual quantites will vary based on, but not limited to, the following potential circumstances: unanticipated contamination, different extents of known areas of contamination, field screening and performance monitoring described in the Final IAWP (Aspect, 2018).

2) All estimated quantites are expressed in cubic yards.

3) Colors correspond to those presented in the Construction Management Plan text.

4) The quantity of contaminated soil includes a 50% contingency.

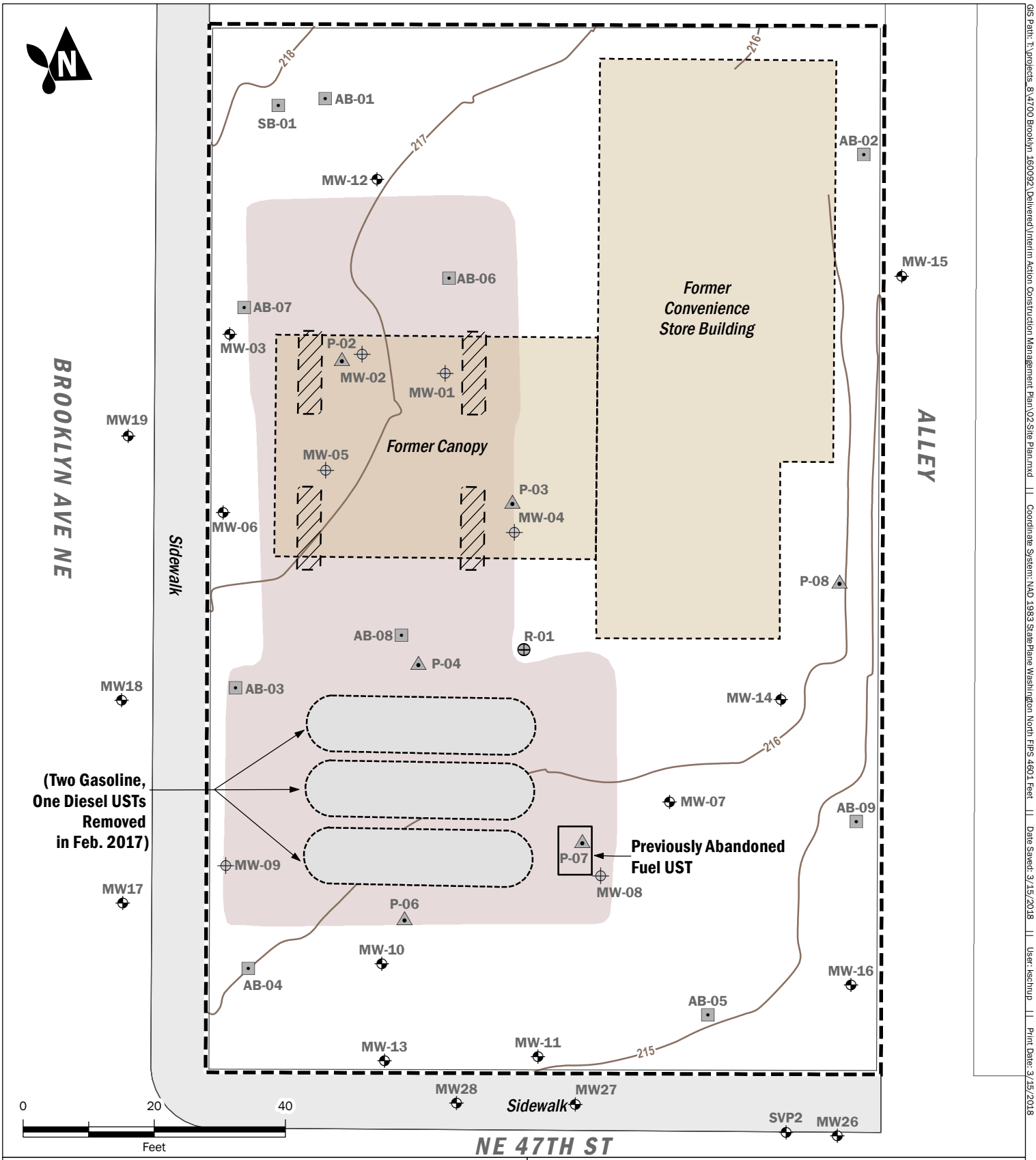
FIGURES

Site Location Map

Environmental Construction Management Plan
4700 Brooklyn Avenue NE
Seattle, Washington

Aspect CONSULTING	MAR-2018	BY: DLC / EAC	FIGURE NO. 1
	PROJECT NO. 160092	REVISED BY: SCC / KES	

GIS Path: T:\projects_8\4700 Brooklyn 160092\Delivered\Interim Action Construction Management Plan\01-Site Location Map.mxd || Coordinate System: NAD 1983 StatePlane Washington North FIPS 4601 Feet || Date Saved: 3/15/2018 || User: lschrup || Print Date: 3/15/2018



Monitoring Well
Abandoned in Feb. 2017

Monitoring Well

Product Recovery Well
Abandoned in Feb. 2017

Soil Boring

Direct-Push Sample
(Riley, 2015)

Ground Surface Elevation Contours
1-Foot Interval

Former Pump Island

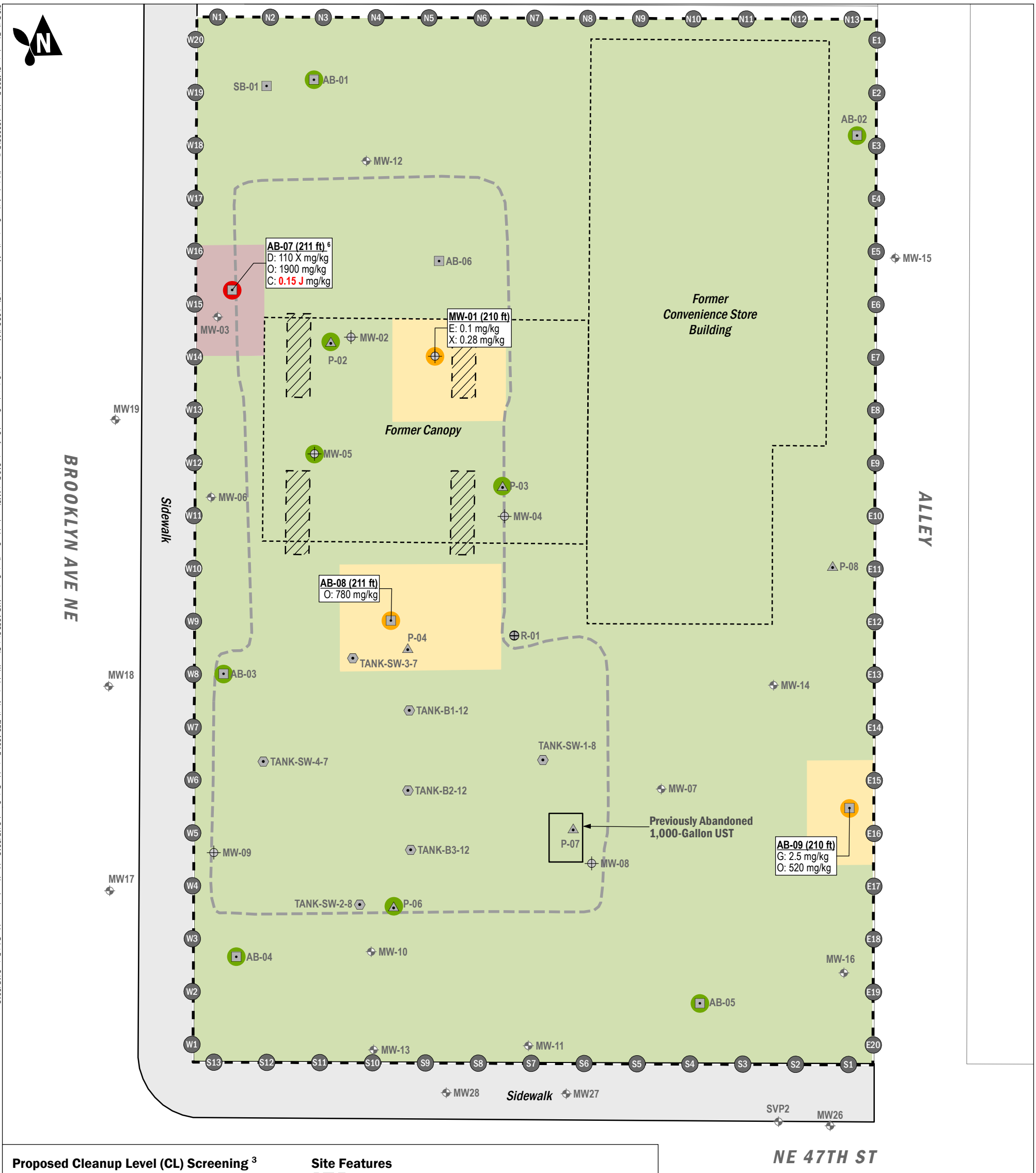
Property Boundary

1990 Tank and Pump Island Removal; Contaminated Soil Remedial Excavation

Site Plan

Environmental Construction Management Plan
4700 Brooklyn Avenue NE
Seattle, Washington

Aspect CONSULTING	MAR-2018	BY: DAH / EAC	FIGURE NO. 2
	PROJECT NO. 160092	REVISED BY: ACG/ KES	



Proposed Cleanup Level (CL) Screening [3]

- No Detections, all Lab Detection Limits are Below CL.
- One or More Detected, All Below CL.
- One or More Detected Above CL.

Soil Management Category [1]

- Clean Soil
- Impacted Soil
- Contaminated Soil

Explorations

- Abandoned Monitoring Well
- Monitoring Well
- Product Recovery Well
- Soil Boring
- Direct-Push Sample
- UST Site Assessment Location

Site Features

- 1990 Soil Excavation Boundary
- Former Pump Island
- Face of Soldier Pile Wall
- Soldier Pile
- Tax Parcel

Exploration Name (Sample Depth In Feet)

G: Gasoline Range Organics (mg/kg)
B: Benzene (mg/kg)
E: Ethylbenzene (mg/kg)
T: Toluene (mg/kg)
X:Total Xylenes (mg/kg)
O: Motor Oil Range Organics (mg/kg)
D: Diesel Range Organics (mg/kg)
C: Total cPAH (mg/kg)

Notes:

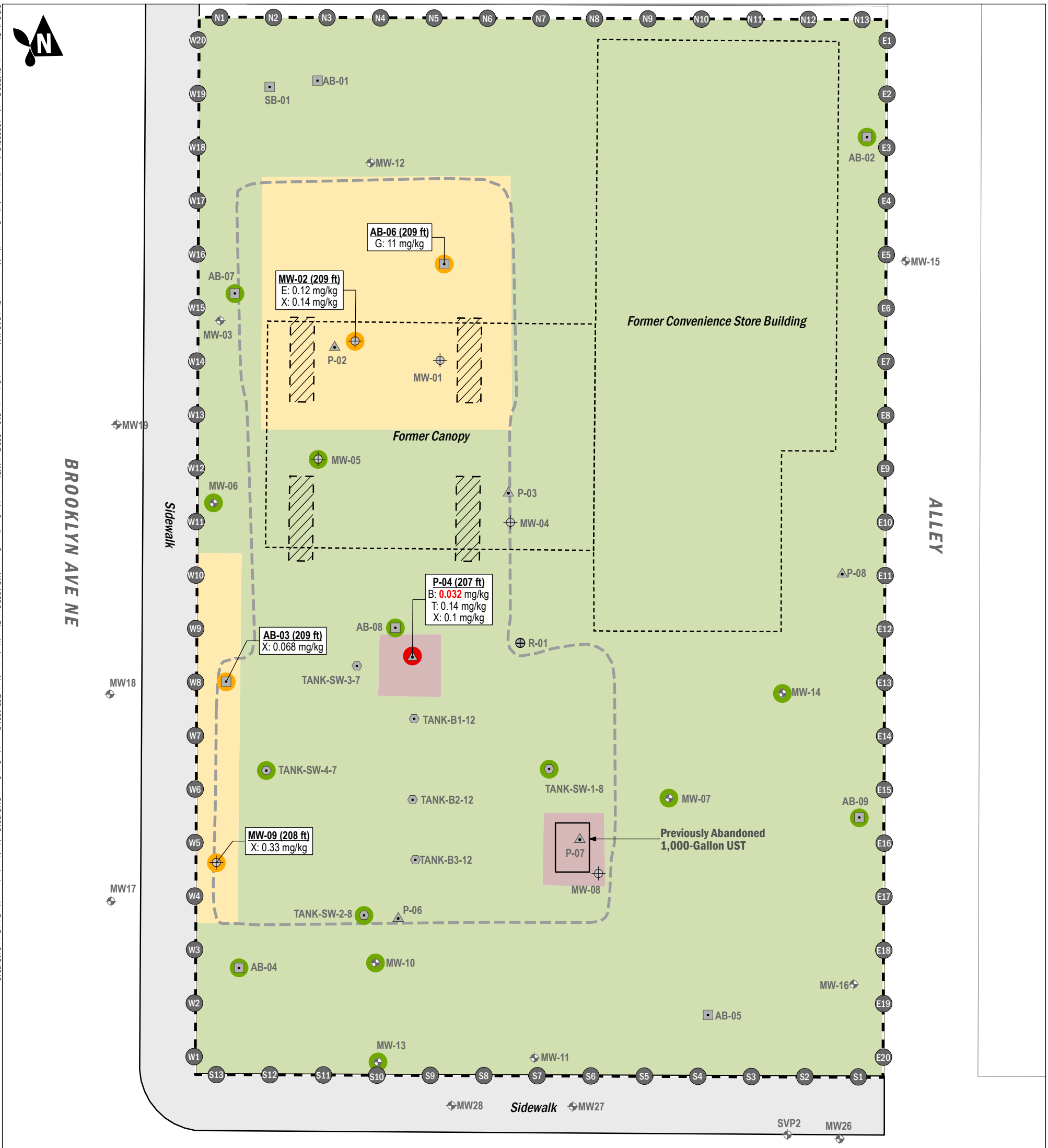
1. The estimated extents of soil management categories are based on available characterization data. The actual extents will be determined during construction by field screening and laboratory analysis.
2. Shoring details shown are taken from the Temporary Shoring Wall Plans (Rev. 1) by Ground Support PLLC date November 3, 2017.
3. No sample was collected from locations with no screening color.
4. Results in red bold indicate concentration exceeds proposed cleanup levels.
5. Ground surface elevation at the Site ranges from 214 to 217 ft amsl.
6. The total cPAH concentration at AB-07 is the only sample result at the Site which determines soil categorization.

0 7.5 15
Feet

Soil Management Categories Ground Surface to 210 Feet AMSL

Environmental Construction Management Plan
4700 Brooklyn Ave NE
Seattle, Washington

Aspect CONSULTING	MAR-2018	BY: ACG / RAP	FIGURE NO. 3
	PROJECT NO. 160092	REVISED BY: KES / EAC	



Proposed Cleanup Level (CL) Screening [3]

- No Detections, all Lab Detection Limits are Below CL.
- One or More Detected, All Below CL.
- One or More Detected Above CL.

Soil Management Category[1]

- Clean Soil
- Impacted Soil
- Contaminated Soil

Explorations

- Abandoned Monitoring Well
- Monitoring Well
- Product Recovery Well
- Soil Boring
- Direct-Push Sample
- UST Site Assessment Location

Site Features

- 1990 Soil Excavation Boundary
- Former Pump Island
- Face of Soldier Pile Wall
- Soldier Pile
- Tax Parcel

Exploration Name (Sample Depth In Feet)
G: Gasoline Range Organics (mg/kg)
B: Benzene (mg/kg)
E: Ethylbenzene (mg/kg)
T: Toluene (mg/kg)
X: Total Xylenes (mg/kg)
O: Motor Oil Range Organics (mg/kg)
D: Diesel Range Organics (mg/kg)

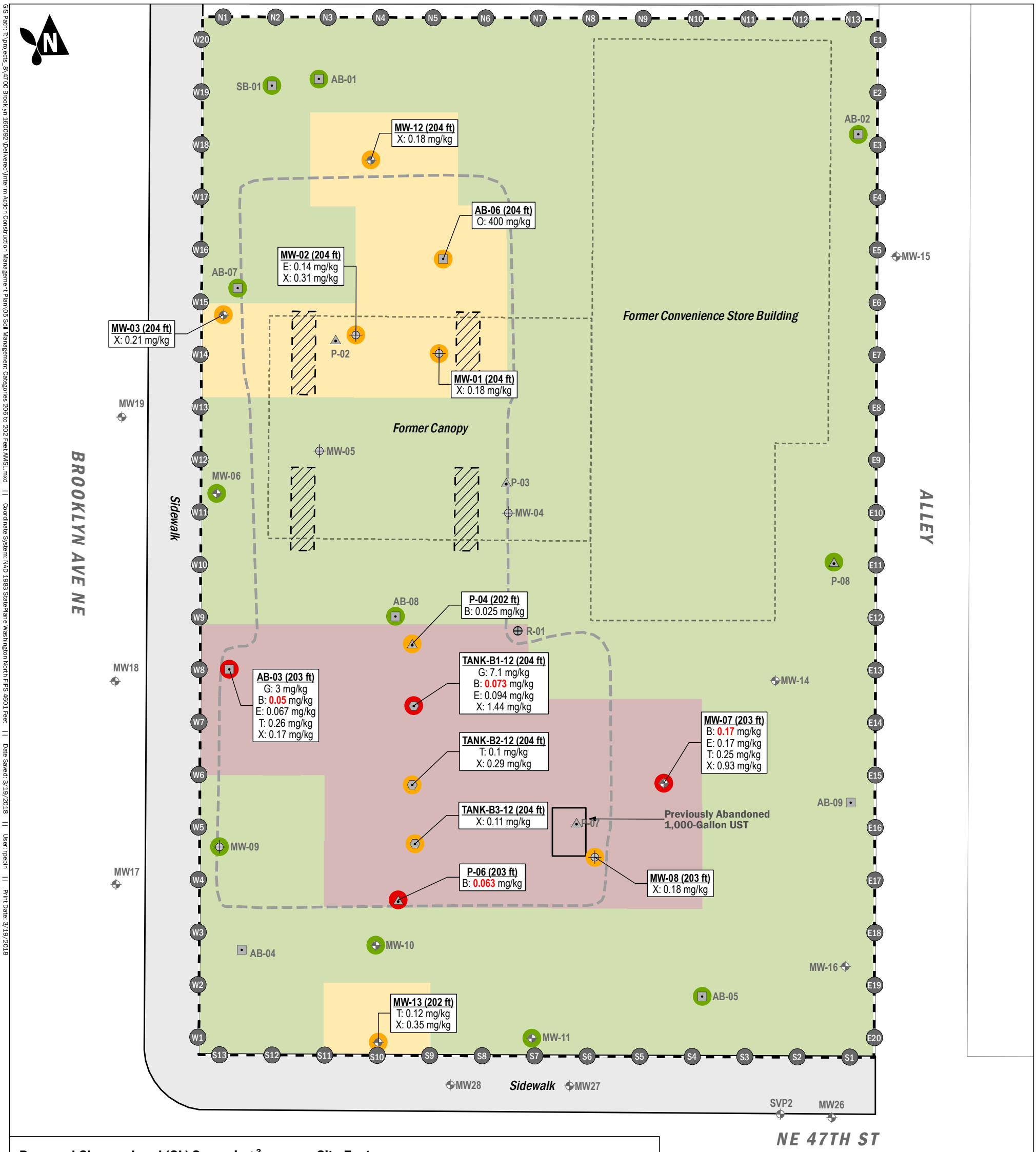
Notes:

1. The estimated extents of soil management categories are based on available characterization data. The actual extents will be determined during construction by field screening and laboratory analysis.
2. Shoring details shown are taken from the Temporary Shoring Wall Plans (Rev. 1) by Ground Support PLLC date November 3, 2017.
3. No sample was collected from locations with no screening color.
4. Results in red bold indicate concentration exceeds proposed

Soil Management Categories 210 to 206 Feet AMSL

Environmental Construction Management Plan
4700 Brooklyn Ave NE
Seattle, Washington

Aspect Consulting	MAR-2018	BY: ACG / RAP	FIGURE NO. 4
	PROJECT NO. 160092	REVISED BY: KES / EAC	



Proposed Cleanup Level (CL) Screening [3]

- LNAPL Occurs at this Monitoring Well Location and Supersedes Any Soil Analytical Data Collected During Well Installation in 1990
- One or More Detected Above Cleanup Level
- One or More Detected, No Cleanup Level Exceedances
- No Detections

Soil Management Category [1]

- Clean Soil
- Impacted Soil
- Contaminated Soil

Explorations

- Abandoned Monitoring Well
- Monitoring Well
- Product Recovery Well
- Soil Boring
- Direct-Push Sample
- UST Site Assessment Location

Site Features

- 1990 Soil Excavation Boundary
- Former Pump Island
- Face of Soldier Pile Wall
- Soldier Pile
- Tax Parcel

Exploration Name (Sample Depth In Feet)
G: Gasoline Range Organics (mg/kg)
B: Benzene (mg/kg)
E: Ethylbenzene (mg/kg)
T: Toluene (mg/kg)
X:Total Xylenes (mg/kg)
O: Motor Oil Range Organics (mg/kg)
D: Diesel Range Organics (mg/kg)

Notes:

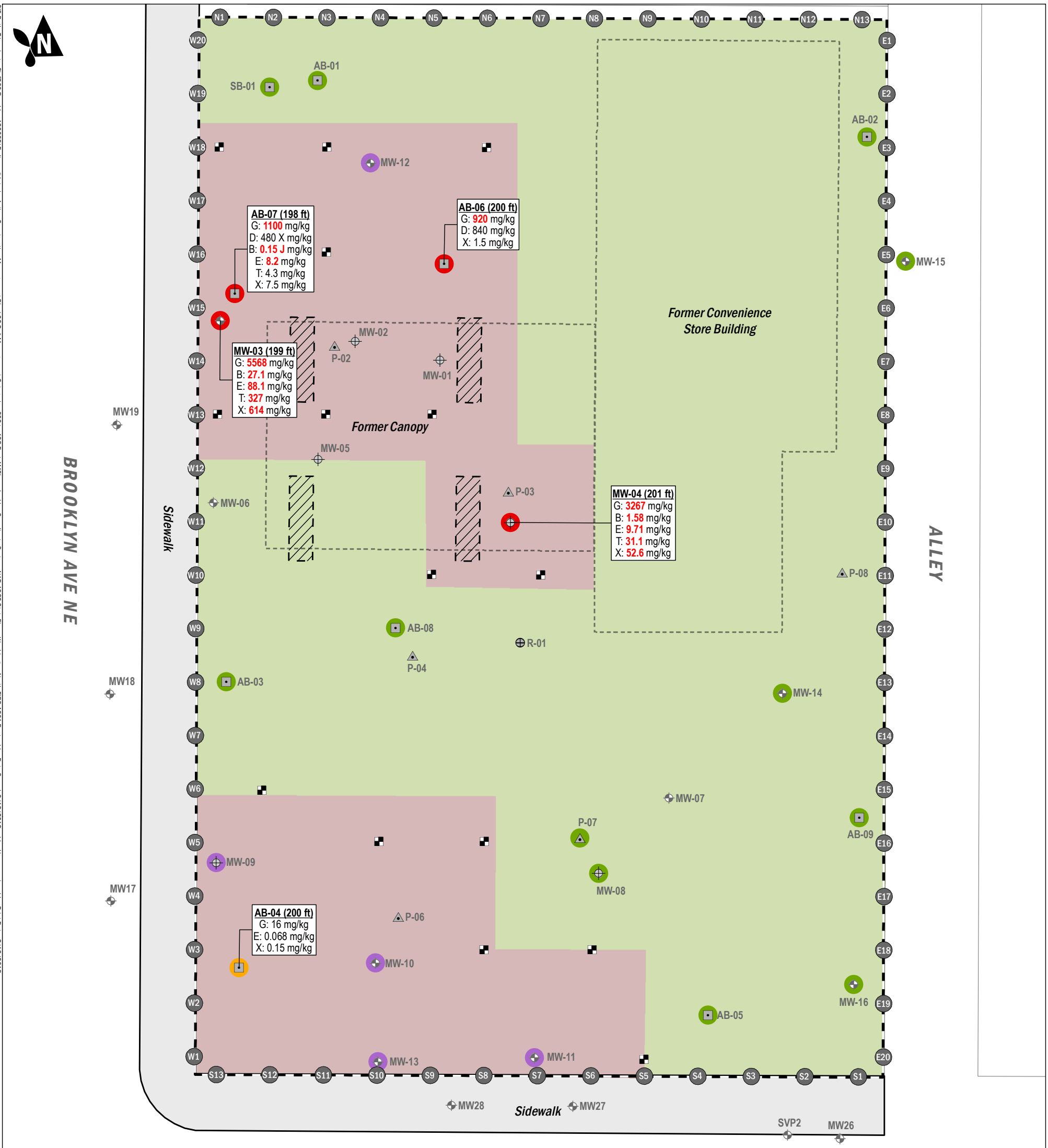
1. The estimated extents of soil management categories are based on available characterization data. The actual extents will be determined during construction by field screening and laboratory analysis.
2. Shoring details shown are taken from the Temporary Shoring Wall Plans (Rev. 1) by Ground Support PLLC date November 3, 2017.
3. No sample was collected from locations with no screening color.
4. Results in red bold indicate concentration exceeds proposed cleanup levels.

0 7.5 15
Feet

Soil Management Categories 206 to 202 Feet AMSL

Environmental Construction Management Plan
4700 Brooklyn Ave NE
Seattle, Washington

Aspect CONSULTING	MAR-2018	BY: ACG / RAP	FIGURE NO. 5
	PROJECT NO. 160092	REVISED BY: KES / EAC	



Proposed Cleanup Level (CL) Screening [3]

- LNAPL Occurs at this Monitoring Well Location and Supersedes Any Soil Analytical Data Collected During Well Installation in 1990
- One or More Detected Above Cleanup Level
- One or More Detected, No Cleanup Level Exceedances
- No Detections

Soil Management Category[1]

- Clean Soil
- Impacted Soil
- Contaminated Soil

Explorations

- Abandoned Monitoring Well
- Monitoring Well
- Product Recovery Well
- Soil Boring
- Test Probe

Site Features

- Former Pump Island
- Proposed Test Pit
- Face of Soldier Pile Wall
- Soldier Pile
- Tax Parcel

Exploration Name (Sample Depth In Feet)
G: Gasoline Range Organics (mg/kg)
B: Benzene (mg/kg)
E: Ethylbenzene (mg/kg)
T: Toluene (mg/kg)
X:Total Xylenes (mg/kg)
O: Motor Oil Range Organics (mg/kg)
D: Diesel Range Organics (mg/kg)

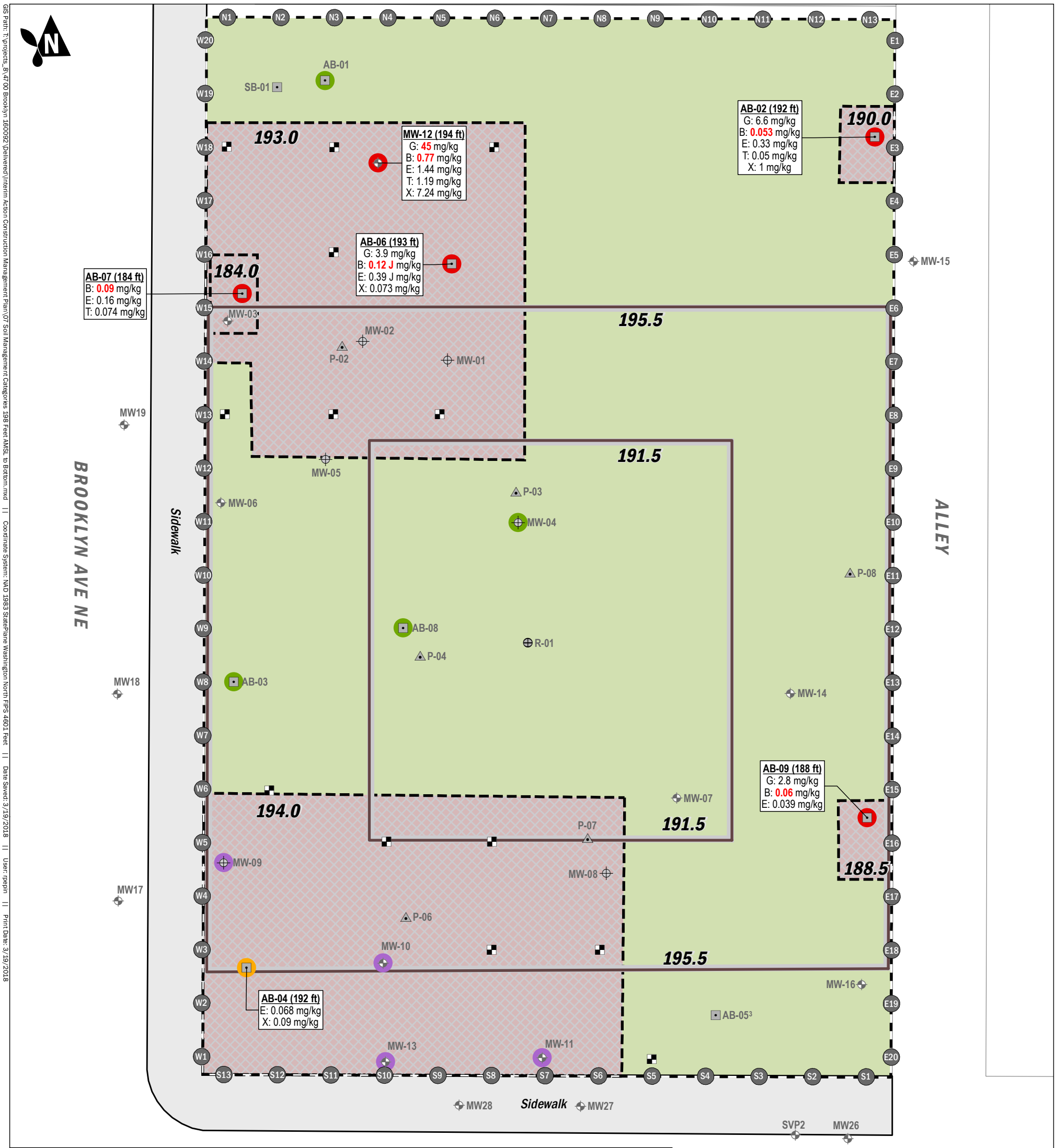
Notes:

1. The estimated extents of soil management categories are based on available characterization data. The actual extents will be determined during construction by field screening and laboratory analysis.
2. Shoring details shown are taken from the Temporary Shoring Wall Plans (Rev. 1) by Ground Support PLLC date November 3, 2017.
3. No sample was collected from locations with no screening color.
4. Results in red bold indicate concentration exceeds proposed cleanup levels.

Soil Management Categories 202 to 198 Feet AMSL

Environmental Construction Management Plan
4700 Brooklyn Ave NE
Seattle, Washington

Aspect Consulting	MAR-2018	BY: ACG / RAP	FIGURE NO. 6
	PROJECT NO. 160092	REVISED BY: KES	



Proposed Cleanup Level (CL) Screening [3]

- LNAPL Occurs at this Monitoring Well Location and Supersedes Any Soil Analytical Data Collected During Well Installation in 1990
- One or More Detected Above Cleanup Level
- One or More Detected, No Cleanup Level Exceedances
- No Detections

Soil Management Category[1]

- Clean Soil
- Impacted Soil
- Contaminated Soil

Explorations

- Abandoned Monitoring Well
- Monitoring Well
- Product Recovery Well
- Soil Boring
- Direct-Push Sample

Excavation Depths

- 191.5 Mat Foundation Bottom Elevation
- 194.0 Maximum Cleanup Excavation Elevation

Site Features Legend

- Face of Soldier Pile Wall
- Proposed Test Pits
- Soldier Pile
- Tax Parcel

Exploration Name (Sample Depth In Feet)
G: Gasoline Range Organics (mg/kg)
B: Benzene (mg/kg)
E: Ethylbenzene (mg/kg)
T: Toluene (mg/kg)
X:Total Xylenes (mg/kg)
O: Motor Oil Range Organics (mg/kg)
D: Diesel Range Organics (mg/kg)

Notes:

1. The estimated extents of soil management categories are based on available characterization data. The actual extents will be determined during construction by field screening and laboratory analysis.
2. Shoring details shown are taken from the Temporary Shoring Wall Plans (Rev. 1) by Ground Support PLLC date November 3, 2017.
3.No sample was collected from locations with no screening color with exception of AB-05 sample collected at 191.0 ft amsl, deeper than the planned excavation depth at this location.
4. Results in red bold indicate concentration exceeds proposed cleanup levels.

0 7.5 15
Feet

Soil Management Categories 198 Feet AMSL to Bottom

Environmental Construction Management Plan
4700 Brooklyn Ave NE
Seattle, Washington

Aspect CONSULTING	MAR-2018	BY: ACG / RAP	FIGURE NO. 7
	PROJECT NO. 160092	REVISED BY: KES	

APPENDIX C

Monitoring Well Decommissioning Logs

RESOURCE PROTECTION WELL REPORT

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

CURRENT Notice of Intent No. AE 41399

Construction/Decommission

☐ Construction

☒ Decommission *ORIGINAL INSTALLATION Notice of Intent Number* _____

Type of Well

☒ Resource Protection

☐ Geotechnical Soil Boring

Property Owner Chevron

Site Address 4700 Brooklyn Ave

Consulting Firm Aspect

City Seattle County King

Unique Ecology Well ID Tag No. ~~Aspect~~ RW01

Location 1/4 SE 1/4 SE Sec 8 Twp 25N R 4E ☐ EWM ☐ or WWM

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief

Lat/Long (s,t,r still Required) Lat Deg _____ Lat Min/Sec _____ Long Deg _____ Long Min/Sec _____

☐ Driller ☐ Trainee Name (Print) ~~Tom Kayser~~

Driller/Trainee Signature

Driller/Trainee License No. 3021

Tax Parcel No. _____

Cased or Uncased Diameter 8"

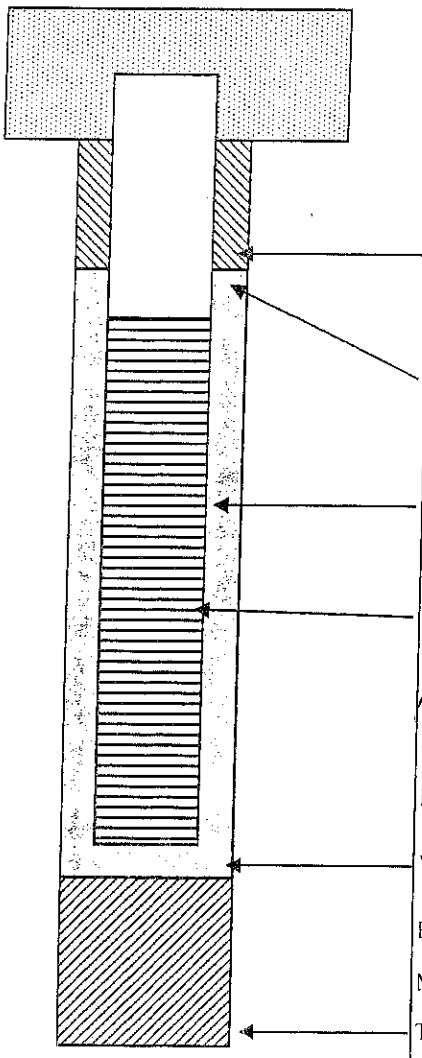
Static Level _____

Work/Decommision Start Date 2-3-17

If trainee, licesned drillers' Signature and License No. _____

Work/Decommision End Date 2-3-17

Construction/Design



Well Data

Concrete Surface Seal Depth _____ FT

Blank Casing (dia x dep) _____

Material _____

Backfill _____ FT

Type _____

Seal _____

Material _____

Gravel Pack _____ FT

Material _____

Screen (dia x dep) _____

Slot Size _____

Material _____

Well Depth _____ FT

Backfill _____

Material _____

Total Hole Depth 25 FT

Formation Description

0 - _____ FT

overdrilled

Decommissioned backfill with

_____ FT

Bentonite

0 - _____ FT

Scale 1" = _____

Page _____ of _____

ECY 050-12 (Rev 2/01)

Please print, sign and return by mail to Department of Ecology

RESOURCE PROTECTION WELL REPORT

CURRENT Notice of Intent No. AE41399

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

Construction/Decommission *(select one)*

☐ Construction

☒ Decommission *ORIGINAL INSTALLATION Notice of Intent Number* _____

Consulting Firm Aspect

Unique Ecology Well ID Tag No. MW-1

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☒ Driller ☐ Engineer ☐ Trainee Name (Print) Todd Carpscharo

Driller/Engineer /Trainee Signature _____

Driller or Trainee License No. 3027

If trainee, licensed driller's Signature and License No. _____

Type of Well *(select one)*

☒ Resource Protection

☐ Geotech Soil Boring

Property Owner Chevron

Site Address 4700 Brooklyn Ave

City Seattle County King

Location SE 1/4-1/4 SE 1/4 Sec 8 Twn 25 R 4 Select One ☒ BWM ☐ WWM

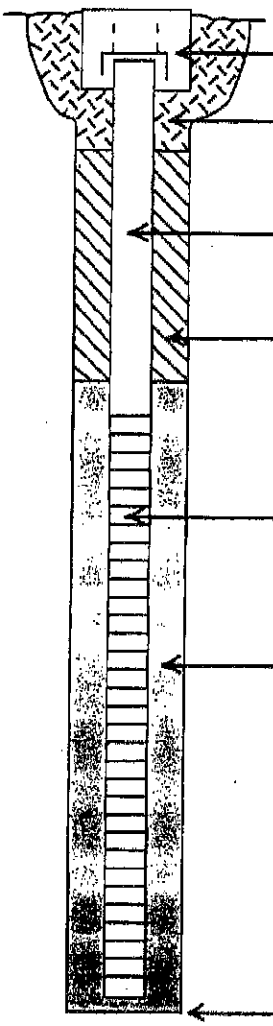
Lat/Long (s, t, r still REQUIRED) Lat Deg _____ Lat Min/Sec _____ Long Deg _____ Long Min/Sec _____

Tax Parcel No. _____

Cased or Uncased Diameter 2" Static Level _____

Work/Decommission Start Date 2-3-17

Work/Decommission Completed Date 2-3-17

Construction/Design	Well Data	Formation Description
	MONUMENT TYPE: _____ CONCRETE SURFACE SEAL _____ ft. PVC BLANK 2 " x _____ ' BACKFILL _____ ft. TYPE: _____ PVC SCREEN _____ " x _____ ' SLOT SIZE: _____ TYPE: _____ GRAVEL PACK _____ ft. MATERIAL: _____ WELL DEPTH 29 '	0 - _____ ft. _____ - _____ ft. Decommission. 4" Backfill with bentonite _____ - _____ ft. _____ - _____ ft. _____ - _____ ft. **REMARKS**

25/4E-8 R

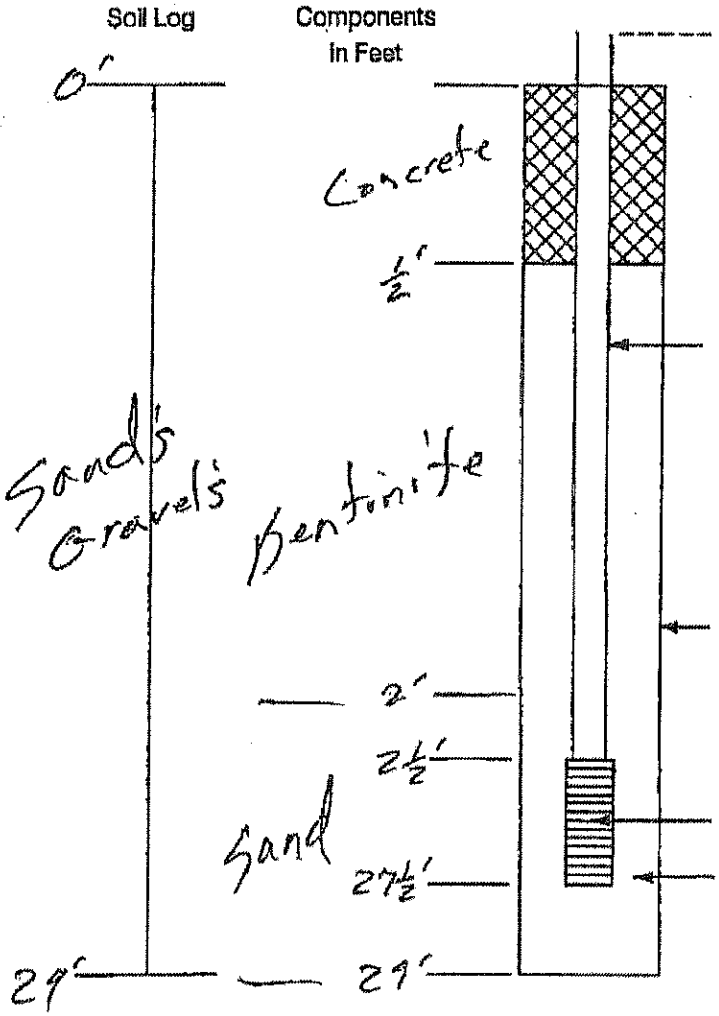
Geoboring & Development, Inc.

Resource Protection Well Report

Project Name Chevron / NE 47th & Brooklyn
Well Identification # mw-1
Drilling Method HSA 4"
Driller Terry Burns
License # 1733
Job # 7

Date 1/11/90
County King, 5E 1/4 5E 1/4
Section 8 T. 25N R. 4E
Start Card 022715
Consulting Firm Geo Engineers

Soil Log / Depth of Components in Feet



Stick up Flush on Monument Casing

Type of Surface Seal Concrete
Amount

ID of Riser Pipe 2"
Type of Riser Pipe PVC
Amount
Type of Connection Thread

Type of Backfill around Riser Bentinite
Amount

Diameter of Borehole 8¾"

Screen Size or Type .02 PVC

Type of Filter Material 10-20 Qtz Sand
Amount

RECEIVED
JAN 1 1990
DEPARTMENT OF ECOLOGY
NORTHWEST REGION

Remarks:

Signature

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

Please print, sign and return by mail to Department of Ecology

RESOURCE PROTECTION WELL REPORT

CURRENT Notice of Intent No. AE 41399

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

Construction/Decommission *(select one)*

☐ Construction

☒ Decommission *ORIGINAL INSTALLATION Notice of Intent Number* _____

Consulting Firm Aspect

Unique Ecology Well ID Tag No. MW 4

Type of Well *(select one)*

☑ Resource Protection

☐ Geotech Soil Boring

Property Owner Chevron

Site Address 4700 Brooklyn Ave

City Seattle County King

Location SE 1/4-1/4 SE 1/4 Sec 8 Twn 25 R 4 (Select One) ☒ BWAT ☐ WWAT

Lat/Long (s, t, r still REQUIRED) Lat Deg _____ Lat Min/Sec _____ Long Deg _____ Long Min/Sec _____

Tax Parcel No. _____

Cased or Uncased Diameter _____ Static Level _____

Work/Decommission Start Date 2-3-17

Work/Decommission Completed Date 2-3-17

WELL CONSTRUCTION CERTIFICATION: *I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.*

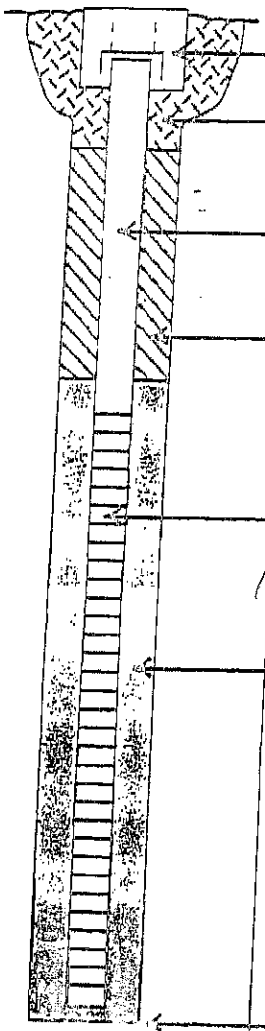
☐ Driller ☐ Engineer ☐ Trainee Name (Print) Todd Engebretson

Driller/Engineer/Trainee Signature _____

Driller or Trainee License No. 3 5021

If trainee, licensed driller's Signature and License No. _____

Construction/Design



MONUMENT TYPE: _____

CONCRETE SURFACE SEAL _____ ft.

PVC BLANK 2 " x _____ '

BACKFILL _____ ft.

TYPE: _____

PVC SCREEN _____ " x _____ '

SLOT SIZE: _____

TYPE: _____

GRAVEL PACK _____ ft.

MATERIAL: _____

WELL DEPTH 23 '

Well Data

0 - _____ ft.

_____ - _____ ft.

Decommission backfill with bentonite

_____ - _____ ft.

_____ - _____ ft.

_____ - _____ ft.

Formation Description

REMARKS

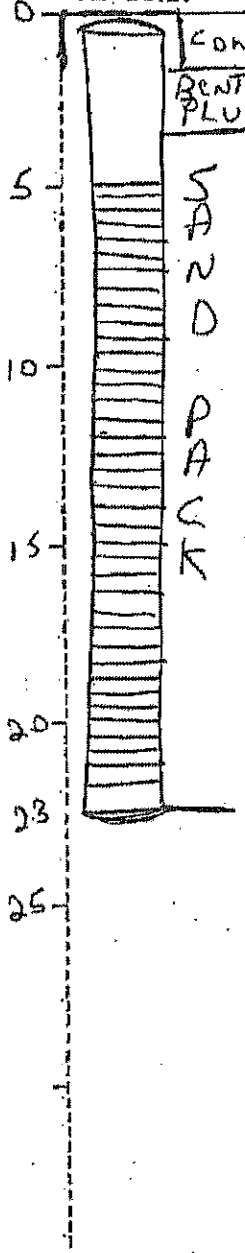
25/4E/8 R

RESOURCE PROTECTION WELL REPORT

START CARD NO. 026504

PROJECT NAME: CHEVRON
WELL INDENTIFICATION NO. MW-4
DRILLING METHOD: 3 3/8 HOLLOW STEM AUGER
DRILLER: WILLIAM T BRUN
FIRM: PACIFIC TESTING LABS
SIGNATURE: William T. Brun
CONSULTING FIRM: GEO ENGINEERS
REPRESENTATIVE: ERIN NELSON

LOCATION: T 25 N, R 4 E, SEC. 8
DISTANCE: SE FT. FROM N/S SECTION LINE
SE FT. FROM E/W SECTION LINE
DATUM: N/A
WATER LEVEL ELEVATION: 17'
INSTALLED: 1-31-90
DEVELOPED: N/A



WELL DATA

1' STEEL LOCKING MOUNMENT SET IN 1' OF CONCRETE
2' BENTONITE PLUG
5' of 2" THREADED PVC CASEING WITH A CAP ON TOP
18' of 2" THREADED PVC SCREEN 20 SLOT WITH A CAP ON BOTTOM
20' of 10-20 SAND PACK

FORMATION DESCRIPTION

0'-8" CONCRETE
8"-16' MEDIUEM SAND BROWN DRY
16'-23' MEDIUEM TO COURSE SAND WET

RECEIVED
OCT 18 1990
DEPT. OF ECOLOGY

RECEIVED
FEB 05 1990
DEPARTMENT OF ECOLOGY
NORTHWEST REGION

SCALE: 1"= 5'

PAGE 2 OF 4

ECY 050-12

Please print, sign and return by mail to Department of Ecology

RESOURCE PROTECTION WELL REPORT

CURRENT Notice of Intent No. AE41399

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

Construction/Decommission *(select one)*

☐ Construction

☒ Decommission *ORIGINAL INSTALLATION Notice of Intent Number* ______

Consulting Firm: Aspect

Unique Ecology Well ID Tag No.: MW 5

Type of Well *(select one)*

☒ Resource Protection

☐ Geotech Soil Boring

Property Owner: Chevron

Site Address: 4700 Brooklyn Ave

City: Seattle County: King

Location: SE 1/4-1/4 SE 1/4 Sec 8 Twn 25 R 4 (select one) ☒ EWM ☐ WWM

Lat/Long (s, t, r still REQUIRED) Lat Deg ______ Lat Min/Sec ______ Long Deg ______ Long Min/Sec ______

Tax Parcel No. ______

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☐ Driller ☐ Engineer ☐ Trainee Name (Print): Todd Kampschel

Driller/Engineer/Trainee Signature: [signature]

Driller or Trainee License No.: 3021

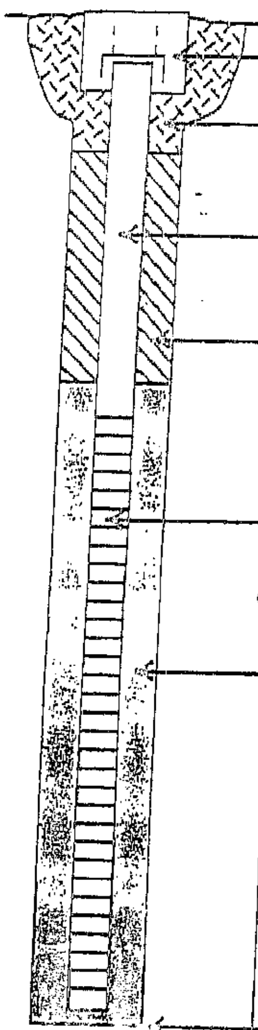
Cased or Uncased Diameter ______ Static Level ______

Work/Decommission Start Date: 2-3-17

Work/Decommission Completed Date: 2-3-17

If trainee, licensed driller's Signature and License No. ______

Construction/Design	Well Data	Formation Description



MONUMENT TYPE: ______

CONCRETE SURFACE SEAL ______ ft.

PVC BLANK 2 "x ______

BACKFILL ______ ft.

TYPE: ______

PVC SCREEN ______ "x ______

SLOT SIZE: ______

TYPE: ______

GRAVEL PACK ______ ft.

MATERIAL: ______

WELL DEPTH 23 "

0 - ______ ft.

______ - ______ ft.

Decommission backfill with bentonite

______ - ______ ft.

______ - ______ ft.

______ - ______ ft.

REMARKS ______

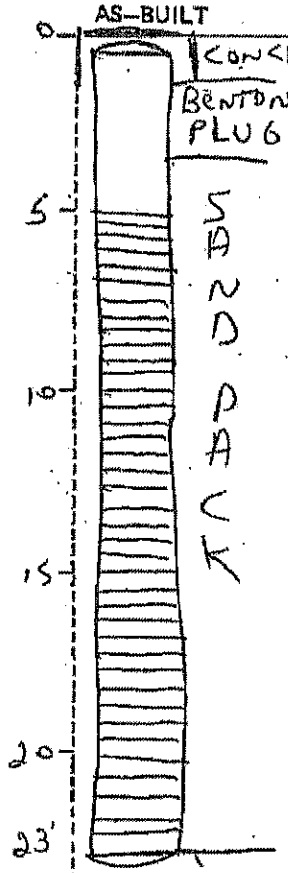
RESOURCE PROTECTION WELL REPORT

25/4E/8 R

START CARD NO. 0265 04

PROJECT NAME: CHEVRON
WELL INDENTIFICATION NO. MW 5
DRILLING METHOD: 3 3/8 HOLLOW STEM AUGER
DRILLER: WILLIAM T. BRUN
FIRM: PACIFIC TESTING LABS
SIGNATURE: William T. Brun
CONSULTING FIRM: Geo ENGINEERS
REPRESENTATIVE: ERIN NELSON

LOCATION: T 25 N, R 4E SEC. 8
DISTANCE: 58 FT. FROM N/S SECTION LINE
58 FT. FROM E/W SECTION LINE
DATUM: N/A
WATER LEVEL ELEVATION: 17'
INSTALLED: 1-31-90
DEVELOPED: N/A



WELL DATA

1' STEEL LOCKING MOUNMENT SET IN 1' OF CONCRETE
2' BENTONITE PLUG
5' of 2" THREADED PVC CASING WITH A CAP ON TOP
18' OF THREADED 2" PVC SCREEN 20 SLOT WITH A CAP ON BOTTOM
20' of 10-20 SAND PACK

FORMATION DESCRIPTION

0'-8" CONCRETE
8'-16' MEDIUM SAND BROWN DRY
16'-23' MEDIUM TO COURSE SAND GREY WET

RECEIVED
OCT 16 1990
DEPT. OF ECOLOGY

RECEIVED
FEB 05 1990
DEPARTMENT OF ECOLOGY
NORTHWEST REGION

SCALE: 1"= 5'

PAGE 1 OF 4

ECY 050-12

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

Please print, sign and return by mail to Department of Ecology

RESOURCE PROTECTION WELL REPORT

CURRENT Notice of Intent No. AE41399

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

Construction/Decommission *(select one)*

☐ Construction

☑ Decommission *ORIGINAL INSTALLATION Notice of Intent Number* _____

Consulting Firm Aspect

Unique Ecology Well ID Tag No. MW8

Type of Well *(select one)*

☑ Resource Protection

☐ Geotech Soil Boring

Property Owner Chevron

Site Address 4700 Brooklyn Ave

City Seattle County King

Location SE 1/4-1/4 SE 1/4 Sec 8 Twn 25 R 4 (Select One ☑ WWM ☐ WWM)

Lat/Long (s, t, r still REQUIRED) Lat Deg _____ Lat Min/Sec _____ Long Deg _____ Long Min/Sec _____

Tax Parcel No. _____

Cased or Uncased Diameter _____ Static Level _____

Work/Decommission Start Date 2-3-17

Work/Decommission Completed Date 2-3-17

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

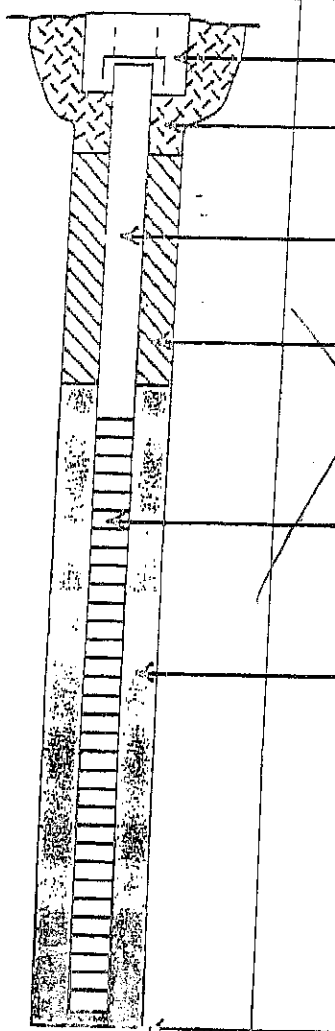
☑ Driller ☐ Engineer ☐ Trainee Name (Print) Todd Campbell

Driller/Engineer/Trainee Signature _____

Driller or Trainee License No. 2 5021

If trainee, licensed driller's Signature and License No. _____

Construction/Design



MONUMENT TYPE: _____

CONCRETE SURFACE SEAL _____ ft.

PVC BLANK 2 " x _____ '

BACKFILL _____ ft.

TYPE: _____

PVC SCREEN _____ " x _____ '

SLOT SIZE: _____

TYPE: _____

GRAVEL PACK _____ ft.

MATERIAL: _____

WELL DEPTH 25 '

Well Data

0 - _____ ft.

_____ - _____ ft.

Decommission backfill with bentonite

_____ - _____ ft.

_____ - _____ ft.

_____ - _____ ft.

_____ - _____ ft.

Formation Description

REMARKS _____

Geoboring & Development, Inc.

25/4E-8 R

Resource Protection Well Report

Project Name Chevron
Well Identification # MW-8
Drilling Method 4" HSA
Driller Pat Terneus
License # 1793
Job # 21

Date 1-29-90
County King SE 1/4 SE 1/4
Section 8 T. 25N R. 4E
Start Card 022715
Consulting Firm Geo Engineers

Soil Log

Depth of Components in Feet

Fine to medium sand with silt and occasional gravel

25 ft

0'
2'
5'
25'

Stick up Flush on Monument Casing

Type of Surface Seal Concrete
Amount 2'

ID of Riser Pipe 2"
Type of Riser Pipe P.V.C.
Amount 5'
Type of Connection T/E

Type of Backfill around Riser Bentonite chip
Amount 3'

Diameter of Borehole 9"

Screen Size or Type .020
Type of Filter Material 10/20 Colo. Sand
Amount 20'

Remarks:

RECEIVED
FEB 06 1990
DEPARTMENT OF ECOLOGY
NORTHWEST

Signature Gail Terneus

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

Please print, sign and return by mail to Department of Ecology

RESOURCE PROTECTION WELL REPORT

CURRENT Notice of Intent No. AE41399

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

Construction/Decommission *(select one)*

☐ Construction

☑ Decommission *ORIGINAL INSTALLATION Notice of Intent Number* _____

Consulting Firm Aspect

Unique Ecology Well ID Tag No. MW9

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☑ Driller ☐ Engineer ☐ Trainee Name (Print) Todd Campbell

Driller/Engineer/Trainee Signature _____

Driller or Trainee License No. 3021

If trainee, licensed driller's Signature and License No. _____

Type of Well *(select one)*

☐ Resource Protection

☐ Geotech Soil Boring

Property Owner Chevron

Site Address 4700 Brooklyn

City Seattle County King

Location SE 1/4-1/4 SE 1/4 Sec 8 Twn 25 R 4 Select One ☒ EWM ☐ WWM

Lat/Long (s, t, r still REQUIRED) Lat Deg _____ Lat Min/Sec _____ Long Deg _____ Long Min/Sec _____

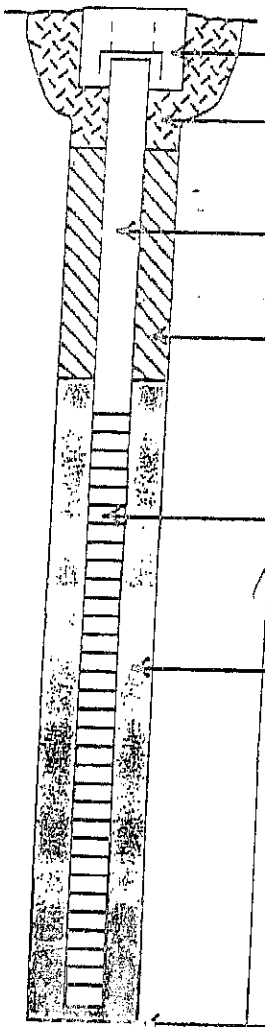
Tax Parcel No. _____

Cased or Uncased Diameter _____ Static Level _____

Work/Decommission Start Date 2-3-17

Work/Decommission Completed Date 2-3-17

Construction/Design



MONUMENT TYPE: _____

CONCRETE SURFACE SEAL _____ ft.

PVC BLANK 2 " x _____ '

BACKFILL _____ ft.

TYPE: _____

PVC SCREEN _____ " x _____ '

SLOT SIZE: _____

TYPE: _____

GRAVEL PACK _____ ft.

MATERIAL: _____

WELL DEPTH 25 '

Well Data

Formation Description

0 - _____ ft.

_____ - _____ ft.

Decommission backfill with bentonite

_____ - _____ ft.

_____ - _____ ft.

_____ - _____ ft.

REMARKS

Geoboring & Development, Inc.

25/4E-8 K

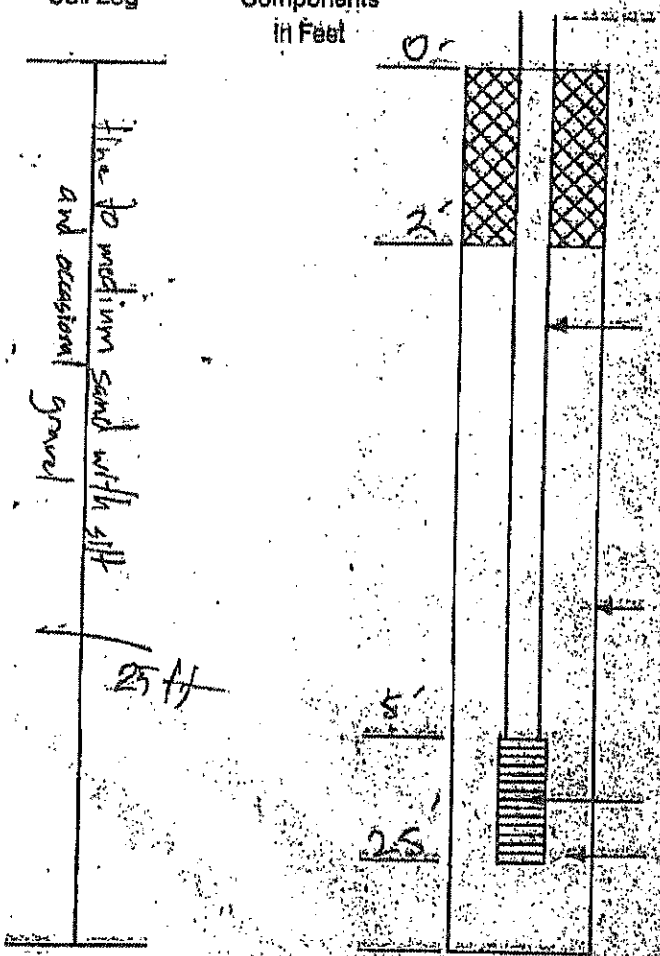
Resource Protection Well Report

Project Name Chevron
Well Identification # MW-9
Drilling Method 4" HSA
Driller Pat Tevnes
License # 1793
Job # 21

Date 1-29-90
County King, SE 1/4 SE 1/4
Section 8, T. 25N, R. 4E
Start Card 022715
Consulting Firm Geoengineers

Soil Log

Depth of Components in Feet



Stick up Flush on Monument Casing

Type of Surface Seal Concrete
Amount 2'

ID of Riser Pipe 2"
Type of Riser Pipe P.V.C.
Amount 5'
Type of Connection T/E

Type of Backfill around Riser Bentonite chip
Amount 3'

Diameter of Borehole 9"

Screen Size or Type .020
Type of Filter Material 10/20 Colo. Sand
Amount 20'

Remarks

Signature G.D. Tevnes

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

Please print, sign and return by mail to Department of Ecology

RESOURCE PROTECTION WELL REPORT

CURRENT Notice of Intent No. AE 9-7849

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

Construction/Decommission *(select one)*

☐ Construction

☒ Decommission *ORIGINAL INSTALLATION Notice of Intent Number* _____

Consulting Firm Aspect

Unique Ecology Well ID

Tag No. AJO-745 MW5

Type of Well *(select one)*

☒ Resource Protection

☐ Geotech Soil Boring

Property Owner Evan Fields

Site Address 4700 Brooklyn Ave NE

City Seattle County King

Location SE 1/4-1/4 SE 1/4 Sec 8 Twn 25N R 4E (Select One) ☐ EWM ☐ WWM

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☒ Driller ☐ Engineer ☐ Trainee Name (Print) Alex Cunningham

Driller/Engineer/Trainee Signature Alex Cunningham

Driller or Trainee License No. 2861

If trainee, licensed driller's Signature and License No. _____

Lat/Long (s, t, r still REQUIRED) Lat Deg _____ Lat Min/Sec _____ Long Deg _____ Long Min/Sec _____

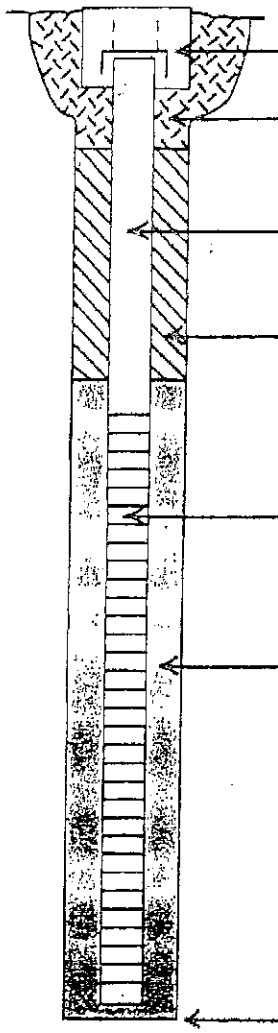
Tax Parcel No. _____

Cased or Uncased Diameter _____ Static Level _____

Work/Decommission Start Date 3-12-18

Work/Decommission Completed Date 3-12-18

Construction/Design



MONUMENT TYPE: 2' CONCRETE

CONCRETE SURFACE SEAL _____ ft.

PVC BLANK 2 "x 15'

BACKFILL _____ ft.

TYPE: _____

PVC SCREEN 2" x 10'

SLOT SIZE: _____

TYPE: _____

GRAVEL PACK _____ ft.

MATERIAL: _____

WELL DEPTH 25' "

Well Data

Formation Description

0 - _____ ft.

_____ - _____ ft.

_____ - _____ ft.

_____ - _____ ft.

_____ - _____ ft.

REMARKS

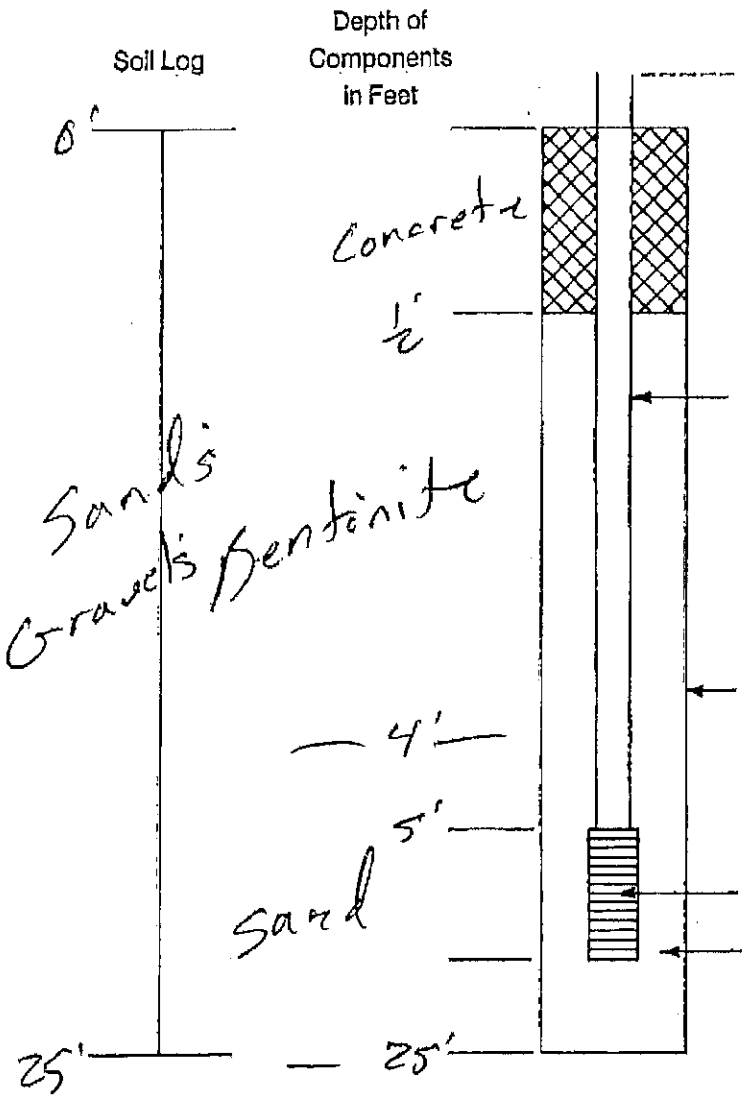
- chip in place
- seal w 2' of concrete

25/4E-8 R

Geoboring & Development, Inc.

Resource Protection Well Report

Project Name Chevron NE 47th & Brooklyn Date 1/12/90
Well Identification # MW-5 County King, SE 1/4 SE 1/4
Drilling Method HSA 4" Section 8 T. 25N R. 4E
Driller Terry Burns Start Card 022715
License # 1733 Consulting Firm Creo Engineers
Job # 7



Stick up Flush on Monument Casing

Type of Surface Seal Concrete
Amount

ID of Riser Pipe 2"
Type of Riser Pipe PVC
Amount
Type of Connection Thread

Type of Backfill around Riser Bentinite
Amount

Diameter of Borehole 8 3/4"

Screen Size or Type .02 PVC

Type of Filter Material 10-20 Colo Sand
Amount

Remarks:

Signature Terry Burns

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

Please print, sign and return by mail to Department of Ecology

RESOURCE PROTECTION WELL REPORT

CURRENT Notice of Intent No. AE 97849

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

Construction/Decommission *(select one)*

☐ Construction

☒ Decommission *ORIGINAL INSTALLATION Notice of Intent Number* _____

Consulting Firm Aspect

Unique Ecology Well ID

Tag No. NO-TAG MW6

Type of Well *(select one)*

☒ Resource Protection

☐ Geotech Soil Boring

Property Owner Evan Fields

Site Address 4700 Brooklyn Ave NE

City Seattle County King

Location SE 1/4-1/4 SE 1/4 Sec 8 Twn 25N R 4E Select One ☐ E/W ☐ W/M

Lat/Long (s, t, r still REQUIRED) Lat Deg _____ Lat Min/Sec _____ Long Deg _____ Long Min/Sec _____

Tax Parcel No. _____

Cased or Uncased Diameter _____ Static Level _____

Work/Decommission Start Date 3-12-18

Work/Decommission Completed Date 3-12-18

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

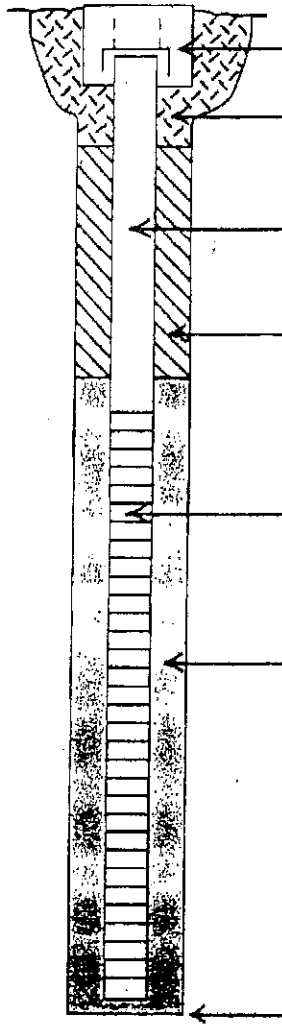
☒ Driller ☐ Engineer ☐ Trainee Name (Print) Alex Castellano

Driller/Engineer/Trainee Signature _____

Driller or Trainee License No. 2861

If trainee, licensed driller's Signature and License No. _____

Construction/Design



MONUMENT TYPE: 2' Concrete

CONCRETE SURFACE SEAL _____ ft.

PVC BLANK 2 "x 15'

BACKFILL _____ ft.

TYPE: _____

PVC SCREEN 2"x 10'

SLOT SIZE: _____

TYPE: _____

GRAVEL PACK _____ ft.

MATERIAL: _____

WELL DEPTH 25 '

Well Data

Formation Description

0 - _____ ft.

_____ - _____ ft.

_____ - _____ ft.

_____ - _____ ft.

_____ - _____ ft.

REMARKS

- chip in pipe
- set w 2' of concrete

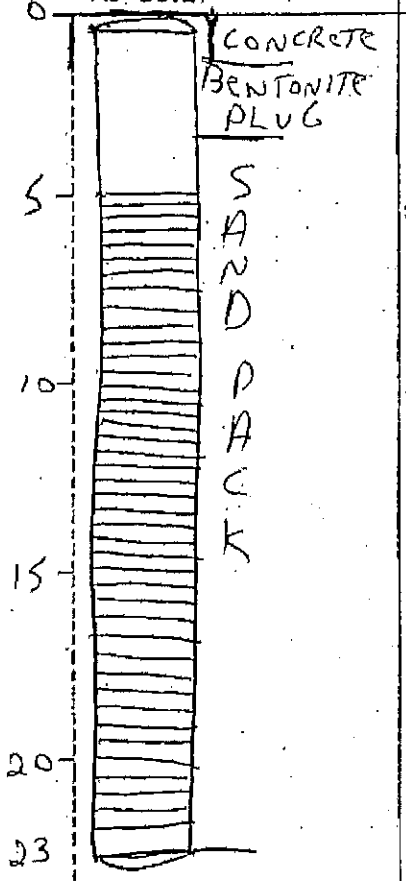
25/4E/8 R

RESOURCE PROTECTION WELL REPORT

START CARD NO. 026504

PROJECT NAME: CHEVRON
WELL INDENTIFICATION NO. MW 6
DRILLING METHOD: 3 3/4 HOLLOW STEM AUGER
DRILLER: WILLIAM T. BRUN
FIRM: PACIFIC TESTING LABS
SIGNATURE: William T. Brun
CONSULTING FIRM: GEO ENGINEERS
REPRESENTATIVE: ERIN NELSON

LOCATION: T 25N, R 4E, SEC. 8
DISTANCE: SE FT. FROM N/S SECTION LINE
SE FT. FROM E/W SECTION LINE
DATUM: N/A
WATER LEVEL ELEVATION: 17'
INSTALLED: 2-1-90
DEVELOPED: N/A



WELL DATA	FORMATION DESCRIPTION
1' STEEL LOCKING MOUNMENT SET IN 1' OF CONCRETE 2' BENTONITE PLUG 5' OF 2" THREADED PVC CASING WITH A CAP ON TOP 18' OF 2" THREADED PVC SCREEN 20 SLOT WITH A CAP ON BOTTOM 20' OF 10-20 SAND PACK	0-13' MEDIUM SAND BROWN DRY 13-16' MEDIUM SAND WITH SMALL TO MEDIUM GRAVEL 16-23' MEDIUM TO COURSE SAND GREY WET

RECEIVED
OCT 18 1990
DEPT. OF ECOLOGY

RECEIVED
FEB 05 1990
DEPARTMENT OF ECOLOGY
NORTHWEST REGION

SCALE: 1"= 5'

PAGE 3 OF 4

ECY 050-12

X 10

Please print, sign and return by mail to Department of Ecology

RESOURCE PROTECTION WELL REPORT

CURRENT Notice of Intent No. AE 47849

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

Construction/Decommission *(select one)*

☐ Construction

☒ Decommission *ORIGINAL INSTALLATION Notice of Intent Number* _____

Consulting Firm Aspect

Unique Ecology Well ID Tag No. NO-746 MW7

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☒ Driller ☐ Engineer ☐ Trainee Name (Print): Alex Cousineau

Driller/Engineer /Trainee Signature Alex Cousineau

Driller or Trainee License No. 2861

If trainee, licensed driller's Signature and License No. _____

Type of Well *(select one)*

☒ Resource Protection

☐ Geotech Soil Boring

Property Owner Eran Fields

Site Address 4700 Brooklyn Ave NE

City Seattle County King

Location SE 1/4-1/4 SE 1/4 Sec 8 Twn 25N R 4E Select One ☐ BWM ☐ WWM

Lat/Long (s, t, r still REQUIRED) Lat Deg _____ Lat Min/Sec _____ Long Deg _____ Long Min/Sec _____

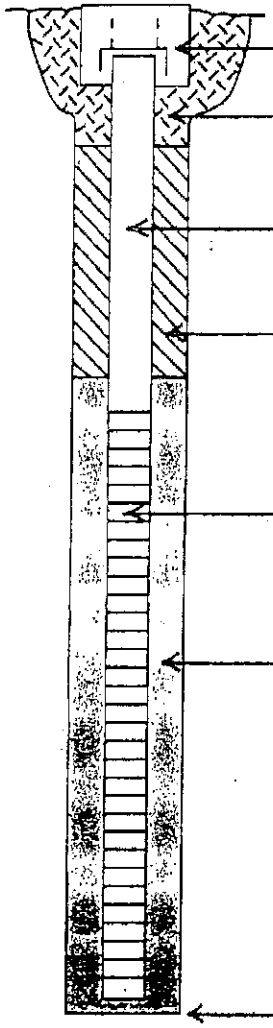
Tax Parcel No. _____

Cased or Uncased Diameter _____ Static Level _____

Work/Decommission Start Date 3-12-18

Work/Decommission Completed Date 3-12-18

Construction/Design



Well Data

MONUMENT TYPE: 2' CONCRETE

CONCRETE SURFACE SEAL _____ ft.

PVC BLANK 2 "x 15'

BACKFILL _____ ft.

TYPE: _____

PVC SCREEN 2"x 10'

SLOT SIZE: _____

TYPE: _____

GRAVEL PACK _____ ft.

MATERIAL: _____

WELL DEPTH 25' "

Formation Description

0 - ft.

- ft.

- ft.

- ft.

- ft.

REMARKS

- chip in place
- seal w 2' of concrete

25/4E-8 R

Geoboring & Development, Inc.

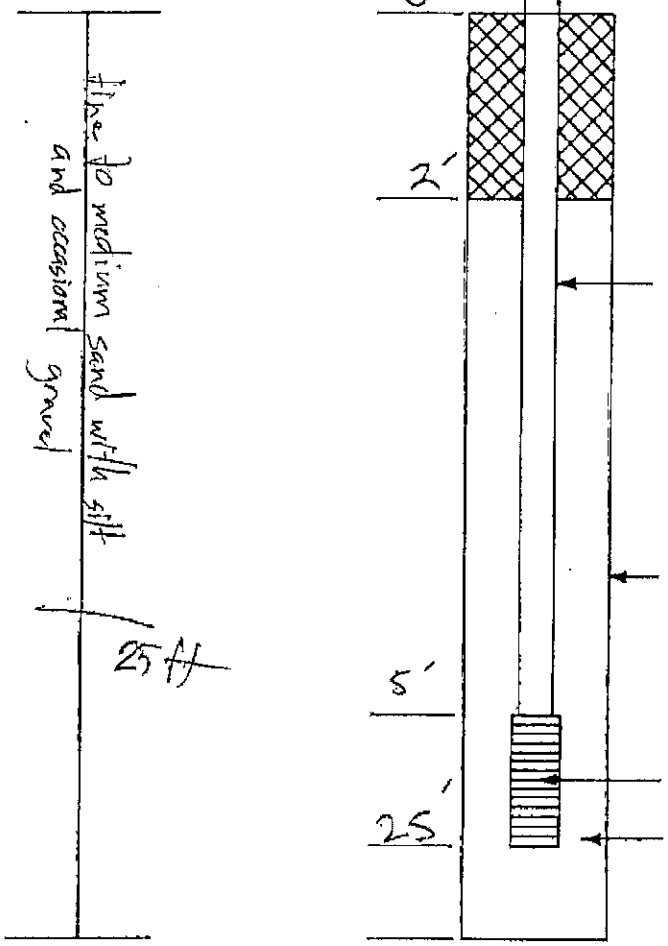
Resource Protection Well Report

Project Name Chevron
Well Identification # MW-17
Drilling Method 4" HSA
Driller Pat Ternes
License # 1793
Job # 21

Date 1-29-90
County King, SE 1/4 SE 1/4
Section 8 T. 25N R. 4E
Start Card 022715
Consulting Firm Geoengineers

Soil Log

Depth of Components in Feet



Stick up Flush on Monument Casing

Type of Surface Seal Concrete
Amount 2'

ID of Riser Pipe 2"
Type of Riser Pipe P.V.C.
Amount 5'
Type of Connection T/E

Type of Backfill around Riser Bentonite chip
Amount 3'

Diameter of Borehole 9"

Screen Size or Type .020
Type of Filter Material 10/20 Colo. Sand
Amount 20'

Remarks:

RECEIVED
FEB 06 1990
DEPARTMENT OF ECOLOGY
NORTHWEST REGION

Signature Pat Ternes

X 10

Please print, sign and return by mail to Department of Ecology

RESOURCE PROTECTION WELL REPORT

CURRENT Notice of Intent No. AE47849

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

Construction/Decommission *(select one)*

☐ Construction

☒ Decommission *ORIGINAL INSTALLATION Notice of Intent Number* _____

Consulting Firm Aspect

Unique Ecology Well ID Tag No. AJO-745 MW 10

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☒ Driller ☐ Engineer ☐ Trainee Name (Print): [illegible]

Driller/Engineer /Trainee Signature [illegible]

Driller or Trainee License No. N2861

If trainee, licensed driller's Signature and License No. _____

Type of Well *(select one)*

☒ Resource Protection

☐ Geotech Soil Boring

Property Owner Evan Fields

Site Address 4700 Brooklyn Ave NE

City Seattle County King

Location SE1/4-1/4SE1/4 Sec 8 Twn 25N R 4E (Select One) ☐ BWN ☐ WWM

Lat/Long (s, t, r still REQUIRED) Lat Deg _____ Lat Min/Sec _____ Long Deg _____ Long Min/Sec _____

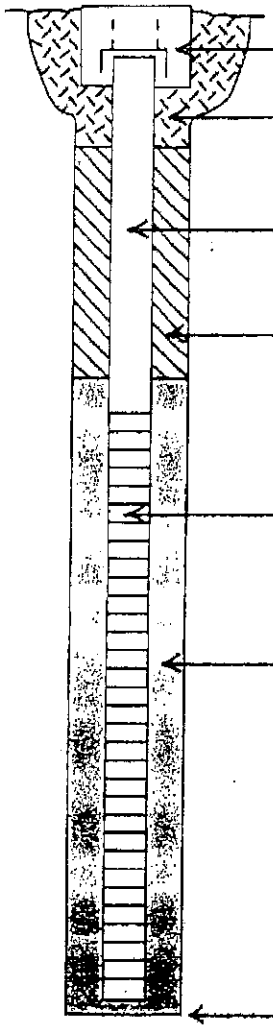
Tax Parcel No. _____

Cased or Uncased Diameter _____ Static Level _____

Work/Decommission Start Date 3-12-18

Work/Decommission Completed Date 3-12-18

Construction/Design



Well Data

MONUMENT TYPE: 2' CONCRETE

CONCRETE SURFACE SEAL _____ ft.

PVC BLANK 2 "x 15'

BACKFILL _____ ft.

TYPE: _____

PVC SCREEN 2"x 10'

SLOT SIZE: _____

TYPE: _____

GRAVEL PACK _____ ft.

MATERIAL: _____

WELL DEPTH 25 '

Formation Description

0 - _____ ft.

_____ ft.

_____ ft.

_____ ft.

_____ ft.

REMARKS

- chip in place
- seal w 2' of concrete

Geoboring & Development, Inc.

25/4E-8 R

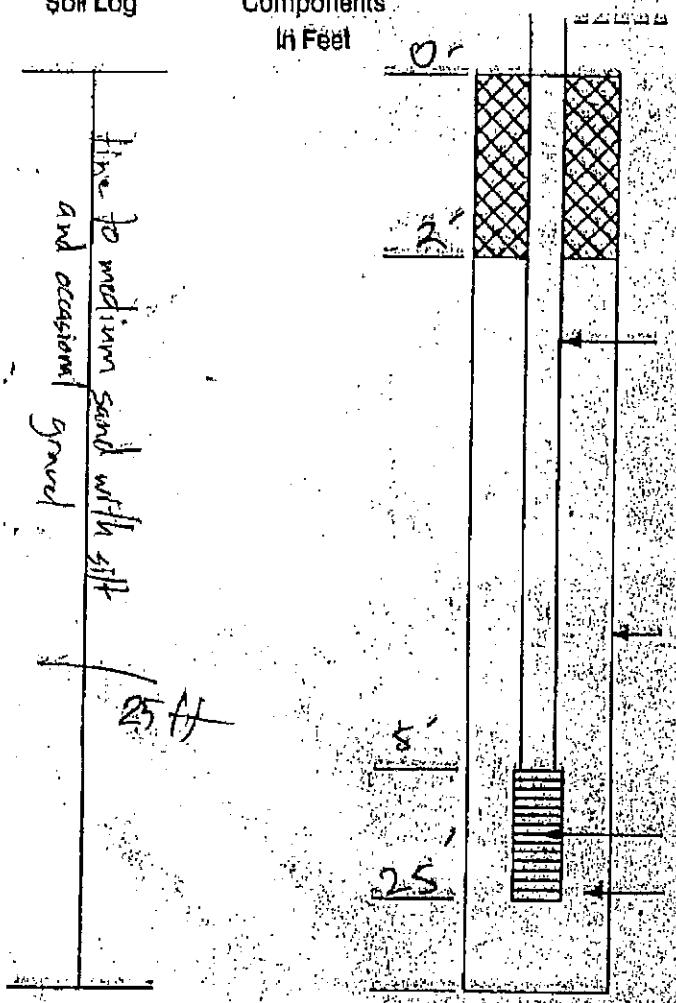
Resource Protection Well Report

Project Name Chevron
Well Identification # MW-10
Drilling Method 4" HSA
Driller Pat Ternes
License # 1793
Job # 21

Date 1-29-90
County King, SE 1/4 SE 1/4
Section 8 T. 25N R. 4E
Start Card 022715
Constituting Firm Geoengineers

Soil Log | Depth of Components in Feet

Stick up Flush on Monument Casing



Type of Surface Seal Concrete
Amount 2'

ID of Riser Pipe 2"
Type of Riser Pipe P.V.C.
Amount 5'
Type of Connection T/E

Type of Backfill around Riser Bentonite chip
Amount 3'

Diameter of Borehole 9"

Screen Size or Type .020

Type of Filter Material 10/20 Colo. Sand
Amount 20'

Remarks:

Signature Pat Ternes

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

X 10

Please print, sign and return by mail to Department of Ecology

RESOURCE PROTECTION WELL REPORT

CURRENT Notice of Intent No. AE47849

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

Construction/Decommission *(select one)*

☐ Construction

☒ Decommission *ORIGINAL INSTALLATION Notice of Intent Number* ____________

Consulting Firm: Aspect

Unique Ecology Well ID Tag No.: NO-TAG MW11

Type of Well *(select one)*

☒ Resource Protection

☐ Geotech Soil Boring

Property Owner: Evan Fields

Site Address: 4700 Brooklyn Ave NE

City: Seattle County: King

Location SE1/4-1/4 SE1/4 Sec 8 Twn 25N R 4E (Select One ☐ EWM ☐ WWM)

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☒ Driller ☐ Engineer ☐ Trainee Name (Print): Tez Cavallo

Driller/Engineer/Trainee Signature: [signature]

Driller or Trainee License No. 2861

If trainee, licensed driller's Signature and License No. ____________

Lat/Long (s, t, r still REQUIRED) Lat Deg ______ Lat Min/Sec ______

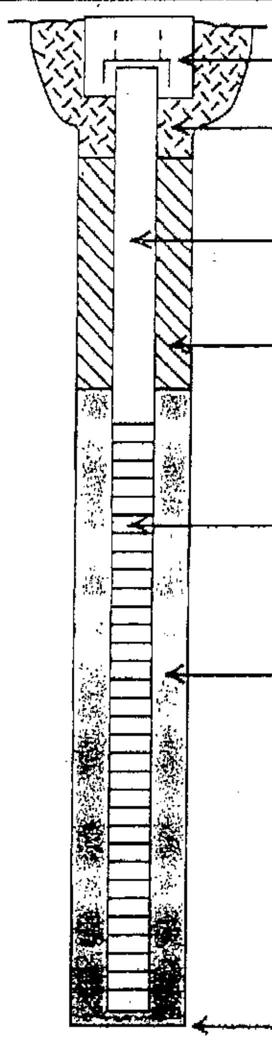
Long Deg ______ Long Min/Sec ______

Tax Parcel No. ____________

Cased or Uncased Diameter ______ Static Level ______

Work/Decommission Start Date: 3-12-18

Work/Decommission Completed Date: 3-12-18

Construction/Design	Well Data	Formation Description
	MONUMENT TYPE: 2' Concrete	0 - ft.
	CONCRETE SURFACE SEAL ____ ft.	- ft.
	PVC BLANK 2"x 15'	- ft.
	BACKFILL ____ ft. TYPE: ____	- ft.
	PVC SCREEN 2"x 10'	- ft.
	SLOT SIZE: ____ TYPE: ____	
	GRAVEL PACK ____ ft. MATERIAL: ____	
	WELL DEPTH 25'	

REMARKS

- chip in place
- seal w 2' of concrete

Geoboring & Development, Inc.

25/4E-8 R

Resource Protection Well Report

Project Name Chevron
Well Identification # MW-11
Drilling Method 4" HSA
Driller Pat Ternes
License # 1793
Job # 21

Date 1-29-90
County King 1/4 SE 1/4 SE
Section 8 T. 25N R. 4E
Start Card 022715
Consulting Firm Geoengineers

Soil Log

Depth of Components In Feet

Fine to medium sand with silt and occasional Gravel

25 ft

0'
2'
5'
25'

Stick up Flush on Monument Casing

Type of Surface Seal Concrete
Amount 2'

ID of Riser Pipe 2"
Type of Riser Pipe P.V.C.
Amount 5'
Type of Connection T/E

Type of Backfill around Riser Bentonite chip
Amount 3'

Diameter of Borehole 9"

Screen Size or Type #020

Type of Filter Material 10/20 Colo. Sand
Amount 20'

Remarks:

Signature Pat Ternes

X 10

Please print, sign and return by mail to Department of Ecology

RESOURCE PROTECTION WELL REPORT

CURRENT Notice of Intent No. AE47849

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

Construction/Decommission *(select one)*

☐ Construction

☒ Decommission *ORIGINAL INSTALLATION Notice of Intent Number* _____

Consulting Firm Aspect

Unique Ecology Well ID Tag No. NO-TAG MW12

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☒ Driller ☐ Engineer ☐ Trainee Name (Print) Abe Cardenas

Driller/Engineer/Trainee Signature Abe Cardenas

Driller or Trainee License No. 2861

If trainee, licensed driller's Signature and License No. _____

Type of Well *(select one)*

☒ Resource Protection

☐ Geotech Soil Boring

Property Owner Evan Fields

Site Address 4700 Brooklyn Ave. NE

City Seattle County King

Location SE 1/4-1/4 SE 1/4 Sec 8 Twn 26N R 4E Select One ☐ BWN ☐ WWN

Lat/Long (s, t, r still REQUIRED) Lat Deg _____ Lat Min/Sec _____ Long Deg _____ Long Min/Sec _____

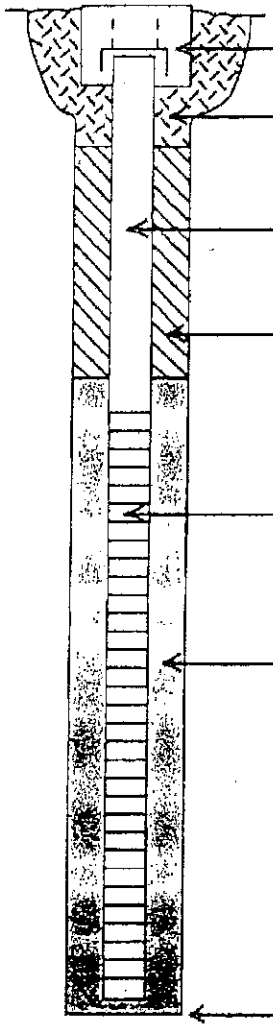
Tax Parcel No. _____

Cased or Uncased Diameter _____ Static Level _____

Work/Decommission Start Date 3-12-18

Work/Decommission Completed Date 3-12-18

Construction/Design



Well Data

MONUMENT TYPE: 2' CONCRETE

CONCRETE SURFACE SEAL _____ ft.

PVC BLANK 2 "x 15'

BACKFILL _____ ft.

TYPE: _____

PVC SCREEN 2" x 10'

SLOT SIZE: _____

TYPE: _____

GRAVEL PACK _____ ft.

MATERIAL: _____

WELL DEPTH 25' "

Formation Description

0 - ft.

- ft.

- ft.

- ft.

- ft.

REMARKS

- chip in place
- seal w 2' of concrete

Geoboring & Development, Inc.

25/4E-8R

Resource Protection Well Report

Project Name Chevron
Well Identification # MW-12
Drilling Method 4" HSA
Driller Pat Ternes
License # 1793
Job # 21

Date 1-29-90
County King 1/4 SE 1/4 SE 1/4
Section 8 T. 25N R. 4E
Start Card 022715
Consulting Firm Geoengineers

Soil Log

Depth of Components In Feet

Stick up Flush on Monument Casing

0'

Type of Surface Seal Concrete
Amount 2'

2'

ID of Riser Pipe 2"
Type of Riser Pipe P.V.C.
Amount 5'
Type of Connection T/E

Type of Backfill around Riser Bentonite chip
Amount 3'

Diameter of Borehole 9"

Fine to medium Sand with silt and occasional Gravel

25 ft

5'

Screen Size or Type .020

25'

Type of Filter Material 10/20 Colo. Sand
Amount 20'

Remarks:

Signature Pat Ternes

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

X 10

Please print, sign and return by mail to Department of Ecology

RESOURCE PROTECTION WELL REPORT

CURRENT Notice of Intent No. AE 47849

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

Construction/Decommission (*select one*)
☐ Construction
☒ Decommission *ORIGINAL INSTALLATION Notice of Intent Number* ______

Type of Well (*select one*)
☒ Resource Protection
☐ Geotech Soil Boring

Consulting Firm: Aspect

Unique Ecology Well ID Tag No.: NO-TAG MW 13

Property Owner: Eran Fields

Site Address: 4700 Brooklyn Ave NE

City: Seattle County: King

Location SE 1/4-1/4 SE 1/4 Sec 8 Twn 25N R 4E (Select One ☐ EWM ☐ WWM)

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☒ Driller ☐ Engineer ☐ Trainee Name (Print): [signature]
Driller/Engineer/Trainee Signature: [signature]
Driller or Trainee License No.: 2861

If trainee, licensed driller's Signature and License No. ______

Lat/Long (s, t, r still REQUIRED) Lat Deg ______ Lat Min/Sec ______
Long Deg ______ Long Min/Sec ______

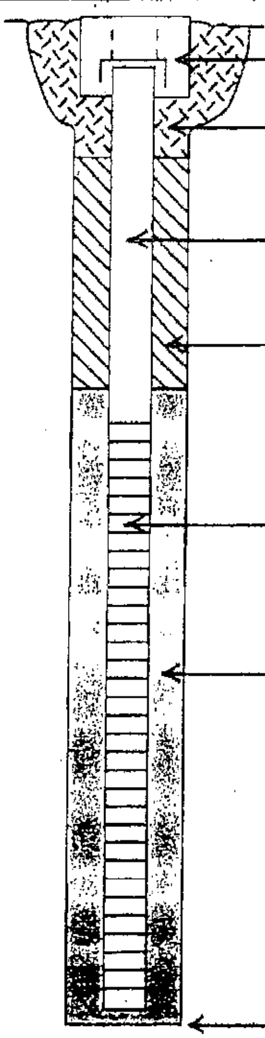
Tax Parcel No. ______

Cased or Uncased Diameter ______ Static Level ______

Work/Decommission Start Date: 3-12-18

Work/Decommission Completed Date: 3-12-18

Construction/Design	Well Data	Formation Description



MONUMENT TYPE: 2' Concrete

CONCRETE SURFACE SEAL ______ ft.

PVC BLANK 2 "x 15'

BACKFILL ______ ft.

TYPE: ______

PVC SCREEN 2"x 10'

SLOT SIZE: ______

TYPE: ______

GRAVEL PACK ______ ft.

MATERIAL: ______

WELL DEPTH 25' "

Formation Description:
0 - ft.
- ft.
- ft.
- ft.
- ft.

REMARKS

- chip in place
- seal w 2' of concrete

25/4C-8 K

Geoboring & Development, Inc.

Resource Protection Well Report

Project Name Chevron
Well Identification # MW-13
Drilling Method 4" HSA
Driller Pat Tennes
License # 1793
Job # 21

Date 1-29-90
County King SE 1/4 SE 1/4
Section 8 T. 25N R. 4E
Start Card 022715
Consulting Firm Cocoengineers

Soil Log

Depth of Components In Feet

Fine to medium sand with silt and occasional gravel

25 ft

0'
2'
5'
25'

Stick up Flush on Monument Casing

Type of Surface Seal Concrete
Amount 2'

ID of Riser Pipe 2"
Type of Riser Pipe P.V.C.
Amount 5'
Type of Connection T/E

Type of Backfill around Riser Bentonite chip
Amount 3'

Diameter of Borehole 9"

Screen Size or Type .020
Type of Filter Material 10/20 Colo. Sand
Amount 20'

Remarks:

Signature J. Tennes

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

X 10

Please print, sign and return by mail to Department of Ecology

RESOURCE PROTECTION WELL REPORT

CURRENT Notice of Intent No. AE 97849

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

Construction/Decommission *(select one)*

☐ Construction

☒ Decommission *ORIGINAL INSTALLATION Notice of Intent Number* _____

Consulting Firm Aspect

Unique Ecology Well ID Tag No. NO-745 MW 14

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☒ Driller ☐ Engineer ☐ Trainee Name (Print): Alex Cardenas

Driller/Engineer /Trainee Signature Alex Cardenas

Driller or Trainee License No. 2861

If trainee, licensed driller's Signature and License No. _____

Type of Well *(select one)*

☒ Resource Protection

☐ Geotech Soil Boring

Property Owner Evan Fields

Site Address 4700 Brooklyn Ave NE

City Seattle County King

Location SE 1/4-1/4 SE 1/4 Sec 9 Twn 25N R 4E Select One ☐ BWM ☐ WWM

Lat/Long (s, t, r still REQUIRED) Lat Deg _____ Lat Min/Sec _____ Long Deg _____ Long Min/Sec _____

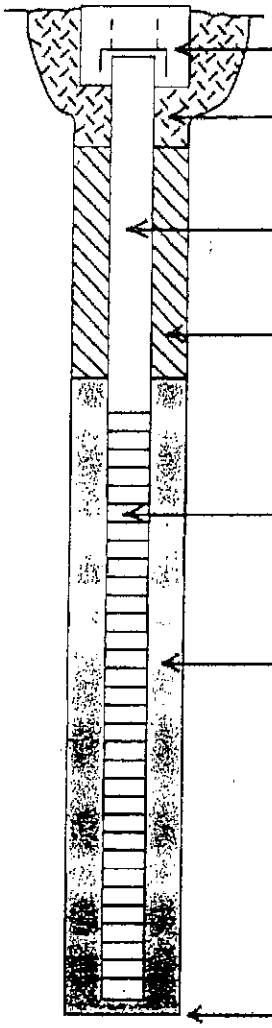
Tax Parcel No. _____

Cased or Uncased Diameter _____ Static Level _____

Work/Decommission Start Date 3-12-18

Work/Decommission Completed Date 3-12-18

Construction/Design



MONUMENT TYPE: 2' CONCRETE

CONCRETE SURFACE SEAL _____ ft.

PVC BLANK 2 "x 15'

BACKFILL _____ ft.

TYPE: _____

PVC SCREEN 12"x 10'

SLOT SIZE: _____

TYPE: _____

GRAVEL PACK _____ ft.

MATERIAL: _____

WELL DEPTH 25' "

Well Data

Formation Description

0 - ft.

ft.

ft.

ft.

ft.

REMARKS

- chip in pipe
- soil w/ 2' of concrete

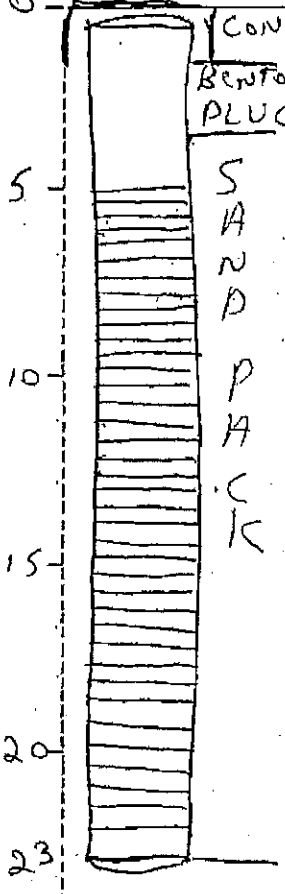
25/4E/8 R

RESOURCE PROTECTION WELL REPORT

START CARD NO. 026501

PROJECT NAME: CHEVRON
WELL INDENTIFICATION NO. MW 14
DRILLING METHOD: 3 1/4 HOLLOW STEM AUGER
DRILLER: WILLIAM T BRUN
FIRM: PACIFIC TESTING LABS
SIGNATURE: William T. Brun
CONSULTING FIRM: GEO ENGINEERS
REPRESENTATIVE: ERIN NELSON

LOCATION: T 25 N, R 4E, SEC. 8
DISTANCE: 5E FT. FROM N/S SECTION LINE
5E FT. FROM E/W SECTION LINE
DATUM: N/A
WATER LEVEL ELEVATION: 17'
INSTALLED: 2-1-90
DEVELOPED: N/A



WELL DATA	FORMATION DESCRIPTION
1' STEEL LOCKING MOUNMENT SET IN 1' OF CONCRETE 2' BENTONITE PLUG 5' of 2" THREADED PVC CASEING WITH A CAP ON TOP 18' of 2" THREADED PVC SCREEN 20 SLOT WITH A CAP ON BOTTOM 20' of SAND PACK	0-4" ASPHALT 4"-3' FILL MATERIAL 3'-13' MEDIUM SAND BROWN WITH SMALL GRAVEL DRY 13'-16' MEDIUM SAND GREY MOIST 16'-23' MEDIUM TO COURSE SAND GREY WET

RECEIVED
OCT 18 1990
DEPT. OF ECOLOGY

RECEIVED
FEB 05 1990
DEPARTMENT OF ECOLOGY
NORTHWEST REGION

SCALE: 1"= 5'

PAGE 4 OF 4

ECY 050-12

X 10

Please print, sign and return by mail to Department of Ecology

RESOURCE PROTECTION WELL REPORT

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

CURRENT Notice of Intent No. AE47849

Construction/Decommission *(select one)*
- ☐ Construction
- ☒ Decommission *ORIGINAL INSTALLATION Notice of Intent Number* _____

Consulting Firm Aspect

Unique Ecology Well ID Tag No. AFR 699 +1

Type of Well *(select one)*
- ☒ Resource Protection
- ☐ Geotech Soil Boring

Property Owner Eran Fields

Site Address 4700 Brooklyn Ave. NE

City Seattle County KING

Location SE 1/4-1/4 SE 1/4 Sec 1 Twn 25 N R 4 E (Select One: ☐ BWM ☐ WWM)

Lat/Long (s, t, r still REQUIRED) Lat Deg _____ Lat Min/Sec _____ Long Deg _____ Long Min/Sec _____

Tax Parcel No. _____

Cased or Uncased Diameter _____ Static Level _____

Work/Decommission Start Date 3-12-18

Work/Decommission Completed Date 3-12-18

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

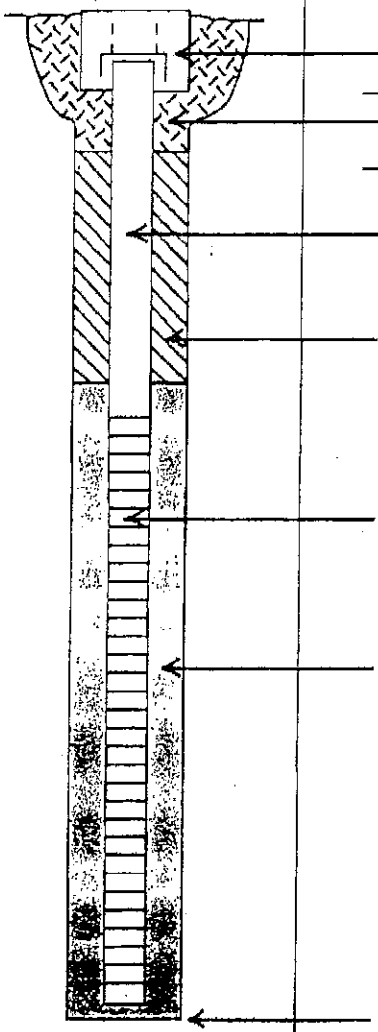
☒ Driller ☐ Engineer ☐ Trainee Name (Print) [illegible]

Driller/Engineer /Trainee Signature [illegible]

Driller or Trainee License No. 2861

If trainee, licensed driller's Signature and License No. _____

Construction/Design



MONUMENT TYPE: 2' CONCRETE

CONCRETE SURFACE SEAL ft.

PVC BLANK 2 " x 15 '

BACKFILL ft.

TYPE:

PVC SCREEN 12" x 10 '

SLOT SIZE:

TYPE:

GRAVEL PACK ft.

MATERIAL:

WELL DEPTH 25 ' "

Well Data

Formation Description

0 - ft.

- ft.

- ft.

- ft.

- ft.

REMARKS

- chip in pipe
- seal w 2' of concrete

92352

RESOURCE PROTECTION WELL REPORT

MW-15

START CARD NO. R050324

PROJECT NAME: Chevron 90129

WELL IDENTIFICATION NO: AFR699

DRILLING METHOD: HSA

DRILLER: James M. Goble

FIRM: Cascade Drilling, Inc.

SIGNATURE:

CONSULTING FIRM: Delta Env

REPRESENTATIVE: Shawn Madison

COUNTY: King 25-4E-8R

LOCATION: SE¼ SE¼ Sec 8 Twn 25N R 4E

STREET ADDRESS OF WELL: 4700 Brooklyn Ave NE, Seattle

WATER LEVEL ELEVATION:

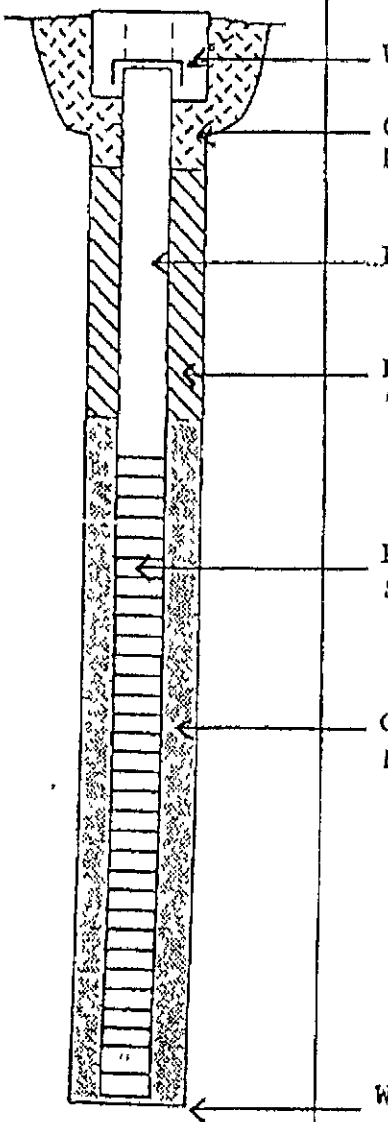
GROUND SURFACE ELEVATION: N/A

INSTALLED: 3/8/01

DEVELOPED: yes

1157

AS-BUILT | WELL DATA | FORMATION DESCRIPTION



WELL COVER

CONCRETE SURFACE SEAL
DEPTH = 1/ft

PVC BLANK 2 "x 10'

BACKFILL 7' ft.
TYPE: BENT CHIPS

PVC SCREEN 2 "x 15'
SLOT SIZE: 010

GRAVEL PACK 17' ft.
MATERIAL: #2 SAND

WELL DEPTH 25' "

0 - 3' ft.
Fill, SAND, GRAVEL
RUBBLE

3 - 23.5' ft.
FINE TO MED.
BROWN SAND,
FAIRLY DENSE

23.5' - 25 ft.
GREY SILT,
DENSE & GRADELY

RECEIVED
APR 05 2001
DEPT OF ECOLOGY

SCALE 1" = _____ PAGE _____ OF _____

ECY 050-12 (Rev 11/89) 92352

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

X 10

Please print, sign and return by mail to Department of Ecology

RESOURCE PROTECTION WELL REPORT

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

CURRENT Notice of Intent No. AE47849

Construction/Decommission *(select one)*
- ☐ Construction
- ☒ Decommission *ORIGINAL INSTALLATION Notice of Intent Number* _____

Consulting Firm Aspect

Unique Ecology Well ID Tag No. AFR 799

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☒ Driller ☐ Engineer ☐ Trainee Name (Print): Abe Covarrubias

Driller/Engineer /Trainee Signature Abe Covarrubias

Driller or Trainee License No. 2861

If trainee, licensed driller's Signature and License No. _____

Type of Well *(select one)*
- ☒ Resource Protection
- ☐ Geotech Soil Boring

Property Owner Evan Fields

Site Address 4700 Brooklyn Ave NE

City Seattle County King

Location SE 1/4-1/4 SE 1/4 Sec 8 Twn 25N R 4E (Select One) ☐ BWM ☐ WWM

Lat/Long (s, t, r still REQUIRED) Lat Deg _____ Lat Min/Sec _____ Long Deg _____ Long Min/Sec _____

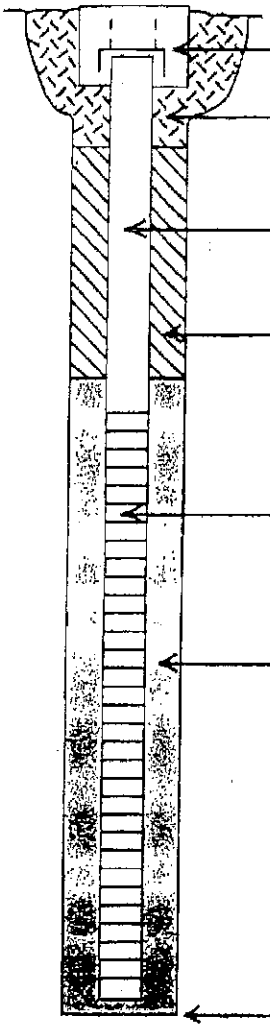
Tax Parcel No. _____

Cased or Uncased Diameter _____ Static Level _____

Work/Decommission Start Date 3-12-18

Work/Decommission Completed Date 3-12-18

Construction/Design



MONUMENT TYPE: 2' Concrete

CONCRETE SURFACE SEAL _____ ft.

PVC BLANK 2 "x 15'

BACKFILL _____ ft.

TYPE: _____

PVC SCREEN 12"x 10'

SLOT SIZE: _____

TYPE: _____

GRAVEL PACK _____ ft.

MATERIAL: _____

WELL DEPTH 25' "

Well Data

Formation Description

0 - _____ ft.

_____ - _____ ft.

_____ - _____ ft.

_____ - _____ ft.

_____ - _____ ft.

REMARKS

- chip in place
- seal w 2' of concrete

RESOURCE PROTECTION WELL REPORT

92353

MW-16

START CARD NO. R050324

PROJECT NAME: Chevron 90129

COUNTY: King 25-4E-8R

WELL IDENTIFICATION NO AFR 700

LOCATION SE¼ SE¼ Sec 8 Twn 25N R 4E

DRILLING METHOD HSA

STREET ADDRESS OF WELL

DRILLER James M. Goble

4700 Brooklyn Ave NE, Seattle

FIRM Cascade Drilling, Inc.

WATER LEVEL ELEVATION:

SIGNATURE

GROUND SURFACE ELEVATION N/A

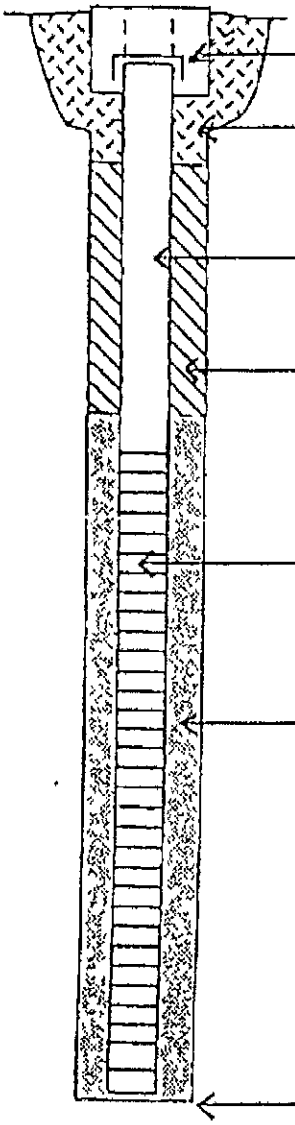
CONSULTING FIRM Delta Env.

INSTALLED. 3/8/01

REPRESENTATIVE Shawn Madison

DEVELOPED yes

1157

AS-BUILT	WELL DATA	FORMATION DESCRIPTION
	WELL COVER CONCRETE SURFACE SEAL DEPTH = 1/ft PVC BLANK 2 "x 10' BACKFILL 7' ft. TYPE: BENT CHIPS PVC SCREEN 2 "x 15' SLOT SIZE: 010 GRAVEL PACK 17' ft. MATERIAL: #2 SAND WELL DEPTH 25' "	0 - 3' ft. FILL, SAND, GRAVEL, COBBLE 3 - 23.5' ft. FINE TO MED. BROWN SAND, FAIRLY DENSE 23.5' - 25 ft. GREY SILT, DENSE & GRADELY

SCALE: 1" = _____ PAGE _____ OF _____

ECY 050-12 (Rev 11/09) 92353

APPENDIX D

UST Permanent Closure Notice and Assessment

DEPARTMENT OF ECOLOGY
State of Washington

UST ID #: _____

County: _____

SITE CHECK/SITE ASSESSMENT CHECKLIST

FOR UNDERGROUND STORAGE TANKS

This checklist certifies that site check or site assessment activities were performed in accordance with Chapter 173-360A WAC. Instructions are found on the last page.

I. UST FACILITY		II. OWNER/OPERATOR INFORMATION	
Facility Compliance Tag #:		Owner/Operator Name:	Eran Fields
UST ID #:		Business Name:	Field Holdings LLC
Site Name:		Address:	2251 Linda Flora Drive
Site Address:		City: Los Angeles	State: CA Zip: 90077
City:		Phone:	424-369-5268
Phone:		Email:	efields@fieldholdings.com

III. CERTIFIED SITE ASSESSOR			
Service Provider Name:	Fasihullah Khan	Company Name:	Aspect Consultings, LLC
Cell Phone: 206.713.2136	Email: fkhan@aspectconsulting.com	Address:	710 2nd Avenue, Suite #550
Certification #: 8359235	Exp. Date: March 2020	City: Seattle	State: WA Zip: 98104

IV. TANK INFORMATION

TANK ID	TANK CAPACITY	LAST SUBSTANCE STORED	DATE SITE CHECK OR ASSESSMENT CONDUCTED
UST 7	4,500 gallons	Gasoline	July 12, 2018
UST 8	5,200 gallons	Gasoline	July 12, 2018

V. REASON FOR CONDUCTING SITE CHECK/SITE ASSESSMENT (check one)

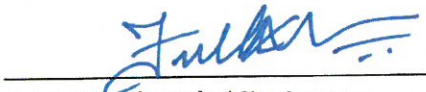
- [x] Release investigation following permanent UST system closure (i.e. tank removal or closure-in-place).
- [ ] Release investigation following a failed tank and/or line tightness test.
- [ ] Release investigation following discovery of contaminated soil and/or groundwater.
- [ ] Release investigation directed by Ecology to determine if the UST system is the source of offsite impacts.
- [ ] UST system is undergoing a "change-in-service", which is changing from storing a regulated substance (e.g. gasoline) to storing a non-regulated substance (e.g. water).
- [ ] Directed by Ecology for UST system permanently closed or abandoned before 12/22/1988.
- [ ] Other (describe):

VI. CHECKLIST

The site assessor must check each of the following items and include it in the report. Sections referenced below can be found in the Ecology publication *Guidance for Site Checks and Site Assessments for Underground Storage Tanks.*	YES	NO
1. The location of the UST site is shown on a vicinity map.	☒	☐
2. A brief summary of information obtained during the site inspection is provided (Section 3.2)	☒	☐
3. A summary of UST system data is provided (Section 3.1)	☒	☐
4. The soils characteristics at the UST site are described. (Section 5.2)	☒	☐
5. Is there any apparent groundwater in the tank excavation?	☐	☒
6. A brief description of the surrounding land use is provided. (Section 3.1)	☒	☐
7. The name and address of the laboratory used to perform analyses is provided. The methods used to collect and analyze the samples, including the number and types of samples collected, are also documented in the report. The data from the laboratory is appended to the report.	☒	☐
8. The following items are provided in one or more sketches:		
• Location and ID number for all field samples collected	☒	☐
• If applicable, groundwater samples are distinguished from soil samples	☒	☐
• Location of samples collected from stockpiled excavated soil	☒	☐
• Tank and piping locations and limits of excavation pit	☒	☐
• Adjacent structures and streets	☒	☐
• Approximate locations of any on-site and nearby utilities	☒	☐
9. If sampling procedures are different from those specified in the guidance, has justification for using these alternative sampling procedures been provided? (Section 3.4)	☒	☐
10. A table is provided showing laboratory results for each sample collected including; sample ID number, constituents analyzed for and corresponding concentration, analytical method, and detection limit for that method. Any sample exceeding MTCA Method A cleanup standards are highlighted or bolded.	☒	☐
11. Any factors that may have compromised the quality of the data or validity of the results are described.	☒	☐
12. The results of this site check/site assessment indicate that a confirmed release of a regulated substance has occurred. The requirements for reporting confirmed releases can be found in WAC 173-360-372.	☐	☒

VII. REQUIRED SIGNATURES

Signature acknowledges the Site Check or Site Assessment complies with UST regulations WAC 173-360A-0730 through 0750.

FASIHULLAH KHAN		7/12/2018
Print or Type Name	Signature of Certified Site Assessor	Date

DEPARTMENT OF ECOLOGY
State of Washington

UST ID #: _____
County: _____

SITE CHECK/SITE ASSESSMENT CHECKLIST
FOR UNDERGROUND STORAGE TANKS

This checklist certifies that site check or site assessment activities were performed in accordance with Chapter 173-360A WAC. Instructions are found on the last page.

I. UST FACILITY		II. OWNER/OPERATOR INFORMATION	
Facility Compliance Tag #:		Owner/Operator Name:	Eran Fields
UST ID #:		Business Name:	Field Holdings LLC
Site Name:		Address:	2251 Linda Flora Drive
Site Address:		City: Los Angeles	State: CA Zip: 90077
City:		Phone:	424-369-5268
Phone:		Email:	efields@fieldholdings.com

III. CERTIFIED SITE ASSESSOR			
Service Provider Name:	Fasihullah Khan	Company Name:	Aspect Consultings, LLC
Cell Phone: 206.713.2136	Email: fkhan@aspectconsulting.com	Address:	710 2nd Avenue, Suite #550
Certification #: 8359235	Exp. Date: March 2020	City: Seattle	State: WA Zip: 98104

IV. TANK INFORMATION

TANK ID	TANK CAPACITY	LAST SUBSTANCE STORED	DATE SITE CHECK OR ASSESSMENT CONDUCTED
UST 1	1,000 gallons	Diesel	June 22, 2018
UST 2 UST 3	400 gallons 125 gallons	Waste Oil Waste Oil	June 22, 2018
UST 4	3,000 gallons	Gasoline	June 22, 2018
UST 5	2,200 gallons	Gasoline	June 22, 2018
UST 6	1,100 gallons	Gasoline	June 22, 2018

V. REASON FOR CONDUCTING SITE CHECK/SITE ASSESSMENT (check one)

- [x] Release investigation following permanent UST system closure (i.e. tank removal or closure-in-place).
- [ ] Release investigation following a failed tank and/or line tightness test.
- [ ] Release investigation following discovery of contaminated soil and/or groundwater.
- [ ] Release investigation directed by Ecology to determine if the UST system is the source of offsite impacts.
- [ ] UST system is undergoing a "change-in-service", which is changing from storing a regulated substance (e.g. gasoline) to storing a non-regulated substance (e.g. water).
- [ ] Directed by Ecology for UST system permanently closed or abandoned before 12/22/1988.
- [ ] Other (describe):

VI. Checklist

The site assessor must check each of the following items and include it in the report. Sections referenced below can be found in the Ecology publication *Guidance for Site Checks and Site Assessments for Underground Storage Tanks*.	YES	NO
1. The location of the UST site is shown on a vicinity map.	☒	☐
2. A brief summary of information obtained during the site inspection is provided (Section 3.2)	☒	☐
3. A summary of UST system data is provided (Section 3.1)	☒	☐
4. The soils characteristics at the UST site are described. (Section 5.2)	☒	☐
5. Is there any apparent groundwater in the tank excavation?	☐	☒
6. A brief description of the surrounding land use is provided. (Section 3.1)	☒	☐
7. The name and address of the laboratory used to perform analyses is provided. The methods used to collect and analyze the samples, including the number and types of samples collected, are also documented in the report. The data from the laboratory is appended to the report.	☒	☐
8. The following items are provided in one or more sketches:		
• Location and ID number for all field samples collected	☒	☐
• If applicable, groundwater samples are distinguished from soil samples	☒	☐
• Location of samples collected from stockpiled excavated soil	☒	☐
• Tank and piping locations and limits of excavation pit	☒	☐
• Adjacent structures and streets	☒	☐
• Approximate locations of any on-site and nearby utilities	☒	☐
9. If sampling procedures are different from those specified in the guidance, has justification for using these alternative sampling procedures been provided? (Section 3.4)	☒	☐
10. A table is provided showing laboratory results for each sample collected including; sample ID number, constituents analyzed for and corresponding concentration, analytical method, and detection limit for that method. Any sample exceeding MTCA Method A cleanup standards are highlighted or bolded.	☒	☐
11. Any factors that may have compromised the quality of the data or validity of the results are described.	☒	☐
12. The results of this site check/site assessment indicate that a confirmed release of a regulated substance has occurred. The requirements for reporting confirmed releases can be found in WAC 173-360-372.	☒	☐

VII. Required Signatures

Signature acknowledges the Site Check or Site Assessment complies with UST regulations WAC 173-360A-0730 through 0750.

FASIHULLAH KHAN	Fasihullah	6/22/2018
Print or Type Name	Signature of Certified Site Assessor	Date

Dixon Environmental Services LLC
4010 N 7th Street, Tacoma, WA 98406
Tel 253.380.4303
www.DixonES.com

June 23, 2018

Mr. Clayton Mullendore
Rivers Edge Environmental Services
PO Box 908
Black Diamond, WA 98010

UST DECOMMISSIONING CERTIFICATION – 4700 BROOKLYN AVENUE, SEATTLE, WA

Mr. Mullendore:

Dixon Environmental Services (Dixon ES) is pleased to provide the enclosed Underground Storage Tank (UST) Decommissioning Certification for the USTs encountered at 4700 Brooklyn Avenue in Seattle, WA.

The following supplemental documentation is also included:

- Site Photos
- City of Seattle Fire Department Commercial Tank Removal/Decommissioning Permit
- City of Seattle Fire Department Hot Work Permit
- Marine Chemist Certificate for Tank Inertion
- Triple Rinse Certificate
- Scrap Metal Receipt

Should you have any questions about the contents of this submittal, please contact me directly at 253-380-4303. Your business is very much appreciated.

Regards,

Brian A. Dixon
President / Principal Environmental Scientist
ICC Certified UST Decommissioner - #8359322

DIXON ENVIRONMENTAL SERVICES

UNDERGROUND STORAGE TANK DECOMMISSIONING CERTIFICATION

PROJECT INFORMATION

DATE:	6-22-18	PROJECT ADDRESS:	4700 Brooklyn Ave, Seattle			
UST DECOMMISSIONER:	Brian Dixon	CERTIFICATION #:	8359322			
TIME ON SITE:	815	UST PERMIT #:	113393 Hot work: 113408			
TIME OFF SITE:	1430	ECY NOTIFICATION?	YES	waived	NO	

PROJECT PERSONELL

EXCAVATION CONTRACTOR	Rivers Edge Environmental Services
MARINE CHEMIST	US Marine Chemists
SITE ASSESSOR	Fasih Khan (Aspect Consulting)
3rd Party Oversight	Aaron Wisher (Leidos)

UST INFORMATION

TANK ID	CONTENTS	DIMENSIONS	CAPACITY	INSTALL DATE	CONSTRUCTION MATERIAL	HOLES?	METHOD OF DECOMMISSIONING
UST 1	Diesel	4' x 6' 8"	1,000	U	steel	Y	Removal
UST 2	waste oil	3' x 4' 9"	400			N	
UST 3	waste oil	2' 6" x 3' 6"	125			Y	
UST 4	Gas	12' x 6' 8"	3,000			Y	
UST 5	Gas	9' x 6' 6"	2,200			N	
UST 6	Gas	12' x 4'	1,100			N	Removed, previously filled w/ sand

DECOMMISSIONING CHECKLIST

	YES	NO	N/A	NOTES
1. ELECTRICAL EQUIPMENT GROUNDED AND/OR EXPLOSION PROOF?	✓			
2. SAFETY EQUIPMENT ON JOB SITE?	✓			
3. OVERHEAD ELECTRICAL LINES LOCATED?	✓			
4. SUBSURFACE UTILITIES OFF OR DISCONNECTED?	✓			
5. WORK ZONE IDENTIFIED AND TRAFFIC CONTROLLED?	✓			
6. DRAINED AND COLLECTED PRODUCT FROM LINES? QUANTITY?			✓	No product in lines
7. REMOVED RESIDUAL PRODUCT FROM TANKS? QUANTITY?	✓			900 gal product & water
8. CLEANED TANKS? RINSE WATER QUANTITY?	✓			
9. INERTED TANKS PRIOR TO HOT WORK OR REMOVAL?	✓			CO_2
10. FIRE DEPARTMENT INSPECTION?	✓			see permit #

DISPOSAL INFORMATION

	DISPOSAL METHOD	DISPOSAL CONTRACTOR	RECEIVING FACILITY
USTs	crushed & scrapped	Rivers Edge	Seattle Iron & Metal
PRODUCT PIPING	"	"	"
PRODUCT	Drummed on site	Northern Environmental	NA
RINSE WATER	"	" "	NA
CONTAMINATED SOIL	stockpiled for disposal	Rivers Edge	Cadman

REMOVAL AND DISPOSAL CHECKLIST

	YES	NO	N/A	NOTES
1. TANK PLACEMENT AREA CLEARED?	✓			
2. SOIL STAGING AREA COVERED WITH PLASTIC?	✓			
3. TANKS BLOCKED TO PREVENT MOVEMENT?		✓		stable on dirt
4. TANK SET ON TRUCK AND SECURED WITH STRAPS?	✓			
5. TANK LABELED BEFORE LEAVING JOB SITE?	✓			or crushed

SITE ASSESSMENT INFORMATION — By others (Aspect)

	YES	NO	N/A	NOTES
1. SITE ASSESSED FOR CONTAMINATION?	✓			By others
2. SOIL SAMPLES COLLECTED AND ANALYZED?	✓			By others
3. OBVIOUS SIGNS OF CONTAMINATION?	✓			odor & staining
4. WATER IN TANK CAVITY?		✓		
5. SITE MAP CREATED?			✓	By others
6. SOIL/FILL CLASSIFIED?			✓	By others

I CERTIFY THAT THIS UNDERGROUND STORAGE DECOMMISIONNING WAS CONDUCTED UNDER THE SUPERVISION OF AN ICC CERTIFIED UST DECOMMISSIONER AND WAS COMPLETED IN ACCORDANCE WITH RULES AND REGULATIONS ESTABLISHED IN THE WASHINGTON ADMINISTRATIVE CODE AND THE UNIFORM FIRE CODE.

SIGNATURE: _____ ICC CERTIFICATION #: 9359322

DIXON
ENVIRONMENTAL SERVICES

PHOTOLOG

Photo 1: Stockpile Area for Contaminated Soil


Photo 2: CO2 for Tank Inertion


Photo 3: Top of UST 4


Photo 4: Triple Rinsing USTs

PHOTOLOG

Photo 5: USTs 2 and 3 Removed

Photo 6: Drums for Product and Rinsewater

Photo 7: Hole in UST 1

Photo 8: Removal of UST 4

PHOTOLOG

Photo 9: Stained Soil Beneath UST 4

Photo 10: Holes in UST 4

Photo 11: Loading Product Piping

Photo 12: Secured and Labeled USTs

Fri 6/22/18 @ 10am

RECEIVED
JUN 20 2018
PERMIT SECTION

Your Seattle Fire Department

APPLICATION FOR TEMPORARY PERMIT

Code 7908 **Commercial Tank Removal/Decommissioning**

Permit Fee: $255.00

Date Issued: 6/22/18

Tank(s) must be removed from site on the same day as permit is issued!

TO BE COMPLETED BY PERMIT APPLICANT

FIRM NAME	Rivers Edge Environmental Services, Inc.	
MAILING ADDRESS	PO Box 908	SUITE
CITY	Black Diamond	STATE WA ZIP 98010
JOBSITE ADDRESS	4700 Brooklyn Ave NE Seattle WA 98105	
CONTACT PERSON	Clayton Mullendore	PHONE NUMBER (206) 455-4849

Number of Tank(s): 6 Tank Size(s): 2- 250, 1-500 3-1500 ☐ Aboveground tank

Product(s) Previously Contained: Heating Oil and Gas Tanks ☑ Underground tank

☑ Removal (Marine Chemist inspection and certificate required for all tanks regardless of size or contents)

☐ Abandonment-in-Place (Marine Chemist certificate required for tanks previously contained Class I flammable liquids and/or unknowns)

#52

Hot work being conducted: ☐ No ☑ Yes (If yes, a separate hot work permit is required)

Permit applications may be submitted in person weekdays from 8:00 a.m. to 4:30 p.m., or mailed to:

Seattle Fire Department
Fire Marshal's Office – Permits
220 Third Ave S, 2nd Floor
Seattle, WA 98104-2608

To pay with a Visa or Master Card: Fax or email this application
THEN CALL US TO CONFIRM RECEIPT AND MAKE PAYMENT
Tel: (206) 386-1450 / Fax: (206) 386-1348
E-mail: permits@seattle.gov

Call 386-1450, at least 24 hours prior to needed inspection time to arrange for an appointment.
TANKS MAY BE REMOVED/DECOMMISSIONED ONLY AFTER FIRE DEPARTMENT INSPECTION
NO HOT WORK IS ALLOWED ON A TANK SYSTEM PRIOR TO ISSUANCE OF THIS FIRE DEPARTMENT PERMIT!

Permission is hereby granted to remove or decommission the tank(s) identified in this permit in accordance with the attached conditions, all noted special conditions, and all applicable provisions of the Seattle Fire Code, federal, state and local regulations. **THIS PERMIT IS NULL AND VOID IF PERMIT CONDITIONS ARE NOT ATTACHED**

Special permit conditions: *Tank removal/decommissioning must be performed, or directly supervised, by an ICC certified individual (WAC 173-360-600)*

FMO USE:
Check No.: 1274206 2018
Receipt No.: 5-291564
Application ID#: 113383

APPROVED BY:
Inspector: T. WILLIAMS SFD ID# 1481
Name of Marine Chemist PHILIP DOVINH Certificate #
Date: 6/22/18

(01/17)

COMMERCIAL TANK REMOVAL/DECOMMISSIONING PERMIT CONDITIONS

1. Two (2) portable fire extinguishers each having a minimum rating of 40 BC shall be on site within 50 feet of the operation. Fire extinguishers shall be inspected, approved and certified annually.

2. Rope or ribbon barricades located at least 10 feet from the tank shall surround every outdoor storage tank removal or decommissioning operation or the operation shall be enclosed in a fenced yard.

3. "No Smoking" signs shall be posted in readily visible locations.

4. No hot work is allowed on a tank system prior to issuance of this permit and the tank is certified "Safe for Hot Work" by a Certified Marine Chemist. Hot work means any activities involving riveting, welding, burning, brazing, soldering, heating, chopping, grinding, ripping, drilling, cutting with a chop saw or "Sawzall", abrasive blasting, use of powder-actuated tools or similar spark-producing operations, crushing or mechanically shearing to facilitate opening for cleaning, disposal, scrapping for recycling purposes.

5. A separate temporary Seattle Fire Department permit (Code 4913) or a validation number assigned in conjunction with an annual hot work permit (Code 4911 or 4912) is required prior to any hot work operations.

6. Permits may cover multiple tanks located at the same address. If additional tanks are to be removed or abandoned at later dates, separate permits shall be obtained. Each address location requires a separate permit application regardless of whether multiple address locations are physically next to one another.

7. Additional fees will be charged if inspectors are required to work other than normal business hours. (Normal business hours are Monday through Friday, 8:00 a.m. to 4:30 p.m.)

8. No excavation of an underground tank is permitted prior to inspection by the Seattle Fire Marshal's Office.
   Exception: Removal of the top layer of asphalt or concrete only with no removal of dirt, pea gravel or soil over the underground storage tank. Further excavation may be allowed by a Seattle Fire Department Special Hazards Unit Inspector prior to the initial inspection depending on conditions and if the tank has been inerted by a Marine Chemist who is present on site. The name of the inspector and the time permission was given shall be made available at time of inspection.

9. Prior to inspection, to ensure tanks and connected piping are completely free of all flammable or combustible liquids, a receipt or certificate must be on site indicating the tanks have been pumped and rinsed by an approved company. Product and rinse water must be disposed of in an approved manner.

10. For tanks being decommissioned in place that previously contained Class I liquids, a Certified Marine Chemist certificate must be issued and available on site for inspection certifying that the tank has been properly inerted prior to filling.

11. No tank shall be filled prior to an inspection by the Seattle Fire Marshal's Office.

12. Tanks being decommissioned in place must be filled with a lean concrete mixture. Filling with foam is prohibited.

13. A Marine Chemist's certificate verifying the tank has been properly inerted or is otherwise certified "Safe for Hot Work" shall be issued and available on site for inspection for each underground and aboveground tank being removed regardless of the product previously contained.

14. If tanks are being removed, the tanks' atmosphere must be inert using one of the following approved methods:
    - Dry ice (pellets or chunks of solid CO_2). Minimum 40 lbs per 1000 gallons of tank capacity is recommended.
    - Compressed CO_2 gas in cylinders (Note: This method may only be performed by a Certified Marine Chemist).
    - Purging with air (gas-freeing) using Venturi tube apparatus, with proper bonding and grounding and after the tank has been pumped and rinsed by an approved company.

15. A maximum reading of less than 6% of oxygen must be obtained prior to the removal of the tanks if CO_2 or another inert gas, as approved by the Marine Chemist, is used to inert the tank or, a reading of 0% LEL must be obtained prior to removal of the tank if the air-purging (Venturi air moving devices) method is used.

16. All local, state and federal regulations for confined space entry shall be complied with prior to entering an underground storage tank.

17. Tanks with baffles to prevent movement of liquid must be certified gas-freed or inerted by a Certified Marine Chemist or a Petroleum Industry Safety Engineer regularly engaged in that business prior to removal.

18. Tanks being removed must be removed from the site and relocated to a remote, approved facility on the same day that the permit is issued.

19. During the hot work operations, digging, excavating, hauling or transport of petroleum storage tanks that have not been cleaned and gas-freed, tanks must be inerted to less than 6% oxygen. All openings are to be cap closed and secured except for one 1/8" hole drilled through a cap. These tanks are to be sprayed painted with "INERTED, DO NOT ENTER" or "INERTED WITH CO_2, NOT SAFE FOR WORKERS".

Seattle Fire Department Permit Application
Annual Land-based Hot Work

RECEIVED
JUN 2 1 2018
PERMIT SECTION

☐ **Code 4911 (1-3 units)** **Permit Fee: $427.00**
☑ **Code 4912 (4 or more units)** **Permit Fee: $716.00**

TO BE COMPLETED BY PERMIT APPLICANT (PLEASE PRINT)

FIRM NAME: Rivers Edge Environmental Services, Inc		
MAILING ADDRESS: PO Box 9085		SUITE:
CITY: Black Diamond	STATE: WA	ZIP: 98010
OPERATION ADDRESS: 4700 Brooklyn Ave NE Seattle WA 98105		
CONTACT PERSON: Shawna Michelsen		
PHONE NUMBER: (425) 584-7089	E-MAIL ADDRESS: smichelsen@rivers.city	

Reason for submitting this application (check all that apply):

☐ New Owner/Operator
☐ New Operation Address
☑ Previous Permit Expired at this Operation Address
☐ New Construction/Process/Installation
☐ Directed to Apply by Fire Dept/Other Government Agency
☐ Other Reason: _____

Payment must accompany all applications. Please include a check made payable to the CITY OF SEATTLE.

Permit applications may be submitted in person weekdays from 8:00 a.m. to 4:30 p.m., or mailed to:

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To pay with a Visa or Master Card: Fax or email this application
THEN CALL US TO CONFIRM RECEIPT AND MAKE PAYMENT
Tel: (206) 386-1450 / Fax: (206) 386-1348
E-mail: permits@seattle.gov

TO BE COMPLETED BY FMO INSPECTOR:

Approved By: T WILLIAMS SFD ID#: 1481 Date: 6/22/18

Station No. 17

FMO OFFICE USE ONLY:

Application ID# 113408 Check No.: CC 000127606218 Receipt No.: 5-291605

☐ Cancel, refund requested (Approval attached) ☐ Cancel, no refund: ☐ Moved ☐ Business closed ☐ Change in ownership ☐ Final inspection completed

(01/17)

U.S. MARINE CHEMISTS & ENGINEERING -
Philip Dovinh, P.O. Box 63, Mukilteo, WA 98275
Office: (206) 200-6912 Fax: (206) 763-8084
Cell: (206) 200-6912 Email: pdovinh@comcast.net

MARINE CHEMIST CERTIFICATE

Serial 667-03924

Clayton Mullendore-- Rivers Edge Environmental	Rivers Edge Environmental Services, Inc./Clayton M. (206) 455-4849	Jun 22, 2018
Survey Requested by	Vessel Owner Agent	Date
Underground Storage Tanks	Underground Storage Tanks (USTs)	4700 Brooklyn Ave NE, Seattle, WA
Vessel	Type of Vessel	Specific Location of Vessel
Diesel/Heating Oil/Waste Oil (3X)	O_2, LEL, Visual, CO, H2S, THCs	11:08
Last Three 3 Loadings	Tests Performed	Time Survey Completed

Inspected Spaces:

Group 1.
—ONE 125-GALLON UST (WASTE OIL)
—ONE 400-GALLON UST (WASTE OIL)
—ONE 1000-GALLON UST (DIESEL OIL)
—ONE APPROX 2000-GALLON UST (SAND-FILLED)
—ONE APPROX 2000-GALLON UST (WASTE OIL/DIESEL/BUNKER FUEL)
—ONE 3000-GALLON UST (DIESEL)

AUTHORIZATION, RESTRICTIONS & REQUIREMENTS:

1) PUMPING & RINSING RESIDUAL OIL & WATER IN TANK AUTHORIZED;

2) SHEARING/ OR PULLING END OF TANK OPEN WITH EXCAVATOR PERMITTED TO FACILITATE THE REMOVAL OF DIRT, PEA GRAVEL & SOIL INSIDE TANK PERMITTED;

3) LIMITED HOT WORK AUTHORIZED IN WAYS OF EXCAVATION, TRANSPORT TO SEATTLE IRON & METAL;

4) GRINDING, TORCHING, CUTTING, BURNING OR WELDING ON TANK IS NOT PERMITTED.

Safety Designations:

NOT SAFE FOR WORKERS
SAFE FOR LIMITED HOT WORK
LIMITATIONS:
Specific Location: *—Hot Work Authorized Cut Tanks Open With Chop Saw For Cleaning.*
—Chemist Stayed On-Site During Hot Work.
Hot Work Type: *—Use Of Chop Saw Permitted.*
Areas to be Excluded and Limitations: *—Hot Work Completed At 11:15 AM On June 22, 2018*
INERTED
Inert Medium: *—Carbon Dioxide (CO2)*
Method for maintaining safe conditions: *—Keep CLosed & Secured.*
Measures for safe disposal of inert gas: *—CO2 May Be Disposed Of During Washing From Outside Of Tank & Using Vacuum Hose.*
Other instructions: *—Excavation & Transport For Disposal After Cleaning Is Authorized.*

Test Results	% O_2	% LEL	CO	H2S	THCs
Inspected spaces group 1	<3%	0%	0 ppm	0 ppm	<500

Limits of Detection

0.5% O2, 1% LEL, 0.1 ppm H2S, 1 ppm CO, 1 ppb THCs/VOCs w/PPB PID

In the event of physical or atmospheric changes affecting the STANDARD SAFETY DESIGNATIONS assigned to any of the above spaces, this certificate is voided; spaces not listed on the Certificate are not to be entered unless authorized on another Certificate and/or maintained in accordance with OSHA 29 CFR 1915; or if in any doubt, immediately stop all work and contact the undersigned Marine Chemist. Unless otherwise stated on the Certificate, all spaces and affected adjacent spaces are to be reinspected daily or more often as necessary by the competent person or the authority having jurisdiction as applicable in support of work prior to entry or recommencement of work.

QUALIFICATIONS: Transfer of ballast, cargo, fuel or manipulation of valves or closure equipment tending to alter conditions in pipelines, tanks, or compartments subject to gas accumulation, unless specifically approved on this Certificate, requires inspection and a new Certificate for spaces so affected. All lines, vents, heating coils, valves, and similar enclosed appurtenances shall be considered "not safe" unless otherwise specifically designated. Movement of the vessel from its specific location voids the Certificate unless shifting of the vessel within the facility has been specifically authorized on this certificate.

STANDARD SAFETY DESIGNATIONS: (partial list, paraphrased from NFP 306, Subsections 4.3.1 through 4.3.6)

ATMOSPHERE SAFE FOR WORKERS: In the compartment or space so designated (a) the oxygen content of the atmosphere shall be at least 19.5 percent and not greater than 22 percent by volume; (b) the concentration of flammable materials is below 10 percent of the lower explosive limit; (c) any toxic materials in the atmosphere associated with cargo, fuel, tank coatings, inerting mediums, or fumigants are within permissible concentrations at the time of the inspection.

NOT SAFE FOR WORKERS: In the compartment or space so designated, entry shall not be permitted.

ENTER WITH RESTRICTIONS: In the compartment or space so designated, entry for work is permitted only if conditions of proper protective equipment, or clothing, or time, or all of the aforementioned, as appropriate, are as specified.

SAFE FOR HOT WORK: In the compartment or space so designated (a) the oxygen content of the atmosphere is not greater than 22 percent by volume; (b) the concentration of flammable materials in the

Northern ENVIRONMENTAL

Pump and Rinse Certification

Date: 6/22/18 Job: #18-766 Elk Heights Tank Pull

To Whom It May Concern:

This letter is to certify that the following tank(s), sized at #1 & #2 (2000 gal.)
#3 - (3000 gal.)
#4 - #5 - (250 gal)
#6 - (100 gal)
have been pumped and rinsed for removal.

Work was performed at:

Address 4700 Brooklyn AVE NE Seattle, WA 98105

For:

Rivers Edge Environmental Services

Please note that this letter does not certify that the above tank(s) have been cleaned for disposal or that it (they) should be considered gas-free.

Sincerely,

Pat Ford

Northern Environmental Services

253.503.3096

SEATTLE IRON&METALS CORP.

601 South Myrtle Street Seattle, WA 98108 206-682-0040

Date 06 22 18 3:29 PM

Ticket # 977411

Weighed for: River Edge

Commodity	Price	
Heavy Scrap (Large Tanks = TC)		Gross lbs. 54240 lb
		Tare lbs. 41010 lb
OT HOT	B04	Net lbs. 13230 lb

I, the undersigned, certify that the weights indicated hereon are true and correct.

Weighed by R Licensed City Weigher

DRIVER

KS300 (4/10)

#4-#5-(250 gal)

Dixon Environmental Services LLC
4010 N 7th Street, Tacoma, WA 98406
Tel 253.380.4303
www.DixonES.com

July 17, 2018

Mr. Clayton Mullendore
Rivers Edge Environmental Services
PO Box 908
Black Diamond, WA 98010

UST DECOMMISSIONING CERTIFICATION – 4700 BROOKLYN AVENUE, SEATTLE, WA

Mr. Mullendore:

Dixon Environmental Services (Dixon ES) is pleased to provide the enclosed Underground Storage Tank (UST) Decommissioning Certification for the two additional USTs (UST 7 and 8) encountered at 4700 Brooklyn Avenue in Seattle, WA.

The following supplemental documentation is also included:

- Site Photos
- City of Seattle Fire Department Commercial Tank Removal/Decommissioning Permit
- City of Seattle Fire Department Hot Work Permit
- Marine Chemist Certificate for Tank Inertion
- Triple Rinse Certificate
- Scrap Metal Receipt

Should you have any questions about the contents of this submittal, please contact me directly at 253-380-4303. Your business is very much appreciated.

Regards,

Brian A. Dixon
President / Principal Environmental Scientist
ICC Certified UST Decommissioner - #8359322

DIXON
ENVIRONMENTAL SERVICES

UNDERGROUND STORAGE TANK DECOMMISSIONING CERTIFICATION

PROJECT INFORMATION

DATE:	7-12-18	PROJECT ADDRESS:	4700 Brooklyn Ave				
UST DECOMMISSIONER:	Brian Dixon	CERTIFICATION #:	8359322				
TIME ON SITE:	0845	UST PERMIT #:	113602	Hot work: 113408			
TIME OFF SITE:	1315	ECY NOTIFICATION?	YES	✓	~~NO~~	Waived	

PROJECT PERSONELL

EXCAVATION CONTRACTOR	Rivers Edge Env. services
MARINE CHEMIST	US Marine Chemists
SITE ASSESSOR	Aspect - Fasih Khan
Tank Cleaning	Northern Environmental

UST INFORMATION

TANK ID	CONTENTS	DIMENSIONS	CAPACITY	INSTALL DATE	CONSTRUCTION MATERIAL	HOLES?	METHOD OF DECOMMISSIONING
UST 7	Gas	12' x 8'	4,500	U	Steel	N	Removal
UST 8	Gas	14' x 8'	5,250	U	Steel	N	Removal

DECOMMISSIONING CHECKLIST

	YES	NO	N/A	NOTES
1. ELECTRICAL EQUIPMENT GROUNDED AND/OR EXPLOSION PROOF?	✓			
2. SAFETY EQUIPMENT ON JOB SITE?	✓			
3. OVERHEAD ELECTRICAL LINES LOCATED?	✓			
4. SUBSURFACE UTILITIES OFF OR DISCONNECTED?	✓			
5. WORK ZONE IDENTIFIED AND TRAFFIC CONTROLLED?	✓			
6. DRAINED AND COLLECTED PRODUCT FROM LINES? QUANTITY?			✓	
7. REMOVED RESIDUAL PRODUCT FROM TANKS? QUANTITY?	✓			~600 Gal
8. CLEANED TANKS? RINSE WATER QUANTITY?	✓			
9. INERTED TANKS PRIOR TO HOT WORK OR REMOVAL?	✓			
10. FIRE DEPARTMENT INSPECTION?	✓			see permit

DISPOSAL INFORMATION

	DISPOSAL METHOD	DISPOSAL CONTRACTOR	RECEIVING FACILITY
USTs	Scrap	Rivers Edge	Seattle Iron & Metal
PRODUCT PIPING	"	"	"
PRODUCT	Drummed on site	TBD	TBD
RINSE WATER	"	"	"
CONTAMINATED SOIL	NA		

REMOVAL AND DISPOSAL CHECKLIST

	YES	NO	N/A	NOTES
1. TANK PLACEMENT AREA CLEARED?	✓			
2. SOIL STAGING AREA COVERED WITH PLASTIC?			✓	
3. TANKS BLOCKED TO PREVENT MOVEMENT?	✓			
4. TANK SET ON TRUCK AND SECURED WITH STRAPS?	✓			
5. TANK LABELED BEFORE LEAVING JOB SITE?	✓			

SITE ASSESSMENT INFORMATION - Aspect Consulting

	YES	NO	N/A	NOTES
1. SITE ASSESSED FOR CONTAMINATION?	✓			By others
2. SOIL SAMPLES COLLECTED AND ANALYZED?	✓			
3. OBVIOUS SIGNS OF CONTAMINATION?		✓		
4. WATER IN TANK CAVITY?		✓		
5. SITE MAP CREATED?			✓	
6. SOIL/FILL CLASSIFIED?			✓	

I CERTIFY THAT THIS UNDERGROUND STORAGE DECOMMISIONNING WAS CONDUCTED UNDER THE SUPERVISION OF AN ICC CERTIFIED UST DECOMMISSIONER AND WAS COMPLETED IN ACCORDANCE WITH RULES AND REGULATIONS ESTABLISHED IN THE WASHINGTON ADMINISTRATIVE CODE AND THE UNIFORM FIRE CODE.

SIGNATURE: _____ ICC CERTIFICATION #: 8359322

DIXON
ENVIRONMENTAL SERVICES

PHOTOLOG

Photo 1: Top of UST 7

Photo 2: CO2 for Tank Inertion

Photo 3: Cutting UST 8 for Cleaning

Photo 4: Pumping Residual Product from UST 8

DIXON
ENVIRONMENTAL SERVICES

PHOTOLOG

Photo 5: Drumming Prodcut and Wash Water

Photo 6: Removal of UST 7

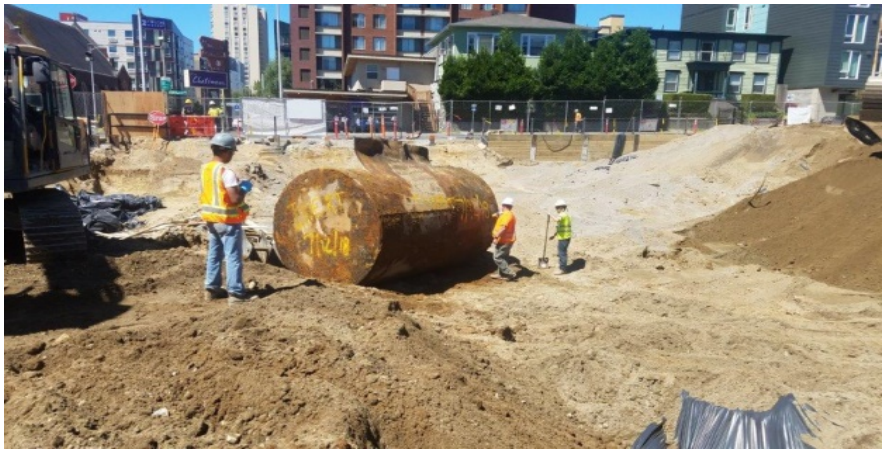

Photo 7: Labeling UST 7 Prior to Transport

Photo 8: Loading UST 7 for Transport

Thurs, July 12, 2018 10am

RECEIVED
JUL 10 2018
PERMIT SECTION

Validation #58

Your Seattle Fire Department

APPLICATION FOR TEMPORARY PERMIT

Code 7908 **Commercial Tank Removal/Decommissioning**

Permit Fee: $255.00

Date Issued: 7/12/18

Tank(s) must be removed from site on the same day as permit is issued!

TO BE COMPLETED BY PERMIT APPLICANT

FIRM NAME Rivers Edge Environmental Services, Inc

MAILING ADDRESS Po Box 908 SUITE

CITY Black Diamond STATE Wa ZIP 98010

JOBSITE ADDRESS 4700 Brooklyn Ave NE Seattle WA 98105

CONTACT PERSON Clayton Mullendore PHONE NUMBER (206) 455-4849

Number of Tank(s): 2 Tank Size(s): 1500 gallon ☐ Aboveground tank

Product(s) Previously Contained: Diesel ☑ Underground tank

☑ Removal (Marine Chemist inspection and certificate required for all tanks regardless of size or contents)

☐ Abandonment-in-Place (Marine Chemist certificate required for tanks previously containing Class I flammable liquids and/or unknowns)

Hot work being conducted: ☐ No ☑ Yes (If yes, a separate hot work permit is required)

Permit applications may be submitted in person weekdays from 8:00 a.m. to 4:30 p.m., or mailed to:

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Fire Marshal's Office – Permits
220 Third Ave S, 2nd Floor
Seattle, WA 98104-2608

To pay with a Visa or Master Card: Fax or email this application
THEN CALL US TO CONFIRM RECEIPT AND MAKE PAYMENT
Tel: (206) 386-1450 / Fax: (206) 386-1348
E-mail: permits@seattle.gov

Call 386-1450, at least 24 hours prior to needed inspection time to arrange for an appointment.
TANKS MAY BE REMOVED/DECOMMISSIONED ONLY AFTER FIRE DEPARTMENT INSPECTION
NO HOT WORK IS ALLOWED ON A TANK SYSTEM PRIOR TO ISSUANCE OF THIS FIRE DEPARTMENT PERMIT!

Permission is hereby granted to remove or decommission the tank(s) identified in this permit in accordance with the attached conditions, all noted special conditions, and all applicable provisions of the Seattle Fire Code, federal, state and local regulations. **THIS PERMIT IS NULL AND VOID IF PERMIT CONDITIONS ARE NOT ATTACHED**

Special permit conditions: *Tank removal/decommissioning must be performed, or directly supervised, by an ICC certified individual (WAC 173-360-600)*
FOLLOW MARINE CHEMIST INSTRUCTIONS BEFORE TRIPLE RINSE.

FMO USE:
Check No.: ICC 0001288807101 8
Receipt No.: 5-292220
Application ID#: 113602

APPROVED BY:
Inspector: Mike Fahey SFD ID# 1388
Name of Marine Chemist D. Dovinh Certificate # 667-
Date: 7/12/18

(01/17)

04003

COMMERCIAL TANK REMOVAL/DECOMMISSIONING PERMIT CONDITIONS

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Seattle Fire Department Permit Application
Annual Land-based Hot Work

RECEIVED
JUN 2 1 2018
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☑ **Code 4912 (4 or more units)** **Permit Fee: $716.00**

TO BE COMPLETED BY PERMIT APPLICANT (PLEASE PRINT)

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MAILING ADDRESS: PO Box 9085		SUITE:
CITY: Black Diamond	STATE: WA	ZIP: 98010
OPERATION ADDRESS: 4700 Brooklyn Ave NE Seattle WA 98105		
CONTACT PERSON: Shawna Michelsen		
PHONE NUMBER: (425) 584-7089	E-MAIL ADDRESS: smichelsen@rivers.city	

Reason for submitting this application (check all that apply):

☐ New Owner/Operator
☐ New Operation Address
☑ Previous Permit Expired at this Operation Address
☐ New Construction/Process/Installation
☐ Directed to Apply by Fire Dept/Other Government Agency
☐ Other Reason: _____

Payment must accompany all applications. Please include a check made payable to the CITY OF SEATTLE.

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Tel: (206) 386-1450 / Fax: (206) 386-1348
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TO BE COMPLETED BY FMO INSPECTOR:

Approved By: T WILLIAMS SFD ID#: 1481 Date: 6/22/18

Station No. 17

FMO OFFICE USE ONLY:

Application ID# 113408 Check No.: CC 000127606218 Receipt No.: 5-291605

☐ Cancel, refund requested (Approval attached) ☐ Cancel, no refund: ☐ Moved ☐ Business closed ☐ Change in ownership ☐ Final inspection completed

(01/17)

Philip Dovinh - U.S. MARINE CHEMISTS & ENGINEERING
P.O. Box 63, Mukilteo, WA 98275
Office: (206) 200-6912 Fax:
Cell: (206) 200-6912 Email: pdovinh@comcast.net

MARINE CHEMIST CERTIFICATE

Serial 667-04003

Clayton Mullendore-- Rivers Edge Environmental	Rivers Edge Environmental Services, Inc./Clayton M. (206) 455-4849	Jul 12, 2018
Survey Requested by	Vessel Owner Agent	Date
Underground Storage Tanks	Underground Storage Tanks (USTs)	4700 Brooklyn Ave NE, Seattle, WA
Vessel	Type of Vessel	Specific Location of Vessel
Diesel/Heating Oil/Waste Oil (3X)	O_2, LEL, Visual, CO, H2S, THCs	9:20
Last Three 3 Loadings	Tests Performed	Time Survey Completed

Inspected Spaces:

Group 1.
—TWO APPROXIMATELY 3000-GALLON USTS

AUTHORIZATION, RESTRICTIONS & REQUIREMENTS:

1) CUTTING TANKS OPEN WITH CUT-OFF SAW PERMITTED;
2) SHEARING TANKS OPEN AFTER CUTTING PERMITTED;
3) PUMPING & RINSING RESIDUAL OIL & WATER IN TANKS AUTHORIZED;
3) EXCAVATION & TRANSPORT AUTHORIZED AFTER CLEANING IN PLACE IS COMPLETED.

Safety Designations:

NOT SAFE FOR WORKERS
SAFE FOR LIMITED HOT WORK

LIMITATIONS:

Specific Location: *—Hot Work Authorized Cut Tanks Open With Chop Saw For Cleaning.*
—Chemist Stayed On-Site During Hot Work.
Hot Work Type: *—Use Of Chop Saw Permitted.*
Areas to be Excluded and Limitations: *—Hot Work Completed At 09:35 AM On Jyly 12, 2018*

INERTED

Inert Medium: *—Carbon Dioxide (CO2)*
Method for maintaining safe conditions: *—Keep CLosed & Secured.*
Measures for safe disposal of inert gas: *—CO2 May Be Disposed Of During Washing From Outside Of Tank & Using Vacuum Hose.*
Other instructions: *—Excavation & Transport For Disposal After Cleaning Is Authorized.*

Test Results	% O_2	% LEL	CO	H2S	THCs
Inspected spaces group 1	<3%	0%	0 ppm	0 ppm	<500

Limits of Detection

0.5% O2, 1% LEL, 0.1 ppm H2S, 1 ppm CO, 1 ppb THCs/VOCs w/PPB PID

In the event of physical or atmospheric changes affecting the STANDARD SAFETY DESIGNATIONS assigned to any of the above spaces, this certificate is voided; spaces not listed on the Certificate are not to be entered unless authorized on another Certificate and/or maintained in accordance with OSHA 29 CFR 1915; or if in any doubt, immediately stop all work and contact the undersigned Marine Chemist. Unless otherwise stated on the Certificate, all spaces and affected adjacent spaces are to be reinspected daily or more often as necessary by the competent person or the authority having jurisdiction as applicable in support of work prior to entry or recommencement of work.

QUALIFICATIONS: Transfer of ballast, cargo, fuel or manipulation of valves or closure equipment tending to alter conditions in pipelines, tanks, or compartments subject to gas accumulation, unless specifically approved on this Certificate, requires inspection and a new Certificate for spaces so affected. All lines, vents, heating coils, valves, and similar enclosed appurtenances shall be considered "not safe" unless otherwise specifically designated. Movement of the vessel from its specific location voids the Certificate unless shifting of the vessel within the facility has been specifically authorized on this certificate.

STANDARD SAFETY DESIGNATIONS: (partial list, paraphrased from NFP 306, Subsections 4.3.1 through 4.3.6)

ATMOSPHERE SAFE FOR WORKERS: In the compartment or space so designated (a) the oxygen content of the atmosphere shall be at least 19.5 percent and not greater than 22 percent by volume; (b) the concentration of flammable materials is below 10 percent of the lower explosive limit; (c) any toxic materials in the atmosphere associated with cargo, fuel, tank coatings, inerting mediums, or fumigants are within permissible concentrations at the time of the inspection.

NOT SAFE FOR WORKERS: In the compartment or space so designated, entry shall not be permitted.

ENTER WITH RESTRICTIONS: In the compartment or space so designated, entry for work is permitted only if conditions of proper protective equipment, or clothing, or time, or all of the aforementioned, as appropriate, are as specified.

SAFE FOR HOT WORK: In the compartment or space so designated (a) the oxygen content of the atmosphere is not greater than 22 percent by volume; (b) the concentration of flammable materials in the atmosphere is less than 10 percent of the lower explosive limit; (c) the residues, scale, or preservative coatings are cleaned sufficiently to prevent the spread of fire and are not be capable of producing a higher concentration than permitted by (a) or (b); (d) all adjacent spaces, containing or having contained flammable or combustible materials shall be sufficiently cleaned of residues, scale, or preservative coatings to prevent the spread of fire; or they are inerted. Ship's fuel tanks, lube tanks, or engine room or fire room bilges, or other machinery spaces, are treated in accordance with the Marine Chemist's requirements.

SAFE FOR LIMITED HOT WORK: In the compartment or space so designated (a) portions of the space meet the requirements Safe for Hot Work and Partial Cleaning, as applicable, or (b) the space is inerted, adjacent spaces meet the requirements for Safe for Hot Work, and hot work is restricted to specific locations; (c) portions of the space shall meet the requirements for Safe for Hot Work, as applicable; and the nature or type of hot work shall be limited or restricted.

NOT SAFE FOR HOT WORK: In the compartment or space so designated, hot is not permitted.

CHEMISTS ENDORSEMENT. This is to certify that I have personally determined that all spaces in the foregoing list are in accordance with NFPA 306 Control of Gas Hazards on Vessels and have found the condition of each to be in accordance with its assigned designation.

"The undersigned acknowledges receipt of this Certificate under NFPA 306 and understands conditions and limitations under which it was issued, and the requirements for maintaining its validity."

This Certificate is based on conditions existing at the time the inspection herein set forth was completed and is issued subject to compliance with all qualifications and instructions.

Authorized Representative	Rivers Edge Environmental	Jul 12, 2018	Signed Marine Chemist	667
	Company	Date		CMC No.

Pump and Rinse Certification

Date: 7/12/18 **Job:** 57936

To Whom It May Concern:

This letter is to certify that the following tank(s), sized at 2 tanks @ 3,000 gallons each have been pumped and rinsed for removal.

Work was performed at:

Address 4700 Brooklyn Avenue, Seattle, WA 98105

For:

Rivers Edge Environmental Services

Please note that this letter does not certify that the above tank(s) have been cleaned for disposal or that it (they) should be considered gas-free.

Sincerely,

Northern Environmental Services

253.503.3096

Certificate of Weight

Issued under authority of City of Seattle Ord. 7.04.580

SEATTLE IRON & METALS CORP.

601 South Myrtle Street Seattle, WA 98108 206-682-0040

Weighed for: Rivers Edge

Date 07 12 18 2:54 PM

Ticket # 979395

Commodity	Price
Scrap	120
OT Truck / T	1404

PAID JUL 12 2018 SEATTLE IRON & METALS CORP

Gross lbs. 18860 lb

Tare lbs. 12610 lb

Net lbs. 6250 lb

I, the undersigned, certify that the weights indicated hereon are true and correct.

Weighed by M

Licensed City Weigher

KS300 (4/10)

ORIGINAL

Certificate of Weight

Issued under authority of City of Seattle Ord. 7.04.580

SEATTLE IRON & METALS CORP.

601 South Myrtle Street Seattle, WA 98108 206-682-0040

eighed for: Rivers Edge

Date 07 12 18 1:10 PM

Ticket # 979367

ommodity	Price
S	120
PC	1404

PAID JUL 1 SEATTLE IRON & METALS CORP

Gross lbs. 19000 lb

Tare lbs. 12660 lb

Net lbs. 6340 lb

e undersigned, certify that the weights indicated hereon rue and correct.

ghed by A

Licensed City Weigher

(4/10)

ORIGINAL

APPENDIX E

Laboratory Analytical Reports

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

August 29, 2018

Adam Griffin, Project Manager
Aspect Consulting, LLC
350 Madison Ave. N.
Bainbridge Island, WA 98110-1810

Dear Mr Griffin:

Included are the results from the testing of material submitted on August 24, 2018 from the Brooklyn 160092, F&BI 808571 project. There are 4 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Data Aspect, Breeyn Greer, Fasih Khan
ASP0829R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on August 24, 2018 by Friedman & Bruya, Inc. from the Aspect Consulting, LLC Brooklyn 160092, F&BI 808571 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Aspect Consulting, LLC
808571 -01	W1S12-193.5-082418
808571 -02	W1S12-192-082418
808571 -03	W1S10-193.5-082418
808571 -04	W1S10-192-082418
808571 -05	W1S8-193.5-082418
808571 -06	W1S8-192-082418

All quality control requirements were acceptable.

Date of Report: 08/29/18
Date Received: 08/24/18
Project: Brooklyn 160092, F&BI 808571
Date Extracted: 08/27/18
Date Analyzed: 08/27/18

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
W1S12-193.5-082418 808571-01	<0.02	<0.02	<0.02	<0.06	<5	87
W1S10-193.5-082418 808571-03	<0.02	<0.02	<0.02	<0.06	<5	85
W1S8-193.5-082418 808571-05	<0.02	<0.02	0.066	<0.06	<5	86
Method Blank 08-1769 MB	<0.02	<0.02	<0.02	<0.06	<5	79

Date of Report: 08/29/18
Date Received: 08/24/18
Project: Brooklyn 160092, F&BI 808571

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 808571-03 (Duplicate)

Analyte	Reporting Units	Sample Result (Wet Wt)	Duplicate Result (Wet Wt)	RPD (Limit 20)
Benzene	mg/kg (ppm)	<0.02	<0.02	nm
Toluene	mg/kg (ppm)	<0.02	<0.02	nm
Ethylbenzene	mg/kg (ppm)	<0.02	<0.02	nm
Xylenes	mg/kg (ppm)	<0.06	<0.06	nm
Gasoline	mg/kg (ppm)	<5	<5	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/kg (ppm)	0.5	83	69-120
Toluene	mg/kg (ppm)	0.5	84	70-117
Ethylbenzene	mg/kg (ppm)	0.5	86	65-123
Xylenes	mg/kg (ppm)	1.5	85	66-120
Gasoline	mg/kg (ppm)	20	80	71-131

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.

308571

SAMPLE CHAIN OF CUSTODY

ME 08-24-18 VSZ

Report To Adam Griffin, Breeyn Greer, Fasih Khan

Company Aspect Consulting

Address 401 2nd Ave S #201

City, State, ZIP Seattle WA 98104

Phone 612 232 7343 Email all above

SAMPLERS (*signature*) Breeyn Greer

PROJECT NAME: Brooklyn

PO #: 160092

REMARKS

INVOICE TO: AP

Page # 1 of 1

TURNAROUND TIME
- ☐ Standard Turnaround
- ☒ RUSH Tuesday End of Day 8/28
- Rush charges authorized by:

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

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM					Notes
						ANALYSES REQUESTED											
WIS12-193.5-082418	01A-D	8/24/18	1130	S	4			X	X								
WIS12-192-082418	02		1215														Hold
WIS10-193.5-082418	03		1230					X	X								
WIS10-192-082418	04		1235														Hold
WIS8-193.5-082418	05		1245					X	X								
WIS8-192-082418	06		1255														Hold

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: Breeyn Greer	Breeyn Greer	Aspect	8/24/18	1605
Received by:	DOVO	FGBI	8-24-18	16.05
Relinquished by:				
Received by:				

Samples received at ∅ °C

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

August 30, 2018

Adam Griffin, Project Manager
Aspect Consulting, LLC
350 Madison Ave. N.
Bainbridge Island, WA 98110-1810

Dear Mr Griffin:

Included are the results from the testing of material submitted on August 28, 2018 from the Brooklyn 160092, F&BI 808615 project. There are 4 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Data Aspect, Breeyn Greer, Fasih Khan
ASP0830R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on August 28, 2018 by Friedman & Bruya, Inc. from the Aspect Consulting, LLC Brooklyn 160092, F&BI 808615 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Aspect Consulting, LLC
808615 -01	W16N4-192-082818
808615 -02	W16N4-190-082818
808615 -03	W11.5N2-196-082818

All quality control requirements were acceptable.

Date of Report: 08/30/18
Date Received: 08/28/18
Project: Brooklyn 160092, F&BI 808615
Date Extracted: 08/28/18
Date Analyzed: 08/28/18

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
W16N4-190-082818 808615-02	0.038	<0.02	0.026	<0.06	<5	86
W11.5N2-196-082818 808615-03 1/10	<0.2	<0.2	0.77	2.6	280	85
Method Blank 08-1771 MB	<0.02	<0.02	<0.02	<0.06	<5	85

Date of Report: 08/30/18
Date Received: 08/28/18
Project: Brooklyn 160092, F&BI 808615

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 808497-04 (Duplicate)

Analyte	Reporting Units	Sample Result (Wet Wt)	Duplicate Result (Wet Wt)	RPD (Limit 20)
Benzene	mg/kg (ppm)	<0.02	<0.02	nm
Toluene	mg/kg (ppm)	<0.02	<0.02	nm
Ethylbenzene	mg/kg (ppm)	<0.02	<0.02	nm
Xylenes	mg/kg (ppm)	<0.06	<0.06	nm
Gasoline	mg/kg (ppm)	<5	<5	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/kg (ppm)	0.5	84	69-120
Toluene	mg/kg (ppm)	0.5	83	70-117
Ethylbenzene	mg/kg (ppm)	0.5	87	65-123
Xylenes	mg/kg (ppm)	1.5	85	66-120
Gasoline	mg/kg (ppm)	20	80	71-131

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.

E006615

SAMPLE CHAIN OF CUSTODY ME 08/28/18. CG/US1

Page # 1 of 1

Report To Adam Griffin, Breeyn Greer, Fasih Khan

Company Aspect Consulting

Address 401 2nd Ave S #201

City, State, ZIP Seattle WA 98104

Phone 612-232-7343 Email all above

SAMPLERS (*signature*): Breeyn Greer

PROJECT NAME: Brooklyn

PO #: 160092

REMARKS: Rush

INVOICE TO: AP

TURNAROUND TIME
- ☐ Standard Turnaround
- ☒ RUSH Wed 8/29 am

Rush charges authorized by:

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

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	ANALYSES REQUESTED: TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM					Notes
W16N4-192-082818	01	8/28/18	0740	S	1												Hold, gravel
W16N4-190-082818	02 A-D	8/28/18	0745	S	4			X	X								
W11.5N2-196-082818	03 A-E	8/28/18	1000	S	5			X	X								

Samples received at 4 °C

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: Breeyn Greer	Breeyn Greer	Aspect	8/28/18	1150
Received by:	Mc Langston	FBInc	8/28/18	1150
Relinquished by:				
Received by:				

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

August 31, 2018

Adam Griffin, Project Manager
Aspect Consulting, LLC
401 2nd Ave S, Suite 201
Seattle, WA 98104

Dear Ms. Griffin:

Included are the results from the testing of material submitted on August 27, 2018 from the 160092 Brooklyn, F&BI 808598 project. There are 6 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Data Aspect, Breeyn Greer, Fasih Khan
ASP0831R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on August 27, 2018 by Friedman & Bruya, Inc. from the Aspect Consulting, LLC 160092 Brooklyn, F&BI 808598 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Aspect Consulting, LLC
808598 -01	W1S6-193.5-082718
808598 -02	W1S6-192-082718
808598 -03	W5S12-193.5-082718
808598 -04	W5S12-192-082718
808598 -05	W3S10-193.5-082718
808598 -06	W3S10-192-082718
808598 -07	W18N6-196-082718
808598 -08	W18N6-193-082718
808598 -09	W18N4-192-082718
808598 -10	W18N4-190-082718
808598 -11	W17N2-192-082718
808598 -12	W17N2-190-082718
808598 -13	W15N2-192-082718
808598 -14	W15N2-190-082718

All quality control requirements were acceptable.

Date of Report: 08/31/18
Date Received: 08/27/18
Project: 160092 Brooklyn, F&BI 808598
Date Extracted: 08/28/18 and 08/29/18
Date Analyzed: 08/28/18 and 08/29/18

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
W5S12-193.5-082718 808598-03	<0.02	<0.02	<0.02	<0.06	<5	87
W3S10-193.5-082718 808598-05	0.040	<0.02	0.046	0.090	<5	87
W3S10-192-082718 808598-06	<0.02	<0.02	0.047	<0.06	<5	86
W18N6-196-082718 808598-07	0.034	<0.02	0.13	<0.06	<5	89
W18N6-193-082718 808598-08	0.32	<0.02	0.96	0.12	<5	87
W18N4-192-082718 808598-09	1.9	0.096	0.54	0.72	13	88
W18N4-190-082718 808598-10	0.87	0.034	1.2	1.1	13	89
W17N2-192-082718 808598-11	0.49	0.075	0.85	0.68	11	88
W17N2-190-082718 808598-12	0.33	<0.02	0.39	<0.06	<5	86

Date of Report: 08/31/18
Date Received: 08/27/18
Project: 160092 Brooklyn, F&BI 808598
Date Extracted: 08/28/18 and 08/29/18
Date Analyzed: 08/28/18 and 08/29/18

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
W15N2-192-082718 808598-13	<0.02	<0.02	<0.02	<0.06	<5	90
Method Blank 08-1771 MB	<0.02	<0.02	<0.02	<0.06	<5	85
Method Blank	<0.02	<0.02	<0.02	<0.06	<5	86

Date of Report: 08/31/18
Date Received: 08/27/18
Project: 160092 Brooklyn, F&BI 808598

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING METHOD 8021B AND NWTPH-Gx

Laboratory Code: 808497-04 (Duplicate)

Analyte	Reporting Units	Sample Result (Wet Wt)	Duplicate Result (Wet Wt)	RPD (Limit 20)
Benzene	mg/kg (ppm)	<0.02	<0.02	nm
Toluene	mg/kg (ppm)	<0.02	<0.02	nm
Ethylbenzene	mg/kg (ppm)	<0.02	<0.02	nm
Xylenes	mg/kg (ppm)	<0.06	<0.06	nm
Gasoline	mg/kg (ppm)	<5	<5	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/kg (ppm)	0.5	84	69-120
Toluene	mg/kg (ppm)	0.5	83	70-117
Ethylbenzene	mg/kg (ppm)	0.5	87	65-123
Xylenes	mg/kg (ppm)	1.5	85	66-120
Gasoline	mg/kg (ppm)	20	80	71-131

Date of Report: 08/31/18
Date Received: 08/27/18
Project: 160092 Brooklyn, F&BI 808598

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 808598-03 (Duplicate)

Analyte	Reporting Units	Sample Result (Wet Wt)	Duplicate Result (Wet Wt)	RPD (Limit 20)
Benzene	mg/kg (ppm)	<0.02	<0.02	nm
Toluene	mg/kg (ppm)	<0.02	<0.02	nm
Ethylbenzene	mg/kg (ppm)	<0.02	<0.02	nm
Xylenes	mg/kg (ppm)	<0.06	<0.06	nm
Gasoline	mg/kg (ppm)	<5	<5	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/kg (ppm)	0.5	88	69-120
Toluene	mg/kg (ppm)	0.5	88	70-117
Ethylbenzene	mg/kg (ppm)	0.5	90	65-123
Xylenes	mg/kg (ppm)	1.5	87	66-120
Gasoline	mg/kg (ppm)	20	85	71-131

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.

SAMPLE CHAIN OF CUSTODY

808598

ME 08-27-18

US#3 Euro

Page # 1 of 2

Report To Breeyn Greer, Adam Griffin, Fasih Khan

Company Aspect Consulting

Address 401 2nd Ave S #201

City, State, ZIP Seattle WA 98104

Phone 612 232 7343 Email all above

SAMPLERS (*signature*) Breeyn Green

PROJECT NAME: Brooklyn

PO #: 160092

REMARKS: Rush

INVOICE TO: AP

TURNAROUND TIME
- ☐ Standard Turnaround
- ☒ RUSH Tues End of Day 8/28

Rush charges authorized by:

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

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM					Notes
						ANALYSES REQUESTED											(X)-pe AG 8/28/18 ME
WIS6-193.5-082718	01A-D	8/27/18	1010	S	4												Hold
WIS6-192-082718	02		1015														Hold
WSS12-193.5-082718	03		1020					(X)	(X)								~~Hold~~
WSS12-192-082718	04		1025														Hold
W3S10-193.5-082718	05		1045					X	X								
W3S10-192-082718	06		1050					(X)	(X)								~~Hold~~
W18N6-196-082718	07		1350					X	X								
W18N6-193-082718	08		1400					X	X								
W18N4-192-082718	09		1410					X	X								
W18N4-190-082718	10		1420					(X)	(X)								~~Hold~~

Samples received at 3 °C

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: Breeyn Green	Breeyn Greer	Aspect	8/27/18	1515
Received by:	Matt Langston	FBInc	8/27/18	1515
Relinquished by:				
Received by:				

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

808598

SAMPLE CHAIN OF CUSTODY

ME 08-27-18 [redacted] VS*3

Page # 2 of 2 EWB

Report To Breeyn Greer, Adam Griffin, Fasih Khan

Company Aspect

Address See pg. 1

City, State, ZIP

Phone ______ Email all above

SAMPLERS (signature) Breeyn Greer	
PROJECT NAME: Brooklyn	PO #: 160092
REMARKS: Rush	INVOICE TO: AP

TURNAROUND TIME
- ☐ Standard Turnaround
- ☒ RUSH Tues
- Rush charges authorized by:

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

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM					Notes
W17N2-192-082718	11 A-D	8/27/18	1430	S	4			X	X								
W17N2-190-082718	12		1440					(X)	(X)								Hold
W15N2-192-082718	13		1450					X	X								
W15N2-190-082718	14		1500														Hold

Samples received at 3 °C

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

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Breeyn Greer	Breeyn Greer	Aspect	8/27/18	1515
Received by:	[signature]	Matt Langston	FBInc	8/27/18	1515
Relinquished by:					
Received by:					

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

September 6, 2018

Adam Griffin, Project Manager
Aspect Consulting, LLC
401 2nd Ave S, Suite 201
Seattle, WA 98104

Dear Mr Griffin:

Included are the results from the testing of material submitted on September 4, 2018 from the Brooklyn 160092, F&BI 809028 project. There are 4 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Data Aspect, Breeyn Greer, Fasih Khan
ASP0906R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on September 4, 2018 by Friedman & Bruya, Inc. from the Aspect Consulting, LLC Brooklyn 160092, F&BI 809028 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Aspect Consulting, LLC
809028 -01	AB02-BTM-090418
809028 -02	AB02-SW1-090418
809028 -03	AB02-SW2-090418
809028 -04	AB02-SW3-090418
809028 -05	AB02-SW4-090418

All quality control requirements were acceptable.

Date of Report: 09/06/18
Date Received: 09/04/18
Project: Brooklyn 160092, F&BI 809028
Date Extracted: 09/04/18
Date Analyzed: 09/04/18

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 50-132)
AB02-BTM-090418 809028-01	<0.02	<0.02	<0.02	<0.06	<5	97
AB02-SW1-090418 809028-02	<0.02	<0.02	<0.02	<0.06	<5	93
AB02-SW2-090418 809028-03	<0.02	<0.02	<0.02	0.081	<5	92
AB02-SW3-090418 809028-04	<0.02	<0.02	<0.02	<0.06	<5	95
AB02-SW4-090418 809028-05	<0.02	<0.02	<0.02	<0.06	<5	95
Method Blank 08-2004 MB	<0.02	<0.02	<0.02	<0.06	<5	97

Date of Report: 09/06/18
Date Received: 09/04/18
Project: Brooklyn 160092, F&BI 809028

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 809024-03 (Duplicate)

Analyte	Reporting Units	Sample Result (Wet Wt)	Duplicate Result (Wet Wt)	RPD (Limit 20)
Benzene	mg/kg (ppm)	<0.02	<0.02	nm
Toluene	mg/kg (ppm)	<0.02	<0.02	nm
Ethylbenzene	mg/kg (ppm)	<0.02	<0.02	nm
Xylenes	mg/kg (ppm)	<0.06	<0.06	nm
Gasoline	mg/kg (ppm)	<5	<5	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/kg (ppm)	0.5	88	66-121
Toluene	mg/kg (ppm)	0.5	90	72-128
Ethylbenzene	mg/kg (ppm)	0.5	92	69-132
Xylenes	mg/kg (ppm)	1.5	95	69-131
Gasoline	mg/kg (ppm)	20	80	61-153

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.

809028

SAMPLE CHAIN OF CUSTODY

ME 09/04/18 VS2

Page # 1 of 1

Report To Adam Griffin, Breeyn Greer, Fasih Khan

Company Aspect

Address 401 2nd Ave S #201

City, State, ZIP Seattle WA 98104

Phone 612 232 7343 Email all above

SAMPLERS (*signature*) Breeyn Green

PROJECT NAME: Brooklyn

PO #: 160092

REMARKS: Rush

INVOICE TO: AP

TURNAROUND TIME
- ☐ Standard Turnaround
- ☒ RUSH wed 9/5 am

Rush charges authorized by:

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

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM					Notes
						ANALYSES REQUESTED											
AB02-BTM-090418	01 A-D	9/4/18	1330	S	4			X	X								
AB02-SW1-090418	02		1340					X	X								
AB02-SW2-090418	03		1350					X	X								
AB02-SW3-090418	04		1400					X	X								
AB03-SW4-090418	05		1410					X	X								
AB02 re-AG 9/4/18 ME																	

Samples received at 3 °C

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Breeyn Greer	Aspect	9/4/18	1520
Received by:	HONG NGUYEN	FBI	✓	✓
Relinquished by:				
Received by:				

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

October 11, 2018

Adam Griffin, Project Manager
Aspect Consulting, LLC
350 Madison Ave. N.
Bainbridge Island, WA 98110-1810

Dear Mr Griffin:

Included is the amended report from the testing of material submitted on September 6, 2018 from the Brooklyn 160092, F&BI 809088 project. Per your request, sample ID E1651-188-090618 was amended to AB09-BTM-090618.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Data Aspect, Fasih Khan, Andrew Yonkofski, Breeyn Greer
ASP0910R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

September 10, 2018

Adam Griffin, Project Manager
Aspect Consulting, LLC
350 Madison Ave. N.
Bainbridge Island, WA 98110-1810

Dear Mr Griffin:

Included are the results from the testing of material submitted on September 6, 2018 from the Brooklyn 160092, F&BI 809088 project. There are 5 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Data Aspect, Fasih Khan, Andrew Yonkofski, Breeyn Greer
ASP0910R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on September 6, 2018 by Friedman & Bruya, Inc. from the Aspect Consulting, LLC Brooklyn 160092, F&BI 809088 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Aspect Consulting, LLC
809088 -01	W18N4-189-090618
809088 -02	AB09-BTM-090618

All quality control requirements were acceptable.

Date of Report: 09/10/18
Date Received: 09/06/18
Project: Brooklyn 160092, F&BI 809088
Date Extracted: 09/06/18
Date Analyzed: 09/06/18

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, AND XYLENES USING METHOD 8021B

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Surrogate (% Recovery) (Limit 50-150)
W18N4-189-090618 809088-01	0.50	0.024	0.17	0.30	84
Method Blank 08-1951 MB	<0.02	<0.02	<0.02	<0.06	83

Date of Report: 09/10/18
Date Received: 09/06/18
Project: Brooklyn 160092, F&BI 809088
Date Extracted: 09/06/18
Date Analyzed: 09/06/18

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
AB09-BTM-090618 809088-02	<0.02	<0.02	<0.02	<0.06	<5	85
Method Blank 08-1951 MB	<0.02	<0.02	<0.02	<0.06	<5	83

Date of Report: 09/10/18
Date Received: 09/06/18
Project: Brooklyn 160092, F&BI 809088

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 809079-02 (Duplicate)

Analyte	Reporting Units	Sample Result (Wet Wt)	Duplicate Result (Wet Wt)	RPD (Limit 20)
Benzene	mg/kg (ppm)	<0.02	<0.02	nm
Toluene	mg/kg (ppm)	<0.02	<0.02	nm
Ethylbenzene	mg/kg (ppm)	<0.02	<0.02	nm
Xylenes	mg/kg (ppm)	<0.06	<0.06	nm
Gasoline	mg/kg (ppm)	<5	<5	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/kg (ppm)	0.5	98	69-120
Toluene	mg/kg (ppm)	0.5	98	70-117
Ethylbenzene	mg/kg (ppm)	0.5	100	65-123
Xylenes	mg/kg (ppm)	1.5	99	66-120
Gasoline	mg/kg (ppm)	20	90	71-131

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.

809088

SAMPLE CHAIN OF CUSTODY

ME 09/06/18 US-P4

Report To Adam Griffin, Fasih Khan, Andrew Vonkofski, Breeyn Gonzor

Company Aspect Consulting

Address 4012 2nd Ave S, #201

City, State, ZIP Seattle, WA 98104

Phone _____ Email all above

SAMPLERS (*signature*)

PROJECT NAME Brooklyn

PO # 160092

REMARKS

~~INVOICE TO~~

Page # 1 of 1

TURNAROUND TIME

☐ Standard Turnaround

☒ RUSH Friday A.M.

Rush charges authorized by:

~~SAMPLE DISPOSAL~~

☒ Dispose after 30 days

☐ Archive Samples

☐ Other

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM					Notes
W18N4-189-090618	01 A-D	9/6/18	1145	Soil	4				X								
~~E16S1-188-090618~~	02 V	9/6/18	1220	Soil	4			X	X								
AB09-BTM-090618																	
																Samples received at	3 °C

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Andrew Vonkofski	Aspect	9/6/18	1430
Received by:	Nhan Phan	FeBI	9/6/18	1430
Relinquished by:				
Received by:				

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

June 21, 2018

Adam Griffin, Project Manager
Aspect Consulting, LLC
350 Madison Ave. N.
Bainbridge Island, WA 98110-1810

Dear Mr Griffin:

Included are the results from the testing of material submitted on June 19, 2018 from the FH Brooklyn 160092, F&BI 806333 project. There are 6 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Data Aspect, Bob Hanford, Breeyn Greer, Fasih Khan
ASP0621R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on June 19, 2018 by Friedman & Bruya, Inc. from the Aspect Consulting, LLC FH Brooklyn 160092, F&BI 806333 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Aspect Consulting, LLC
806333 -01	SS1-1-061918
806333 -02	SS1-2-061918
806333 -03	SS1-3-061918
806333 -04	SS1-4-061918
806333 -05	SS1-5-061918
806333 -06	SS1-6-061918
806333 -07	SS2-1-061918

All quality control requirements were acceptable.

Date of Report: 06/21/18
Date Received: 06/19/18
Project: FH Brooklyn 160092, F&BI 806333
Date Extracted: 06/19/18
Date Analyzed: 06/19/18

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
SS1-1-061918 806333-01	<0.02	<0.02	<0.02	<0.06	<5	79
SS1-2-061918 806333-02	<0.02	<0.02	<0.02	<0.06	<5	79
SS1-3-061918 806333-03	<0.02	<0.02	<0.02	<0.06	<5	79
SS1-4-061918 806333-04	<0.02	<0.02	<0.02	<0.06	<5	80
SS1-5-061918 806333-05	<0.02	<0.02	<0.02	<0.06	<5	80
SS1-6-061918 806333-06	<0.02	<0.02	<0.02	<0.06	<5	79
SS2-1-061918 806333-07 1/5	<0.02 j	<0.1	0.79	3.1	310	85
Method Blank 08-1274 MB	<0.02	<0.02	<0.02	<0.06	<5	80

Date of Report: 06/21/18
Date Received: 06/19/18
Project: FH Brooklyn 160092, F&BI 806333
Date Extracted: 06/19/18
Date Analyzed: 06/19/18

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 48-168)
SS1-1-061918 806333-01	<50	<250	100
SS1-2-061918 806333-02	<50	<250	102
SS1-3-061918 806333-03	<50	<250	101
SS1-4-061918 806333-04	<50	<250	120
SS1-5-061918 806333-05	<50	<250	99
SS1-6-061918 806333-06	<50	<250	103
SS2-1-061918 806333-07	200 x	<250	92
Method Blank 08-1329 MB	<50	<250	108

Date of Report: 06/21/18
Date Received: 06/19/18
Project: FH Brooklyn 160092, F&BI 806333

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 806291-01 (Duplicate)

Analyte	Reporting Units	Sample Result (Wet Wt)	Duplicate Result (Wet Wt)	RPD (Limit 20)
Benzene	mg/kg (ppm)	<0.02	<0.02	nm
Toluene	mg/kg (ppm)	<0.02	<0.02	nm
Ethylbenzene	mg/kg (ppm)	<0.02	<0.02	nm
Xylenes	mg/kg (ppm)	<0.06	<0.06	nm
Gasoline	mg/kg (ppm)	<5	<5	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/kg (ppm)	0.5	86	69-120
Toluene	mg/kg (ppm)	0.5	90	70-117
Ethylbenzene	mg/kg (ppm)	0.5	93	65-123
Xylenes	mg/kg (ppm)	1.5	92	66-120
Gasoline	mg/kg (ppm)	20	105	71-131

Date of Report: 06/21/18
Date Received: 06/19/18
Project: FH Brooklyn 160092, F&BI 806333

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 806309-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet Wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	<50	98	90	73-135	9

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Diesel Extended	mg/kg (ppm)	5,000	92	74-139

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.

Fasin Khan
Robert Hanford
Breeyn Greer

B06333

SAMPLE CHAIN OF CUSTODY

MF 6/19/18

A02
V53

Page # 1 of 1

Report To Adam Griffin

Company Aspect Consulting

Address 401 2nd Ave S #201

City, State, ZIP Seattle WA 98104

Phone 206 713 2136 Email bhanford FKhan agriffin bgreer @aspectconsulting.com

SAMPLERS (signature) Breeyn Greer

PROJECT NAME: FH Brooklyn

PO #: 160092

REMARKS

INVOICE TO: Adam Griffin Fasin Khan

TURNAROUND TIME
- ☐ Standard Turnaround
- ☒ RUSH 7am 6/20

Rush charges authorized by: BH

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

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM					Notes
						ANALYSES REQUESTED											
SS1-1-061918	01AE	6/19/18	0840	S	S		X	X	X								
SS1-2-061918	02AE		0930				X	X	X								
SS1-3-061918	03AE		0950				X	X	X								
SS1-4-061918	04AE		1040				X	X	X								
SS1-5-061918	05AE		1110				X	X	X								
SS1-6-061918	06AE		1200				X	X	X								
SS2-1-061918	07AE		1240				X	X	X								
																	Samples received at 5 °C

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: Breeyn Greer	Breeyn Greer	Aspect	6/19/18	1245
Received by: Matt Langston	Matt Langston	FIEldtec	6/19/18	1245
Relinquished by:				
Received by:				

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

June 27, 2018

Bob Hanford, Project Manager
Aspect Consulting, LLC
350 Madison Ave. N.
Bainbridge Island, WA 98110-1810

Dear Mr Hanford:

Included are the results from the testing of material submitted on June 19, 2018 from the FH Brooklyn 160092, F&BI 806342 project. There are 6 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Data Aspect, Fasih Khan, Breeyn Greer, Adam Griffin
ASP0627R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on June 19, 2018 by Friedman & Bruya, Inc. from the Aspect Consulting, LLC FH Brooklyn 160092, F&BI 806342 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Aspect Consulting, LLC
806342 -01	SS1-7-061918
806342 -02	SS2-2-061918
806342 -03	SS1-8-061918
806342 -04	SS1-9-061918
806342 -05	SS1-10-061918

All quality control requirements were acceptable.

Date of Report: 06/27/18
Date Received: 06/19/18
Project: FH Brooklyn 160092, F&BI 806342
Date Extracted: 06/19/18
Date Analyzed: 06/20/18 and 06/22/18

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
SS1-7-061918 806342-01	<0.02	<0.02	<0.02	<0.06	<5	79
SS2-2-061918 806342-02	<0.02	<0.02	<0.02	2.4	360	102
SS1-8-061918 806342-03	<0.02	<0.02	<0.02	<0.06	<5	80
SS1-9-061918 806342-04	<0.02	<0.02	<0.02	<0.06	<5	79
SS1-10-061918 806342-05	<0.02	<0.02	<0.02	<0.06	<5	77
Method Blank 08-1275 MB	<0.02	<0.02	<0.02	<0.06	<5	79

Date of Report: 06/27/18
Date Received: 06/19/18
Project: FH Brooklyn 160092, F&BI 806342
Date Extracted: 06/20/18
Date Analyzed: 06/20/18

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 56-165)
SS1-7-061918 806342-01	<50	<250	91
SS2-2-061918 806342-02	160 x	420	101
SS1-8-061918 806342-03	<50	<250	107
SS1-9-061918 806342-04	<50	<250	106
SS1-10-061918 806342-05	<50	<250	105
Method Blank 08-1333 MB	<50	<250	97

Date of Report: 06/27/18
Date Received: 06/19/18
Project: FH Brooklyn 160092, F&BI 806342

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING METHOD 8021B AND NWTPH-Gx

Laboratory Code: 806307-04 (Duplicate)

Analyte	Reporting Units	Sample Result (Wet Wt)	Duplicate Result (Wet Wt)	RPD (Limit 20)
Benzene	mg/kg (ppm)	<0.02	<0.02	nm
Toluene	mg/kg (ppm)	<0.02	<0.02	nm
Ethylbenzene	mg/kg (ppm)	<0.02	<0.02	nm
Xylenes	mg/kg (ppm)	<0.06	<0.06	nm
Gasoline	mg/kg (ppm)	<5	<5	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/kg (ppm)	0.5	86	69-120
Toluene	mg/kg (ppm)	0.5	85	70-117
Ethylbenzene	mg/kg (ppm)	0.5	87	65-123
Xylenes	mg/kg (ppm)	1.5	87	66-120
Gasoline	mg/kg (ppm)	20	95	71-131

Date of Report: 06/27/18
Date Received: 06/19/18
Project: FH Brooklyn 160092, F&BI 806342

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 806342-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet Wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	<50	102	88	63-146	15

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Diesel Extended	mg/kg (ppm)	5,000	88	79-144

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.

Breeyn Greer
Robert Hanford
Fasih Khan
Adam Griffin

806342

SAMPLE CHAIN OF CUSTODY

ME 6/19/18

A02

Page # 1 of 1 VSI

Report To

Company Aspect Consulting

Address 401 2nd Ave S #201

City, State, ZIP Seattle WA 98104

Phone 612 232 7343 Email ~~See Previous COC~~ →

SAMPLERS (*signature*) Breeyn Greer

PROJECT NAME: FH Brooklyn

PO #: 160092

REMARKS: agriffin Rhanford@aspectconsulting.com fkhan bgreer

INVOICE TO: Adam Griffin

TURNAROUND TIME
- ☐ Standard Turnaround
- ☒ RUSH 24-hr (EOD 6/20)

Rush charges authorized by:

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

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM					Notes
						ANALYSES REQUESTED											
SS1-7-061918	01AE	6/19/18	1400	S	5		X	X	X								
SS2-2-061918	02AE		1410				X	X	X								
SS1-8-061918	03AE		1450				X	X	X								
SS1-9-061918	04AE		1530				X	X	X								
SS1-10-061918	05AE	↓	1540	↓	↓		X	X	X								

Samples received at 3 °C

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: Breeyn Greer	Breeyn Greer	Aspect	6/19/18	1625
Received by:	Matt Langston	FBInc	6/19/18	1625
Relinquished by:				
Received by:				

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

July 6, 2018

Adam Griffin, Project Manager
Aspect Consulting, LLC
350 Madison Ave. N.
Bainbridge Island, WA 98110-1810

Dear Mr Griffin:

Included are the results from the testing of material submitted on July 2, 2018 from the FH Brooklyn 160092, F&BI 807016 project. There are 6 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Data Aspect, Bob Hanford, Breeyn Greer
ASP0706R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on July 2, 2018 by Friedman & Bruya, Inc. from the Aspect Consulting, LLC FH Brooklyn 160092, F&BI 807016 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Aspect Consulting, LLC
807016 -01	SS5-1-070218
807016 -02	SS6-1-070218

All quality control requirements were acceptable.

Date of Report: 07/06/18
Date Received: 07/02/18
Project: FH Brooklyn 160092, F&BI 807016
Date Extracted: 07/03/18
Date Analyzed: 07/03/18

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
SS5-1-070218 807016-01	<0.02	<0.02	<0.02	<0.06	<5	77
SS6-1-070218 807016-02	0.036	<0.02	<0.02	<0.06	<5	77
Method Blank	<0.02	<0.02	<0.02	<0.06	<5	78

Date of Report: 07/06/18
Date Received: 07/02/18
Project: FH Brooklyn 160092, F&BI 807016
Date Extracted: 07/03/18
Date Analyzed: 07/03/18

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 56-165)
SS5-1-070218 807016-01	<50	<250	87
SS6-1-070218 807016-02	<50	<250	89
Method Blank 07-1447 MB2	<50	<250	94

Date of Report: 07/06/18
Date Received: 07/02/18
Project: FH Brooklyn 160092, F&BI 807016

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 807017-01 (Duplicate)

Analyte	Reporting Units	Sample Result (Wet Wt)	Duplicate Result (Wet Wt)	RPD (Limit 20)
Benzene	mg/kg (ppm)	<0.02	<0.02	nm
Toluene	mg/kg (ppm)	<0.02	<0.02	nm
Ethylbenzene	mg/kg (ppm)	<0.02	<0.02	nm
Xylenes	mg/kg (ppm)	<0.06	<0.06	nm
Gasoline	mg/kg (ppm)	<5	<5	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/kg (ppm)	0.5	80	69-120
Toluene	mg/kg (ppm)	0.5	89	70-117
Ethylbenzene	mg/kg (ppm)	0.5	93	65-123
Xylenes	mg/kg (ppm)	1.5	92	66-120
Gasoline	mg/kg (ppm)	20	80	71-131

Date of Report: 07/06/18
Date Received: 07/02/18
Project: FH Brooklyn 160092, F&BI 807016

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 807001-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet Wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	<50	88	86	64-133	2

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Diesel Extended	mg/kg (ppm)	5,000	86	58-147

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.

Adam Griffin
Bob Hanford
Breeyn Greer

807016

SAMPLE CHAIN OF CUSTODY

ME 07-02-18

B01/US1

Page # 1 of 1

Report To

Company Aspect Consulting

Address 401 2nd Ave S #201

City, State, ZIP Seattle WA 98104

Phone 206 713 2136 Email bgreer@aspectconsulting.com

SAMPLERS (*signature*) Breeyn Greer

PROJECT NAME: FH Brooklyn

PO #: 160092

REMARKS

INVOICE TO: Fk

TURNAROUND TIME
- ☐ Standard Turnaround
- ☒ RUSH EOD 7/3/18

Rush charges authorized by:

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

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM					Notes
						ANALYSES REQUESTED											
SS5-1-070218	01A-E	7/2/18	1435	S	5		X	X	X								
SS6-1-070218	021	7/2/18	1440	S	5		X	X	X								

Samples received at 2 °C

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: Breeyn Greer	Breeyn Greer	Aspect	7/2/18	1555
Received by:	HONG NGUYEN	FBT	V	V
Relinquished by:				
Received by:				

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

3012 16th Avenue West
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(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

July 11, 2018

Adam Griffin, Project Manager
Aspect Consulting, LLC
350 Madison Ave. N.
Bainbridge Island, WA 98110-1810

Dear Mr Griffin:

Included are the results from the testing of material submitted on July 3, 2018 from the FH Brooklyn 160094, F&BI 807053 project. There are 6 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Data Aspect, Fasih Khan, Breeyn Greer, Bob Hanford
ASP0711R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on July 3, 2018 by Friedman & Bruya, Inc. from the Aspect Consulting, LLC FH Brooklyn 160094, F&BI 807053 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Aspect Consulting, LLC
807053 -01	SS5-2-070318
807053 -02	SS6-2-070318

All quality control requirements were acceptable.

Date of Report: 07/11/18
Date Received: 07/03/18
Project: FH Brooklyn 160094, F&BI 807053
Date Extracted: 07/05/18
Date Analyzed: 07/05/18

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
SS5-2-070318 807053-01	<0.02	<0.02	<0.02	<0.06	<5	77
SS6-2-070318 807053-02	0.041	<0.02	0.033	<0.06	<5	78
Method Blank 08-1467 MB	<0.02	<0.02	<0.02	<0.06	<5	77

Date of Report: 07/11/18
Date Received: 07/03/18
Project: FH Brooklyn 160094, F&BI 807053
Date Extracted: 07/05/18
Date Analyzed: 07/05/18

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 53-144)
SS5-2-070318 807053-01	<50	<250	84
SS6-2-070318 807053-02	<50	<250	91
Method Blank 08-1466 MB	<50	<250	87

Date of Report: 07/11/18
Date Received: 07/03/18
Project: FH Brooklyn 160094, F&BI 807053

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 807023-02 1/50 (Duplicate)

Analyte	Reporting Units	Sample Result (Wet Wt)	Duplicate Result (Wet Wt)	RPD (Limit 20)
Benzene	mg/kg (ppm)	<1	<1	nm
Toluene	mg/kg (ppm)	<1	<1	nm
Ethylbenzene	mg/kg (ppm)	4.1	4.3	6
Xylenes	mg/kg (ppm)	3.4	4.2	20
Gasoline	mg/kg (ppm)	2,000	2,400	20

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/kg (ppm)	0.5	75	69-120
Toluene	mg/kg (ppm)	0.5	83	70-117
Ethylbenzene	mg/kg (ppm)	0.5	87	65-123
Xylenes	mg/kg (ppm)	1.5	87	66-120
Gasoline	mg/kg (ppm)	20	80	71-131

Date of Report: 07/11/18
Date Received: 07/03/18
Project: FH Brooklyn 160094, F&BI 807053

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 807053-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet Wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	<50	90	96	64-133	6

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Diesel Extended	mg/kg (ppm)	5,000	88	58-147

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.

807053

SAMPLE CHAIN OF CUSTODY

ME 07-03-18

B01/151

Report To Fasih Khan, Breeyn Greer, Adam Griffin, Bob Hanford

Company Aspect Consulting

Address 401 2nd Ave S #201

City, State, ZIP Seattle WA 98104

Phone 612 2327343 Email (all people above)

SAMPLERS (*signature*) Breeyn Greer

PROJECT NAME: FH Brooklyn

PO #: 160094

REMARKS

INVOICE TO: FK / AG

Page # 1 of 1

TURNAROUND TIME
- ☐ Standard Turnaround
- ☒ RUSH 7/5 @ 0700

Rush charges authorized by: FK

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

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	ANALYSES REQUESTED: TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM					Notes
SS5-2-070318	01A-E		1400	S	5		X	X	X								Rush
SS6-2-070318	02		1410	S	5		X	X	X								Rush

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: Breeyn Greer	Breeyn Greer	Aspect	7/3	1610
Received by:	EAC Yaun	F&B	7/3	1610
Relinquished by:				
Received by:		Samples received at 4 °C		

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Seattle, WA 98119-2029
Ph. (206) 285-8282

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

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Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

July 11, 2018

Adam Griffin, Project Manager
Aspect Consulting, LLC
350 Madison Ave. N.
Bainbridge Island, WA 98110-1810

Dear Mr Griffin:

Included are the results from the testing of material submitted on July 6, 2018 from the FH Brooklyn 160092, F&BI 807114 project. There are 6 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Data Aspect, Bob Hanford, Fasih Khan, Breeyn Greer
ASP0711R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on July 6, 2018 by Friedman & Bruya, Inc. from the Aspect Consulting, LLC FH Brooklyn 160092, F&BI 807114 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Aspect Consulting, LLC
807114 -01	SS9-1-070618
807114 -02	SS9-2-070618
807114 -03	SS10-1-070618

All quality control requirements were acceptable.

Date of Report: 07/11/18
Date Received: 07/06/18
Project: FH Brooklyn 160092, F&BI 807114
Date Extracted: 07/06/18
Date Analyzed: 07/06/18

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 50-132)
SS9-1-070618 807114-01	<0.02	<0.02	<0.02	<0.06	<5	73
SS9-2-070618 807114-02	<0.02	<0.02	0.029	<0.06	<5	71
SS10-1-070618 807114-03	<0.02	<0.02	<0.02	<0.06	<5	73
Method Blank 08-1393 MB	<0.02	<0.02	<0.02	<0.06	<5	81

Date of Report: 07/11/18
Date Received: 07/06/18
Project: FH Brooklyn 160092, F&BI 807114
Date Extracted: 07/06/18
Date Analyzed: 07/06/18

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 56-165)
SS9-1-070618 807114-01	<50	<250	82
SS9-2-070618 807114-02	<50	<250	91
SS10-1-070618 807114-03	<50	<250	81
Method Blank 08-1480 MB	<50	<250	79

Date of Report: 07/11/18
Date Received: 07/06/18
Project: FH Brooklyn 160092, F&BI 807114

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 807061-01 (Duplicate)

Analyte	Reporting Units	Sample Result (Wet Wt)	Duplicate Result (Wet Wt)	RPD (Limit 20)
Benzene	mg/kg (ppm)	<0.02	<0.02	nm
Toluene	mg/kg (ppm)	<0.02	<0.02	nm
Ethylbenzene	mg/kg (ppm)	<0.02	<0.02	nm
Xylenes	mg/kg (ppm)	<0.06	<0.06	nm
Gasoline	mg/kg (ppm)	<5	<5	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/kg (ppm)	0.5	91	66-121
Toluene	mg/kg (ppm)	0.5	87	72-128
Ethylbenzene	mg/kg (ppm)	0.5	85	69-132
Xylenes	mg/kg (ppm)	1.5	83	69-131
Gasoline	mg/kg (ppm)	20	90	61-153

Date of Report: 07/11/18
Date Received: 07/06/18
Project: FH Brooklyn 160092, F&BI 807114

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 807070-05 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet Wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	<50	90	84	63-146	7

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Diesel Extended	mg/kg (ppm)	5,000	92	79-144

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.

807114 Breeyn Greer

SAMPLE CHAIN OF CUSTODY

ME 7/6/18

B01

Page # 1 of 1 V52

Report To Adam Griffin, Bob Hanford, Fasih Khan

Company Aspect Consulting

Address 401 2nd Ave S #201

City, State, ZIP Seattle WA 98104

Phone 612 232 7343 Email (all above)

SAMPLERS (*signature*) Breeyn Greer

PROJECT NAME: FH Brooklyn

PO #: 160092

REMARKS: Rush Thanks!

INVOICE TO: AG

TURNAROUND TIME

☐ Standard Turnaround

☒ RUSH Mon. 7/9 COB

Rush charges authorized by: FK

SAMPLE DISPOSAL

☒ Dispose after 30 days

☐ Archive Samples

☐ Other

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	ANALYSES REQUESTED: TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM					Notes
SS9-1-070618	01AE	7/6/18	1220	S	5		X	X	X								
SS9-2-070618	02AE	7/6/18	1300	S	5		X	X	X								
SS10-1-070618	03AE	7/6/18	1320	S	5		X	X	X								

Samples received at 4 °C

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: Breeyn Greer	Breeyn Greer	Aspect	7/6/18	1500
Received by: [signature]	Nhan Phan	FEBI	7/6/18	1520
Relinquished by:				
Received by:				

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FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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Eric Young, B.S.

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August 8, 2018

Adam Griffin, Project Manager
Aspect Consulting, LLC
350 Madison Ave. N.
Bainbridge Island, WA 98110-1810

Dear Mr Griffin:

Included are the results from the testing of material submitted on August 3, 2018 from the FH Brooklyn 160092, F&BI 808100 project. There are 6 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Data Aspect, Fasih Khan, Breeyn Greer
ASP0808R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on August 3, 2018 by Friedman & Bruya, Inc. from the Aspect Consulting, LLC FH Brooklyn 160092, F&BI 808100 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Aspect Consulting, LLC
808100 -01	SS11-1-080318
808100 -02	SS11-2-080318
808100 -03	SS11-3-080318
808100 -04	SS11-4-080318
808100 -05	SS11-5-080318
808100 -06	SS13-1-080318
808100 -07	SS13-2-080318

All quality control requirements were acceptable.

Date of Report: 08/08/18
Date Received: 08/03/18
Project: FH Brooklyn 160092, F&BI 808100
Date Extracted: 08/06/18
Date Analyzed: 08/06/18

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
SS11-1-080318 808100-01	<0.02	<0.02	<0.02	<0.06	<5	89
SS11-2-080318 808100-02	<0.02	0.027	0.052	0.37	21	73
SS11-3-080318 808100-03 1/5	<0.02 j	<0.1	<0.1	1.3	100	92
SS11-4-080318 808100-04 1/100	<2	3.3	4.4	75	1,800	74
SS11-5-080318 808100-05	<0.02	0.17	0.081	0.99	69	76
SS13-1-080318 808100-06	<0.02	<0.02	<0.02	<0.06	<5	91
SS13-2-080318 808100-07	<0.02	<0.02	<0.02	<0.06	<5	88
Method Blank 08-1659 MB	<0.02	<0.02	<0.02	<0.06	<5	93

Date of Report: 08/08/18
Date Received: 08/03/18
Project: FH Brooklyn 160092, F&BI 808100
Date Extracted: 08/06/18
Date Analyzed: 08/06/18

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 56-165)
SS11-1-080318 808100-01	<50	<250	75
SS11-2-080318 808100-02	<50	<250	76
SS11-3-080318 808100-03	140 x	<250	75
SS11-4-080318 808100-04	620 x	<250	76
SS11-5-080318 808100-05	97 x	<250	76
SS13-1-080318 808100-06	<50	<250	81
SS13-2-080318 808100-07	<50	<250	76
Method Blank 08-1718 MB	<50	<250	85

Date of Report: 08/08/18
Date Received: 08/03/18
Project: FH Brooklyn 160092, F&BI 808100

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING METHOD 8021B AND NWTPH-Gx

Laboratory Code: 808100-01 (Duplicate)

Analyte	Reporting Units	Sample Result (Wet Wt)	Duplicate Result (Wet Wt)	RPD (Limit 20)
Benzene	mg/kg (ppm)	<0.02	<0.02	nm
Toluene	mg/kg (ppm)	<0.02	<0.02	nm
Ethylbenzene	mg/kg (ppm)	<0.02	<0.02	nm
Xylenes	mg/kg (ppm)	<0.06	<0.06	nm
Gasoline	mg/kg (ppm)	<5	<5	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/kg (ppm)	0.5	81	69-120
Toluene	mg/kg (ppm)	0.5	88	70-117
Ethylbenzene	mg/kg (ppm)	0.5	93	65-123
Xylenes	mg/kg (ppm)	1.5	91	66-120
Gasoline	mg/kg (ppm)	20	100	71-131

Date of Report: 08/08/18
Date Received: 08/03/18
Project: FH Brooklyn 160092, F&BI 808100

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 808122-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet Wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	17,000	144 b	70 b	63-146	69 b

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Diesel Extended	mg/kg (ppm)	5,000	100	79-144

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.

808100

SAMPLE CHAIN OF CUSTODY

ME 08/03/18

VS2/D02

Page # 1 of 1

Report To Adam Griffin, Fasih Khan, Breeyn Green

Company Aspect Consulting

Address 401 2nd Ave S #201

City, State, ZIP Seattle WA 98104

Phone 206 780 7746 Email all above

SAMPLERS (signature): Breeyn Green

PROJECT NAME: FH Brooklyn

PO #: 160092

REMARKS

INVOICE TO: AP

TURNAROUND TIME
- ☐ Standard Turnaround
- ☒ RUSH Next day (COB Mon.)

Rush charges authorized by: AG

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

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM					Notes
						ANALYSES REQUESTED											
SS11-1-080318	01 A-E	8/3/18	1200	Soil	5		X	X	X								
SS11-2-080318	02		1205				X	X	X								
SS11-3-080318	03		1215				X	X	X								
SS11-4-080318	04		1330				X	X	X								
SS11-5-080318	05		1400				X	X	X								
SS13-1-080318	06		1245				X	X	X								
SS13-2-080318	07		1255				X	X	X								
																	Samples received at 5 °C

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: Breeyn Green	Breeyn Green	Aspect	8/3/18	1510
Received by: Nhan Phan	Nhan Phan	FEBI	8/3/18	1510
Relinquished by:				
Received by:				

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

August 15, 2018

Adam Griffin, Project Manager
Aspect Consulting, LLC
350 Madison Ave. N.
Bainbridge Island, WA 98110-1810

Dear Mr Griffin:

Included are the results from the testing of material submitted on August 10, 2018 from the FH Brooklyn 160092, F&BI 808284 project. There are 4 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Data Aspect, Breeyn Greer, Fasih Khan
ASP0815R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on August 10, 2018 by Friedman & Bruya, Inc. from the Aspect Consulting, LLC FH Brooklyn 160092, F&BI 808284 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Aspect Consulting, LLC
808284 -01	TP1-200-081018
808284 -02	TP1-197-081018
808284 -03	TP1-193-081018
808284 -04	TP2-200-081018
808284 -05	TP2-197-081018
808284 -06	TP2-193-081018
808284 -07	TP3-200-081018
808284 -08	TP3-197-081018
808284 -09	TP3-193-081018

All quality control requirements were acceptable.

Date of Report: 08/15/18
Date Received: 08/10/18
Project: FH Brooklyn 160092, F&BI 808284
Date Extracted: 08/13/18
Date Analyzed: 08/13/18

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
TP1-200-081018 808284-01	<0.02	<0.02	<0.02	<0.06	<5	87
TP1-197-081018 808284-02	<0.02	<0.02	<0.02	<0.06	<5	89
TP2-200-081018 808284-04	<0.02	<0.02	<0.02	<0.06	<5	88
TP2-197-081018 808284-05	<0.02	<0.02	<0.02	<0.06	<5	88
TP3-200-081018 808284-07	<0.02	<0.02	<0.02	<0.06	<5	88
TP3-197-081018 808284-08	0.038	<0.02	<0.02	<0.06	<5	88
Method Blank 08-1747 MB	<0.02	<0.02	<0.02	<0.06	<5	91

Date of Report: 08/15/18
Date Received: 08/10/18
Project: FH Brooklyn 160092, F&BI 808284

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 808283-01 (Duplicate)

Analyte	Reporting Units	Sample Result (Wet Wt)	Duplicate Result (Wet Wt)	RPD (Limit 20)
Benzene	mg/kg (ppm)	<0.02	<0.02	nm
Toluene	mg/kg (ppm)	<0.02	<0.02	nm
Ethylbenzene	mg/kg (ppm)	<0.02	<0.02	nm
Xylenes	mg/kg (ppm)	<0.06	<0.06	nm
Gasoline	mg/kg (ppm)	<5	<5	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/kg (ppm)	0.5	91	69-120
Toluene	mg/kg (ppm)	0.5	96	70-117
Ethylbenzene	mg/kg (ppm)	0.5	102	65-123
Xylenes	mg/kg (ppm)	1.5	100	66-120
Gasoline	mg/kg (ppm)	20	105	71-131

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.

808284

SAMPLE CHAIN OF CUSTODY

ME 08/10/18 VS2

Page # 1 of 1

Report To Adam Griffin, Breeyn Greer, Fasih Khan

Company Aspect Consulting

Address 401 2nd Ave S #201

City, State, ZIP Seattle WA 98104

Phone 612 232 7343 Email all above

SAMPLERS (*signature*) Breeyn Greer

PROJECT NAME: Ft Brooklyn

PO #: 160092

REMARKS

INVOICE TO: AP

TURNAROUND TIME
- ☐ Standard Turnaround
- ☒ RUSH Tues End of Day 8/14

Rush charges authorized by:

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

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM					Notes
						ANALYSES REQUESTED											
TP1-200-081018	01 A-D	8/10/18	1230	S	4			X	X								
TP1-197-081018	02		1235					X	X								
TP1-193-081018	03		1245					~~X~~	~~X~~	BG							HOLD
TP2-200-081018	04		1300					X	X								
TP2-197-081018	05		1315					X	X								
TP2-193-081018	06		1320					~~X~~	~~X~~	BG							HOLD
TP3-200-081018	07		1335					X	X								
TP3-197-081018	08		1345					X	X								
TP3-193-081018	09		1355					~~X~~	~~X~~	BG							HOLD

Samples received at 0 °C

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: Breeyn Greer	Breeyn Greer	Aspect	8/10/18	1500
Received by: D S VO	D S VO	F&BI	8-10-18	15:20
Relinquished by:				
Received by:				

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
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Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

August 16, 2018

Adam Griffin, Project Manager
Aspect Consulting, LLC
350 Madison Ave. N.
Bainbridge Island, WA 98110-1810

Dear Mr Griffin:

Included are the results from the testing of material submitted on August 13, 2018 from the FH Brooklyn 160092, F&BI 808304 project. There are 4 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Data Aspect, Breeyn Greer, Fasih Khan
ASP0816R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on August 13, 2018 by Friedman & Bruya, Inc. from the Aspect Consulting, LLC FH Brooklyn 160092, F&BI 808304 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Aspect Consulting, LLC
808304 -01	TP4-200-081318
808304 -02	TP4-197-081318
808304 -03	TP4-194-081318
808304 -04	TP5-200-081318
808304 -05	TP5-197-081318
808304 -06	TP5-194-081318
808304 -07	TP6-200-081318
808304 -08	TP6-197-081318
808304 -09	TP6-194-081318

All quality control requirements were acceptable.

Date of Report: 08/16/18
Date Received: 08/13/18
Project: FH Brooklyn 160092, F&BI 808304
Date Extracted: 08/14/18
Date Analyzed: 08/14/18

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
TP4-200-081318 808304-01	<0.02	<0.02	<0.02	<0.06	<5	86
TP4-197-081318 808304-02	<0.02	<0.02	0.042	<0.06	<5	86
TP5-200-081318 808304-04	<0.02	<0.02	<0.02	<0.06	<5	89
TP5-197-081318 808304-05	<0.02	<0.02	0.066	0.13	<5	82
TP6-200-081318 808304-07	<0.02	<0.02	<0.02	<0.06	<5	86
TP6-194-081318 808304-09	<0.02	<0.02	<0.02	<0.06	<5	87
Method Blank 08-1749 MB	<0.02	<0.02	<0.02	<0.06	<5	87

Date of Report: 08/16/18
Date Received: 08/13/18
Project: FH Brooklyn 160092, F&BI 808304

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 808304-09 (Duplicate)

Analyte	Reporting Units	Sample Result (Wet Wt)	Duplicate Result (Wet Wt)	RPD (Limit 20)
Benzene	mg/kg (ppm)	<0.02	<0.02	nm
Toluene	mg/kg (ppm)	<0.02	<0.02	nm
Ethylbenzene	mg/kg (ppm)	<0.02	<0.02	nm
Xylenes	mg/kg (ppm)	<0.06	<0.06	nm
Gasoline	mg/kg (ppm)	<5	<5	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/kg (ppm)	0.5	86	69-120
Toluene	mg/kg (ppm)	0.5	86	70-117
Ethylbenzene	mg/kg (ppm)	0.5	91	65-123
Xylenes	mg/kg (ppm)	1.5	90	66-120
Gasoline	mg/kg (ppm)	20	90	71-131

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.

808304

SAMPLE CHAIN OF CUSTODY ME 8/13/18 VS3

Page # 1 of 1

Report To Adam Griffin, Breeyn Greer, Fasih Khan
Company Aspect Consulting
Address 401 2nd Ave S #201
City, State, ZIP Seattle WA 98104
Phone _____ Email bgreer@aspectconsulting.com

SAMPLERS (signature): Breeyn Greer
PROJECT NAME: FH Brooklyn
PO #: 160092
REMARKS: Rush
INVOICE TO: AP

TURNAROUND TIME
☐ Standard Turnaround
☒ RUSH Tues 8/14 End of Day
Rush charges authorized by: AG

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

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM					Notes
						ANALYSES REQUESTED											
TP4-200-081318	01 A-D	8/13/18	1150	Soil	4			X	X								
TP4-197-081318	02		1200					X	X								
TP4-194-081318	03		1210														Hold
TP5-200-081318	04		1225					X	X								
TP5-197-081318	05		1245					X	X								
TP5-194-081318	06		1255														Hold
TP6-200-081318	07		1340					X	X								
TP6-197-081318	08		1350					—									HOLD
TP6-193-081318	09		1400					X	X								

Samples received at 2 °C

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: Breeyn Greer	Breeyn Greer	Aspect	8/13/18	1600
Received by: Liza Rodford	Liza Rodford	FBF	8/13/18	1600
Relinquished by:				
Received by:				

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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Eric Young, B.S.

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Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

August 17, 2018

Adam Griffin, Project Manager
Aspect Consulting, LLC
350 Madison Ave. N.
Bainbridge Island, WA 98110-1810

Dear Mr Griffin:

Included are the results from the testing of material submitted on August 14, 2018 from the FH Brooklyn 160092, F&BI 808330 project. There are 6 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Data Aspect, Fasih Khan, Breeyn Greer
ASP0817R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on August 14, 2018 by Friedman & Bruya, Inc. from the Aspect Consulting, LLC FH Brooklyn 160092, F&BI 808330 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Aspect Consulting, LLC
808330 -01	E16S3-200-081418
808330 -02	E18S2-200-081418
808330 -03	E11S1-198-081418
808330 -04	E9S3-198-081418

All quality control requirements were acceptable.

Date of Report: 08/17/18
Date Received: 08/14/18
Project: FH Brooklyn 160092, F&BI 808330
Date Extracted: 08/15/18
Date Analyzed: 08/15/18

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 50-132)
E16S3-200-081418 808330-01 1/10	<0.2	<0.2	0.88	3.5	640	102
E18S2-200-081418 808330-02 1/20	1.1	15	35	140	6,400	129
E11S1-198-081418 808330-03 1/5	<0.02 j	<0.1	0.91	3.3	1,200	114
E9S3-198-081418 808330-04 1/5	<0.02 j	<0.1	2.8	5.9	840	115
Method Blank 08-1750 MB	<0.02	<0.02	<0.02	<0.06	<5	107

Date of Report: 08/17/18
Date Received: 08/14/18
Project: FH Brooklyn 160092, F&BI 808330
Date Extracted: 08/15/18
Date Analyzed: 08/15/18

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 53-144)
E16S3-200-081418 808330-01	62 x	<250	78
E18S2-200-081418 808330-02	1,100 x	<250	77
E11S1-198-081418 808330-03	1,300 x	3,000	75
E9S3-198-081418 808330-04	5,900	<250	80
Method Blank 08-1836 MB	<50	<250	74

Date of Report: 08/17/18
Date Received: 08/14/18
Project: FH Brooklyn 160092, F&BI 808330

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 808333-02 (Duplicate)

Analyte	Reporting Units	Sample Result (Wet Wt)	Duplicate Result (Wet Wt)	RPD (Limit 20)
Benzene	mg/kg (ppm)	<0.02	<0.02	nm
Toluene	mg/kg (ppm)	<0.02	<0.02	nm
Ethylbenzene	mg/kg (ppm)	<0.02	<0.02	nm
Xylenes	mg/kg (ppm)	<0.06	<0.06	nm
Gasoline	mg/kg (ppm)	<5	<5	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/kg (ppm)	0.5	96	66-121
Toluene	mg/kg (ppm)	0.5	96	72-128
Ethylbenzene	mg/kg (ppm)	0.5	101	69-132
Xylenes	mg/kg (ppm)	1.5	102	69-131
Gasoline	mg/kg (ppm)	20	95	61-153

Date of Report: 08/17/18
Date Received: 08/14/18
Project: FH Brooklyn 160092, F&BI 808330

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 808331-02 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet Wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	<50	74	74	64-133	0

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Diesel Extended	mg/kg (ppm)	5,000	74	58-147

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.

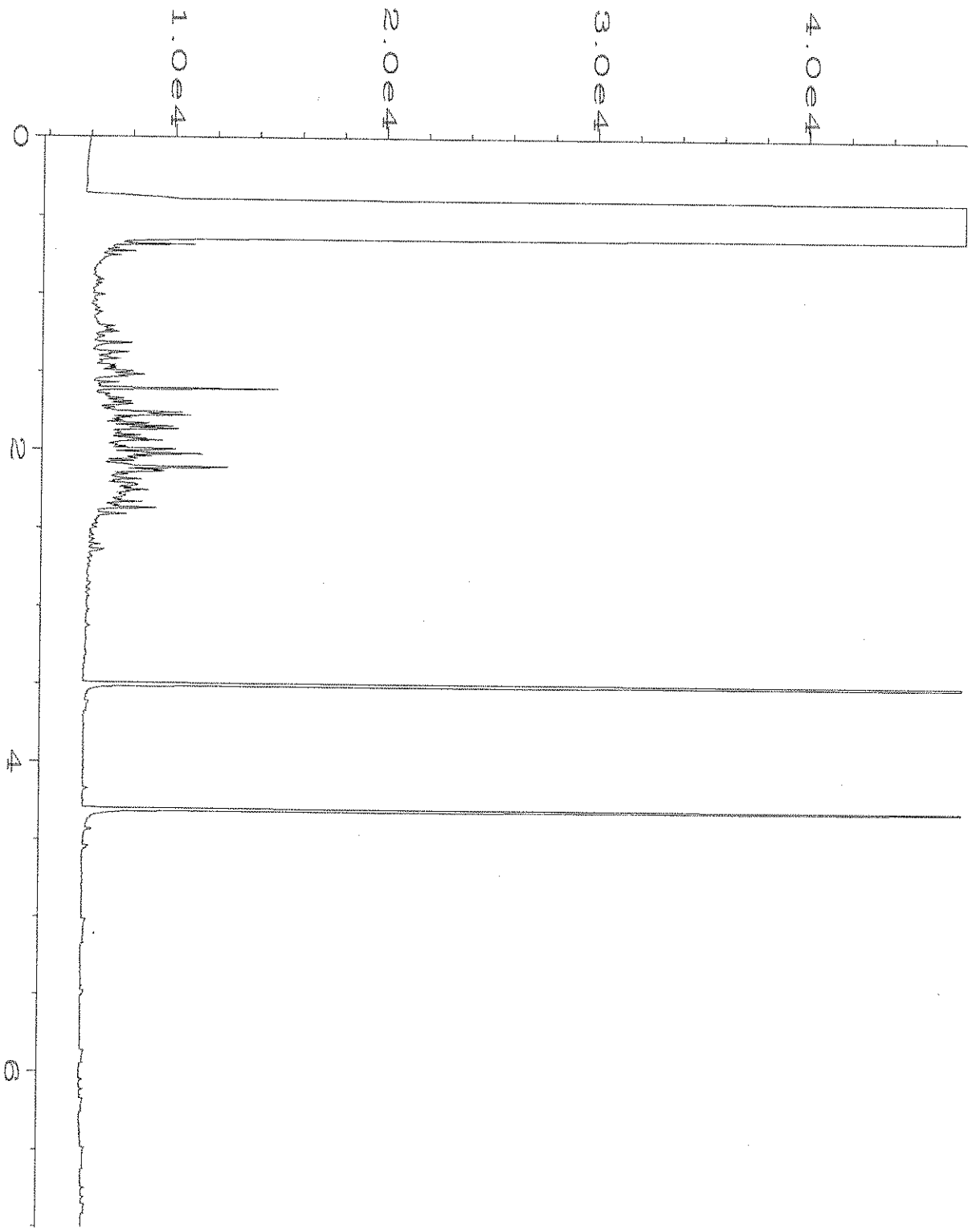
nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

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.

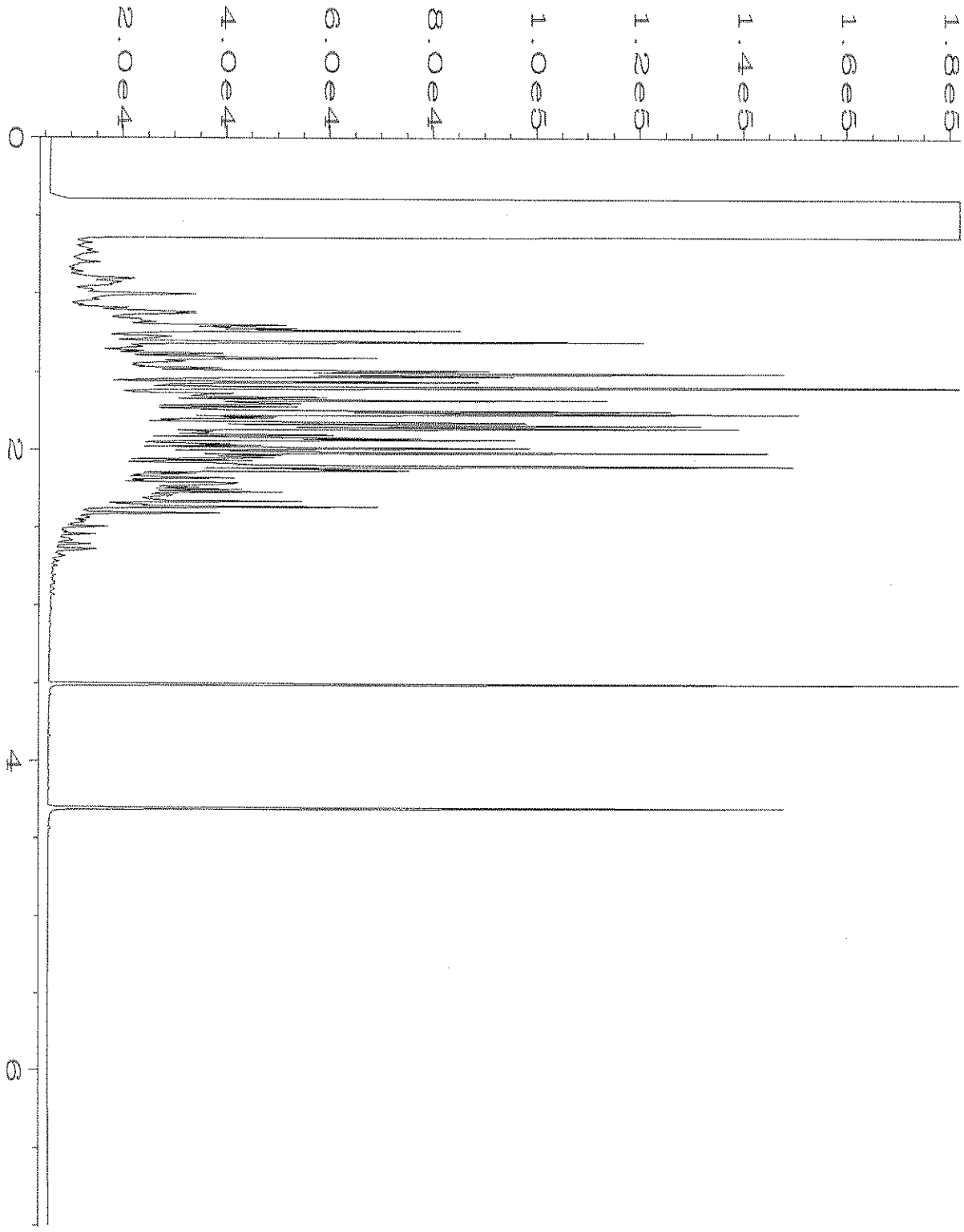
vo - The value reported fell outside the control limits established for this analyte.

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

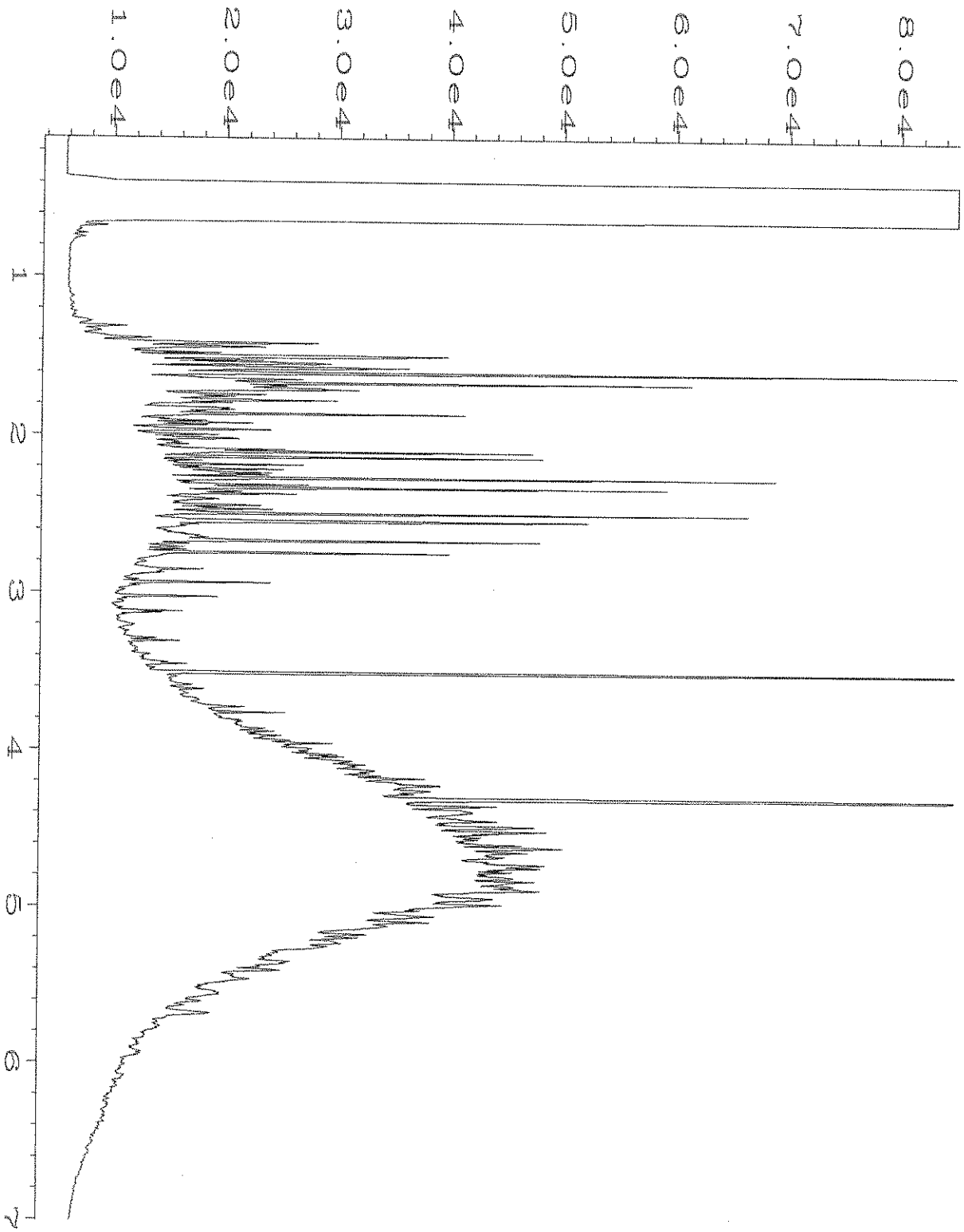


Data File Name : C:\HPCHEM\6\DATA\08-15-18\039F1101.D
Operator : TL
Instrument : GC6
Sample Name : 808330-01
Run Time Bar Code:
Acquired on : 15 Aug 18 04:00 PM
Report Created on: 16 Aug 18 10:16 AM

Page Number : 1
Vial Number : 39
Injection Number : 1
Sequence Line : 11
Instrument Method: DX.MTH
Analysis Method : DX.MTH

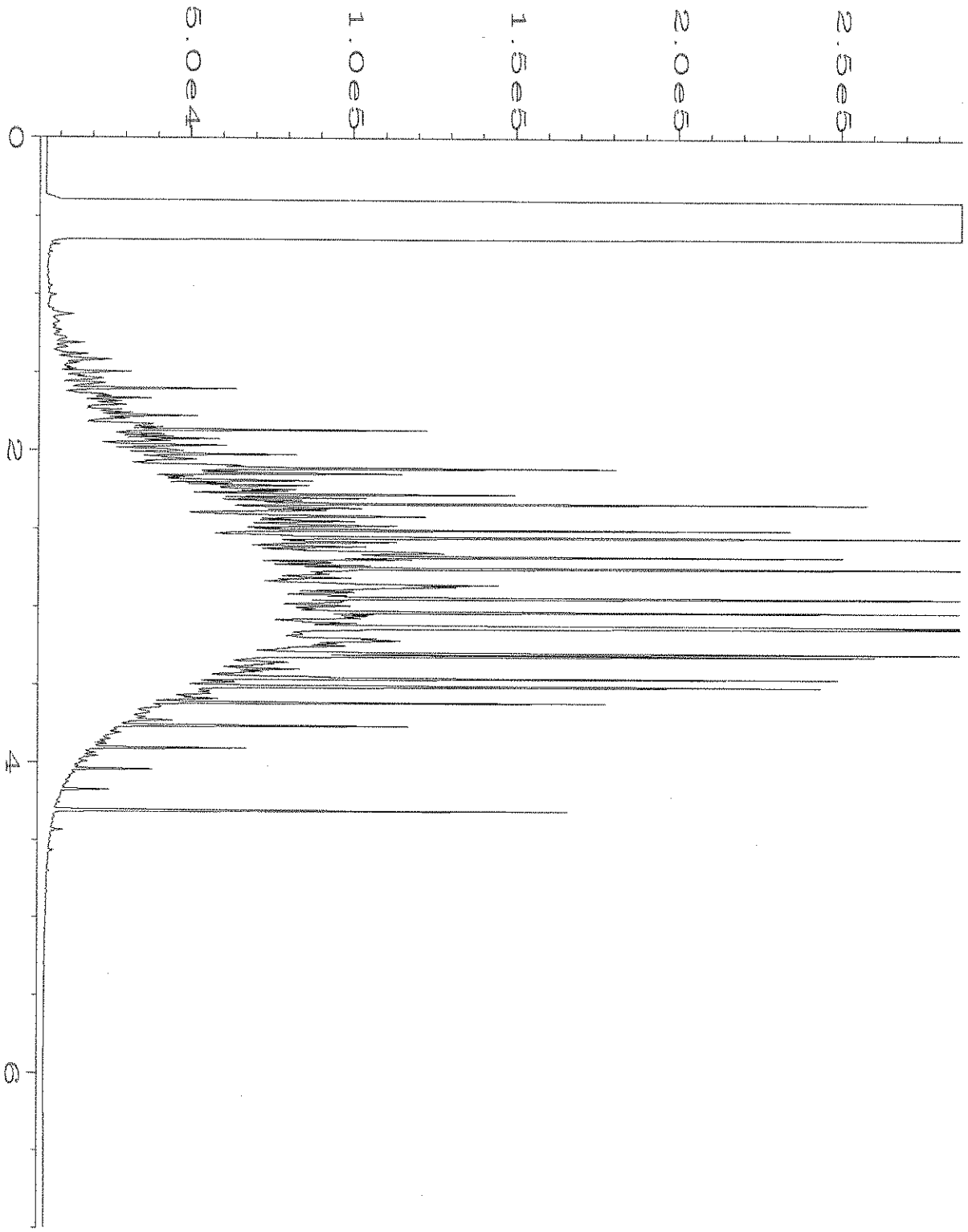


Data File Name	: C:\HPCHEM\6\DATA\08-15-18\040F1201.D		
Operator	: TL	Page Number	: 1
Instrument	: GC6	Vial Number	: 40
Sample Name	: 808330-02	Injection Number	: 1
Run Time Bar Code:		Sequence Line	: 12
Acquired on	: 15 Aug 18 04:15 PM	Instrument Method	: DX.MTH
Report Created on	: 16 Aug 18 10:17 AM	Analysis Method	: DX.MTH



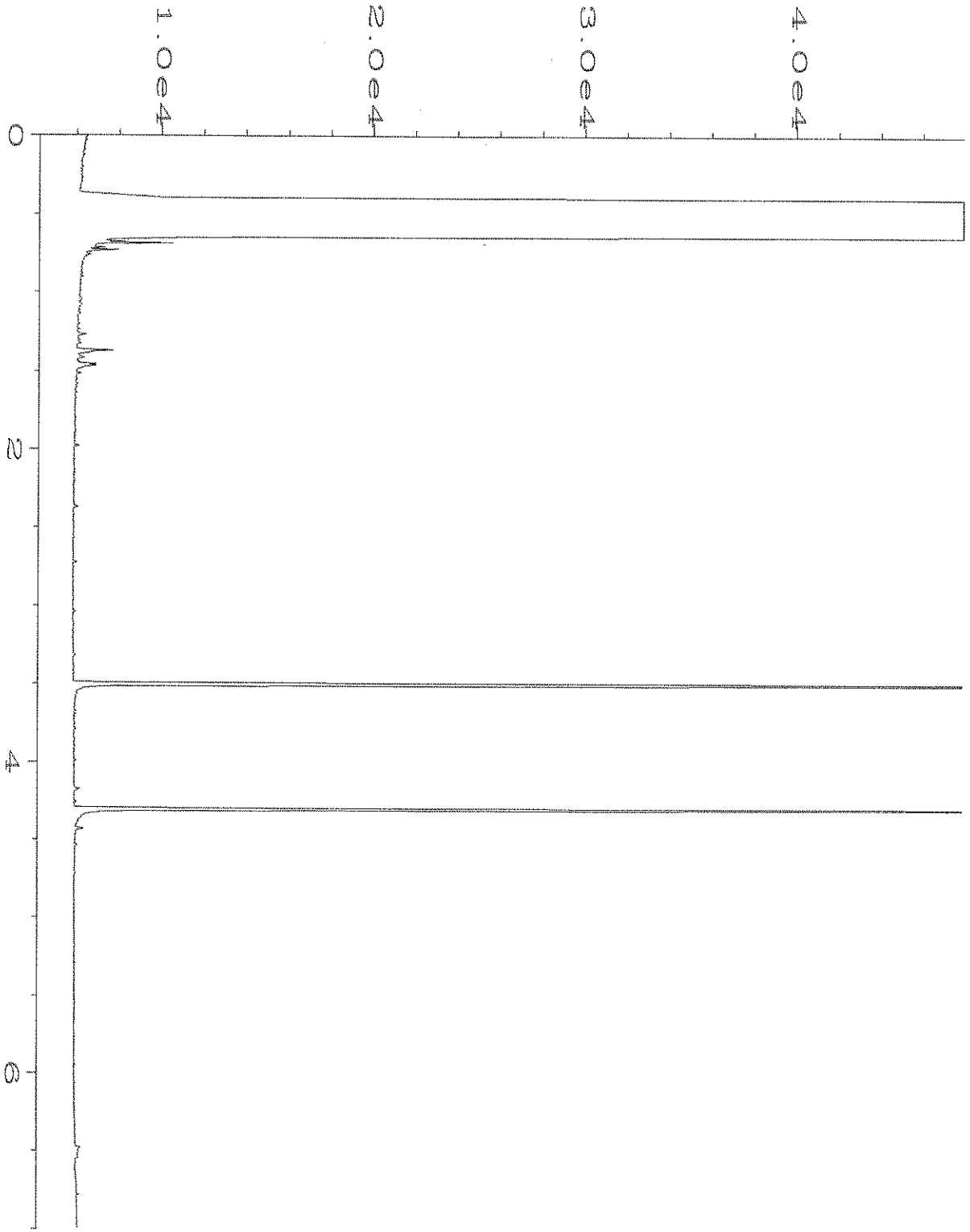
Data File Name : C:\HPCHEM\6\DATA\08-15-18\041F1201.D
Operator : TL
Instrument : GC6
Sample Name : 808330-03
Run Time Bar Code:
Acquired on : 15 Aug 18 04:24 PM
Report Created on: 16 Aug 18 10:17 AM

Page Number : 1
Vial Number : 41
Injection Number : 1
Sequence Line : 12
Instrument Method: DX.MTH
Analysis Method : DX.MTH

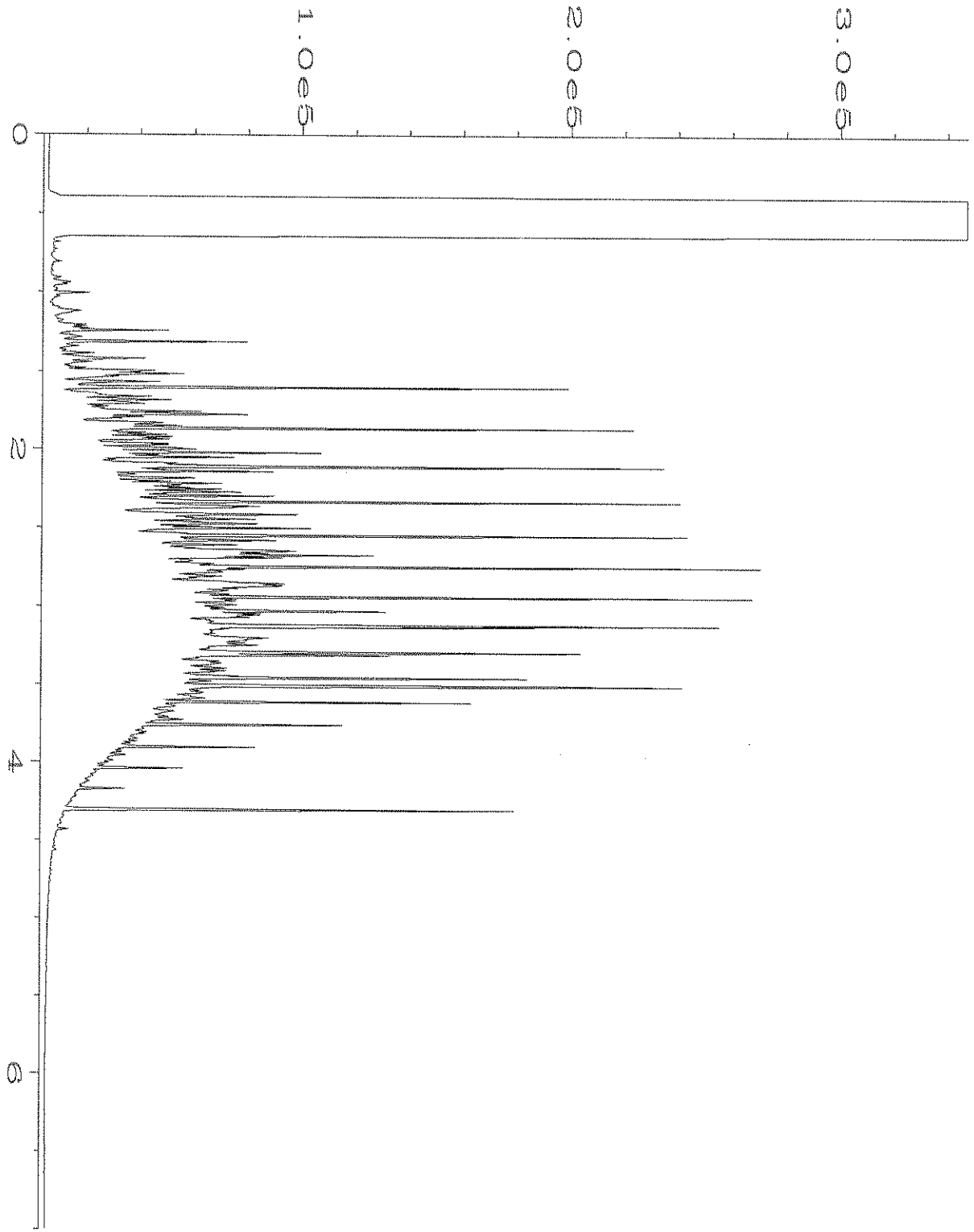


Data File Name : C:\HPCHEM\6\DATA\08-15-18\042F1201.D
Operator : TL
Instrument : GC6
Sample Name : 808330-04
Run Time Bar Code:
Acquired on : 15 Aug 18 04:35 PM
Report Created on: 16 Aug 18 10:43 AM

Page Number : 1
Vial Number : 42
Injection Number : 1
Sequence Line : 12
Instrument Method: DX.MTH
Analysis Method : DX.MTH



Data File Name	: C:\HPCHEM\6\DATA\08-15-18\012F0701.D		
Operator	: TL	Page Number	: 1
Instrument	: GC6	Vial Number	: 12
Sample Name	: 08-1836 mb	Injection Number	: 1
Run Time Bar Code:		Sequence Line	: 7
Acquired on	: 15 Aug 18 11:10 AM	Instrument Method	: DX.MTH
Report Created on	: 16 Aug 18 10:43 AM	Analysis Method	: DX.MTH



Data File Name	: C:\HPCHEM\6\DATA\08-15-18\005F1001.D		
Operator	: TL	Page Number	: 1
Instrument	: GC6	Vial Number	: 5
Sample Name	: 1000 Dx 52-185B	Injection Number	: 1
Run Time Bar Code:		Sequence Line	: 10
Acquired on	: 15 Aug 18 02:51 PM	Instrument Method	: DX.MTH
Report Created on	: 16 Aug 18 10:45 AM	Analysis Method	: DX.MTH

808330

SAMPLE CHAIN OF CUSTODY

ME 08/14/18 US-D3/D01

Page # 1 of 1

Report To Adam Griffin, Breeyn Green, Fasin Khan

Company Aspect Consulting

Address 401 2nd Ave #201

City, State, ZIP Seattle WA 98104

Phone 612 232 7343 Email all above

SAMPLERS (*signature*) Breeyn Green

PROJECT NAME: FH Brooklyn

PO #: 160092

REMARKS

INVOICE TO: AP

TURNAROUND TIME
- [X] ~~Standard Turnaround~~
- [ ] RUSH 8/16 COB pe BG 8/13/18 ME
- Rush charges authorized by:

SAMPLE DISPOSAL
- [X] Dispose after 30 days
- [ ] Archive Samples
- [ ] Other

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM					Notes
E1653-200-081418	01 A-E	8/14/18	1005	S	5		X	X	X								
E1852-200-081418	02		1010				X	X	X								
E1151-198-081418	03		1230				X	X	X								
E953-198-081418	04		1330				X	X	X								
													Samples received at 6 °C				

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: Breeyn Green	Breeyn Green	Aspect	8/14	1450
Received by: Liza Radford	Liza Radford	FBI	8/14/18	1450
Relinquished by:				
Received by:				

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

August 21, 2018

Adam Griffin, Project Manager
Aspect Consulting, LLC
350 Madison Ave. N.
Bainbridge Island, WA 98110-1810

Dear Mr Griffin:

Included are the results from the testing of material submitted on August 16, 2018 from the FH Brooklyn 160092, F&BI 808380 project. There are 6 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Data Aspect
ASP0821R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on August 16, 2018 by Friedman & Bruya, Inc. from the Aspect Consulting, LLC FH Brooklyn 160092, F&BI 808380 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Aspect Consulting, LLC
808380 -01	TP7-200-081518
808380 -02	TP7-197-081518
808380 -03	TP7-194-081518
808380 -04	TP8-200-081518
808380 -05	TP8-197-081518
808380 -06	TP8-194-081518
808380 -07	TP9-200-081518
808380 -08	TP9-196-081518
808380 -09	TP9-194-081518
808380 -10	S10W3-198-081518

All quality control requirements were acceptable.

Date of Report: 08/21/18
Date Received: 08/16/18
Project: FH Brooklyn 160092, F&BI 808380
Date Extracted: 08/16/18
Date Analyzed: 08/16/18 and 08/17/18

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
TP7-200-081518 808380-01 1/20	<0.4	<0.4	36	70	6,500	121
TP7-197-081518 808380-02	<0.02	<0.02	<0.02	<0.06	<5	87
TP8-200-081518 808380-04	<0.02	0.036	0.065	0.19	6.6	88
TP8-197-081518 808380-05	0.084	0.50	0.16	0.97	8.0	88
TP9-200-081518 808380-07	<0.02	<0.02	0.048	0.14	6.6	90
TP9-196-081518 808380-08	<0.02	<0.02	0.14	0.70	<5	82
S10W3-198-081518 808380-10 1/10	<0.2	<0.2	26	130	8,400	ip
Method Blank 08-1754 MB	<0.02	<0.02	<0.02	<0.06	<5	88

Date of Report: 08/21/18
Date Received: 08/16/18
Project: FH Brooklyn 160092, F&BI 808380
Date Extracted: 08/16/18
Date Analyzed: 08/16/18

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 56-165)
S10W3-198-081518 808380-10	370 x	<250	79
Method Blank 08-1846 MB	<50	<250	88

Date of Report: 08/21/18
Date Received: 08/16/18
Project: FH Brooklyn 160092, F&BI 808380

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING METHOD 8021B AND NWTPH-Gx

Laboratory Code: 808380-02 (Duplicate)

Analyte	Reporting Units	Sample Result (Wet Wt)	Duplicate Result (Wet Wt)	RPD (Limit 20)
Benzene	mg/kg (ppm)	<0.02	<0.02	nm
Toluene	mg/kg (ppm)	<0.02	<0.02	nm
Ethylbenzene	mg/kg (ppm)	<0.02	0.023	nm
Xylenes	mg/kg (ppm)	<0.06	<0.06	nm
Gasoline	mg/kg (ppm)	<5	9.8 c	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/kg (ppm)	0.5	85	69-120
Toluene	mg/kg (ppm)	0.5	85	70-117
Ethylbenzene	mg/kg (ppm)	0.5	88	65-123
Xylenes	mg/kg (ppm)	1.5	86	66-120
Gasoline	mg/kg (ppm)	20	90	71-131

Date of Report: 08/21/18
Date Received: 08/16/18
Project: FH Brooklyn 160092, F&BI 808380

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 808362-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet Wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	<50	94	92	63-146	2

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Diesel Extended	mg/kg (ppm)	5,000	96	79-144

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.

808380

SAMPLE CHAIN OF CUSTODY

NE 08-16-18

E02 / V83

Page # 1 of 1

Report To Adam Griffin, Breeyn Green, Fasih Khan

Company Aspect

Address 401 2nd Ave S #201

City, State, ZIP Seattle WA 98104

Phone 612 232 7343 Email all above

SAMPLERS (signature) Breeyn Green

PROJECT NAME: FH Brooklyn

PO #: 160092

REMARKS: Rush

INVOICE TO: AP

TURNAROUND TIME
- ☐ Standard Turnaround
- ☒ RUSH Next Day (8/17 am)

Rush charges authorized by:

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

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM					Notes
						ANALYSES REQUESTED											
TP7-200-081518	01 A-D	8/15/18	1245	S	4			X	X								
TP7-197-081518	02		1300					X	X								
TP7-194-081518	03		1310					X	X	B6							Hold
TP8-200-081518	04		1350					X	X								
TP8-197-081518	05		1400					X	X								
TP8-194-081518	06		1410					X	X	B6							Hold
TP9-200-081518	07		1425					X	X								
TP9-196-081518	08		1435					X	X								Samples received at 0 °C
TP9-194-081518	09		1440					X	X	B6							Hold
S10W3-198-081518	10 A-E		1335		5		X	X	X								

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: Breeyn Green	Breeyn Green	Aspect	8/16/18	0700
Received by:	DAVID NICOLO	FEDEX	8/16/18	8:5*
Relinquished by:				
Received by:	Nhan Phan	FEBF	8/16/18	1025

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

August 20, 2018

Adam Griffin, Project Manager
Aspect Consulting, LLC
350 Madison Ave. N.
Bainbridge Island, WA 98110-1810

Dear Mr Griffin:

Included are the results from the testing of material submitted on August 16, 2018 from the FH Brooklyn 160092, F&BI 808390 project. There are 4 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Data Aspect, Breeyn Greer, Fasih Khan
ASP0820R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on August 16, 2018 by Friedman & Bruya, Inc. from the Aspect Consulting, LLC FH Brooklyn 160092, F&BI 808390 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Aspect Consulting, LLC
808390 -01	TP14-200-081618
808390 -02	TP14-197-081618
808390 -03	TP14-194-081618
808390 -04	TP15-198-081618
808390 -05	TP10-198-081618
808390 -06	TP13-197-081618
808390 -07	TP13-193-081618
808390 -08	TP12-197-081618
808390 -09	TP12-194-081618
808390 -10	TP12-193-081618
808390 -11	TP11-199-081618
808390 -12	TP11-197-081618
808390 -13	TP11-193-081618

All quality control requirements were acceptable.

Date of Report: 08/20/18
Date Received: 08/16/18
Project: FH Brooklyn 160092, F&BI 808390
Date Extracted: 08/16/18
Date Analyzed: 08/16/18

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
TP14-197-081618 808390-02	<0.02	<0.02	<0.02	<0.06	<5	86
TP15-198-081618 808390-04	<0.02	0.033	0.24	0.16	10	88
TP10-198-081618 808390-05	<0.02	<0.02	<0.02	<0.06	<5	88
TP13-197-081618 808390-06	<0.02	0.069	0.21	2.0	13	89
TP13-193-081618 808390-07	0.093	<0.02	0.24	0.088	<5	87
TP12-197-081618 808390-08	<0.02	<0.02	<0.02	<0.06	<5	89
TP11-197-081618 808390-12	<0.02	<0.02	<0.02	<0.06	<5	89
Method Blank 08-1754 MB	<0.02	<0.02	<0.02	<0.06	<5	88

Date of Report: 08/20/18
Date Received: 08/16/18
Project: FH Brooklyn 160092, F&BI 808390

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 808380-02 (Duplicate)

Analyte	Reporting Units	Sample Result (Wet Wt)	Duplicate Result (Wet Wt)	RPD (Limit 20)
Benzene	mg/kg (ppm)	<0.02	<0.02	nm
Toluene	mg/kg (ppm)	<0.02	<0.02	nm
Ethylbenzene	mg/kg (ppm)	0.023	<0.02	nm
Xylenes	mg/kg (ppm)	<0.06	<0.06	nm
Gasoline	mg/kg (ppm)	9.8 c	<5	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/kg (ppm)	0.5	85	69-120
Toluene	mg/kg (ppm)	0.5	85	70-117
Ethylbenzene	mg/kg (ppm)	0.5	88	65-123
Xylenes	mg/kg (ppm)	1.5	86	66-120
Gasoline	mg/kg (ppm)	20	90	71-131

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.

VSY

SAMPLE CHAIN OF CUSTODY ME 8/16/18

8088390

Report To ADAM GRIFFIN | BREEN | FASHT

Company ASPECT CONSULTING

Address 401 2ND AVE #201

City, State, ZIP SEATTLE WA 98104

Phone 612 232 7343 Email ABOVE

SAMPLERS (*signature*)

PROJECT NAME: FT BROOKLYN

PO #: 160092

REMARKS: RESULTS BY MONDAY AM

INVOICE TO: ASPECT AP

TURNAROUND TIME
- ☐ Standard Turnaround
- ☒ RUSH By MONDAY AM

Rush charges authorized by:

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

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM					Notes
						ANALYSES REQUESTED											
TP14-200-081618	01 A-D	8/16/18	1055	S	4												HOLD
TP14-197-0816-18	02	8/16/18	1105	S	4			X	X								
TP14-194-081618	03	8/16/18	1115	S	4												HOLD
TP15-198-081618	04	8/16/18	1130	S	4			X	X								
TP10-198-081618	05	8/16/18	0815	S	4			X	X								
TP13-197-081618	06	8/16/18	1020	S	4			X	X								
TP13-193-081618	07	8/16/18	1030	S	4			X	X								
TP12-197-081618	08	8/16/18	0935	S	4			X	X								
TP12-194-081618	09	8/16/18	0955	S	4												HOLD
TP12-193-081618	TD	8/16/18	0945	S	4												HOLD

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	ADAM GRIFFIN	ASPECT	8/16/18	1330
Received by:	Matt Langston	FB	8/16/18	1330
Relinquished by:				
Received by:		Samples received at 5 °C		

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

8088390

SAMPLE CHAIN OF CUSTODY ME 8/16/18

VS4

Page # 2 of 2

Report To Adam | Breeyn | Fasih

Company Aspect Consulting

Address 401 2nd Ave. #201

City, State, ZIP Seattle WA 98104

Phone 612 232 7343 Email Above

SAMPLERS (*signature*)

PROJECT NAME: FH Brooklyn

PO #: 160092

REMARKS: Results by Monday AM

INVOICE TO: Aspect AP

TURNAROUND TIME
- ☐ Standard Turnaround
- ☒ RUSH by Monday AM

Rush charges authorized by:

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

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM					Notes
TP11-199-081618	11 A-D	8/16/18	0840	S	4												Hold
TP11-197-081618	12	8/16/18	0850	S	4			X	X								
TP11-193-081618	13	8/16/18	0900	S	4												Hold

ACO 8/16/18

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Adam Griffin	Aspect	8/16/18	1330
Received by:	Matt Langsdorf	FBInc	8/16/18	1770
Relinquished by:				
Received by:		Samples received at 5 °C		

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

August 24, 2018

Adam Griffin, Project Manager
Aspect Consulting, LLC
350 Madison Ave. N.
Bainbridge Island, WA 98110-1810

Dear Mr Griffin:

Included are the results from the testing of material submitted on August 21, 2018 from the FH Brooklyn 160092, F&BI 808488 project. There are 6 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Data Aspect, Breeyn Greer, Fasih Khan
ASP0824R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on August 21, 2018 by Friedman & Bruya, Inc. from the Aspect Consulting, LLC FH Brooklyn 160092, F&BI 808488 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Aspect Consulting, LLC
808488 -01	E9S3-195-082118
808488 -02	E11S1-195-082118
808488 -03	E16S3-195-082118
808488 -04	E18S2-195-082118
808488 -05	E19S1-199-082118
808488 -06	E19S1-196-082118
808488 -07	E19S3-199-082118
808488 -08	E19S3-196-082118

All quality control requirements were acceptable.

Date of Report: 08/24/18
Date Received: 08/21/18
Project: FH Brooklyn 160092, F&BI 808488
Date Extracted: 08/22/18
Date Analyzed: 08/22/18

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
E9S3-195-082118 808488-01	<0.02	<0.02	<0.02	<0.06	<5	90
E11S1-195-082118 808488-02	<0.02	<0.02	<0.02	<0.06	<5	90
E16S3-195-082118 808488-03	<0.02	<0.02	<0.02	<0.06	<5	89
E18S2-195-082118 808488-04	<0.02	<0.02	<0.02	<0.06	<5	91
E19S1-199-082118 808488-05	<0.02	<0.02	<0.02	<0.06	<5	91
E19S1-196-082118 808488-06 1/10	<0.03 j	<0.2	0.53	1.3	210	93
E19S3-199-082118 808488-07	<0.02	<0.02	<0.02	<0.06	<5	91
E19S3-196-082118 808488-08	<0.02	<0.02	0.025	<0.06	<5	91
Method Blank 08-1763 MB	<0.02	<0.02	<0.02	<0.06	<5	91

Date of Report: 08/24/18
Date Received: 08/21/18
Project: FH Brooklyn 160092, F&BI 808488
Date Extracted: 08/21/18
Date Analyzed: 08/21/18

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 56-165)
E9S3-195-082118 808488-01	<50	<250	86
E11S1-195-082118 808488-02	<50	<250	82
E16S3-195-082118 808488-03	<50	<250	83
E18S2-195-082118 808488-04	<50	<250	88
E19S1-199-082118 808488-05	<50	<250	84
E19S1-196-082118 808488-06	670 x	<250	86
E19S3-199-082118 808488-07	<50	<250	86
E19S3-196-082118 808488-08	<50	<250	89
Method Blank 08-1876 MB	<50	<250	94

Date of Report: 08/24/18
Date Received: 08/21/18
Project: FH Brooklyn 160092, F&BI 808488

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 808488-01 (Duplicate)

Analyte	Reporting Units	Sample Result (Wet Wt)	Duplicate Result (Wet Wt)	RPD (Limit 20)
Benzene	mg/kg (ppm)	<0.02	<0.02	nm
Toluene	mg/kg (ppm)	<0.02	<0.02	nm
Ethylbenzene	mg/kg (ppm)	<0.02	<0.02	nm
Xylenes	mg/kg (ppm)	<0.06	<0.06	nm
Gasoline	mg/kg (ppm)	<5	<5	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/kg (ppm)	0.5	95	69-120
Toluene	mg/kg (ppm)	0.5	97	70-117
Ethylbenzene	mg/kg (ppm)	0.5	100	65-123
Xylenes	mg/kg (ppm)	1.5	99	66-120
Gasoline	mg/kg (ppm)	20	99	71-131

Date of Report: 08/24/18
Date Received: 08/21/18
Project: FH Brooklyn 160092, F&BI 808488

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 808488-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet Wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	<50	94	98	63-146	4

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Diesel Extended	mg/kg (ppm)	5,000	104	79-144

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.

SAMPLE CHAIN OF CUSTODY

808488 — ME 8/21/18 — V32 / 202

Page # 1 of 1

Report To: Adam Griffin, Breeyn Greer, Fasih Khan

Company: Aspect Consulting

Address: 401 2nd Ave S #201

City, State, ZIP: Seattle WA 98104

Phone: 612 232 7343 Email: all above

SAMPLERS (*signature*): Breeyn Greer

PROJECT NAME: FH Brooklyn

PO #: 160092

REMARKS: Rush

INVOICE TO: AP

TURNAROUND TIME
- ☐ Standard Turnaround
- ☒ RUSH Wed (8/22) End of Day

Rush charges authorized by:

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

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM					Notes
						ANALYSES REQUESTED											
E953-195-082118	01 A-E	8/21/18	1230	S	5		X	X	X								~~Dup~~ AG
E1151-195-082118	02		1245				X	X	X								8/21/18 ME
E1653-195-082118	03		1300				X	X	X								
E1852-195-082118	04		1310				X	X	X								
E1951-199-082118	05		1325				X	X	X								
E1951-196-082118	06		1330				(X)	(X)	(X)								~~Hold~~
E1953-199-082118	07		1340				X	X	X								
E1953-196-082118	08	↓	1350	↓	↓		(X)	(X)	(X)								~~Hold~~

~~Samples received at~~ 2 °C

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
~~Relinquished by:~~ Breeyn Greer	Breeyn Greer	Aspect	8/21/18	1930
Received by:	Matt Langston	FEDEX	8/22/18	1430
Relinquished by:				
Received by:				

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
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fbi@isomedia.com
www.friedmanandbruya.com

September 19, 2018

Adam Griffin, Project Manager
Aspect Consulting, LLC
350 Madison Ave. N.
Bainbridge Island, WA 98110-1810

Dear Mr Griffin:

Included are the additional results from the testing of material submitted on August 31, 2018 from the FH Brooklyn 160092, F&BI 808727 project. There are 9 pages included in this report.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Data Aspect
ASP0919R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on August 31, 2018 by Friedman & Bruya, Inc. from the Aspect Consulting, LLC FH Brooklyn 160092, F&BI 808727 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Aspect Consulting, LLC
808727 -01	MW-18-083118
808727 -02	MW-25-083118
808727 -03	MW-26-083118

Vinyl chloride in the 8260C laboratory control sample and laboratory control sample duplicate failed the acceptance criteria. The data were flagged accordingly.

All other quality control requirements were acceptable.

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-18-083118	Client:	Aspect Consulting, LLC
Date Received:	08/31/18	Project:	FH Brooklyn 160092, F&BI 808727
Date Extracted:	09/06/18	Lab ID:	808727-01
Date Analyzed:	09/06/18	Data File:	090608.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	57	121
Toluene-d8	95	63	127
4-Bromofluorobenzene	95	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2 jl
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	1.6

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-25-083118	Client:	Aspect Consulting, LLC
Date Received:	08/31/18	Project:	FH Brooklyn 160092, F&BI 808727
Date Extracted:	09/06/18	Lab ID:	808727-02
Date Analyzed:	09/06/18	Data File:	090609.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	57	121
Toluene-d8	99	63	127
4-Bromofluorobenzene	98	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	9.5 jl
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	24
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	240 ve
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	320 ve
Tetrachloroethene	42

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-25-083118	Client:	Aspect Consulting, LLC
Date Received:	08/31/18	Project:	FH Brooklyn 160092, F&BI 808727
Date Extracted:	09/06/18	Lab ID:	808727-02 1/10
Date Analyzed:	09/07/18	Data File:	090734.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	50	150
Toluene-d8	100	50	150
4-Bromofluorobenzene	101	50	150

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	12 jl
Chloroethane	<10
1,1-Dichloroethene	<10
Methylene chloride	<50
trans-1,2-Dichloroethene	26
1,1-Dichloroethane	<10
cis-1,2-Dichloroethene	280
1,2-Dichloroethane (EDC)	<10
1,1,1-Trichloroethane	<10
Trichloroethene	360
Tetrachloroethene	43

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-26-083118	Client:	Aspect Consulting, LLC
Date Received:	08/31/18	Project:	FH Brooklyn 160092, F&BI 808727
Date Extracted:	09/06/18	Lab ID:	808727-03
Date Analyzed:	09/06/18	Data File:	090610.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	57	121
Toluene-d8	100	63	127
4-Bromofluorobenzene	99	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	5.2 jl
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	98
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	540 ve
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	1,200 ve
Tetrachloroethene	43

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-26-083118	Client:	Aspect Consulting, LLC
Date Received:	08/31/18	Project:	FH Brooklyn 160092, F&BI 808727
Date Extracted:	09/06/18	Lab ID:	808727-03 1/20
Date Analyzed:	09/07/18	Data File:	090735.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	50	150
Toluene-d8	99	50	150
4-Bromofluorobenzene	102	50	150

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	12 jl
Chloroethane	<20
1,1-Dichloroethene	<20
Methylene chloride	<100
trans-1,2-Dichloroethene	110
1,1-Dichloroethane	<20
cis-1,2-Dichloroethene	660
1,2-Dichloroethane (EDC)	<20
1,1,1-Trichloroethane	<20
Trichloroethene	1,400
Tetrachloroethene	44

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	Method Blank	Client:	Aspect Consulting, LLC
Date Received:	Not Applicable	Project:	FH Brooklyn 160092, F&BI 808727
Date Extracted:	09/06/18	Lab ID:	08-1986 mb
Date Analyzed:	09/06/18	Data File:	090619.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	50	150
Toluene-d8	99	50	150
4-Bromofluorobenzene	100	50	150

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2 jl
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

Date of Report: 09/19/18
Date Received: 08/31/18
Project: FH Brooklyn 160092, F&BI 808727

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260C

Laboratory Code: 809013-02 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Acceptance Criteria
Vinyl chloride	ug/L (ppb)	50	<0.2	65	61-139
Chloroethane	ug/L (ppb)	50	<1	74	55-149
1,1-Dichloroethene	ug/L (ppb)	50	<1	89	71-123
Methylene chloride	ug/L (ppb)	50	<5	102	61-126
trans-1,2-Dichloroethene	ug/L (ppb)	50	<1	96	72-122
1,1-Dichloroethane	ug/L (ppb)	50	<1	103	79-113
cis-1,2-Dichloroethene	ug/L (ppb)	50	<1	103	63-126
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	<1	105	70-119
1,1,1-Trichloroethane	ug/L (ppb)	50	<1	102	75-121
Trichloroethene	ug/L (ppb)	50	<1	98	73-122
Tetrachloroethene	ug/L (ppb)	50	<1	99	72-113

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Vinyl chloride	ug/L (ppb)	50	65 vo	66 vo	70-128	2
Chloroethane	ug/L (ppb)	50	73	73	66-149	0
1,1-Dichloroethene	ug/L (ppb)	50	88	90	75-119	2
Methylene chloride	ug/L (ppb)	50	96	99	63-132	3
trans-1,2-Dichloroethene	ug/L (ppb)	50	96	98	76-118	2
1,1-Dichloroethane	ug/L (ppb)	50	102	103	77-119	1
cis-1,2-Dichloroethene	ug/L (ppb)	50	102	104	76-119	2
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	104	107	78-114	3
1,1,1-Trichloroethane	ug/L (ppb)	50	101	104	80-116	3
Trichloroethene	ug/L (ppb)	50	97	100	72-119	3
Tetrachloroethene	ug/L (ppb)	50	99	98	78-109	1

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.

808727

SAMPLE CHAIN OF CUSTODY

ME 08-31-18

Page # 1 of 1

Report To Adam Griffin

Company Aspect Consulting

Address 401 2nd Ave S #201

City, State, ZIP Seattle WA

Phone 612 232 7343 Email agriffin@aspectconsulting.com

SAMPLERS (*signature*): Breeyn Greer

PROJECT NAME: FH Brooklyn

PO #: 160092

REMARKS: CVOCs invoiced Separately

INVOICE TO: AP

TURNAROUND TIME
- ☑ Standard Turnaround
- ☐ RUSH
- Rush charges authorized by:

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

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM					Notes
						ANALYSES REQUESTED											
MW-18-083118	01A-D	8/31/18	1355	W	~~3~~ 4		X	X		X							Dx if possible
MW-25-083118	02 T	8/31/18	1215	↓	4		X	X		X							
MW-26-083118	03 T	8/31/18	1000	↓	4		X	X		X							
													Samples ~~received~~ at 2 °C				

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: Breeyn Greer	Breeyn Greer	Aspect	8/31/18	1516
Received by: Nhan Phan	Nhan Phan	FEBI	8/31/18	1516
Relinquished by:				
Received by:				

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

September 13, 2018

Adam Griffin, Project Manager
Aspect Consulting, LLC
350 Madison Ave. N.
Bainbridge Island, WA 98110-1810

Dear Mr Griffin:

Included are the results from the testing of material submitted on August 31, 2018 from the FH Brooklyn 160092, F&BI 808727 project. There are 12 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Data Aspect
ASP0913R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on August 31, 2018 by Friedman & Bruya, Inc. from the Aspect Consulting, LLC FH Brooklyn 160092, F&BI 808727 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Aspect Consulting, LLC
808727 -01	MW-18-083118
808727 -02	MW-25-083118
808727 -03	MW-26-083118

All quality control requirements were acceptable.

Date of Report: 09/13/18
Date Received: 08/31/18
Project: FH Brooklyn 160092, F&BI 808727
Date Extracted: 09/05/18
Date Analyzed: 09/05/18

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Gasoline Range	Surrogate (% Recovery) (Limit 51-134)
MW-18-083118 808727-01	<100	87
MW-25-083118 808727-02	440	88
MW-26-083118 808727-03	1,300	94
Method Blank 08-1945 MB	<100	94

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-18-083118	Client:	Aspect Consulting, LLC
Date Received:	08/31/18	Project:	FH Brooklyn 160092, F&BI 808727
Date Extracted:	09/06/18	Lab ID:	808727-01
Date Analyzed:	09/06/18	Data File:	090608.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	57	121
Toluene-d8	95	63	127
4-Bromofluorobenzene	95	60	133

Compounds:	Concentration ug/L (ppb)
Methyl t-butyl ether (MTBE)	<1
Benzene	<0.35
Toluene	<1
Ethylbenzene	<1
m,p-Xylene	<2
o-Xylene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-25-083118	Client:	Aspect Consulting, LLC
Date Received:	08/31/18	Project:	FH Brooklyn 160092, F&BI 808727
Date Extracted:	09/06/18	Lab ID:	808727-02
Date Analyzed:	09/06/18	Data File:	090609.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	57	121
Toluene-d8	99	63	127
4-Bromofluorobenzene	98	60	133

Compounds:	Concentration ug/L (ppb)
Methyl t-butyl ether (MTBE)	<1
Benzene	12
Toluene	<1
Ethylbenzene	<1
m,p-Xylene	<2
o-Xylene	<1

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-26-083118	Client:	Aspect Consulting, LLC
Date Received:	08/31/18	Project:	FH Brooklyn 160092, F&BI 808727
Date Extracted:	09/06/18	Lab ID:	808727-03
Date Analyzed:	09/06/18	Data File:	090610.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	57	121
Toluene-d8	100	63	127
4-Bromofluorobenzene	99	60	133

Compounds:	Concentration ug/L (ppb)
Methyl t-butyl ether (MTBE)	<1
Benzene	23
Toluene	<1
Ethylbenzene	<1
m,p-Xylene	<2
o-Xylene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	Method Blank	Client:	Aspect Consulting, LLC
Date Received:	Not Applicable	Project:	FH Brooklyn 160092, F&BI 808727
Date Extracted:	09/06/18	Lab ID:	08-1986 mb
Date Analyzed:	09/06/18	Data File:	090619.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	50	150
Toluene-d8	99	50	150
4-Bromofluorobenzene	100	50	150

Compounds:	Concentration ug/L (ppb)
Methyl t-butyl ether (MTBE)	<1
Benzene	<0.35
Toluene	<1
Ethylbenzene	<1
m,p-Xylene	<2
o-Xylene	<1

Date of Report: 09/13/18
Date Received: 08/31/18
Project: FH Brooklyn 160092, F&BI 808727
Date Extracted: 09/04/18
Date Analyzed: 09/04/18

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 41-152)
MW-18-083118 808727-01	180 x	<250	69
MW-25-083118 808727-02	<50	<250	74
MW-26-083118 808727-03 1/0.6	120 x	<150	71
Method Blank 08-1981 MB	<50	<250	67

Date of Report: 09/13/18
Date Received: 08/31/18
Project: FH Brooklyn 160092, F&BI 808727

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TPH AS GASOLINE USING METHOD NWTPH-Gx

Laboratory Code: 809020-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
Gasoline	ug/L (ppb)	<100	<100	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Gasoline	ug/L (ppb)	1,000	94	69-134

Date of Report: 09/13/18
Date Received: 08/31/18
Project: FH Brooklyn 160092, F&BI 808727

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260C

Laboratory Code: 809013-02 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Acceptance Criteria
Methyl t-butyl ether (MTBE)	ug/L (ppb)	50	<1	101	68-125
Benzene	ug/L (ppb)	50	<0.35	97	75-114
Toluene	ug/L (ppb)	50	<1	103	73-117
Ethylbenzene	ug/L (ppb)	50	<1	102	66-124
m,p-Xylene	ug/L (ppb)	100	<2	99	63-128
o-Xylene	ug/L (ppb)	50	<1	102	64-129

Date of Report: 09/13/18
Date Received: 08/31/18
Project: FH Brooklyn 160092, F&BI 808727

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260C

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Methyl t-butyl ether (MTBE)	ug/L (ppb)	50	100	102	70-122	2
Benzene	ug/L (ppb)	50	97	98	75-116	1
Toluene	ug/L (ppb)	50	103	104	79-115	1
Ethylbenzene	ug/L (ppb)	50	101	103	83-111	2
m,p-Xylene	ug/L (ppb)	100	99	100	84-112	1
o-Xylene	ug/L (ppb)	50	102	103	81-117	1

Date of Report: 09/13/18
Date Received: 08/31/18
Project: FH Brooklyn 160092, F&BI 808727

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	ug/L (ppb)	2,500	92	96	63-142	4

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.

808727

SAMPLE CHAIN OF CUSTODY

ME 08-31-18

Page # 1 of 1

Report To Adam Griffin

Company Aspect Consulting

Address 401 2nd Ave S #201

City, State, ZIP Seattle WA

Phone 612 232 7343 Email agriffin@aspectconsulting.com

SAMPLERS (*signature*): Breeyn Greer

PROJECT NAME: FH Brooklyn

PO #: 160092

REMARKS: CVOCs invoiced Separately

INVOICE TO: AP

TURNAROUND TIME
- ☑ Standard Turnaround
- ☐ RUSH
- Rush charges authorized by:

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

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM					Notes
						ANALYSES REQUESTED											
MW-18-083118	01A-D	8/31/18	1355	W	~~3~~ 4		X	X		X							Dx if possible
MW-25-083118	02 T	8/31/18	1215	↓	4		X	X		X							
MW-26-083118	03 T	8/31/18	1000	↓	4		X	X		X							
													Samples ~~received~~ at 2 °C				

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: Breeyn Greer	Breeyn Greer	Aspect	8/31/18	1516
Received by: Nhan Phan	Nhan Phan	FEBI	8/31/18	1516
Relinquished by:				
Received by:				

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

September 10, 2018

Adam Griffin, Project Manager
Aspect Consulting, LLC
350 Madison Ave. N.
Bainbridge Island, WA 98110-1810

Dear Mr Griffin:

Included are the results from the testing of material submitted on September 5, 2018 from the FH Brooklyn 160092, F&BI 809062 project. There are 4 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Data Aspect, Fasih Khan, Breeyn Greer, Andrew Yonkofski
ASP0910R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on September 5, 2018 by Friedman & Bruya, Inc. from the Aspect Consulting, LLC FH Brooklyn 160092, F&BI 809062 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Aspect Consulting, LLC
809062 -01	W18N4-189.5-090518
809062 -02	W16N4-189.5-090518
809062 -03	W18N6-189.5-090518
809062 -04	W18N7-192-090518
809062 -05	W16N7-192-090518

All quality control requirements were acceptable.

Date of Report: 09/10/18
Date Received: 09/05/18
Project: FH Brooklyn 160092, F&BI 809062
Date Extracted: 09/05/18
Date Analyzed: 09/05/18

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 50-132)
W18N4-189.5-090518 809062-01	0.046	<0.02	0.19	0.10	<5	81
W16N4-189.5-090518 809062-02	<0.02	<0.02	<0.02	<0.06	<5	81
W18N6-189.5-090518 809062-03	<0.02	<0.02	<0.02	<0.06	<5	82
W18N7-192-090518 809062-04	<0.02	<0.02	<0.02	<0.06	<5	79
W16N7-192-090518 809062-05	<0.02	<0.02	<0.02	<0.06	<5	81
Method Blank 08-1947 MB	<0.02	<0.02	<0.02	<0.06	<5	80

Date of Report: 09/10/18
Date Received: 09/05/18
Project: FH Brooklyn 160092, F&BI 809062

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 809062-01 (Duplicate)

Analyte	Reporting Units	Sample Result (Wet Wt)	Duplicate Result (Wet Wt)	RPD (Limit 20)
Benzene	mg/kg (ppm)	0.037	0.023	46 a
Toluene	mg/kg (ppm)	<0.02	<0.02	nm
Ethylbenzene	mg/kg (ppm)	0.16	0.074	74 a
Xylenes	mg/kg (ppm)	0.082	<0.06	nm
Gasoline	mg/kg (ppm)	<5	<5	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/kg (ppm)	0.5	98	66-121
Toluene	mg/kg (ppm)	0.5	96	72-128
Ethylbenzene	mg/kg (ppm)	0.5	98	69-132
Xylenes	mg/kg (ppm)	1.5	97	69-131
Gasoline	mg/kg (ppm)	20	105	61-153

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.

809062

SAMPLE CHAIN OF CUSTODY ME 09-05-18

B01 / B2

Page # 1 of 1

Report To Adam Griffin, Fasih Khan, Andrew Yonkofski, Breeyn Greer

Company Aspect Consulting

Address 401 2nd Ave S, # 201

City, State, ZIP Seattle, WA 98104

Phone _____ Email All above

SAMPLERS (*signature*)

PROJECT NAME: FH Brooklyn

PO #: 160092

REMARKS: Rush

INVOICE TO: AP

TURNAROUND TIME
- ☐ Standard Turnaround
- ☒ RUSH Thurs a.m.

Rush charges authorized by:

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

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM					Notes
W18N4-189.5-090518	01 A-E	9/5/18	1310	Soil	5			X	X								
W16N4-189.5-090518	02		1255					X	X								
W18N6-189.5-090518	03		1325					X	X								
W18N7-192-090518	04		1335					X	X								
W16N7-192-090518	05		1345					X	X								
																	Samples received at 3 °C

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Andrew Yonkofski	Aspect	9/5/18	1540
Received by:	DO UO	FEDEX	9-5-18	15.40
Relinquished by:				
Received by:				

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

July 11, 2018

Adam Griffin, Project Manager
Aspect Consulting, LLC
350 Madison Ave. N.
Bainbridge Island, WA 98110-1810

Dear Mr Griffin:

Included are the additional results from the testing of material submitted on June 22, 2018 from the FH Brooklyn, F&BI 806437 project. There are 6 pages included in this report.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Data Aspect, Bob Hanford, Fasih Khan, Breeyn Greer
ASP0711R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on June 22, 2018 by Friedman & Bruya, Inc. from the Aspect Consulting, LLC FH Brooklyn, F&BI 806437 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Aspect Consulting, LLC
806437 -01	UST1-BASE-206
806437 -02	UST2&3-BASE-208
806437 -03	UST4&5-BASE-200
806437 -04	UST6-BASE-208
806437 -05	SS2-3-062218

All quality control requirements were acceptable.

Date of Report: 07/11/18
Date Received: 06/22/18
Project: FH Brooklyn, F&BI 806437
Date Extracted: 07/05/18
Date Analyzed: 07/05/18

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
SS2-3-062218 806437-05	<0.02	<0.02	<0.02	<0.06	<5	75
Method Blank 07-05-18 10:25	<0.02	<0.02	<0.02	<0.06	<5	77

Date of Report: 07/11/18
Date Received: 06/22/18
Project: FH Brooklyn, F&BI 806437
Date Extracted: 07/03/18
Date Analyzed: 07/03/18

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 48-168)
SS2-3-062218 806437-05	<50	<250	114
Method Blank 08-1451 MB	<50	<250	94

Date of Report: 07/11/18
Date Received: 06/22/18
Project: FH Brooklyn, F&BI 806437

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 807023-02 1/50 (Duplicate)

Analyte	Reporting Units	Sample Result (Wet Wt)	Duplicate Result (Wet Wt)	RPD (Limit 20)
Benzene	mg/kg (ppm)	<1	<1	nm
Toluene	mg/kg (ppm)	<1	<1	nm
Ethylbenzene	mg/kg (ppm)	4.1	4.3	6
Xylenes	mg/kg (ppm)	3.4	4.2	20
Gasoline	mg/kg (ppm)	2,000	2,400	20

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/kg (ppm)	0.5	75	69-120
Toluene	mg/kg (ppm)	0.5	83	70-117
Ethylbenzene	mg/kg (ppm)	0.5	87	65-123
Xylenes	mg/kg (ppm)	1.5	87	66-120
Gasoline	mg/kg (ppm)	20	80	71-131

Date of Report: 07/11/18
Date Received: 06/22/18
Project: FH Brooklyn, F&BI 806437

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 807008-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet Wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	<50	91	89	73-135	2

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Diesel Extended	mg/kg (ppm)	5,000	88	74-139

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.

~~806438~~ 806437

FKHAN@ASPECTCONSULTING.COM

SAMPLE CHAIN OF CUSTODY

ME 06-22-18

A02/NS2

Page # 1 of 1

Report To ADAM G, BOB, HANFORD, FASIH, BREEYN

Company ASPECT CONSULTING

Address SEATTLE

City, State, ZIP WA

Phone 206.713.2186 Email

SAMPLERS (signature)

PROJECT NAME: FH BROOKLYN

PO #

REMARKS

INVOICE TO: 180064

TURNAROUND TIME
- [x] Standard Turnaround
- [ ] RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- [ ] Dispose after 30 days
- [ ] Archive Samples
- [ ] Other

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM	PCBs	MTCA 5 METALS			Notes
						ANALYSES REQUESTED											
VST 1-BASE-206	01	6/22/18	1220	S	5		X	X		X							✓ per PL 7/2
VST 2&3-BASE-208	02		1145				X	X		X		X	X	X			
VST 4&5-BASE-200	03		1330				X	X		X							
VST 6-BASE-208	04		1420				X	X		X							
SS2-3-062818	05		1130				✓	✓	✓								
													Samples received at 4 °C				

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	FASIH KHAN	ASPECT	6/22/18	
Received by:	LIZ Meeker-Bga	F?B1	6/22/18	1630
Relinquished by:				
Received by:				

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

3012 16th Avenue West
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fbi@isomedia.com
www.friedmanandbruya.com

July 3, 2018

Fasih Khan, Project Manager
Aspect Consulting, LLC
401 2nd Ave S, Suite 201
Seattle, WA 98104

Dear Mr Khan:

Included are the results from the testing of material submitted on June 22, 2018 from the FH Brooklyn, F&BI 806437 project. There are 24 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Data Aspect, Bob Hanford, Breeyn Greer, Adam Griffin
ASP0703R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on June 22, 2018 by Friedman & Bruya, Inc. from the Aspect Consulting, LLC FH Brooklyn, F&BI 806437 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Aspect Consulting, LLC
806437 -01	UST1-BASE-206
806437 -02	UST2&3-BASE-208
806437 -03	UST4&5-BASE-200
806437 -04	UST6-BASE-208
806437 -05	SS2-3-062218

An 8270D internal standard failed the acceptance criteria for sample UST2&3-BASE-208 due to matrix interferences. The data were flagged accordingly. The sample was diluted and reanalyzed.

All other quality control requirements were acceptable.

Date of Report: 07/03/18
Date Received: 06/22/18
Project: FH Brooklyn, F&BI 806437
Date Extracted: 06/25/18
Date Analyzed: 06/25/18 and 06/27/18

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Gasoline Range	Surrogate (% Recovery) (Limit 58-139)
UST1-BASE-206 806437-01 1/5	1,900	ip
UST2&3-BASE-208 806437-02 1/10	1,200	117
UST4&5-BASE-200 806437-03	<5	69
UST6-BASE-208 806437-04	<5	69
Method Blank 08-1283 MB	<5	87

Date of Report: 07/03/18
Date Received: 06/22/18
Project: FH Brooklyn, F&BI 806437
Date Extracted: 06/25/18
Date Analyzed: 06/25/18

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 53-144)
UST1-BASE-206 806437-01	13,000	<250	105
UST2&3-BASE-208 806437-02	9,500 x	33,000	80
UST4&5-BASE-200 806437-03	<50	<250	92
UST6-BASE-208 806437-04	<50	<250	91
Method Blank 08-1367 MB	<50	<250	91

Analysis For Total Metals By EPA Method 6020B

Client ID:	UST2&3-BASE-208	Client:	Aspect Consulting, LLC
Date Received:	06/22/18	Project:	FH Brooklyn, F&BI 806437
Date Extracted:	06/25/18	Lab ID:	806437-02
Date Analyzed:	06/25/18	Data File:	806437-02.061
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	2.26
Cadmium	<1
Chromium	26.4
Lead	2.14
Mercury	<1

Analysis For Total Metals By EPA Method 6020B

Client ID:	Method Blank	Client:	Aspect Consulting, LLC
Date Received:	NA	Project:	FH Brooklyn, F&BI 806437
Date Extracted:	06/25/18	Lab ID:	I8-411 mb
Date Analyzed:	06/25/18	Data File:	I8-411 mb.059
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	<1
Cadmium	<1
Chromium	<1
Lead	<1
Mercury	<1

Analysis For Semivolatile Compounds By EPA Method 8270D SIM

Client Sample ID:	UST2&3-BASE-208	Client:	Aspect Consulting, LLC
Date Received:	06/22/18	Project:	FH Brooklyn, F&BI 806437
Date Extracted:	06/25/18	Lab ID:	806437-02 1/5
Date Analyzed:	06/28/18	Data File:	062814.D
Matrix:	Soil	Instrument:	GCMS6
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Anthracene-d10	91 J	31	163
Benzo(a)anthracene-d12	123 J	24	168

Compounds:	Concentration mg/kg (ppm)
Naphthalene	18 ve
Acenaphthylene	0.16
Acenaphthene	0.14
Fluorene	0.28
Phenanthrene	2.1 ve J
Anthracene	0.35 J
Fluoranthene	0.21 J
Pyrene	1.9 ve J
Benz(a)anthracene	0.18 J
Chrysene	0.65 J
Benzo(a)pyrene	0.080 J
Benzo(b)fluoranthene	0.098 J
Benzo(k)fluoranthene	0.028 J
Indeno(1,2,3-cd)pyrene	0.094 J
Dibenz(a,h)anthracene	0.010 J
Benzo(g,h,i)perylene	0.25 J

Analysis For Semivolatile Compounds By EPA Method 8270D SIM

Client Sample ID:	UST2&3-BASE-208	Client:	Aspect Consulting, LLC
Date Received:	06/22/18	Project:	FH Brooklyn, F&BI 806437
Date Extracted:	06/25/18	Lab ID:	806437-02 1/500
Date Analyzed:	06/26/18	Data File:	062614.D
Matrix:	Soil	Instrument:	GCMS6
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Anthracene-d10	358 d	31	163
Benzo(a)anthracene-d12	111 d	24	168

Compounds:	Concentration mg/kg (ppm)
Naphthalene	20
Acenaphthylene	<1
Acenaphthene	<1
Fluorene	<1
Phenanthrene	2.4
Anthracene	<1
Fluoranthene	<1
Pyrene	1.3
Benz(a)anthracene	<1
Chrysene	<1
Benzo(a)pyrene	<1
Benzo(b)fluoranthene	<1
Benzo(k)fluoranthene	<1
Indeno(1,2,3-cd)pyrene	<1
Dibenz(a,h)anthracene	<1
Benzo(g,h,i)perylene	<1

Analysis For Semivolatile Compounds By EPA Method 8270D SIM

Client Sample ID:	Method Blank	Client:	Aspect Consulting, LLC
Date Received:	Not Applicable	Project:	FH Brooklyn, F&BI 806437
Date Extracted:	06/25/18	Lab ID:	08-1368 mb 1/5
Date Analyzed:	06/25/18	Data File:	062517.D
Matrix:	Soil	Instrument:	GCMS6
Units:	mg/kg (ppm) Dry Weight	Operator:	ya

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Anthracene-d10	79	31	163
Benzo(a)anthracene-d12	92	24	168

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.01
Acenaphthylene	<0.01
Acenaphthene	<0.01
Fluorene	<0.01
Phenanthrene	<0.01
Anthracene	<0.01
Fluoranthene	<0.01
Pyrene	<0.01
Benz(a)anthracene	<0.01
Chrysene	<0.01
Benzo(a)pyrene	<0.01
Benzo(b)fluoranthene	<0.01
Benzo(k)fluoranthene	<0.01
Indeno(1,2,3-cd)pyrene	<0.01
Dibenz(a,h)anthracene	<0.01
Benzo(g,h,i)perylene	<0.01

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	UST1-BASE-206	Client:	Aspect Consulting, LLC
Date Received:	06/22/18	Project:	FH Brooklyn, F&BI 806437
Date Extracted:	06/25/18	Lab ID:	806437-01
Date Analyzed:	06/25/18	Data File:	062510.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	98	62	142
Toluene-d8	101	55	145
4-Bromofluorobenzene	105	65	139

Compounds:	Concentration mg/kg (ppm)	Compounds:	Concentration mg/kg (ppm)
Dichlorodifluoromethane	<0.5	1,3-Dichloropropane	<0.05
Chloromethane	<0.5	Tetrachloroethene	<0.025
Vinyl chloride	<0.05	Dibromochloromethane	<0.05
Bromomethane	<0.5	1,2-Dibromoethane (EDB)	<0.05
Chloroethane	<0.5	Chlorobenzene	<0.05
Trichlorofluoromethane	<0.5	Ethylbenzene	1.0
Acetone	<0.5	1,1,1,2-Tetrachloroethane	<0.05
1,1-Dichloroethene	<0.05	m,p-Xylene	3.7
Hexane	<0.25	o-Xylene	3.6
Methylene chloride	<0.5	Styrene	<0.05
Methyl t-butyl ether (MTBE)	<0.05	Isopropylbenzene	1.3
trans-1,2-Dichloroethene	<0.05	Bromoform	<0.05
1,1-Dichloroethane	<0.05	n-Propylbenzene	1.8
2,2-Dichloropropane	<0.05	Bromobenzene	<0.05
cis-1,2-Dichloroethene	<0.05	1,3,5-Trimethylbenzene	4.0
Chloroform	<0.05	1,1,2,2-Tetrachloroethane	<0.05
2-Butanone (MEK)	<0.5	1,2,3-Trichloropropane	<0.05
1,2-Dichloroethane (EDC)	<0.05	2-Chlorotoluene	<0.05
1,1,1-Trichloroethane	<0.05	4-Chlorotoluene	<0.05
1,1-Dichloropropene	<0.05	tert-Butylbenzene	0.11
Carbon tetrachloride	<0.05	1,2,4-Trimethylbenzene	10
Benzene	<0.03	sec-Butylbenzene	2.9
Trichloroethene	<0.02	p-Isopropyltoluene	1.7
1,2-Dichloropropane	<0.05	1,3-Dichlorobenzene	<0.05
Bromodichloromethane	<0.05	1,4-Dichlorobenzene	<0.05
Dibromomethane	<0.05	1,2-Dichlorobenzene	<0.05
4-Methyl-2-pentanone	<0.5	1,2-Dibromo-3-chloropropane	<0.5
cis-1,3-Dichloropropene	<0.05	1,2,4-Trichlorobenzene	<0.25
Toluene	0.48	Hexachlorobutadiene	<0.25
trans-1,3-Dichloropropene	<0.05	Naphthalene	3.3
1,1,2-Trichloroethane	<0.05	1,2,3-Trichlorobenzene	<0.25
2-Hexanone	<0.5		

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	UST2&3-BASE-208	Client:	Aspect Consulting, LLC
Date Received:	06/22/18	Project:	FH Brooklyn, F&BI 806437
Date Extracted:	06/25/18	Lab ID:	806437-02
Date Analyzed:	06/25/18	Data File:	062511.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	96	62	142
Toluene-d8	101	55	145
4-Bromofluorobenzene	108	65	139

Compounds:	Concentration mg/kg (ppm)	Compounds:	Concentration mg/kg (ppm)
Dichlorodifluoromethane	<0.5	1,3-Dichloropropane	<0.05
Chloromethane	<0.5	Tetrachloroethene	<0.025
Vinyl chloride	<0.05	Dibromochloromethane	<0.05
Bromomethane	<0.5	1,2-Dibromoethane (EDB)	<0.05
Chloroethane	<0.5	Chlorobenzene	<0.05
Trichlorofluoromethane	<0.5	Ethylbenzene	2.2
Acetone	<0.5	1,1,1,2-Tetrachloroethane	<0.05
1,1-Dichloroethene	<0.05	m,p-Xylene	17
Hexane	<0.25	o-Xylene	8.5
Methylene chloride	<0.5	Styrene	<0.05
Methyl t-butyl ether (MTBE)	<0.05	Isopropylbenzene	1.2
trans-1,2-Dichloroethene	<0.05	Bromoform	<0.05
1,1-Dichloroethane	<0.05	n-Propylbenzene	2.9
2,2-Dichloropropane	<0.05	Bromobenzene	<0.05
cis-1,2-Dichloroethene	<0.05	1,3,5-Trimethylbenzene	7.8
Chloroform	<0.05	1,1,2,2-Tetrachloroethane	<0.05
2-Butanone (MEK)	<0.5	1,2,3-Trichloropropane	<0.05
1,2-Dichloroethane (EDC)	<0.05	2-Chlorotoluene	<0.05
1,1,1-Trichloroethane	<0.05	4-Chlorotoluene	<0.05
1,1-Dichloropropene	<0.05	tert-Butylbenzene	0.16
Carbon tetrachloride	<0.05	1,2,4-Trimethylbenzene	26 ve
Benzene	0.12	sec-Butylbenzene	0.72
Trichloroethene	<0.02	p-Isopropyltoluene	1.2
1,2-Dichloropropane	<0.05	1,3-Dichlorobenzene	<0.05
Bromodichloromethane	<0.05	1,4-Dichlorobenzene	<0.05
Dibromomethane	<0.05	1,2-Dichlorobenzene	<0.05
4-Methyl-2-pentanone	<0.5	1,2-Dibromo-3-chloropropane	<0.5
cis-1,3-Dichloropropene	<0.05	1,2,4-Trichlorobenzene	<0.25
Toluene	1.7	Hexachlorobutadiene	<0.25
trans-1,3-Dichloropropene	<0.05	Naphthalene	13
1,1,2-Trichloroethane	<0.05	1,2,3-Trichlorobenzene	<0.25
2-Hexanone	<0.5		

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	UST2&3-BASE-208	Client:	Aspect Consulting, LLC
Date Received:	06/22/18	Project:	FH Brooklyn, F&BI 806437
Date Extracted:	06/25/18	Lab ID:	806437-02 1/10
Date Analyzed:	06/26/18	Data File:	062616.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	57	121
Toluene-d8	101	63	127
4-Bromofluorobenzene	104	60	133

Compounds:	Concentration mg/kg (ppm)	Compounds:	Concentration mg/kg (ppm)
Dichlorodifluoromethane	<5	1,3-Dichloropropane	<0.5
Chloromethane	<5	Tetrachloroethene	<0.25
Vinyl chloride	<0.5	Dibromochloromethane	<0.5
Bromomethane	<5	1,2-Dibromoethane (EDB)	<0.5
Chloroethane	<5	Chlorobenzene	<0.5
Trichlorofluoromethane	<5	Ethylbenzene	2.2
Acetone	<5	1,1,1,2-Tetrachloroethane	<0.5
1,1-Dichloroethene	<0.5	m,p-Xylene	17
Hexane	<2.5	o-Xylene	8.6
Methylene chloride	<5	Styrene	<0.5
Methyl t-butyl ether (MTBE)	<0.5	Isopropylbenzene	1.2
trans-1,2-Dichloroethene	<0.5	Bromoform	<0.5
1,1-Dichloroethane	<0.5	n-Propylbenzene	3.0
2,2-Dichloropropane	<0.5	Bromobenzene	<0.5
cis-1,2-Dichloroethene	<0.5	1,3,5-Trimethylbenzene	7.6
Chloroform	<0.5	1,1,2,2-Tetrachloroethane	<0.5
2-Butanone (MEK)	<5	1,2,3-Trichloropropane	<0.5
1,2-Dichloroethane (EDC)	<0.5	2-Chlorotoluene	<0.5
1,1,1-Trichloroethane	<0.5	4-Chlorotoluene	<0.5
1,1-Dichloropropene	<0.5	tert-Butylbenzene	<0.5
Carbon tetrachloride	<0.5	1,2,4-Trimethylbenzene	27
Benzene	<0.3	sec-Butylbenzene	0.76
Trichloroethene	<0.2	p-Isopropyltoluene	1.3
1,2-Dichloropropane	<0.5	1,3-Dichlorobenzene	<0.5
Bromodichloromethane	<0.5	1,4-Dichlorobenzene	<0.5
Dibromomethane	<0.5	1,2-Dichlorobenzene	<0.5
4-Methyl-2-pentanone	<5	1,2-Dibromo-3-chloropropane	<5
cis-1,3-Dichloropropene	<0.5	1,2,4-Trichlorobenzene	<2.5
Toluene	1.7	Hexachlorobutadiene	<2.5
trans-1,3-Dichloropropene	<0.5	Naphthalene	14
1,1,2-Trichloroethane	<0.5	1,2,3-Trichlorobenzene	<2.5
2-Hexanone	<5		

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	UST4&5-BASE-200	Client:	Aspect Consulting, LLC
Date Received:	06/22/18	Project:	FH Brooklyn, F&BI 806437
Date Extracted:	06/25/18	Lab ID:	806437-03
Date Analyzed:	06/25/18	Data File:	062508.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	98	62	142
Toluene-d8	101	55	145
4-Bromofluorobenzene	106	65	139

Compounds:	Concentration mg/kg (ppm)	Compounds:	Concentration mg/kg (ppm)
Dichlorodifluoromethane	<0.5	1,3-Dichloropropane	<0.05
Chloromethane	<0.5	Tetrachloroethene	<0.025
Vinyl chloride	<0.05	Dibromochloromethane	<0.05
Bromomethane	<0.5	1,2-Dibromoethane (EDB)	<0.05
Chloroethane	<0.5	Chlorobenzene	<0.05
Trichlorofluoromethane	<0.5	Ethylbenzene	<0.05
Acetone	<0.5	1,1,1,2-Tetrachloroethane	<0.05
1,1-Dichloroethene	<0.05	m,p-Xylene	<0.1
Hexane	<0.25	o-Xylene	<0.05
Methylene chloride	<0.5	Styrene	<0.05
Methyl t-butyl ether (MTBE)	<0.05	Isopropylbenzene	<0.05
trans-1,2-Dichloroethene	<0.05	Bromoform	<0.05
1,1-Dichloroethane	<0.05	n-Propylbenzene	<0.05
2,2-Dichloropropane	<0.05	Bromobenzene	<0.05
cis-1,2-Dichloroethene	<0.05	1,3,5-Trimethylbenzene	<0.05
Chloroform	<0.05	1,1,2,2-Tetrachloroethane	<0.05
2-Butanone (MEK)	<0.5	1,2,3-Trichloropropane	<0.05
1,2-Dichloroethane (EDC)	<0.05	2-Chlorotoluene	<0.05
1,1,1-Trichloroethane	<0.05	4-Chlorotoluene	<0.05
1,1-Dichloropropene	<0.05	tert-Butylbenzene	<0.05
Carbon tetrachloride	<0.05	1,2,4-Trimethylbenzene	<0.05
Benzene	<0.03	sec-Butylbenzene	<0.05
Trichloroethene	<0.02	p-Isopropyltoluene	<0.05
1,2-Dichloropropane	<0.05	1,3-Dichlorobenzene	<0.05
Bromodichloromethane	<0.05	1,4-Dichlorobenzene	<0.05
Dibromomethane	<0.05	1,2-Dichlorobenzene	<0.05
4-Methyl-2-pentanone	<0.5	1,2-Dibromo-3-chloropropane	<0.5
cis-1,3-Dichloropropene	<0.05	1,2,4-Trichlorobenzene	<0.25
Toluene	<0.05	Hexachlorobutadiene	<0.25
trans-1,3-Dichloropropene	<0.05	Naphthalene	<0.05
1,1,2-Trichloroethane	<0.05	1,2,3-Trichlorobenzene	<0.25
2-Hexanone	<0.5		

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	UST6-BASE-208	Client:	Aspect Consulting, LLC
Date Received:	06/22/18	Project:	FH Brooklyn, F&BI 806437
Date Extracted:	06/25/18	Lab ID:	806437-04
Date Analyzed:	06/25/18	Data File:	062509.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	62	142
Toluene-d8	101	55	145
4-Bromofluorobenzene	105	65	139

Compounds:	Concentration mg/kg (ppm)	Compounds:	Concentration mg/kg (ppm)
Dichlorodifluoromethane	<0.5	1,3-Dichloropropane	<0.05
Chloromethane	<0.5	Tetrachloroethene	<0.025
Vinyl chloride	<0.05	Dibromochloromethane	<0.05
Bromomethane	<0.5	1,2-Dibromoethane (EDB)	<0.05
Chloroethane	<0.5	Chlorobenzene	<0.05
Trichlorofluoromethane	<0.5	Ethylbenzene	<0.05
Acetone	<0.5	1,1,1,2-Tetrachloroethane	<0.05
1,1-Dichloroethene	<0.05	m,p-Xylene	<0.1
Hexane	<0.25	o-Xylene	<0.05
Methylene chloride	<0.5	Styrene	<0.05
Methyl t-butyl ether (MTBE)	<0.05	Isopropylbenzene	<0.05
trans-1,2-Dichloroethene	<0.05	Bromoform	<0.05
1,1-Dichloroethane	<0.05	n-Propylbenzene	<0.05
2,2-Dichloropropane	<0.05	Bromobenzene	<0.05
cis-1,2-Dichloroethene	<0.05	1,3,5-Trimethylbenzene	<0.05
Chloroform	<0.05	1,1,2,2-Tetrachloroethane	<0.05
2-Butanone (MEK)	<0.5	1,2,3-Trichloropropane	<0.05
1,2-Dichloroethane (EDC)	<0.05	2-Chlorotoluene	<0.05
1,1,1-Trichloroethane	<0.05	4-Chlorotoluene	<0.05
1,1-Dichloropropene	<0.05	tert-Butylbenzene	<0.05
Carbon tetrachloride	<0.05	1,2,4-Trimethylbenzene	<0.05
Benzene	<0.03	sec-Butylbenzene	<0.05
Trichloroethene	<0.02	p-Isopropyltoluene	<0.05
1,2-Dichloropropane	<0.05	1,3-Dichlorobenzene	<0.05
Bromodichloromethane	<0.05	1,4-Dichlorobenzene	<0.05
Dibromomethane	<0.05	1,2-Dichlorobenzene	<0.05
4-Methyl-2-pentanone	<0.5	1,2-Dibromo-3-chloropropane	<0.5
cis-1,3-Dichloropropene	<0.05	1,2,4-Trichlorobenzene	<0.25
Toluene	<0.05	Hexachlorobutadiene	<0.25
trans-1,3-Dichloropropene	<0.05	Naphthalene	<0.05
1,1,2-Trichloroethane	<0.05	1,2,3-Trichlorobenzene	<0.25
2-Hexanone	<0.5		

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	Method Blank	Client:	Aspect Consulting, LLC
Date Received:	Not Applicable	Project:	FH Brooklyn, F&BI 806437
Date Extracted:	06/25/18	Lab ID:	08-1359 mb
Date Analyzed:	06/25/18	Data File:	062512.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	89	113
Toluene-d8	99	64	137
4-Bromofluorobenzene	97	81	119

Compounds:	Concentration mg/kg (ppm)	Compounds:	Concentration mg/kg (ppm)
Dichlorodifluoromethane	<0.5	1,3-Dichloropropane	<0.05
Chloromethane	<0.5	Tetrachloroethene	<0.025
Vinyl chloride	<0.05	Dibromochloromethane	<0.05
Bromomethane	<0.5	1,2-Dibromoethane (EDB)	<0.05
Chloroethane	<0.5	Chlorobenzene	<0.05
Trichlorofluoromethane	<0.5	Ethylbenzene	<0.05
Acetone	<0.5	1,1,1,2-Tetrachloroethane	<0.05
1,1-Dichloroethene	<0.05	m,p-Xylene	<0.1
Hexane	<0.25	o-Xylene	<0.05
Methylene chloride	<0.5	Styrene	<0.05
Methyl t-butyl ether (MTBE)	<0.05	Isopropylbenzene	<0.05
trans-1,2-Dichloroethene	<0.05	Bromoform	<0.05
1,1-Dichloroethane	<0.05	n-Propylbenzene	<0.05
2,2-Dichloropropane	<0.05	Bromobenzene	<0.05
cis-1,2-Dichloroethene	<0.05	1,3,5-Trimethylbenzene	<0.05
Chloroform	<0.05	1,1,2,2-Tetrachloroethane	<0.05
2-Butanone (MEK)	<0.5	1,2,3-Trichloropropane	<0.05
1,2-Dichloroethane (EDC)	<0.05	2-Chlorotoluene	<0.05
1,1,1-Trichloroethane	<0.05	4-Chlorotoluene	<0.05
1,1-Dichloropropene	<0.05	tert-Butylbenzene	<0.05
Carbon tetrachloride	<0.05	1,2,4-Trimethylbenzene	<0.05
Benzene	<0.03	sec-Butylbenzene	<0.05
Trichloroethene	<0.02	p-Isopropyltoluene	<0.05
1,2-Dichloropropane	<0.05	1,3-Dichlorobenzene	<0.05
Bromodichloromethane	<0.05	1,4-Dichlorobenzene	<0.05
Dibromomethane	<0.05	1,2-Dichlorobenzene	<0.05
4-Methyl-2-pentanone	<0.5	1,2-Dibromo-3-chloropropane	<0.5
cis-1,3-Dichloropropene	<0.05	1,2,4-Trichlorobenzene	<0.25
Toluene	<0.05	Hexachlorobutadiene	<0.25
trans-1,3-Dichloropropene	<0.05	Naphthalene	<0.05
1,1,2-Trichloroethane	<0.05	1,2,3-Trichlorobenzene	<0.25
2-Hexanone	<0.5		

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	UST2&3-BASE-208	Client:	Aspect Consulting, LLC
Date Received:	06/22/18	Project:	FH Brooklyn, F&BI 806437
Date Extracted:	06/28/18	Lab ID:	806437-02 1/6
Date Analyzed:	06/28/18	Data File:	062809.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	66	29	154

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.02
Aroclor 1232	<0.02
Aroclor 1016	<0.02
Aroclor 1242	<0.02
Aroclor 1248	<0.02
Aroclor 1254	<0.02
Aroclor 1260	<0.02
Aroclor 1262	<0.02
Aroclor 1268	<0.02

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	Method Blank	Client:	Aspect Consulting, LLC
Date Received:	Not Applicable	Project:	FH Brooklyn, F&BI 806437
Date Extracted:	06/28/18	Lab ID:	08-1430 mb 1/6
Date Analyzed:	06/28/18	Data File:	062806.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	89	29	154

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.02
Aroclor 1232	<0.02
Aroclor 1016	<0.02
Aroclor 1242	<0.02
Aroclor 1248	<0.02
Aroclor 1254	<0.02
Aroclor 1260	<0.02
Aroclor 1262	<0.02
Aroclor 1268	<0.02

Date of Report: 07/03/18
Date Received: 06/22/18
Project: FH Brooklyn, F&BI 806437

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TPH AS GASOLINE USING METHOD NWTPH-Gx

Laboratory Code: 806307-29 (Duplicate)

Analyte	Reporting Units	Sample Result (Wet Wt)	Duplicate Result (Wet Wt)	RPD (Limit 20)
Gasoline	mg/kg (ppm)	<5	<5	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Gasoline	mg/kg (ppm)	20	90	71-131

Date of Report: 07/03/18
Date Received: 06/22/18
Project: FH Brooklyn, F&BI 806437

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 806449-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet Wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	<50	88	86	64-133	2

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Diesel Extended	mg/kg (ppm)	5,000	88	58-147

Date of Report: 07/03/18
Date Received: 06/22/18
Project: FH Brooklyn, F&BI 806437

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL METALS USING EPA METHOD 6020B

Laboratory Code: 806437-02 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Arsenic	mg/kg (ppm)	10	2.08	106	103	75-125	3
Cadmium	mg/kg (ppm)	10	<1	104	105	75-125	1
Chromium	mg/kg (ppm)	50	24.3	90	96	75-125	6
Lead	mg/kg (ppm)	50	1.97	90	90	75-125	0
Mercury	mg/kg (ppm	5	<1	84	83	75-125	1

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Arsenic	mg/kg (ppm)	10	108	80-120
Cadmium	mg/kg (ppm)	10	108	80-120
Chromium	mg/kg (ppm)	50	105	80-120
Lead	mg/kg (ppm)	50	96	80-120
Mercury	mg/kg (ppm)	5	101	80-120

Date of Report: 07/03/18
Date Received: 06/22/18
Project: FH Brooklyn, F&BI 806437

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR PAHS BY EPA METHOD 8270D SIM

Laboratory Code: 806430-01 1/5 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Acceptance Criteria
Naphthalene	mg/kg (ppm)	0.17	<0.01	82	44-129
Acenaphthylene	mg/kg (ppm)	0.17	<0.01	83	52-121
Acenaphthene	mg/kg (ppm)	0.17	<0.01	84	51-123
Fluorene	mg/kg (ppm)	0.17	<0.01	87	37-137
Phenanthrene	mg/kg (ppm)	0.17	<0.01	85	34-141
Anthracene	mg/kg (ppm)	0.17	<0.01	83	32-124
Fluoranthene	mg/kg (ppm)	0.17	<0.01	95	16-160
Pyrene	mg/kg (ppm)	0.17	<0.01	84	10-180
Benz(a)anthracene	mg/kg (ppm)	0.17	<0.01	88	23-144
Chrysene	mg/kg (ppm)	0.17	<0.01	87	32-149
Benzo(b)fluoranthene	mg/kg (ppm)	0.17	<0.01	89	23-176
Benzo(k)fluoranthene	mg/kg (ppm)	0.17	<0.01	87	42-139
Benzo(a)pyrene	mg/kg (ppm)	0.17	<0.01	87	21-163
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.17	<0.01	86	23-170
Dibenz(a,h)anthracene	mg/kg (ppm)	0.17	<0.01	82	31-146
Benzo(g,h,i)perylene	mg/kg (ppm)	0.17	<0.01	78	37-133

Laboratory Code: Laboratory Control Sample 1/5

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Naphthalene	mg/kg (ppm)	0.17	83	86	58-121	4
Acenaphthylene	mg/kg (ppm)	0.17	79	85	54-121	7
Acenaphthene	mg/kg (ppm)	0.17	83	87	54-123	5
Fluorene	mg/kg (ppm)	0.17	85	87	56-127	2
Phenanthrene	mg/kg (ppm)	0.17	84	85	55-122	1
Anthracene	mg/kg (ppm)	0.17	80	83	50-120	4
Fluoranthene	mg/kg (ppm)	0.17	91	84	54-129	8
Pyrene	mg/kg (ppm)	0.17	76	82	53-127	8
Benz(a)anthracene	mg/kg (ppm)	0.17	86	88	51-115	2
Chrysene	mg/kg (ppm)	0.17	88	90	55-129	2
Benzo(b)fluoranthene	mg/kg (ppm)	0.17	90	92	56-123	2
Benzo(k)fluoranthene	mg/kg (ppm)	0.17	89	93	54-131	4
Benzo(a)pyrene	mg/kg (ppm)	0.17	76	82	51-118	8
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.17	84	81	49-148	4
Dibenz(a,h)anthracene	mg/kg (ppm)	0.17	85	79	50-141	7
Benzo(g,h,i)perylene	mg/kg (ppm)	0.17	82	77	52-131	6

Date of Report: 07/03/18
Date Received: 06/22/18
Project: FH Brooklyn, F&BI 806437

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR VOLATILES BY EPA METHOD 8260C

Laboratory Code: 806436-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Acceptance Criteria
Dichlorodifluoromethane	mg/kg (ppm)	2.5	<0.5	14	10-56
Chloromethane	mg/kg (ppm)	2.5	<0.5	46	10-90
Vinyl chloride	mg/kg (ppm)	2.5	<0.05	51	10-91
Bromomethane	mg/kg (ppm)	2.5	<0.5	65	10-110
Chloroethane	mg/kg (ppm)	2.5	<0.5	68	10-101
Trichlorofluoromethane	mg/kg (ppm)	2.5	<0.5	56	10-95
Acetone	mg/kg (ppm)	12.5	<0.5	75	11-141
1,1-Dichloroethene	mg/kg (ppm)	2.5	<0.05	62	22-107
Hexane	mg/kg (ppm)	2.5	<0.25	45	10-95
Methylene chloride	mg/kg (ppm)	2.5	<0.5	68	14-128
Methyl t-butyl ether (MTBE)	mg/kg (ppm)	2.5	<0.05	85	17-134
trans-1,2-Dichloroethene	mg/kg (ppm)	2.5	<0.05	76	13-112
1,1-Dichloroethane	mg/kg (ppm)	2.5	<0.05	81	23-115
2,2-Dichloropropane	mg/kg (ppm)	2.5	<0.05	68	18-117
cis-1,2-Dichloroethene	mg/kg (ppm)	2.5	<0.05	72	25-120
Chloroform	mg/kg (ppm)	2.5	<0.05	70	29-117
2-Butanone (MEK)	mg/kg (ppm)	12.5	<0.5	77	20-133
1,2-Dichloroethane (EDC)	mg/kg (ppm)	2.5	<0.05	70	22-124
1,1,1-Trichloroethane	mg/kg (ppm)	2.5	<0.05	71	27-112
1,1-Dichloropropene	mg/kg (ppm)	2.5	<0.05	68	26-107
Carbon tetrachloride	mg/kg (ppm)	2.5	<0.05	68	28-126
Benzene	mg/kg (ppm)	2.5	<0.03	69	26-114
Trichloroethene	mg/kg (ppm)	2.5	<0.02	73	30-112
1,2-Dichloropropane	mg/kg (ppm)	2.5	<0.05	76	31-119
Bromodichloromethane	mg/kg (ppm)	2.5	<0.05	73	31-131
Dibromomethane	mg/kg (ppm)	2.5	<0.05	69	27-124
4-Methyl-2-pentanone	mg/kg (ppm)	12.5	<0.5	82	16-147
cis-1,3-Dichloropropene	mg/kg (ppm)	2.5	<0.05	73	28-137
Toluene	mg/kg (ppm)	2.5	<0.05	71	34-112
trans-1,3-Dichloropropene	mg/kg (ppm)	2.5	<0.05	74	30-136
1,1,2-Trichloroethane	mg/kg (ppm)	2.5	<0.05	77	32-126
2-Hexanone	mg/kg (ppm)	12.5	<0.5	74	17-147
1,3-Dichloropropane	mg/kg (ppm)	2.5	<0.05	75	29-125
Tetrachloroethene	mg/kg (ppm)	2.5	<0.025	70	25-114
Dibromochloromethane	mg/kg (ppm)	2.5	<0.05	75	32-143
1,2-Dibromoethane (EDB)	mg/kg (ppm)	2.5	<0.05	76	32-126
Chlorobenzene	mg/kg (ppm)	2.5	<0.05	72	37-113
Ethylbenzene	mg/kg (ppm)	2.5	<0.05	72	34-115
1,1,1,2-Tetrachloroethane	mg/kg (ppm)	2.5	<0.05	75	35-126
m,p-Xylene	mg/kg (ppm)	5	<0.1	73	25-125
o-Xylene	mg/kg (ppm)	2.5	<0.05	75	27-126
Styrene	mg/kg (ppm)	2.5	<0.05	75	39-121
Isopropylbenzene	mg/kg (ppm)	2.5	<0.05	74	34-123
Bromoform	mg/kg (ppm)	2.5	<0.05	76	18-155
n-Propylbenzene	mg/kg (ppm)	2.5	<0.05	72	31-120
Bromobenzene	mg/kg (ppm)	2.5	<0.05	73	40-115
1,3,5-Trimethylbenzene	mg/kg (ppm)	2.5	<0.05	73	24-130
1,1,2,2-Tetrachloroethane	mg/kg (ppm)	2.5	<0.05	74	27-148
1,2,3-Trichloropropane	mg/kg (ppm)	2.5	<0.05	73	33-123
2-Chlorotoluene	mg/kg (ppm)	2.5	<0.05	72	39-110
4-Chlorotoluene	mg/kg (ppm)	2.5	<0.05	72	39-111
tert-Butylbenzene	mg/kg (ppm)	2.5	<0.05	74	36-116
1,2,4-Trimethylbenzene	mg/kg (ppm)	2.5	<0.05	72	35-116
sec-Butylbenzene	mg/kg (ppm)	2.5	<0.05	73	33-118
p-Isopropyltoluene	mg/kg (ppm)	2.5	<0.05	73	32-119
1,3-Dichlorobenzene	mg/kg (ppm)	2.5	<0.05	72	38-111
1,4-Dichlorobenzene	mg/kg (ppm)	2.5	<0.05	71	39-109
1,2-Dichlorobenzene	mg/kg (ppm)	2.5	<0.05	72	40-111
1,2-Dibromo-3-chloropropane	mg/kg (ppm)	2.5	<0.5	76	47-127
1,2,4-Trichlorobenzene	mg/kg (ppm)	2.5	<0.25	71	31-121
Hexachlorobutadiene	mg/kg (ppm)	2.5	<0.25	71	24-128
Naphthalene	mg/kg (ppm)	2.5	<0.05	72	24-139
1,2,3-Trichlorobenzene	mg/kg (ppm)	2.5	<0.25	74	35-117

Date of Report: 07/03/18
Date Received: 06/22/18
Project: FH Brooklyn, F&BI 806437

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR VOLATILES BY EPA METHOD 8260C

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Dichlorodifluoromethane	mg/kg (ppm)	2.5	47	46	10-76	2
Chloromethane	mg/kg (ppm)	2.5	77	78	34-98	1
Vinyl chloride	mg/kg (ppm)	2.5	94	92	42-107	2
Bromomethane	mg/kg (ppm)	2.5	89	94	46-113	5
Chloroethane	mg/kg (ppm)	2.5	107	106	47-115	1
Trichlorofluoromethane	mg/kg (ppm)	2.5	103	104	53-112	1
Acetone	mg/kg (ppm)	12.5	104	94	39-147	10
1,1-Dichloroethene	mg/kg (ppm)	2.5	98	91	65-110	7
Hexane	mg/kg (ppm)	2.5	102	90	55-107	12
Methylene chloride	mg/kg (ppm)	2.5	96	86	50-127	11
Methyl t-butyl ether (MTBE)	mg/kg (ppm)	2.5	113	99	72-122	13
trans-1,2-Dichloroethene	mg/kg (ppm)	2.5	111	100	71-113	10
1,1-Dichloroethane	mg/kg (ppm)	2.5	114 vo	98	74-109	15
2,2-Dichloropropane	mg/kg (ppm)	2.5	96	96	64-151	0
cis-1,2-Dichloroethene	mg/kg (ppm)	2.5	99	97	73-110	2
Chloroform	mg/kg (ppm)	2.5	95	94	76-110	1
2-Butanone (MEK)	mg/kg (ppm)	12.5	102	102	60-121	0
1,2-Dichloroethane (EDC)	mg/kg (ppm)	2.5	93	94	73-111	1
1,1,1-Trichloroethane	mg/kg (ppm)	2.5	98	100	72-116	2
1,1-Dichloropropene	mg/kg (ppm)	2.5	96	97	72-112	1
Carbon tetrachloride	mg/kg (ppm)	2.5	100	97	67-123	3
Benzene	mg/kg (ppm)	2.5	95	95	72-106	0
Trichloroethene	mg/kg (ppm)	2.5	102	100	72-107	2
1,2-Dichloropropane	mg/kg (ppm)	2.5	101	102	74-115	1
Bromodichloromethane	mg/kg (ppm)	2.5	98	97	75-126	1
Dibromomethane	mg/kg (ppm)	2.5	92	92	76-116	0
4-Methyl-2-pentanone	mg/kg (ppm)	12.5	108	108	80-128	0
cis-1,3-Dichloropropene	mg/kg (ppm)	2.5	101	100	71-138	1
Toluene	mg/kg (ppm)	2.5	96	96	74-111	0
trans-1,3-Dichloropropene	mg/kg (ppm)	2.5	101	101	77-135	0
1,1,2-Trichloroethane	mg/kg (ppm)	2.5	104	104	77-116	0
2-Hexanone	mg/kg (ppm)	12.5	96	97	70-129	1
1,3-Dichloropropane	mg/kg (ppm)	2.5	101	102	75-115	1
Tetrachloroethene	mg/kg (ppm)	2.5	98	98	73-111	0
Dibromochloromethane	mg/kg (ppm)	2.5	102	101	64-152	1
1,2-Dibromoethane (EDB)	mg/kg (ppm)	2.5	101	102	77-117	1
Chlorobenzene	mg/kg (ppm)	2.5	97	97	76-109	0
Ethylbenzene	mg/kg (ppm)	2.5	97	96	75-112	1
1,1,1,2-Tetrachloroethane	mg/kg (ppm)	2.5	98	101	76-125	3
m,p-Xylene	mg/kg (ppm)	5	99	98	77-115	1
o-Xylene	mg/kg (ppm)	2.5	100	100	76-115	0
Styrene	mg/kg (ppm)	2.5	99	99	76-119	0
Isopropylbenzene	mg/kg (ppm)	2.5	99	99	76-120	0
Bromoform	mg/kg (ppm)	2.5	98	98	50-174	0
n-Propylbenzene	mg/kg (ppm)	2.5	99	98	77-115	1
Bromobenzene	mg/kg (ppm)	2.5	99	99	76-112	0
1,3,5-Trimethylbenzene	mg/kg (ppm)	2.5	99	99	77-121	0
1,1,2,2-Tetrachloroethane	mg/kg (ppm)	2.5	100	100	74-121	0
1,2,3-Trichloropropane	mg/kg (ppm)	2.5	97	97	74-116	0
2-Chlorotoluene	mg/kg (ppm)	2.5	99	98	75-113	1
4-Chlorotoluene	mg/kg (ppm)	2.5	98	97	77-115	1
tert-Butylbenzene	mg/kg (ppm)	2.5	100	99	77-123	1
1,2,4-Trimethylbenzene	mg/kg (ppm)	2.5	98	96	77-119	2
sec-Butylbenzene	mg/kg (ppm)	2.5	98	98	78-120	0
p-Isopropyltoluene	mg/kg (ppm)	2.5	99	99	77-120	0
1,3-Dichlorobenzene	mg/kg (ppm)	2.5	98	97	76-112	1
1,4-Dichlorobenzene	mg/kg (ppm)	2.5	96	95	74-109	1
1,2-Dichlorobenzene	mg/kg (ppm)	2.5	97	96	75-114	1
1,2-Dibromo-3-chloropropane	mg/kg (ppm)	2.5	99	98	68-122	1
1,2,4-Trichlorobenzene	mg/kg (ppm)	2.5	97	97	75-122	0
Hexachlorobutadiene	mg/kg (ppm)	2.5	97	96	74-130	1
Naphthalene	mg/kg (ppm)	2.5	97	96	73-122	1
1,2,3-Trichlorobenzene	mg/kg (ppm)	2.5	99	100	75-117	1

Date of Report: 07/03/18
Date Received: 06/22/18
Project: FH Brooklyn, F&BI 806437

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR POLYCHLORINATED BIPHENYLS AS AROCLOR 1016/1260 BY EPA METHOD 8082A

Laboratory Code: 806437-02 1/6 (Matrix Spike) 1/6

Analyte	Reporting Units	Spike Level	Sample Result (Wet Wt)	Percent Recovery MS	Control Limits
Aroclor 1016	mg/kg (ppm)	0.5	<0.02	54	38-122
Aroclor 1260	mg/kg (ppm)	0.5	<0.02	64	39-131

Laboratory Code: Laboratory Control Sample 1/6

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Aroclor 1016	mg/kg (ppm)	0.5	101	108	55-130	7
Aroclor 1260	mg/kg (ppm)	0.5	106	111	58-133	5

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.

~~806438~~ 806437

FKHAN@ASPECTCONSULTING.COM

SAMPLE CHAIN OF CUSTODY

ME 06-22-18

A02/NS2

Page # 1 of 1

Report To ADAM G, BOB, HANFORD, FASIH, BREEYN

Company ASPECT CONSULTING

Address SEATTLE

City, State, ZIP WA

Phone 206.713.2186 Email

SAMPLERS (signature)

PROJECT NAME: FH BROOKLYN

PO #

REMARKS

INVOICE TO: 180064

TURNAROUND TIME
- [x] Standard Turnaround
- [ ] RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- [ ] Dispose after 30 days
- [ ] Archive Samples
- [ ] Other

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM	PCBs	MTCA 5 METALS			Notes
						ANALYSES REQUESTED											
VST 1-BASE-206	01	6/22/18	1220	S	5		X	X		X							✓ per PL 7/2
VST 2&3-BASE-208	02		1145				X	X		X		X	X	X			
VST 4&5-BASE-200	03		1330				X	X		X							
VST 6-BASE-208	04		1420				X	X		X							
SS2-3-062818	05		1130				✓	✓	✓								
													Samples received at 4 °C				

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	FASIH KHAN	ASPECT	6/22/18	
Received by:	LIZ Meeker-Bga	F?B1	6/22/18	1630
Relinquished by:				
Received by:				

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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www.friedmanandbruya.com

June 27, 2018

Adam Griffin, Project Manager
Aspect Consulting, LLC
350 Madison Ave. N.
Bainbridge Island, WA 98110-1810

Dear Mr Griffin:

Included are the results from the testing of material submitted on June 22, 2018 from the FH Brooklyn, F&BI 806439 project. There are 20 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Data Aspect, Bob Hanford, Fasih Khan, Breeyn Greer
ASP0627R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on June 22, 2018 by Friedman & Bruya, Inc. from the Aspect Consulting, LLC FH Brooklyn, F&BI 806439 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Aspect Consulting, LLC
806439 -01	UST-Rinse-1
806439 -02	UST-Rinse-2

The samples were sent to Fremont Analytical for UST-Rinse-1 for flashpoint analysis. The report is enclosed.

1,1-Dichloroethane in the 8260C laboratory control sample exceeded the acceptance criteria. The analyte was not detected in the sample, therefore the data were acceptable.

All other quality control requirements were acceptable.

Date of Report: 06/27/18
Date Received: 06/22/18
Project: FH Brooklyn, F&BI 806439
Date Extracted: 06/25/18
Date Analyzed: 06/25/18

RESULTS FROM THE ANALYSIS OF SOIL/PRODUCT SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx

Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
UST-Rinse-1 806439-01 1/10,000	120,000	99
Method Blank 08-1283 MB	<5	87

Date of Report: 06/27/18
Date Received: 06/22/18
Project: FH Brooklyn, F&BI 806439
Date Extracted: 06/25/18
Date Analyzed: 06/25/18

RESULTS FROM THE ANALYSIS OF SOIL/PRODUCT SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND RESIDUAL RANGE USING METHOD NWTPH-Dx

Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 53-144)
UST-Rinse-1 806439-01 1/10	470,000	210,000	112
Method Blank 08-1367 MB	<50	<250	91

Analysis For Total Metals By EPA Method 6020B

Client ID:	UST-Rinse-1	Client:	Aspect Consulting, LLC
Date Received:	06/22/18	Project:	FH Brooklyn, F&BI 806439
Date Extracted:	06/25/18	Lab ID:	806439-01 x50
Date Analyzed:	06/25/18	Data File:	806439-01 x50.067
Matrix:	Soil/Product	Instrument:	ICPMS2
Units:	mg/kg (ppm)	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Lead	3,530

Analysis For Total Metals By EPA Method 6020B

Client ID:	Method Blank	Client:	Aspect Consulting, LLC
Date Received:	NA	Project:	FH Brooklyn, F&BI 806439
Date Extracted:	06/25/18	Lab ID:	I8-411 mb
Date Analyzed:	06/25/18	Data File:	I8-411 mb.059
Matrix:	Soil/Product	Instrument:	ICPMS2
Units:	mg/kg (ppm)	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Lead	<1

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	UST-Rinse-1	Client:	Aspect Consulting, LLC
Date Received:	06/22/18	Project:	FH Brooklyn, F&BI 806439
Date Extracted:	06/25/18	Lab ID:	806439-01 1/200
Date Analyzed:	06/25/18	Data File:	062518.D
Matrix:	Soil/Product	Instrument:	GCMS9
Units:	mg/kg (ppm)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	89	113
Toluene-d8	101	64	137
4-Bromofluorobenzene	113	81	119

Compounds:	Concentration mg/kg (ppm)	Compounds:	Concentration mg/kg (ppm)
Dichlorodifluoromethane	<100	1,3-Dichloropropane	<10
Chloromethane	<100	Tetrachloroethene	<5
Vinyl chloride	<10	Dibromochloromethane	<10
Bromomethane	<100	1,2-Dibromoethane (EDB)	<10
Chloroethane	<100	Chlorobenzene	<10
Trichlorofluoromethane	<100	Ethylbenzene	290
Acetone	<100	1,1,1,2-Tetrachloroethane	<10
1,1-Dichloroethene	<10	m,p-Xylene	1,400
Hexane	170	o-Xylene	610
Methylene chloride	<100	Styrene	<10
Methyl t-butyl ether (MTBE)	<10	Isopropylbenzene	120
trans-1,2-Dichloroethene	<10	Bromoform	<10
1,1-Dichloroethane	<10	n-Propylbenzene	250
2,2-Dichloropropane	<10	Bromobenzene	<10
cis-1,2-Dichloroethene	<10	1,3,5-Trimethylbenzene	550
Chloroform	<10	1,1,2,2-Tetrachloroethane	<10
2-Butanone (MEK)	<100	1,2,3-Trichloropropane	<10
1,2-Dichloroethane (EDC)	<10	2-Chlorotoluene	<10
1,1,1-Trichloroethane	<10	4-Chlorotoluene	<10
1,1-Dichloropropene	<10	tert-Butylbenzene	<10
Carbon tetrachloride	<10	1,2,4-Trimethylbenzene	1,600 ve
Benzene	54	sec-Butylbenzene	230
Trichloroethene	<4	p-Isopropyltoluene	150
1,2-Dichloropropane	<10	1,3-Dichlorobenzene	<10
Bromodichloromethane	<10	1,4-Dichlorobenzene	<10
Dibromomethane	<10	1,2-Dichlorobenzene	<10
4-Methyl-2-pentanone	<100	1,2-Dibromo-3-chloropropane	<100
cis-1,3-Dichloropropene	<10	1,2,4-Trichlorobenzene	<50
Toluene	600	Hexachlorobutadiene	<50
trans-1,3-Dichloropropene	<10	Naphthalene	500
1,1,2-Trichloroethane	<10	1,2,3-Trichlorobenzene	<50
2-Hexanone	<100		

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	UST-Rinse-1	Client:	Aspect Consulting, LLC
Date Received:	06/22/18	Project:	FH Brooklyn, F&BI 806439
Date Extracted:	06/25/18	Lab ID:	806439-01 1/2000
Date Analyzed:	06/25/18	Data File:	062517.D
Matrix:	Soil/Product	Instrument:	GCMS9
Units:	mg/kg (ppm)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	103	89	113
Toluene-d8	98	64	137
4-Bromofluorobenzene	100	81	119

Compounds:	Concentration mg/kg (ppm)	Compounds:	Concentration mg/kg (ppm)
Dichlorodifluoromethane	<1,000	1,3-Dichloropropane	<100
Chloromethane	<1,000	Tetrachloroethene	<50
Vinyl chloride	<100	Dibromochloromethane	<100
Bromomethane	<1,000	1,2-Dibromoethane (EDB)	<100
Chloroethane	<1,000	Chlorobenzene	<100
Trichlorofluoromethane	<1,000	Ethylbenzene	300
Acetone	<1,000	1,1,1,2-Tetrachloroethane	<100
1,1-Dichloroethene	<100	m,p-Xylene	1,400
Hexane	<500	o-Xylene	640
Methylene chloride	<1,000	Styrene	<100
Methyl t-butyl ether (MTBE)	<100	Isopropylbenzene	120
trans-1,2-Dichloroethene	<100	Bromoform	<100
1,1-Dichloroethane	<100	n-Propylbenzene	250
2,2-Dichloropropane	<100	Bromobenzene	<100
cis-1,2-Dichloroethene	<100	1,3,5-Trimethylbenzene	550
Chloroform	<100	1,1,2,2-Tetrachloroethane	<100
2-Butanone (MEK)	<1,000	1,2,3-Trichloropropane	<100
1,2-Dichloroethane (EDC)	<100	2-Chlorotoluene	<100
1,1,1-Trichloroethane	<100	4-Chlorotoluene	<100
1,1-Dichloropropene	<100	tert-Butylbenzene	<100
Carbon tetrachloride	<100	1,2,4-Trimethylbenzene	1,700
Benzene	<60	sec-Butylbenzene	220
Trichloroethene	<40	p-Isopropyltoluene	140
1,2-Dichloropropane	<100	1,3-Dichlorobenzene	<100
Bromodichloromethane	<100	1,4-Dichlorobenzene	<100
Dibromomethane	<100	1,2-Dichlorobenzene	<100
4-Methyl-2-pentanone	<1,000	1,2-Dibromo-3-chloropropane	<1,000
cis-1,3-Dichloropropene	<100	1,2,4-Trichlorobenzene	<500
Toluene	610	Hexachlorobutadiene	<500
trans-1,3-Dichloropropene	<100	Naphthalene	540
1,1,2-Trichloroethane	<100	1,2,3-Trichlorobenzene	<500
2-Hexanone	<1,000		

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	Method Blank	Client:	Aspect Consulting, LLC
Date Received:	Not Applicable	Project:	FH Brooklyn, F&BI 806439
Date Extracted:	06/25/18	Lab ID:	08-1359 mb
Date Analyzed:	06/25/18	Data File:	062512.D
Matrix:	Soil/Product	Instrument:	GCMS9
Units:	mg/kg (ppm)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	89	113
Toluene-d8	99	64	137
4-Bromofluorobenzene	97	81	119

Compounds:	Concentration mg/kg (ppm)	Compounds:	Concentration mg/kg (ppm)
Dichlorodifluoromethane	<0.5	1,3-Dichloropropane	<0.05
Chloromethane	<0.5	Tetrachloroethene	<0.025
Vinyl chloride	<0.05	Dibromochloromethane	<0.05
Bromomethane	<0.5	1,2-Dibromoethane (EDB)	<0.05
Chloroethane	<0.5	Chlorobenzene	<0.05
Trichlorofluoromethane	<0.5	Ethylbenzene	<0.05
Acetone	<0.5	1,1,1,2-Tetrachloroethane	<0.05
1,1-Dichloroethene	<0.05	m,p-Xylene	<0.1
Hexane	<0.25	o-Xylene	<0.05
Methylene chloride	<0.5	Styrene	<0.05
Methyl t-butyl ether (MTBE)	<0.05	Isopropylbenzene	<0.05
trans-1,2-Dichloroethene	<0.05	Bromoform	<0.05
1,1-Dichloroethane	<0.05	n-Propylbenzene	<0.05
2,2-Dichloropropane	<0.05	Bromobenzene	<0.05
cis-1,2-Dichloroethene	<0.05	1,3,5-Trimethylbenzene	<0.05
Chloroform	<0.05	1,1,2,2-Tetrachloroethane	<0.05
2-Butanone (MEK)	<0.5	1,2,3-Trichloropropane	<0.05
1,2-Dichloroethane (EDC)	<0.05	2-Chlorotoluene	<0.05
1,1,1-Trichloroethane	<0.05	4-Chlorotoluene	<0.05
1,1-Dichloropropene	<0.05	tert-Butylbenzene	<0.05
Carbon tetrachloride	<0.05	1,2,4-Trimethylbenzene	<0.05
Benzene	<0.03	sec-Butylbenzene	<0.05
Trichloroethene	<0.02	p-Isopropyltoluene	<0.05
1,2-Dichloropropane	<0.05	1,3-Dichlorobenzene	<0.05
Bromodichloromethane	<0.05	1,4-Dichlorobenzene	<0.05
Dibromomethane	<0.05	1,2-Dichlorobenzene	<0.05
4-Methyl-2-pentanone	<0.5	1,2-Dibromo-3-chloropropane	<0.5
cis-1,3-Dichloropropene	<0.05	1,2,4-Trichlorobenzene	<0.25
Toluene	<0.05	Hexachlorobutadiene	<0.25
trans-1,3-Dichloropropene	<0.05	Naphthalene	<0.05
1,1,2-Trichloroethane	<0.05	1,2,3-Trichlorobenzene	<0.25
2-Hexanone	<0.5		

Analysis for TCLP Metals By EPA Method 6020B and 1311

Client ID:	UST-Rinse-1	Client:	Aspect Consulting, LLC
Date Received:	06/22/18	Project:	FH Brooklyn, F&BI 806439
Date Extracted:	06/25/18	Lab ID:	806439-01 x20
Date Analyzed:	06/26/18	Data File:	806439-01 x20.040
Matrix:	Soil/Product	Instrument:	ICPMS2
Units:	mg/L (ppm)	Operator:	SP

Analyte:	Concentration mg/L (ppm)	TCLP Limit
Lead	110	5.0

Analysis for TCLP Metals By EPA Method 6020B and 1311

Client ID:	Method Blank	Client:	Aspect Consulting, LLC
Date Received:	NA	Project:	FH Brooklyn, F&BI 806439
Date Extracted:	06/25/18	Lab ID:	I8-412 mb x0.1
Date Analyzed:	06/26/18	Data File:	I8-412 mb x0.1.071
Matrix:	Soil/Product	Instrument:	ICPMS2
Units:	mg/L (ppm)	Operator:	SP

Analyte:	Concentration mg/L (ppm)	TCLP Limit
Lead	<1	5.0

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	UST-Rinse-1	Client:	Aspect Consulting, LLC
Date Received:	06/22/18	Project:	FH Brooklyn, F&BI 806439
Date Extracted:	06/25/18	Lab ID:	806439-01
Date Analyzed:	06/26/18	Data File:	062605.D
Matrix:	Product	Instrument:	GC7
Units:	mg/kg (ppm)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	55	37	158

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<2
Aroclor 1232	<2
Aroclor 1016	<2
Aroclor 1242	<2
Aroclor 1248	<2
Aroclor 1254	<2
Aroclor 1260	<2
Aroclor 1262	<2
Aroclor 1268	<2

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	Method Blank	Client:	Aspect Consulting, LLC
Date Received:	Not Applicable	Project:	FH Brooklyn, F&BI 806439
Date Extracted:	06/25/18	Lab ID:	08-1373 mb c
Date Analyzed:	06/25/18	Data File:	062510.D
Matrix:	Product	Instrument:	GC7
Units:	mg/kg (ppm)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	80	37	158

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<2
Aroclor 1232	<2
Aroclor 1016	<2
Aroclor 1242	<2
Aroclor 1248	<2
Aroclor 1254	<2
Aroclor 1260	<2
Aroclor 1262	<2
Aroclor 1268	<2

Date of Report: 06/27/18
Date Received: 06/22/18
Project: FH Brooklyn, F&BI 806439

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL/PRODUCT SAMPLES FOR TPH AS GASOLINE USING METHOD NWTPH-Gx

Laboratory Code: 806307-29 (Duplicate)

Analyte	Reporting Units	Sample Result (Wet Wt)	Duplicate Result (Wet Wt)	RPD (Limit 20)
Gasoline	mg/kg (ppm)	<5	<5	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Gasoline	mg/kg (ppm)	20	90	71-131

Date of Report: 06/27/18
Date Received: 06/22/18
Project: FH Brooklyn, F&BI 806439

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL/PRODUCT SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 806449-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet Wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	<50	88	86	64-133	2

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Diesel Extended	mg/kg (ppm)	5,000	88	58-147

Date of Report: 06/27/18
Date Received: 06/22/18
Project: FH Brooklyn, F&BI 806439

QUALITY ASSURANCE RESULTS
FOR THE ANALYSIS OF SOIL/PRODUCT SAMPLES
FOR TOTAL METALS USING EPA METHOD 6020B

Laboratory Code: 806437-02 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Lead	mg/kg (ppm)	50	1.97	90	90	75-125	0

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Lead	mg/kg (ppm)	50	96	80-120

Date of Report: 06/27/18
Date Received: 06/22/18
Project: FH Brooklyn, F&BI 806439

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL/PRODUCT SAMPLES FOR VOLATILES BY EPA METHOD 8260C

Laboratory Code: 806436-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Acceptance Criteria
Dichlorodifluoromethane	mg/kg (ppm)	2.5	<0.5	14	10-56
Chloromethane	mg/kg (ppm)	2.5	<0.5	46	10-90
Vinyl chloride	mg/kg (ppm)	2.5	<0.05	51	10-91
Bromomethane	mg/kg (ppm)	2.5	<0.5	65	10-110
Chloroethane	mg/kg (ppm)	2.5	<0.5	68	10-101
Trichlorofluoromethane	mg/kg (ppm)	2.5	<0.5	56	10-95
Acetone	mg/kg (ppm)	12.5	<0.5	75	11-141
1,1-Dichloroethene	mg/kg (ppm)	2.5	<0.05	62	22-107
Hexane	mg/kg (ppm)	2.5	<0.25	45	10-95
Methylene chloride	mg/kg (ppm)	2.5	<0.5	68	14-128
Methyl t-butyl ether (MTBE)	mg/kg (ppm)	2.5	<0.05	85	17-134
trans-1,2-Dichloroethene	mg/kg (ppm)	2.5	<0.05	76	13-112
1,1-Dichloroethane	mg/kg (ppm)	2.5	<0.05	81	23-115
2,2-Dichloropropane	mg/kg (ppm)	2.5	<0.05	68	18-117
cis-1,2-Dichloroethene	mg/kg (ppm)	2.5	<0.05	72	25-120
Chloroform	mg/kg (ppm)	2.5	<0.05	70	29-117
2-Butanone (MEK)	mg/kg (ppm)	12.5	<0.5	77	20-133
1,2-Dichloroethane (EDC)	mg/kg (ppm)	2.5	<0.05	70	22-124
1,1,1-Trichloroethane	mg/kg (ppm)	2.5	<0.05	71	27-112
1,1-Dichloropropene	mg/kg (ppm)	2.5	<0.05	68	26-107
Carbon tetrachloride	mg/kg (ppm)	2.5	<0.05	68	28-126
Benzene	mg/kg (ppm)	2.5	<0.03	69	26-114
Trichloroethene	mg/kg (ppm)	2.5	<0.02	73	30-112
1,2-Dichloropropane	mg/kg (ppm)	2.5	<0.05	76	31-119
Bromodichloromethane	mg/kg (ppm)	2.5	<0.05	73	31-131
Dibromomethane	mg/kg (ppm)	2.5	<0.05	69	27-124
4-Methyl-2-pentanone	mg/kg (ppm)	12.5	<0.5	82	16-147
cis-1,3-Dichloropropene	mg/kg (ppm)	2.5	<0.05	73	28-137
Toluene	mg/kg (ppm)	2.5	<0.05	71	34-112
trans-1,3-Dichloropropene	mg/kg (ppm)	2.5	<0.05	74	30-136
1,1,2-Trichloroethane	mg/kg (ppm)	2.5	<0.05	77	32-126
2-Hexanone	mg/kg (ppm)	12.5	<0.5	74	17-147
1,3-Dichloropropane	mg/kg (ppm)	2.5	<0.05	75	29-125
Tetrachloroethene	mg/kg (ppm)	2.5	<0.025	70	25-114
Dibromochloromethane	mg/kg (ppm)	2.5	<0.05	75	32-143
1,2-Dibromoethane (EDB)	mg/kg (ppm)	2.5	<0.05	76	32-126
Chlorobenzene	mg/kg (ppm)	2.5	<0.05	72	37-113
Ethylbenzene	mg/kg (ppm)	2.5	<0.05	72	34-115
1,1,1,2-Tetrachloroethane	mg/kg (ppm)	2.5	<0.05	75	35-126
m,p-Xylene	mg/kg (ppm)	5	<0.1	73	25-125
o-Xylene	mg/kg (ppm)	2.5	<0.05	75	27-126
Styrene	mg/kg (ppm)	2.5	<0.05	75	39-121
Isopropylbenzene	mg/kg (ppm)	2.5	<0.05	74	34-123
Bromoform	mg/kg (ppm)	2.5	<0.05	76	18-155
n-Propylbenzene	mg/kg (ppm)	2.5	<0.05	72	31-120
Bromobenzene	mg/kg (ppm)	2.5	<0.05	73	40-115
1,3,5-Trimethylbenzene	mg/kg (ppm)	2.5	<0.05	73	24-130
1,1,2,2-Tetrachloroethane	mg/kg (ppm)	2.5	<0.05	74	27-148
1,2,3-Trichloropropane	mg/kg (ppm)	2.5	<0.05	73	33-123
2-Chlorotoluene	mg/kg (ppm)	2.5	<0.05	72	39-110
4-Chlorotoluene	mg/kg (ppm)	2.5	<0.05	72	39-111
tert-Butylbenzene	mg/kg (ppm)	2.5	<0.05	74	36-116
1,2,4-Trimethylbenzene	mg/kg (ppm)	2.5	<0.05	72	35-116
sec-Butylbenzene	mg/kg (ppm)	2.5	<0.05	73	33-118
p-Isopropyltoluene	mg/kg (ppm)	2.5	<0.05	73	32-119
1,3-Dichlorobenzene	mg/kg (ppm)	2.5	<0.05	72	38-111
1,4-Dichlorobenzene	mg/kg (ppm)	2.5	<0.05	71	39-109
1,2-Dichlorobenzene	mg/kg (ppm)	2.5	<0.05	72	40-111
1,2-Dibromo-3-chloropropane	mg/kg (ppm)	2.5	<0.5	76	47-127
1,2,4-Trichlorobenzene	mg/kg (ppm)	2.5	<0.25	71	31-121
Hexachlorobutadiene	mg/kg (ppm)	2.5	<0.25	71	24-128
Naphthalene	mg/kg (ppm)	2.5	<0.05	72	24-139
1,2,3-Trichlorobenzene	mg/kg (ppm)	2.5	<0.25	74	35-117

Date of Report: 06/27/18
Date Received: 06/22/18
Project: FH Brooklyn, F&BI 806439

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL/PRODUCT SAMPLES FOR VOLATILES BY EPA METHOD 8260C

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Dichlorodifluoromethane	mg/kg (ppm)	2.5	47	46	10-76	2
Chloromethane	mg/kg (ppm)	2.5	77	78	34-98	1
Vinyl chloride	mg/kg (ppm)	2.5	94	92	42-107	2
Bromomethane	mg/kg (ppm)	2.5	89	94	46-113	5
Chloroethane	mg/kg (ppm)	2.5	107	106	47-115	1
Trichlorofluoromethane	mg/kg (ppm)	2.5	103	104	53-112	1
Acetone	mg/kg (ppm)	12.5	104	94	39-147	10
1,1-Dichloroethene	mg/kg (ppm)	2.5	98	91	65-110	7
Hexane	mg/kg (ppm)	2.5	102	90	55-107	12
Methylene chloride	mg/kg (ppm)	2.5	96	86	50-127	11
Methyl t-butyl ether (MTBE)	mg/kg (ppm)	2.5	113	99	72-122	13
trans-1,2-Dichloroethene	mg/kg (ppm)	2.5	111	100	71-113	10
1,1-Dichloroethane	mg/kg (ppm)	2.5	114 vo	98	74-109	15
2,2-Dichloropropane	mg/kg (ppm)	2.5	96	96	64-151	0
cis-1,2-Dichloroethene	mg/kg (ppm)	2.5	99	97	73-110	2
Chloroform	mg/kg (ppm)	2.5	95	94	76-110	1
2-Butanone (MEK)	mg/kg (ppm)	12.5	102	102	60-121	0
1,2-Dichloroethane (EDC)	mg/kg (ppm)	2.5	93	94	73-111	1
1,1,1-Trichloroethane	mg/kg (ppm)	2.5	98	100	72-116	2
1,1-Dichloropropene	mg/kg (ppm)	2.5	96	97	72-112	1
Carbon tetrachloride	mg/kg (ppm)	2.5	100	97	67-123	3
Benzene	mg/kg (ppm)	2.5	95	95	72-106	0
Trichloroethene	mg/kg (ppm)	2.5	102	100	72-107	2
1,2-Dichloropropane	mg/kg (ppm)	2.5	101	102	74-115	1
Bromodichloromethane	mg/kg (ppm)	2.5	98	97	75-126	1
Dibromomethane	mg/kg (ppm)	2.5	92	92	76-116	0
4-Methyl-2-pentanone	mg/kg (ppm)	12.5	108	108	80-128	0
cis-1,3-Dichloropropene	mg/kg (ppm)	2.5	101	100	71-138	1
Toluene	mg/kg (ppm)	2.5	96	96	74-111	0
trans-1,3-Dichloropropene	mg/kg (ppm)	2.5	101	101	77-135	0
1,1,2-Trichloroethane	mg/kg (ppm)	2.5	104	104	77-116	0
2-Hexanone	mg/kg (ppm)	12.5	96	97	70-129	1
1,3-Dichloropropane	mg/kg (ppm)	2.5	101	102	75-115	1
Tetrachloroethene	mg/kg (ppm)	2.5	98	98	73-111	0
Dibromochloromethane	mg/kg (ppm)	2.5	102	101	64-152	1
1,2-Dibromoethane (EDB)	mg/kg (ppm)	2.5	101	102	77-117	1
Chlorobenzene	mg/kg (ppm)	2.5	97	97	76-109	0
Ethylbenzene	mg/kg (ppm)	2.5	97	96	75-112	1
1,1,1,2-Tetrachloroethane	mg/kg (ppm)	2.5	98	101	76-125	3
m,p-Xylene	mg/kg (ppm)	5	99	98	77-115	1
o-Xylene	mg/kg (ppm)	2.5	100	100	76-115	0
Styrene	mg/kg (ppm)	2.5	99	99	76-119	0
Isopropylbenzene	mg/kg (ppm)	2.5	99	99	76-120	0
Bromoform	mg/kg (ppm)	2.5	98	98	50-174	0
n-Propylbenzene	mg/kg (ppm)	2.5	99	98	77-115	1
Bromobenzene	mg/kg (ppm)	2.5	99	99	76-112	0
1,3,5-Trimethylbenzene	mg/kg (ppm)	2.5	99	99	77-121	0
1,1,2,2-Tetrachloroethane	mg/kg (ppm)	2.5	100	100	74-121	0
1,2,3-Trichloropropane	mg/kg (ppm)	2.5	97	97	74-116	0
2-Chlorotoluene	mg/kg (ppm)	2.5	99	98	75-113	1
4-Chlorotoluene	mg/kg (ppm)	2.5	98	97	77-115	1
tert-Butylbenzene	mg/kg (ppm)	2.5	100	99	77-123	1
1,2,4-Trimethylbenzene	mg/kg (ppm)	2.5	98	96	77-119	2
sec-Butylbenzene	mg/kg (ppm)	2.5	98	98	78-120	0
p-Isopropyltoluene	mg/kg (ppm)	2.5	99	99	77-120	0
1,3-Dichlorobenzene	mg/kg (ppm)	2.5	98	97	76-112	1
1,4-Dichlorobenzene	mg/kg (ppm)	2.5	96	95	74-109	1
1,2-Dichlorobenzene	mg/kg (ppm)	2.5	97	96	75-114	1
1,2-Dibromo-3-chloropropane	mg/kg (ppm)	2.5	99	98	68-122	1
1,2,4-Trichlorobenzene	mg/kg (ppm)	2.5	97	97	75-122	0
Hexachlorobutadiene	mg/kg (ppm)	2.5	97	96	74-130	1
Naphthalene	mg/kg (ppm)	2.5	97	96	73-122	1
1,2,3-Trichlorobenzene	mg/kg (ppm)	2.5	99	100	75-117	1

Date of Report: 06/27/18
Date Received: 06/22/18
Project: FH Brooklyn, F&BI 806439

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL/PRODUCT SAMPLES FOR TCLP METALS USING EPA METHODS 6020B AND 1311

Laboratory Code: 806450-01 x0.1 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Lead	mg/L (ppm)	1.0	<0.1	90	89	75-125	1

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Lead	mg/L (ppm)	1.0	92	80-120

Date of Report: 06/27/18
Date Received: 06/22/18
Project: FH Brooklyn, F&BI 806439

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF PRODUCT SAMPLES FOR POLYCHLORINATED BIPHENYLS AS AROCLOR 1016/1260 BY EPA METHOD 8082A

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Aroclor 1016	mg/kg (ppm)	25	90	90	60-151	0
Aroclor 1260	mg/kg (ppm)	25	101	105	53-144	4

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.

3600 Fremont Ave. N.
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

Friedman & Bruya
Michael Erdahl
3012 16th Ave. W.
Seattle, WA 98119

RE: 806439
Work Order Number: 1806292

June 26, 2018

Attention Michael Erdahl:

Fremont Analytical, Inc. received 1 sample(s) on 6/25/2018 for the analyses presented in the following report.

Flashpoint by EPA 1010/ASTM D93

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

Mike Ridgeway
Laboratory Director

Date: *06/26/2018*

CLIENT: Friedman & Bruya
Project: 806439
Work Order: 1806292

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1806292-001	UST-RINSE-2	06/22/2018 2:00 PM	06/25/2018 4:12 PM

Case Narrative

WO#: **1806292**
Date: **6/26/2018**

CLIENT: Friedman & Bruya
Project: 806439

WorkOrder Narrative:
I. SAMPLE RECEIPT:
Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:
Results are reported in degrees Fahrenheit.

The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS). The LCS is processed with the samples to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:
Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Qualifiers:

* - Flagged value is not within established control limits
B - Analyte detected in the associated Method Blank
D - Dilution was required
E - Value above quantitation range
H - Holding times for preparation or analysis exceeded
I - Analyte with an internal standard that does not meet established acceptance criteria
J - Analyte detected below Reporting Limit
N - Tentatively Identified Compound (TIC)
Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF)
S - Spike recovery outside accepted recovery limits
ND - Not detected at the Reporting Limit
R - High relative percent difference observed

Acronyms:

%Rec - Percent Recovery
CCB - Continued Calibration Blank
CCV - Continued Calibration Verification
DF - Dilution Factor
HEM - Hexane Extractable Material
ICV - Initial Calibration Verification
LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
MB or MBLANK - Method Blank
MDL - Method Detection Limit
MS/MSD - Matrix Spike / Matrix Spike Duplicate
PDS - Post Digestion Spike
Ref Val - Reference Value
RL - Reporting Limit
RPD - Relative Percent Difference
SD - Serial Dilution
SGT - Silica Gel Treatment
SPK - Spike
Surr - Surrogate

Analytical Report

Work Order: **1806292**
Date Reported: **6/26/2018**

Client: Friedman & Bruya
Collection Date: 6/22/2018 2:00:00 PM
Project: 806439
Lab ID: 1806292-001
Matrix: Product
Client Sample ID: **UST-RINSE-2**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Flashpoint by EPA 1010/ASTM D93				Batch ID: R44275		Analyst: CO
Flashpoint	140			°F	1	6/26/2018 9:05:04 AM

Work Order: 1806292
CLIENT: Friedman & Bruya
Project: 806439

QC SUMMARY REPORT

Flashpoint by EPA 1010/ASTM D93

Sample ID **LCS-R44275** SampType: **LCS** Units: **°F** Prep Date: **6/26/2018** RunNo: **44275**
Client ID: **LCSW** Batch ID: **R44275** Analysis Date: **6/26/2018** SeqNo: **856915**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Flashpoint	151		152.0	0	99.2	65	135				

Sample Log-In Check List

Client Name:	**FB**	Work Order Number:	**1806292**
Logged by:	**Brianna Barnes**	Date Received:	**6/25/2018 4:12:00 PM**

Chain of Custody

1.	Is Chain of Custody complete?	Yes	☑	No ☐	Not Present	☐
2.	How was the sample delivered?	FedEx				

Log In

3.	Coolers are present?	Yes	☐	No ☑	NA	☐
		Product Sample				
4.	Shipping container/cooler in good condition?	Yes	☑	No ☐		
5.	Custody Seals present on shipping container/cooler? (Refer to comments for Custody Seals not intact)	Yes	☐	No ☑	Not Required	☐
6.	Was an attempt made to cool the samples?	Yes	☐	No ☐	NA	☑
7.	Were all items received at a temperature of >0°C to 10.0°C*	Yes	☐	No ☐	NA	☑
8.	Sample(s) in proper container(s)?	Yes	☑	No ☐		
9.	Sufficient sample volume for indicated test(s)?	Yes	☑	No ☐		
10.	Are samples properly preserved?	Yes	☑	No ☐		
11.	Was preservative added to bottles?	Yes	☐	No ☑	NA	☐
12.	Is there headspace in the VOA vials?	Yes	☐	No ☐	NA	☑
13.	Did all samples containers arrive in good condition(unbroken)?	Yes	☑	No ☐		
14.	Does paperwork match bottle labels?	Yes	☐	No ☑		
15.	Are matrices correctly identified on Chain of Custody?	Yes	☑	No ☐		
16.	Is it clear what analyses were requested?	Yes	☑	No ☐		
17.	Were all holding times able to be met?	Yes	☑	No ☐		

Special Handling (if applicable)

18.	Was client notified of all discrepancies with this order?	Yes	☑	No ☐	NA	☐

Person Notified:	Michael Erdahl	Date	6/26/2018
By Whom:	Brianna Barnes	Via:	☐ eMail ☑ Phone ☐ Fax ☐ In Person
Regarding:	Sample ID on COC reads "UST-RINSE-1", sample bottle reads "UST-RINSE-2".		
Client Instructions:	Proceed with flashpoint and edit COC to read "UST-RINSE-2".		

19. Additional remarks:

Item Information

Item #	Temp ºC
Sample	11.9

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

SUBCONTRACT SAMPLE CHAIN OF CUSTODY 1806292

Page # 1 of 1

Send Report To Michael Erdahl

Company Friedman and Bruya, Inc.

Address 3012 16th Ave W

City, State, ZIP Seattle, WA 98119

Phone # (206) 285-8282 Fax # (206) 283-5044

SUBCONTRACTER Fremont

PROJECT NAME/NO.	PO #
806439	A-395

REMARKS

Please Email Results

TURNAROUND TIME

☐ Standard (2 Weeks)

☒ RUSH 6/26/18

Rush charges authorized by: MC

SAMPLE DISPOSAL

☐ Dispose after 30 days

☐ Return samples

☐ Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Matrix	# of jars	ANALYSES REQUESTED: Dioxins/Furans	EPH	VPH	Nitrate	Sulfate	Alkalinity	TOC-9060M	Flashpoint			Notes
UST-RINSE-1		6/22/18	1400	product	1								X			

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

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:		Michael Erdahl	Friedman and Bruya	6/25/18	3:05
Received by:		Eduardo A.S.	FAI	6/25/18	1612
Relinquished by:					
Received by:					

SUBCONTRACT SAMPLE CHAIN OF CUSTODY 1806292

Page # 1 of 1

Send Report To Michael Erdahl

Company Friedman and Bruya, Inc.

Address 3012 16th Ave W

City, State, ZIP Seattle, WA 98119

Phone # (206) 285-8282 Fax # (206) 283-5044

SUBCONTRACTER Fremont

PROJECT NAME/NO.	PO #
806439	A-395

REMARKS edits per ME 6/26/18 RDB

Please Email Results

TURNAROUND TIME

☐ Standard (2 Weeks)

☒ RUSH 6/26/18

Rush charges authorized by: ME

SAMPLE DISPOSAL

☐ Dispose after 30 days

☐ Return samples

☐ Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Matrix	# of jars	ANALYSES REQUESTED: Dioxins/Furans	EPH	VPH	Nitrate	Sulfate	Alkalinity	TOC-9060M	X Flashpoint			Notes
UST-RINSE + -2		6/22/18	1400	product	1								X			

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Michael Erdahl	Friedman and Bruya	6/25/18	3:05
Received by:	Eduardo A.S.	FAI	6/25/18	1512
Relinquished by:				
Received by:				

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

439
80644 (NP)

SAMPLE CHAIN OF CUSTODY

MG 06-22-18 AOS

Page # 1 of 1

Report To ADAM, G, ROBERT H, FASIH K, BREEYN, G
Company ASPECT
Address SEATTLE
City, State, ZIP WA
Phone [redacted] Email [redacted]

SAMPLERS (signature)

PROJECT NAME: FH BROOKLYN

PO #

REMARKS: *Waste Characterization*

INVOICE TO: 180054

TURNAROUND TIME
☐ Standard Turnaround
☒ RUSH 24-hr
Rush charges authorized by:

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

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM	LEAD	PCBs	TCLP Pb	Flashpoint	Notes
						ANALYSES REQUESTED											◇ pvBH 6/25/18
UST-RINSE-1	01A-F	6/22/18	1400	W	6		⊗	⊗		⊗			⊗	⊗	◇	◇	WE
UST-RINSE-2	02	6/22/18	1400	W	6												HOLD
								**									

Samples received at 4 °C

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	FASIH KHAN	ASPECT	6/22/18	1700
Received by:	Eric Young	F&B	6/22/18	1730
Relinquished by:				
Received by:				

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

3012 16th Avenue West
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July 6, 2018

Adam Griffin, Project Manager
Aspect Consulting, LLC
350 Madison Ave. N.
Bainbridge Island, WA 98110-1810

Dear Mr Griffin:

Included are the results from the testing of material submitted on June 28, 2018 from the FH Brooklyn, F&BI 806552 project. There are 15 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Data Aspect, Bob Hanford, Fasih Khan, Breeyn Greer
ASP0706R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on June 28, 2018 by Friedman & Bruya, Inc. from the Aspect Consulting, LLC FH Brooklyn, F&BI 806552 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Aspect Consulting, LLC
806552 -01	SS3-1-062818
806552 -02	SS3-2-062818
806552 -03	SS3-3-062818
806552 -04	SS3-4-062818
806552 -05	SS3-5-062818
806552 -06	SS3-6-062818

All quality control requirements were acceptable.

Date of Report: 07/06/18
Date Received: 06/28/18
Project: FH Brooklyn, F&BI 806552
Date Extracted: 06/28/18
Date Analyzed: 06/28/18

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Gasoline Range	Surrogate (% Recovery) (Limit 58-139)
SS3-1-062818 806552-01	58	72
SS3-2-062818 806552-02	95	71
SS3-3-062818 806552-03	240	83
SS3-4-062818 806552-04	140	75
SS3-5-062818 806552-05	96	72
SS3-6-062818 806552-06	140	74
Method Blank 08-1385 MB	<5	63

Date of Report: 07/06/18
Date Received: 06/28/18
Project: FH Brooklyn, F&BI 806552
Date Extracted: 06/28/18
Date Analyzed: 06/28/18

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 53-144)
SS3-1-062818 806552-01	<50	<250	98
SS3-2-062818 806552-02	<50	<250	86
SS3-3-062818 806552-03	<50	<250	86
SS3-4-062818 806552-04	<50	<250	89
SS3-5-062818 806552-05	<50	<250	88
SS3-6-062818 806552-06	<50	<250	89
Method Blank 08-1433 MB	<50	<250	103

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	SS3-1-062818	Client:	Aspect Consulting, LLC
Date Received:	06/28/18	Project:	FH Brooklyn, F&BI 806552
Date Extracted:	06/28/18	Lab ID:	806552-01
Date Analyzed:	06/28/18	Data File:	062826.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	62	142
Toluene-d8	100	55	145
4-Bromofluorobenzene	104	65	139

Compounds:	Concentration mg/kg (ppm)	Compounds:	Concentration mg/kg (ppm)
Dichlorodifluoromethane	<0.5	1,3-Dichloropropane	<0.05
Chloromethane	<0.5	Tetrachloroethene	<0.025
Vinyl chloride	<0.05	Dibromochloromethane	<0.05
Bromomethane	<0.5	1,2-Dibromoethane (EDB)	<0.05
Chloroethane	<0.5	Chlorobenzene	<0.05
Trichlorofluoromethane	<0.5	Ethylbenzene	1.1
Acetone	<0.5	1,1,1,2-Tetrachloroethane	<0.05
1,1-Dichloroethene	<0.05	m,p-Xylene	2.9
Hexane	<0.25	o-Xylene	0.35
Methylene chloride	<0.5	Styrene	<0.05
Methyl t-butyl ether (MTBE)	<0.05	Isopropylbenzene	0.17
trans-1,2-Dichloroethene	<0.05	Bromoform	<0.05
1,1-Dichloroethane	<0.05	n-Propylbenzene	0.76
2,2-Dichloropropane	<0.05	Bromobenzene	<0.05
cis-1,2-Dichloroethene	<0.05	1,3,5-Trimethylbenzene	1.2
Chloroform	<0.05	1,1,2,2-Tetrachloroethane	<0.05
2-Butanone (MEK)	<0.5	1,2,3-Trichloropropane	<0.05
1,2-Dichloroethane (EDC)	<0.05	2-Chlorotoluene	<0.05
1,1,1-Trichloroethane	<0.05	4-Chlorotoluene	<0.05
1,1-Dichloropropene	<0.05	tert-Butylbenzene	<0.05
Carbon tetrachloride	<0.05	1,2,4-Trimethylbenzene	4.4
Benzene	<0.03	sec-Butylbenzene	0.099
Trichloroethene	<0.02	p-Isopropyltoluene	<0.05
1,2-Dichloropropane	<0.05	1,3-Dichlorobenzene	<0.05
Bromodichloromethane	<0.05	1,4-Dichlorobenzene	<0.05
Dibromomethane	<0.05	1,2-Dichlorobenzene	<0.05
4-Methyl-2-pentanone	<0.5	1,2-Dibromo-3-chloropropane	<0.5
cis-1,3-Dichloropropene	<0.05	1,2,4-Trichlorobenzene	<0.25
Toluene	0.18	Hexachlorobutadiene	<0.25
trans-1,3-Dichloropropene	<0.05	Naphthalene	0.35
1,1,2-Trichloroethane	<0.05	1,2,3-Trichlorobenzene	<0.25
2-Hexanone	<0.5		

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	SS3-2-062818	Client:	Aspect Consulting, LLC
Date Received:	06/28/18	Project:	FH Brooklyn, F&BI 806552
Date Extracted:	06/28/18	Lab ID:	806552-02
Date Analyzed:	06/28/18	Data File:	062825.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	98	62	142
Toluene-d8	101	55	145
4-Bromofluorobenzene	105	65	139

Compounds:	Concentration mg/kg (ppm)	Compounds:	Concentration mg/kg (ppm)
Dichlorodifluoromethane	<0.5	1,3-Dichloropropane	<0.05
Chloromethane	<0.5	Tetrachloroethene	<0.025
Vinyl chloride	<0.05	Dibromochloromethane	<0.05
Bromomethane	<0.5	1,2-Dibromoethane (EDB)	<0.05
Chloroethane	<0.5	Chlorobenzene	<0.05
Trichlorofluoromethane	<0.5	Ethylbenzene	0.98
Acetone	<0.5	1,1,1,2-Tetrachloroethane	<0.05
1,1-Dichloroethene	<0.05	m,p-Xylene	2.5
Hexane	<0.25	o-Xylene	0.38
Methylene chloride	<0.5	Styrene	<0.05
Methyl t-butyl ether (MTBE)	<0.05	Isopropylbenzene	0.16
trans-1,2-Dichloroethene	<0.05	Bromoform	<0.05
1,1-Dichloroethane	<0.05	n-Propylbenzene	0.69
2,2-Dichloropropane	<0.05	Bromobenzene	<0.05
cis-1,2-Dichloroethene	<0.05	1,3,5-Trimethylbenzene	1.2
Chloroform	<0.05	1,1,2,2-Tetrachloroethane	<0.05
2-Butanone (MEK)	<0.5	1,2,3-Trichloropropane	<0.05
1,2-Dichloroethane (EDC)	<0.05	2-Chlorotoluene	<0.05
1,1,1-Trichloroethane	<0.05	4-Chlorotoluene	<0.05
1,1-Dichloropropene	<0.05	tert-Butylbenzene	<0.05
Carbon tetrachloride	<0.05	1,2,4-Trimethylbenzene	4.3
Benzene	<0.03	sec-Butylbenzene	0.093
Trichloroethene	<0.02	p-Isopropyltoluene	<0.05
1,2-Dichloropropane	<0.05	1,3-Dichlorobenzene	<0.05
Bromodichloromethane	<0.05	1,4-Dichlorobenzene	<0.05
Dibromomethane	<0.05	1,2-Dichlorobenzene	<0.05
4-Methyl-2-pentanone	<0.5	1,2-Dibromo-3-chloropropane	<0.5
cis-1,3-Dichloropropene	<0.05	1,2,4-Trichlorobenzene	<0.25
Toluene	0.17	Hexachlorobutadiene	<0.25
trans-1,3-Dichloropropene	<0.05	Naphthalene	0.32
1,1,2-Trichloroethane	<0.05	1,2,3-Trichlorobenzene	<0.25
2-Hexanone	<0.5		

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	SS3-3-062818	Client:	Aspect Consulting, LLC
Date Received:	06/28/18	Project:	FH Brooklyn, F&BI 806552
Date Extracted:	06/28/18	Lab ID:	806552-03
Date Analyzed:	06/28/18	Data File:	062823.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	62	142
Toluene-d8	102	55	145
4-Bromofluorobenzene	105	65	139

Compounds:	Concentration mg/kg (ppm)	Compounds:	Concentration mg/kg (ppm)
Dichlorodifluoromethane	<0.5	1,3-Dichloropropane	<0.05
Chloromethane	<0.5	Tetrachloroethene	<0.025
Vinyl chloride	<0.05	Dibromochloromethane	<0.05
Bromomethane	<0.5	1,2-Dibromoethane (EDB)	<0.05
Chloroethane	<0.5	Chlorobenzene	<0.05
Trichlorofluoromethane	<0.5	Ethylbenzene	1.3
Acetone	<0.5	1,1,1,2-Tetrachloroethane	<0.05
1,1-Dichloroethene	<0.05	m,p-Xylene	2.5
Hexane	<0.25	o-Xylene	0.23
Methylene chloride	<0.5	Styrene	<0.05
Methyl t-butyl ether (MTBE)	<0.05	Isopropylbenzene	0.17
trans-1,2-Dichloroethene	<0.05	Bromoform	<0.05
1,1-Dichloroethane	<0.05	n-Propylbenzene	0.71
2,2-Dichloropropane	<0.05	Bromobenzene	<0.05
cis-1,2-Dichloroethene	<0.05	1,3,5-Trimethylbenzene	1.1
Chloroform	<0.05	1,1,2,2-Tetrachloroethane	<0.05
2-Butanone (MEK)	<0.5	1,2,3-Trichloropropane	<0.05
1,2-Dichloroethane (EDC)	<0.05	2-Chlorotoluene	<0.05
1,1,1-Trichloroethane	<0.05	4-Chlorotoluene	<0.05
1,1-Dichloropropene	<0.05	tert-Butylbenzene	<0.05
Carbon tetrachloride	<0.05	1,2,4-Trimethylbenzene	4.0
Benzene	0.069	sec-Butylbenzene	0.089
Trichloroethene	<0.02	p-Isopropyltoluene	<0.05
1,2-Dichloropropane	<0.05	1,3-Dichlorobenzene	<0.05
Bromodichloromethane	<0.05	1,4-Dichlorobenzene	<0.05
Dibromomethane	<0.05	1,2-Dichlorobenzene	<0.05
4-Methyl-2-pentanone	<0.5	1,2-Dibromo-3-chloropropane	<0.5
cis-1,3-Dichloropropene	<0.05	1,2,4-Trichlorobenzene	<0.25
Toluene	0.13	Hexachlorobutadiene	<0.25
trans-1,3-Dichloropropene	<0.05	Naphthalene	0.36
1,1,2-Trichloroethane	<0.05	1,2,3-Trichlorobenzene	<0.25
2-Hexanone	<0.5		

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	SS3-4-062818	Client:	Aspect Consulting, LLC
Date Received:	06/28/18	Project:	FH Brooklyn, F&BI 806552
Date Extracted:	06/28/18	Lab ID:	806552-04
Date Analyzed:	06/28/18	Data File:	062822.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	98	62	142
Toluene-d8	101	55	145
4-Bromofluorobenzene	104	65	139

Compounds:	Concentration mg/kg (ppm)	Compounds:	Concentration mg/kg (ppm)
Dichlorodifluoromethane	<0.5	1,3-Dichloropropane	<0.05
Chloromethane	<0.5	Tetrachloroethene	<0.025
Vinyl chloride	<0.05	Dibromochloromethane	<0.05
Bromomethane	<0.5	1,2-Dibromoethane (EDB)	<0.05
Chloroethane	<0.5	Chlorobenzene	<0.05
Trichlorofluoromethane	<0.5	Ethylbenzene	0.77
Acetone	<0.5	1,1,1,2-Tetrachloroethane	<0.05
1,1-Dichloroethene	<0.05	m,p-Xylene	2.2
Hexane	<0.25	o-Xylene	0.38
Methylene chloride	<0.5	Styrene	<0.05
Methyl t-butyl ether (MTBE)	<0.05	Isopropylbenzene	0.12
trans-1,2-Dichloroethene	<0.05	Bromoform	<0.05
1,1-Dichloroethane	<0.05	n-Propylbenzene	0.53
2,2-Dichloropropane	<0.05	Bromobenzene	<0.05
cis-1,2-Dichloroethene	<0.05	1,3,5-Trimethylbenzene	0.88
Chloroform	<0.05	1,1,2,2-Tetrachloroethane	<0.05
2-Butanone (MEK)	<0.5	1,2,3-Trichloropropane	<0.05
1,2-Dichloroethane (EDC)	<0.05	2-Chlorotoluene	<0.05
1,1,1-Trichloroethane	<0.05	4-Chlorotoluene	<0.05
1,1-Dichloropropene	<0.05	tert-Butylbenzene	<0.05
Carbon tetrachloride	<0.05	1,2,4-Trimethylbenzene	3.1
Benzene	<0.03	sec-Butylbenzene	0.072
Trichloroethene	<0.02	p-Isopropyltoluene	<0.05
1,2-Dichloropropane	<0.05	1,3-Dichlorobenzene	<0.05
Bromodichloromethane	<0.05	1,4-Dichlorobenzene	<0.05
Dibromomethane	<0.05	1,2-Dichlorobenzene	<0.05
4-Methyl-2-pentanone	<0.5	1,2-Dibromo-3-chloropropane	<0.5
cis-1,3-Dichloropropene	<0.05	1,2,4-Trichlorobenzene	<0.25
Toluene	0.16	Hexachlorobutadiene	<0.25
trans-1,3-Dichloropropene	<0.05	Naphthalene	0.26
1,1,2-Trichloroethane	<0.05	1,2,3-Trichlorobenzene	<0.25
2-Hexanone	<0.5		

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	SS3-5-062818	Client:	Aspect Consulting, LLC
Date Received:	06/28/18	Project:	FH Brooklyn, F&BI 806552
Date Extracted:	06/28/18	Lab ID:	806552-05
Date Analyzed:	06/28/18	Data File:	062824.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	98	62	142
Toluene-d8	102	55	145
4-Bromofluorobenzene	105	65	139

Compounds:	Concentration mg/kg (ppm)	Compounds:	Concentration mg/kg (ppm)
Dichlorodifluoromethane	<0.5	1,3-Dichloropropane	<0.05
Chloromethane	<0.5	Tetrachloroethene	<0.025
Vinyl chloride	<0.05	Dibromochloromethane	<0.05
Bromomethane	<0.5	1,2-Dibromoethane (EDB)	<0.05
Chloroethane	<0.5	Chlorobenzene	<0.05
Trichlorofluoromethane	<0.5	Ethylbenzene	1.1
Acetone	<0.5	1,1,1,2-Tetrachloroethane	<0.05
1,1-Dichloroethene	<0.05	m,p-Xylene	3.1
Hexane	<0.25	o-Xylene	0.54
Methylene chloride	<0.5	Styrene	<0.05
Methyl t-butyl ether (MTBE)	<0.05	Isopropylbenzene	0.17
trans-1,2-Dichloroethene	<0.05	Bromoform	<0.05
1,1-Dichloroethane	<0.05	n-Propylbenzene	0.73
2,2-Dichloropropane	<0.05	Bromobenzene	<0.05
cis-1,2-Dichloroethene	<0.05	1,3,5-Trimethylbenzene	1.2
Chloroform	<0.05	1,1,2,2-Tetrachloroethane	<0.05
2-Butanone (MEK)	<0.5	1,2,3-Trichloropropane	<0.05
1,2-Dichloroethane (EDC)	<0.05	2-Chlorotoluene	<0.05
1,1,1-Trichloroethane	<0.05	4-Chlorotoluene	<0.05
1,1-Dichloropropene	<0.05	tert-Butylbenzene	<0.05
Carbon tetrachloride	<0.05	1,2,4-Trimethylbenzene	4.3
Benzene	<0.03	sec-Butylbenzene	0.10
Trichloroethene	<0.02	p-Isopropyltoluene	<0.05
1,2-Dichloropropane	<0.05	1,3-Dichlorobenzene	<0.05
Bromodichloromethane	<0.05	1,4-Dichlorobenzene	<0.05
Dibromomethane	<0.05	1,2-Dichlorobenzene	<0.05
4-Methyl-2-pentanone	<0.5	1,2-Dibromo-3-chloropropane	<0.5
cis-1,3-Dichloropropene	<0.05	1,2,4-Trichlorobenzene	<0.25
Toluene	0.21	Hexachlorobutadiene	<0.25
trans-1,3-Dichloropropene	<0.05	Naphthalene	0.37
1,1,2-Trichloroethane	<0.05	1,2,3-Trichlorobenzene	<0.25
2-Hexanone	<0.5		

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	SS3-6-062818	Client:	Aspect Consulting, LLC
Date Received:	06/28/18	Project:	FH Brooklyn, F&BI 806552
Date Extracted:	06/28/18	Lab ID:	806552-06
Date Analyzed:	06/28/18	Data File:	062827.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	98	62	142
Toluene-d8	102	55	145
4-Bromofluorobenzene	105	65	139

Compounds:	Concentration mg/kg (ppm)	Compounds:	Concentration mg/kg (ppm)
Dichlorodifluoromethane	<0.5	1,3-Dichloropropane	<0.05
Chloromethane	<0.5	Tetrachloroethene	<0.025
Vinyl chloride	<0.05	Dibromochloromethane	<0.05
Bromomethane	<0.5	1,2-Dibromoethane (EDB)	<0.05
Chloroethane	<0.5	Chlorobenzene	<0.05
Trichlorofluoromethane	<0.5	Ethylbenzene	2.8
Acetone	<0.5	1,1,1,2-Tetrachloroethane	<0.05
1,1-Dichloroethene	<0.05	m,p-Xylene	7.3
Hexane	0.44	o-Xylene	0.43
Methylene chloride	<0.5	Styrene	<0.05
Methyl t-butyl ether (MTBE)	<0.05	Isopropylbenzene	0.41
trans-1,2-Dichloroethene	<0.05	Bromoform	<0.05
1,1-Dichloroethane	<0.05	n-Propylbenzene	1.8
2,2-Dichloropropane	<0.05	Bromobenzene	<0.05
cis-1,2-Dichloroethene	<0.05	1,3,5-Trimethylbenzene	3.1
Chloroform	<0.05	1,1,2,2-Tetrachloroethane	<0.05
2-Butanone (MEK)	<0.5	1,2,3-Trichloropropane	<0.05
1,2-Dichloroethane (EDC)	<0.05	2-Chlorotoluene	<0.05
1,1,1-Trichloroethane	<0.05	4-Chlorotoluene	<0.05
1,1-Dichloropropene	<0.05	tert-Butylbenzene	<0.05
Carbon tetrachloride	<0.05	1,2,4-Trimethylbenzene	11
Benzene	<0.03	sec-Butylbenzene	0.22
Trichloroethene	<0.02	p-Isopropyltoluene	0.11
1,2-Dichloropropane	<0.05	1,3-Dichlorobenzene	<0.05
Bromodichloromethane	<0.05	1,4-Dichlorobenzene	<0.05
Dibromomethane	<0.05	1,2-Dichlorobenzene	<0.05
4-Methyl-2-pentanone	<0.5	1,2-Dibromo-3-chloropropane	<0.5
cis-1,3-Dichloropropene	<0.05	1,2,4-Trichlorobenzene	<0.25
Toluene	0.18	Hexachlorobutadiene	<0.25
trans-1,3-Dichloropropene	<0.05	Naphthalene	0.73
1,1,2-Trichloroethane	<0.05	1,2,3-Trichlorobenzene	<0.25
2-Hexanone	<0.5		

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	Method Blank	Client:	Aspect Consulting, LLC
Date Received:	Not Applicable	Project:	FH Brooklyn, F&BI 806552
Date Extracted:	06/28/18	Lab ID:	08-1409 mb
Date Analyzed:	06/28/18	Data File:	062811.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	62	142
Toluene-d8	103	55	145
4-Bromofluorobenzene	106	65	139

Compounds:	Concentration mg/kg (ppm)	Compounds:	Concentration mg/kg (ppm)
Dichlorodifluoromethane	<0.5	1,3-Dichloropropane	<0.05
Chloromethane	<0.5	Tetrachloroethene	<0.025
Vinyl chloride	<0.05	Dibromochloromethane	<0.05
Bromomethane	<0.5	1,2-Dibromoethane (EDB)	<0.05
Chloroethane	<0.5	Chlorobenzene	<0.05
Trichlorofluoromethane	<0.5	Ethylbenzene	<0.05
Acetone	<0.5	1,1,1,2-Tetrachloroethane	<0.05
1,1-Dichloroethene	<0.05	m,p-Xylene	<0.1
Hexane	<0.25	o-Xylene	<0.05
Methylene chloride	<0.5	Styrene	<0.05
Methyl t-butyl ether (MTBE)	<0.05	Isopropylbenzene	<0.05
trans-1,2-Dichloroethene	<0.05	Bromoform	<0.05
1,1-Dichloroethane	<0.05	n-Propylbenzene	<0.05
2,2-Dichloropropane	<0.05	Bromobenzene	<0.05
cis-1,2-Dichloroethene	<0.05	1,3,5-Trimethylbenzene	<0.05
Chloroform	<0.05	1,1,2,2-Tetrachloroethane	<0.05
2-Butanone (MEK)	<0.5	1,2,3-Trichloropropane	<0.05
1,2-Dichloroethane (EDC)	<0.05	2-Chlorotoluene	<0.05
1,1,1-Trichloroethane	<0.05	4-Chlorotoluene	<0.05
1,1-Dichloropropene	<0.05	tert-Butylbenzene	<0.05
Carbon tetrachloride	<0.05	1,2,4-Trimethylbenzene	<0.05
Benzene	<0.03	sec-Butylbenzene	<0.05
Trichloroethene	<0.02	p-Isopropyltoluene	<0.05
1,2-Dichloropropane	<0.05	1,3-Dichlorobenzene	<0.05
Bromodichloromethane	<0.05	1,4-Dichlorobenzene	<0.05
Dibromomethane	<0.05	1,2-Dichlorobenzene	<0.05
4-Methyl-2-pentanone	<0.5	1,2-Dibromo-3-chloropropane	<0.5
cis-1,3-Dichloropropene	<0.05	1,2,4-Trichlorobenzene	<0.25
Toluene	<0.05	Hexachlorobutadiene	<0.25
trans-1,3-Dichloropropene	<0.05	Naphthalene	<0.05
1,1,2-Trichloroethane	<0.05	1,2,3-Trichlorobenzene	<0.25
2-Hexanone	<0.5		

Date of Report: 07/06/18
Date Received: 06/28/18
Project: FH Brooklyn, F&BI 806552

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TPH AS GASOLINE USING METHOD NWTPH-Gx

Laboratory Code: 806552-05 (Duplicate)

Analyte	Reporting Units	Sample Result (Wet Wt)	Duplicate Result (Wet Wt)	RPD (Limit 20)
Gasoline	mg/kg (ppm)	54	68	23 hr

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Gasoline	mg/kg (ppm)	20	105	61-153

Date of Report: 07/06/18
Date Received: 06/28/18
Project: FH Brooklyn, F&BI 806552

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 806542-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet Wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	<50	84	88	64-133	5

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Diesel Extended	mg/kg (ppm)	5,000	94	58-147

Date of Report: 07/06/18
Date Received: 06/28/18
Project: FH Brooklyn, F&BI 806552

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR VOLATILES BY EPA METHOD 8260C

Laboratory Code: 806528-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Dichlorodifluoromethane	mg/kg (ppm)	2.5	<0.5	27	27	10-142	0
Chloromethane	mg/kg (ppm)	2.5	<0.5	56	56	10-126	0
Vinyl chloride	mg/kg (ppm)	2.5	<0.05	59	58	10-138	2
Bromomethane	mg/kg (ppm)	2.5	<0.5	69	66	10-163	4
Chloroethane	mg/kg (ppm)	2.5	<0.5	61	54	10-176	12
Trichlorofluoromethane	mg/kg (ppm)	2.5	<0.5	49	44	10-176	11
Acetone	mg/kg (ppm)	12.5	<0.5	85	83	10-163	2
1,1-Dichloroethene	mg/kg (ppm)	2.5	<0.05	62	61	10-160	2
Hexane	mg/kg (ppm)	2.5	<0.25	50	56	10-137	11
Methylene chloride	mg/kg (ppm)	2.5	<0.5	80	78	10-156	3
Methyl t-butyl ether (MTBE)	mg/kg (ppm)	2.5	<0.05	93	94	21-145	1
trans-1,2-Dichloroethene	mg/kg (ppm)	2.5	<0.05	80	82	14-137	2
1,1-Dichloroethane	mg/kg (ppm)	2.5	<0.05	86	86	19-140	0
2,2-Dichloropropane	mg/kg (ppm)	2.5	<0.05	81	81	10-158	0
cis-1,2-Dichloroethene	mg/kg (ppm)	2.5	<0.05	88	89	25-135	1
Chloroform	mg/kg (ppm)	2.5	<0.05	87	89	21-145	2
2-Butanone (MEK)	mg/kg (ppm)	12.5	<0.5	85	85	19-147	0
1,2-Dichloroethane (EDC)	mg/kg (ppm)	2.5	<0.05	85	88	12-160	3
1,1,1-Trichloroethane	mg/kg (ppm)	2.5	<0.05	77	76	10-156	1
1,1-Dichloropropene	mg/kg (ppm)	2.5	<0.05	79	81	17-140	2
Carbon tetrachloride	mg/kg (ppm)	2.5	<0.05	77	79	9-164	3
Benzene	mg/kg (ppm)	2.5	<0.03	83	85	29-129	2
Trichloroethene	mg/kg (ppm)	2.5	<0.02	81	83	21-139	2
1,2-Dichloropropane	mg/kg (ppm)	2.5	<0.05	90	93	30-135	3
Bromodichloromethane	mg/kg (ppm)	2.5	<0.05	93	96	23-155	3
Dibromomethane	mg/kg (ppm)	2.5	<0.05	90	89	23-145	1
4-Methyl-2-pentanone	mg/kg (ppm)	12.5	<0.5	92	96	24-155	4
cis-1,3-Dichloropropene	mg/kg (ppm)	2.5	<0.05	99	104	28-144	5
Toluene	mg/kg (ppm)	2.5	<0.05	82	82	35-130	0
trans-1,3-Dichloropropene	mg/kg (ppm)	2.5	<0.05	101	105	26-149	4
1,1,2-Trichloroethane	mg/kg (ppm)	2.5	<0.05	94	95	10-205	1
2-Hexanone	mg/kg (ppm)	12.5	<0.5	93	98	15-166	5
1,3-Dichloropropane	mg/kg (ppm)	2.5	<0.05	90	95	31-137	5
Tetrachloroethene	mg/kg (ppm)	2.5	<0.025	71	75	20-133	5
Dibromochloromethane	mg/kg (ppm)	2.5	<0.05	97	100	28-150	3
1,2-Dibromoethane (EDB)	mg/kg (ppm)	2.5	<0.05	87	91	28-142	4
Chlorobenzene	mg/kg (ppm)	2.5	<0.05	85	86	32-129	1
Ethylbenzene	mg/kg (ppm)	2.5	<0.05	80	82	32-137	2
1,1,1,2-Tetrachloroethane	mg/kg (ppm)	2.5	<0.05	94	94	31-143	0
m,p-Xylene	mg/kg (ppm)	5	<0.1	77	80	34-136	4
o-Xylene	mg/kg (ppm)	2.5	<0.05	79	81	33-134	2
Styrene	mg/kg (ppm)	2.5	<0.05	84	86	35-137	2
Isopropylbenzene	mg/kg (ppm)	2.5	<0.05	77	79	31-142	3
Bromoform	mg/kg (ppm)	2.5	<0.05	100	101	21-156	1
n-Propylbenzene	mg/kg (ppm)	2.5	<0.05	77	81	23-146	5
Bromobenzene	mg/kg (ppm)	2.5	<0.05	83	86	34-130	4
1,3,5-Trimethylbenzene	mg/kg (ppm)	2.5	<0.05	71	75	18-149	5
1,1,2,2-Tetrachloroethane	mg/kg (ppm)	2.5	<0.05	92	95	28-140	3
1,2,3-Trichloropropane	mg/kg (ppm)	2.5	<0.05	90	92	25-144	2
2-Chlorotoluene	mg/kg (ppm)	2.5	<0.05	81	85	31-134	5
4-Chlorotoluene	mg/kg (ppm)	2.5	<0.05	80	84	31-136	5
tert-Butylbenzene	mg/kg (ppm)	2.5	<0.05	75	80	30-137	6
1,2,4-Trimethylbenzene	mg/kg (ppm)	2.5	<0.05	72	76	10-182	5
sec-Butylbenzene	mg/kg (ppm)	2.5	<0.05	72	77	23-145	7
p-Isopropyltoluene	mg/kg (ppm)	2.5	<0.05	69	74	21-149	7
1,3-Dichlorobenzene	mg/kg (ppm)	2.5	<0.05	78	80	30-131	3
1,4-Dichlorobenzene	mg/kg (ppm)	2.5	<0.05	78	81	29-129	4
1,2-Dichlorobenzene	mg/kg (ppm)	2.5	<0.05	82	82	31-132	0
1,2-Dibromo-3-chloropropane	mg/kg (ppm)	2.5	<0.5	91	90	11-161	1
1,2,4-Trichlorobenzene	mg/kg (ppm)	2.5	<0.25	70	71	22-142	1
Hexachlorobutadiene	mg/kg (ppm)	2.5	<0.25	61	65	10-142	6
Naphthalene	mg/kg (ppm)	2.5	<0.05	82	81	14-157	1
1,2,3-Trichlorobenzene	mg/kg (ppm)	2.5	<0.25	76	77	20-144	1

Date of Report: 07/06/18
Date Received: 06/28/18
Project: FH Brooklyn, F&BI 806552

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR VOLATILES BY EPA METHOD 8260C

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Dichlorodifluoromethane	mg/kg (ppm)	2.5	53	10-146
Chloromethane	mg/kg (ppm)	2.5	67	27-133
Vinyl chloride	mg/kg (ppm)	2.5	74	22-139
Bromomethane	mg/kg (ppm)	2.5	75	38-114
Chloroethane	mg/kg (ppm)	2.5	70	10-163
Trichlorofluoromethane	mg/kg (ppm)	2.5	68	10-196
Acetone	mg/kg (ppm)	12.5	93	52-141
1,1-Dichloroethene	mg/kg (ppm)	2.5	81	47-128
Hexane	mg/kg (ppm)	2.5	98	43-142
Methylene chloride	mg/kg (ppm)	2.5	93	42-132
Methyl t-butyl ether (MTBE)	mg/kg (ppm)	2.5	106	60-123
trans-1,2-Dichloroethene	mg/kg (ppm)	2.5	98	67-127
1,1-Dichloroethane	mg/kg (ppm)	2.5	97	68-115
2,2-Dichloropropane	mg/kg (ppm)	2.5	96	52-170
cis-1,2-Dichloroethene	mg/kg (ppm)	2.5	97	72-113
Chloroform	mg/kg (ppm)	2.5	96	66-120
2-Butanone (MEK)	mg/kg (ppm)	12.5	96	57-123
1,2-Dichloroethane (EDC)	mg/kg (ppm)	2.5	94	56-135
1,1,1-Trichloroethane	mg/kg (ppm)	2.5	93	62-131
1,1-Dichloropropene	mg/kg (ppm)	2.5	99	69-128
Carbon tetrachloride	mg/kg (ppm)	2.5	98	60-139
Benzene	mg/kg (ppm)	2.5	97	68-114
Trichloroethene	mg/kg (ppm)	2.5	96	64-117
1,2-Dichloropropane	mg/kg (ppm)	2.5	102	72-127
Bromodichloromethane	mg/kg (ppm)	2.5	103	72-130
Dibromomethane	mg/kg (ppm)	2.5	98	70-120
4-Methyl-2-pentanone	mg/kg (ppm)	12.5	104	45-145
cis-1,3-Dichloropropene	mg/kg (ppm)	2.5	115	75-136
Toluene	mg/kg (ppm)	2.5	98	66-126
trans-1,3-Dichloropropene	mg/kg (ppm)	2.5	118	72-132
1,1,2-Trichloroethane	mg/kg (ppm)	2.5	104	75-113
2-Hexanone	mg/kg (ppm)	12.5	106	33-152
1,3-Dichloropropane	mg/kg (ppm)	2.5	102	72-130
Tetrachloroethene	mg/kg (ppm)	2.5	100	72-114
Dibromochloromethane	mg/kg (ppm)	2.5	110	74-125
1,2-Dibromoethane (EDB)	mg/kg (ppm)	2.5	102	74-132
Chlorobenzene	mg/kg (ppm)	2.5	100	76-111
Ethylbenzene	mg/kg (ppm)	2.5	101	64-123
1,1,1,2-Tetrachloroethane	mg/kg (ppm)	2.5	107	69-135
m,p-Xylene	mg/kg (ppm)	5	100	78-122
o-Xylene	mg/kg (ppm)	2.5	100	77-124
Styrene	mg/kg (ppm)	2.5	102	74-126
Isopropylbenzene	mg/kg (ppm)	2.5	100	76-127
Bromoform	mg/kg (ppm)	2.5	116	56-132
n-Propylbenzene	mg/kg (ppm)	2.5	104	74-124
Bromobenzene	mg/kg (ppm)	2.5	101	72-122
1,3,5-Trimethylbenzene	mg/kg (ppm)	2.5	103	76-126
1,1,2,2-Tetrachloroethane	mg/kg (ppm)	2.5	103	56-143
1,2,3-Trichloropropane	mg/kg (ppm)	2.5	99	61-137
2-Chlorotoluene	mg/kg (ppm)	2.5	103	74-121
4-Chlorotoluene	mg/kg (ppm)	2.5	102	75-122
tert-Butylbenzene	mg/kg (ppm)	2.5	105	73-130
1,2,4-Trimethylbenzene	mg/kg (ppm)	2.5	102	76-125
sec-Butylbenzene	mg/kg (ppm)	2.5	103	71-130
p-Isopropyltoluene	mg/kg (ppm)	2.5	102	70-132
1,3-Dichlorobenzene	mg/kg (ppm)	2.5	98	75-121
1,4-Dichlorobenzene	mg/kg (ppm)	2.5	96	74-117
1,2-Dichlorobenzene	mg/kg (ppm)	2.5	97	76-121
1,2-Dibromo-3-chloropropane	mg/kg (ppm)	2.5	105	58-138
1,2,4-Trichlorobenzene	mg/kg (ppm)	2.5	94	64-135
Hexachlorobutadiene	mg/kg (ppm)	2.5	93	50-153
Naphthalene	mg/kg (ppm)	2.5	98	63-140
1,2,3-Trichlorobenzene	mg/kg (ppm)	2.5	96	63-138

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.

806552

SAMPLE CHAIN OF CUSTODY

ME 06-28-18

Page # 1 of 1 A02/152

Report To ADAM, ROBERT, FASIH, BREEYN

Company ASPECT CONSULTING

Address SEATTLE

City, State, ZIP WA

Phone 206.713.2136 Email

SAMPLERS (signature)

PROJECT NAME: FH BROOKLYN

PO #

REMARKS

INVOICE TO

TURNAROUND TIME
- ☐ Standard Turnaround 6/28
- ☒ RUSH Friday 1pm

Rush charges authorized by:

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

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM					Notes
						ANALYSES REQUESTED											
SS3-1-062818	01	06/28/18	1210	S	5		X	X		X							
SS3-2-062818	02		1215				X	X		X							
SS3-3-062818	03		1240				X	X		X							
SS3-4-062818	04		1320				X	X		X							
SS3-5-062818	05		1330				X	X		X							
SS3-6-062818	06	↓	1345	↓	↓		X	X		X							
																	Samples received at 20 °C

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	FASIH KHAN	ASPECT	6/28/18	1500
Received by:	Liz Webber-Bruya	FTBI	6/28/18	1500
Relinquished by:				
Received by:				

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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Arina Podnozova, B.S.
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www.friedmanandbruya.com

July 6, 2018

Adam Griffin, Project Manager
Aspect Consulting, LLC
350 Madison Ave. N.
Bainbridge Island, WA 98110-1810

Dear Mr Griffin:

Included are the results from the testing of material submitted on June 29, 2018 from the FH Brooklyn, F&BI 806586 project. There are 6 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Data Aspect, Bob Hanford, Breeyn Greer, Fasih Khan
ASP0706R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on June 29, 2018 by Friedman & Bruya, Inc. from the Aspect Consulting, LLC FH Brooklyn, F&BI 806586 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Aspect Consulting, LLC
806586 -01	SS4-1-062918
806586 -02	SS4-2-062918
806586 -03	SS4-3-062918

All quality control requirements were acceptable.

Date of Report: 07/06/18
Date Received: 06/29/18
Project: FH Brooklyn, F&BI 806586
Date Extracted: 07/02/18
Date Analyzed: 07/02/18

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
SS4-1-062918 806586-01	<0.02	<0.02	0.067	0.23	<5	81
SS4-2-062918 806586-02	<0.02	<0.02	0.066	0.20	<5	79
SS4-3-062918 806586-03	<0.02	<0.02	0.065	0.21	<5	78
Method Blank 07-02-18 10:46	<0.02	<0.02	<0.02	<0.06	<5	76

Date of Report: 07/06/18
Date Received: 06/29/18
Project: FH Brooklyn, F&BI 806586
Date Extracted: 07/02/18
Date Analyzed: 07/02/18

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 56-165)
SS4-1-062918 806586-01	<50	<250	96
SS4-2-062918 806586-02	<50	<250	85
SS4-3-062918 806586-03	<50	<250	86
Method Blank 08-1442 MB	<50	<250	87

Date of Report: 07/06/18
Date Received: 06/29/18
Project: FH Brooklyn, F&BI 806586

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 806579-01 (Duplicate)

Analyte	Reporting Units	Sample Result (Wet Wt)	Duplicate Result (Wet Wt)	RPD (Limit 20)
Benzene	mg/kg (ppm)	<0.02	<0.02	nm
Toluene	mg/kg (ppm)	<0.02	<0.02	nm
Ethylbenzene	mg/kg (ppm)	<0.02	<0.02	nm
Xylenes	mg/kg (ppm)	<0.06	<0.06	nm
Gasoline	mg/kg (ppm)	<5	<5	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/kg (ppm)	0.5	102	66-121
Toluene	mg/kg (ppm)	0.5	95	72-128
Ethylbenzene	mg/kg (ppm)	0.5	96	69-132
Xylenes	mg/kg (ppm)	1.5	94	69-131
Gasoline	mg/kg (ppm)	20	85	61-153

Date of Report: 07/06/18
Date Received: 06/29/18
Project: FH Brooklyn, F&BI 806586

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 806586-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet Wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	<50	95	110	63-146	15

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Diesel Extended	mg/kg (ppm)	5,000	107	79-144

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.

806586

SAMPLE CHAIN OF CUSTODY ME 06-29-18

A01 / V81

Page # 1 of 1

Report To ADAM, ROBERT, FASIH, BREEYN

Company ASPECT

Address SEATTLE

City, State, ZIP WA

Phone 206-713-2136 Email

SAMPLERS (*signature*)

PROJECT NAME: FH BROOKLYN

PO #

REMARKS

INVOICE TO

TURNAROUND TIME
- ☐ Standard Turnaround
- ☒ RUSH
- Rush charges authorized by:

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

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM					Notes
						ANALYSES REQUESTED											
SS4-1-062918	01A-E	6/29/18	1210	S	5		⊗	⊗	⊗								
SS4-2-062918	02	↓	1230	↓	↓		⊗	⊗	⊗								
SS4-3-062918	03	↓	1310	↓	↓		⊗	⊗	⊗								
													Samples received at 3 °C				

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	FASIH KHAN	ASPECT	6/29/18	1535
Received by:	D O VA	FEBE	6-29-18	15-35
Relinquished by:				
Received by:				

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

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(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

July 11, 2018

Adam Griffin, Project Manager
Aspect Consulting, LLC
350 Madison Ave. N.
Bainbridge Island, WA 98110-1810

Dear Mr Griffin:

Included are the results from the testing of material submitted on July 5, 2018 from the FH Brooklyn, F&BI 807083 project. There are 6 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Data Aspect, Fasih Khan, Bob Hanford, Breeyn Greer
ASP0711R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on July 5, 2018 by Friedman & Bruya, Inc. from the Aspect Consulting, LLC FH Brooklyn, F&BI 807083 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Aspect Consulting, LLC
807083 -01	SS7-1-070518
807083 -02	SS7-2-070518
807083 -03	SS7-3-070518

All quality control requirements were acceptable.

Date of Report: 07/11/18
Date Received: 07/05/18
Project: FH Brooklyn, F&BI 807083
Date Extracted: 07/06/18
Date Analyzed: 07/06/18

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 50-132)
SS7-1-070518 807083-01	<0.02	0.026	0.18	0.48	110	83
SS7-2-070518 807083-02	<0.02	0.046	0.34	0.72	130	94
SS7-3-070518 807083-03	<0.02	<0.02	0.14	0.33	77	83
Method Blank 08-1393 MB	<0.02	<0.02	<0.02	<0.06	<5	81

Date of Report: 07/11/18
Date Received: 07/05/18
Project: FH Brooklyn, F&BI 807083
Date Extracted: 07/06/18
Date Analyzed: 07/06/18

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 56-165)
SS7-1-070518 807083-01	<50	<250	96
SS7-2-070518 807083-02	69 x	<250	93
SS7-3-070518 807083-03	<50	<250	94
Method Blank 08-1475 MB2	<50	<250	95

Date of Report: 07/11/18
Date Received: 07/05/18
Project: FH Brooklyn, F&BI 807083

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 807061-01 (Duplicate)

Analyte	Reporting Units	Sample Result (Wet Wt)	Duplicate Result (Wet Wt)	RPD (Limit 20)
Benzene	mg/kg (ppm)	<0.02	<0.02	nm
Toluene	mg/kg (ppm)	<0.02	<0.02	nm
Ethylbenzene	mg/kg (ppm)	<0.02	<0.02	nm
Xylenes	mg/kg (ppm)	<0.06	<0.06	nm
Gasoline	mg/kg (ppm)	<5	<5	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/kg (ppm)	0.5	91	66-121
Toluene	mg/kg (ppm)	0.5	87	72-128
Ethylbenzene	mg/kg (ppm)	0.5	85	69-132
Xylenes	mg/kg (ppm)	1.5	83	69-131
Gasoline	mg/kg (ppm)	20	90	61-153

Date of Report: 07/11/18
Date Received: 07/05/18
Project: FH Brooklyn, F&BI 807083

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 807058-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet Wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	<50	88	86	73-135	2

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Diesel Extended	mg/kg (ppm)	5,000	92	74-139

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.

807083

SAMPLE CHAIN OF CUSTODY

ME 7/5/18

VSI

Page # 1 of 1801

Report To ADAM, ROBERT, FASIH, BREEYN

Company ASPECT

Address SEATTLE

City, State, ZIP WA

Phone 206 713.2136 Email

SAMPLERS (*signature*)

PROJECT NAME: FH BROOKLYN

PO #

REMARKS

INVOICE TO

TURNAROUND TIME
- ☐ Standard Turnaround
- ☒ RUSH EOD 7/6

Rush charges authorized by:

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

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	ANALYSES REQUESTED: TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM					Notes
SS7-1-070518	01AE	070518	1330	S	5		X	X	X								
SS7-2-070518	02AE	"	1350	"	5		X	X	X								
SS7-3-070518	03AE	"	1400	"	5		X	X	X								

Samples received at 25 °C

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	FASIH KHAN	ASPECT	7/5/18	1740
Received by:	Matt Langston	FBI	7/5/18	1740
Relinquished by:				
Received by:				

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Seattle, WA 98119-2029
Ph. (206) 285-8282

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

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July 12, 2018

Adam Griffin, Project Manager
Aspect Consulting, LLC
350 Madison Ave. N.
Bainbridge Island, WA 98110-1810

Dear Mr Griffin:

Included are the results from the testing of material submitted on July 9, 2018 from the FH Brooklyn, F&BI 807146 project. There are 6 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Data Aspect, Bob Hanford, Fasih Khan, Breeyn Greer
ASP0712R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on July 9, 2018 by Friedman & Bruya, Inc. from the Aspect Consulting, LLC FH Brooklyn, F&BI 807146 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Aspect Consulting, LLC
807146 -01	SS9-3-070918
807146 -02	SS9-4-070918
807146 -03	SS9-5-070918

All quality control requirements were acceptable.

Date of Report: 07/12/18
Date Received: 07/09/18
Project: FH Brooklyn, F&BI 807146
Date Extracted: 07/10/18
Date Analyzed: 07/10/18

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 50-132)
SS9-3-070918 807146-01 1/10	0.39	2.8	4.6	15	530	84
SS9-4-070918 807146-02	0.062	0.61	1.2	2.7	170	96
SS9-5-070918 807146-03 1/2	0.13	1.0	2.0	5.9	250	97
Method Blank 08-1397 MB	<0.02	<0.02	<0.02	<0.06	<5	79

Date of Report: 07/12/18
Date Received: 07/09/18
Project: FH Brooklyn, F&BI 807146
Date Extracted: 07/09/18
Date Analyzed: 07/09/18

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 48-168)
SS9-3-070918 807146-01	310 x	<250	105
SS9-4-070918 807146-02	160 x	<250	104
SS9-5-070918 807146-03	75 x	<250	100
Method Blank 08-1486 MB	<50	<250	96

Date of Report: 07/12/18
Date Received: 07/09/18
Project: FH Brooklyn, F&BI 807146

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 807139-01 (Duplicate)

Analyte	Reporting Units	Sample Result (Wet Wt)	Duplicate Result (Wet Wt)	RPD (Limit 20)
Benzene	mg/kg (ppm)	<0.02	<0.02	nm
Toluene	mg/kg (ppm)	<0.02	<0.02	nm
Ethylbenzene	mg/kg (ppm)	<0.02	<0.02	nm
Xylenes	mg/kg (ppm)	<0.06	<0.06	nm
Gasoline	mg/kg (ppm)	<5	<5	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/kg (ppm)	0.5	103	66-121
Toluene	mg/kg (ppm)	0.5	101	72-128
Ethylbenzene	mg/kg (ppm)	0.5	101	69-132
Xylenes	mg/kg (ppm)	1.5	98	69-131
Gasoline	mg/kg (ppm)	20	100	61-153

Date of Report: 07/12/18
Date Received: 07/09/18
Project: FH Brooklyn, F&BI 807146

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 807113-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet Wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	<50	92	90	73-135	2

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Diesel Extended	mg/kg (ppm)	5,000	100	74-139

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.

807146

SAMPLE CHAIN OF CUSTODY

MK 7/9/18 SO, NS

Page # 1 of 1

Report To ADAM, ROBERT, FASIH, BREEYN

Company ASPECT

Address SEATTLE

City, State, ZIP WA

Phone 206.713.2136 Email

SAMPLERS (signature)

PROJECT NAME: FH BROOKLYN

PO #

REMARKS

INVOICE TO

TURNAROUND TIME
- ☐ Standard Turnaround
- ☒ RUSH 9:00 a.m.
- Rush charges authorized by:

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

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM					Notes
						ANALYSES REQUESTED											
SS9-3-070918	01 A C	7/9/18	1135		3		X	X	X								
SS9-4-070918	02 A C		1210				X	X	X								
SS9-5-070918	03 A C		1240				X	X	X								

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	FASIH KHAN	ASPECT	7/9/18	1620
Received by:	HONG NGUYEN	FBI	✓	✓
Relinquished by:				
Received by:				

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Ph. (206) 285-8282

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

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(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

October 11, 2018

Adam Griffin, Project Manager
Aspect Consulting, LLC
350 Madison Ave. N.
Bainbridge Island, WA 98110-1810

Dear Mr Griffin:

Included is the amended report from the testing of material submitted on July 11, 2018 from the FH Brooklyn, F&BI 807175 project. Per your request, the sample IDs were amended.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Data Aspect, Bob Hanford, Fasih Khan, Breeyn Greer
ASP0712R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

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www.friedmanandbruya.com

July 12, 2018

Adam Griffin, Project Manager
Aspect Consulting, LLC
350 Madison Ave. N.
Bainbridge Island, WA 98110-1810

Dear Mr Griffin:

Included are the results from the testing of material submitted on July 11, 2018 from the FH Brooklyn, F&BI 807175 project. There are 6 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Data Aspect, Bob Hanford, Fasih Khan, Breeyn Greer
ASP0712R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on July 11, 2018 by Friedman & Bruya, Inc. from the Aspect Consulting, LLC FH Brooklyn, F&BI 807175 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Aspect Consulting, LLC
807175 -01	EX2N10-210-071118
807175 -02	W5S11-212-071118

All quality control requirements were acceptable.

Date of Report: 07/12/18
Date Received: 07/11/18
Project: FH Brooklyn, F&BI 807175
Date Extracted: 07/11/18
Date Analyzed: 07/11/18

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
EX2N10-210-071118 807175-01	<0.02	<0.02	<0.02	<0.06	8.0	95
W5S11-212-071118 807175-02	<0.02	<0.02	<0.02	<0.06	<5	93
Method Blank 08-1398 MB	<0.02	<0.02	<0.02	<0.06	<5	95

Date of Report: 07/12/18
Date Received: 07/11/18
Project: FH Brooklyn, F&BI 807175
Date Extracted: 07/11/18
Date Analyzed: 07/11/18

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 48-168)
EX2N10-210-071118 807175-01	5,700 x	22,000	83
W5S11-212-071118 807175-02	130 x	1,700	85
Method Blank 08-1497 MB	<50	<250	94

Date of Report: 07/12/18
Date Received: 07/11/18
Project: FH Brooklyn, F&BI 807175

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 807175-01 (Duplicate)

Analyte	Reporting Units	Sample Result (Wet Wt)	Duplicate Result (Wet Wt)	RPD (Limit 20)
Benzene	mg/kg (ppm)	<0.02	<0.02	nm
Toluene	mg/kg (ppm)	<0.02	<0.02	nm
Ethylbenzene	mg/kg (ppm)	<0.02	<0.02	nm
Xylenes	mg/kg (ppm)	<0.06	<0.06	nm
Gasoline	mg/kg (ppm)	6.7	7.2	7

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/kg (ppm)	0.5	83	69-120
Toluene	mg/kg (ppm)	0.5	92	70-117
Ethylbenzene	mg/kg (ppm)	0.5	95	65-123
Xylenes	mg/kg (ppm)	1.5	95	66-120
Gasoline	mg/kg (ppm)	20	105	71-131

Date of Report: 07/12/18
Date Received: 07/11/18
Project: FH Brooklyn, F&BI 807175

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 807175-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet Wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	17,000	0 b	54 b	73-135	193 b

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Diesel Extended	mg/kg (ppm)	5,000	90	74-139

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.

B07175

SAMPLE CHAIN OF CUSTODY ME 7/11/18

B01 VS1

Page # 1 of 1

Report To ADAM, ROBERT, FASIH, BREEYN

Company ASPECT

Address SEATTLE

City, State, ZIP WA

Phone _____ Email _____

SAMPLERS (*signature*)

PROJECT NAME: FH BROOKLYN

PO #

REMARKS

INVOICE TO

TURNAROUND TIME
- ☐ Standard Turnaround
- ☒ RUSH 7/11
- Rush charges authorized by:

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

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM					Notes
ANALYSES REQUESTED																	
E2N10-210-071118 ~~EX1-1-210~~																	
~~HS1-1-071118~~	01AE	7/11/18	0800	S	5		✓	✓	✓								
~~HS2-1-071118~~	02AE	7/11/18	0808	S	5		✓	✓	✓								
~~EX2-1-212~~																	
W5S11-212-071118																	
EDs updated per AG 7/11/18 ME																	
													Samples received at 2.1 °C				

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	FASIH KHAN	ASPECT	7/11/18	0825
Received by:	Matt Langston	FBI	7/11/18	
Relinquished by:				
Received by:				

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

July 13, 2018

Adam Griffin, Project Manager
Aspect Consulting, LLC
350 Madison Ave. N.
Bainbridge Island, WA 98110-1810

Dear Mr Griffin:

Included are the results from the testing of material submitted on July 12, 2018 from the FH Brooklyn, F&BI 807203 project. There are 4 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Data Aspect, Fasih Khan, Bob Hanford, Breeyn Greer
ASP0713R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on July 12, 2018 by Friedman & Bruya, Inc. from the Aspect Consulting, LLC FH Brooklyn, F&BI 807203 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Aspect Consulting, LLC
807203 -01	Ex2-2-212
807203 -02	Ex2-3-212

All quality control requirements were acceptable.

Date of Report: 07/13/18
Date Received: 07/12/18
Project: FH Brooklyn, F&BI 807203
Date Extracted: 07/12/18
Date Analyzed: 07/12/18

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 53-144)
Ex2-2-212 807203-01	180 x	1,300	85
Ex2-3-212 807203-02	91 x	730	82
Method Blank 08-1521 MB2	<50	<250	85

Date of Report: 07/13/18
Date Received: 07/12/18
Project: FH Brooklyn, F&BI 807203

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 807164-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet Wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	<50	82	80	73-135	2

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Diesel Extended	mg/kg (ppm)	5,000	90	74-139

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.

807203

SAMPLE CHAIN OF CUSTODY

ME 07/12/18 VBT/BOL

Page# 1 of 1

Report To ADAM, ROBERT, FASIH, BCEEYN

Company ASPECT

Address SEATTLE

City, State, ZIP WA

Phone _____ Email _____

SAMPLERS (*signature*)

PROJECT NAME: FH BROOKLYN

PO #

REMARKS

INVOICE TO

TURNAROUND TIME
- ☐ Standard Turnaround
- ☒ RUSH 7/12 ML
- Rush charges authorized by: _____

SAMPLE DISPOSAL
- ☒ Dispose after 30 days
- ☐ Archive Samples
- ☐ Other _____

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM					Notes
						ANALYSES REQUESTED											
EX2-2-212	01A-C	7/12/18	0715	S	3		X										
EX2-3-212	02	7/12/18	0720	S	3		X										
																	Samples received at 20 °C

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	FASIH KHAN	ASPECT	7/12/18	820
Received by:	Matt Langston	FBT	7/12/18	820
Relinquished by:				
Received by:				

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Eric Young, B.S.

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fbi@isomedia.com
www.friedmanandbruya.com

August 16, 2018

Adam Griffin, Project Manager
Aspect Consulting, LLC
350 Madison Ave. N.
Bainbridge Island, WA 98110-1810

Dear Mr Griffin:

Included are the additional results from the testing of material submitted on August 2, 2018 from the FH Brooklyn, F&BI 808108 project. There are 7 pages included in this report.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Data Aspect
ASP0816R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on August 2, 2018 by Friedman & Bruya, Inc. from the Aspect Consulting, LLC FH Brooklyn, F&BI 808108 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Aspect Consulting, LLC
808108 -01	MW-25-080218
808108 -02	MW-17-080218
808108 -03	MW-100-080218

All quality control requirements were acceptable.

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-25-080218	Client:	Aspect Consulting, LLC
Date Received:	08/02/18	Project:	FH Brooklyn, F&BI 808108
Date Extracted:	08/06/18	Lab ID:	808108-01
Date Analyzed:	08/07/18	Data File:	080651.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	57	121
Toluene-d8	100	63	127
4-Bromofluorobenzene	97	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	78
Chloroethane	<1
1,1-Dichloroethene	1.8
Methylene chloride	<5
trans-1,2-Dichloroethene	100
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	550 ve
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	490 ve
Tetrachloroethene	26

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-25-080218	Client:	Aspect Consulting, LLC
Date Received:	08/02/18	Project:	FH Brooklyn, F&BI 808108
Date Extracted:	08/10/18	Lab ID:	808108-01 1/10
Date Analyzed:	08/10/18	Data File:	081033.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	103	57	121
Toluene-d8	100	63	127
4-Bromofluorobenzene	97	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	81
Chloroethane	<10
1,1-Dichloroethene	<10
Methylene chloride	<50
trans-1,2-Dichloroethene	98
1,1-Dichloroethane	<10
cis-1,2-Dichloroethene	540
1,2-Dichloroethane (EDC)	<10
1,1,1-Trichloroethane	<10
Trichloroethene	480
Tetrachloroethene	25

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-17-080218	Client:	Aspect Consulting, LLC
Date Received:	08/02/18	Project:	FH Brooklyn, F&BI 808108
Date Extracted:	08/10/18	Lab ID:	808108-02
Date Analyzed:	08/10/18	Data File:	081035.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	57	121
Toluene-d8	102	63	127
4-Bromofluorobenzene	96	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	1.7
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	39
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	27
Tetrachloroethene	110

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	Method Blank	Client:	Aspect Consulting, LLC
Date Received:	Not Applicable	Project:	FH Brooklyn, F&BI 808108
Date Extracted:	08/06/18	Lab ID:	08-1707 mb
Date Analyzed:	08/06/18	Data File:	080630.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	57	121
Toluene-d8	99	63	127
4-Bromofluorobenzene	98	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

Date of Report: 08/16/18
Date Received: 08/02/18
Project: FH Brooklyn, F&BI 808108

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260C

Laboratory Code: 808105-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Acceptance Criteria
Vinyl chloride	ug/L (ppb)	50	<0.2	97	36-166
Chloroethane	ug/L (ppb)	50	<1	93	46-160
1,1-Dichloroethene	ug/L (ppb)	50	<1	107	60-136
Methylene chloride	ug/L (ppb)	50	<5	100	67-132
trans-1,2-Dichloroethene	ug/L (ppb)	50	<1	100	72-129
1,1-Dichloroethane	ug/L (ppb)	50	<1	98	70-128
cis-1,2-Dichloroethene	ug/L (ppb)	50	<1	98	71-127
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	<1	96	69-133
1,1,1-Trichloroethane	ug/L (ppb)	50	<1	102	60-146
Trichloroethene	ug/L (ppb)	50	<1	96	66-135
Tetrachloroethene	ug/L (ppb)	50	<1	98	10-226

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Vinyl chloride	ug/L (ppb)	50	98	99	50-154	1
Chloroethane	ug/L (ppb)	50	92	94	58-146	2
1,1-Dichloroethene	ug/L (ppb)	50	103	100	67-136	3
Methylene chloride	ug/L (ppb)	50	103	97	39-148	6
trans-1,2-Dichloroethene	ug/L (ppb)	50	102	100	68-128	2
1,1-Dichloroethane	ug/L (ppb)	50	98	97	79-121	1
cis-1,2-Dichloroethene	ug/L (ppb)	50	100	98	80-123	2
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	94	96	73-132	2
1,1,1-Trichloroethane	ug/L (ppb)	50	103	103	83-130	0
Trichloroethene	ug/L (ppb)	50	96	97	80-120	1
Tetrachloroethene	ug/L (ppb)	50	99	100	76-121	1

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.

808108

SAMPLE CHAIN OF CUSTODY ME 08-03-18

D03 / VW2

Page # 1 of 2

Report To Adam Griffin
Company Aspect Consulting LLC
Address 401 2nd Ave S, #201
City, State, ZIP Seattle, WA 98104
Phone _____ Email agriffin@aspectconsulting.com

SAMPLERS (*signature*)

PROJECT NAME: FH Brooklyn

PO #

REMARKS: cVOCs to be invoiced seperately

INVOICE TO

TURNAROUND TIME
- [x] Standard Turnaround
- [ ] RUSH _____
Rush charges authorized by: _____

SAMPLE DISPOSAL
- [x] Dispose after 30 days
- [ ] Archive Samples
- [ ] Other _____

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	~~VOCs by 8260C~~	SVOCs by 8270D	PAHs 8270D SIM	BTEX	cVOCs			Notes
						ANALYSES REQUESTED											
MW-25-080218	01 A-C	8/2/18	1505	water	7		X	X		X			X	X			
MW-17-080218	02 T	8/2/18	1610	water	7		X	X		X			X	X			
MW-100-080218	03 T	8/2/18	N/A	water	7	(NO)	NO	X		NO	(NO)						Analyze NWTPH-Gx only
																	Samples ~~received~~ at 4 °C

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Andrew Yontofski	Aspect	8/2/18	3:26 PM
Received by:	assistant Bookkeeper	FEDEX	8/2/18	3:26 PM
Relinquished by:				
Received by:			8/3/18	15:10

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

August 15, 2018

Adam Griffin, Project Manager
Aspect Consulting, LLC
350 Madison Ave. N.
Bainbridge Island, WA 98110-1810

Dear Mr Griffin:

Included are the results from the testing of material submitted on August 2, 2018 from the FH Brooklyn, F&BI 808108 project. There are 10 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Data Aspect
ASP0815R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on August 2, 2018 by Friedman & Bruya, Inc. from the Aspect Consulting, LLC FH Brooklyn, F&BI 808108 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Aspect Consulting, LLC
808108 -01	MW-25-080218
808108 -02	MW-17-080218
808108 -03	MW-100-080218

All quality control requirements were acceptable.

Date of Report: 08/15/18
Date Received: 08/02/18
Project: FH Brooklyn, F&BI 808108
Date Extracted: 08/07/18
Date Analyzed: 08/07/18

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Gasoline Range	Surrogate (% Recovery) (Limit 51-134)
MW-25-080218 808108-01	1,200	84
MW-17-080218 808108-02	2,800	86
MW-100-080218 808108-03	2,500	85
Method Blank 08-1656 MB	<100	81

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-25-080218	Client:	Aspect Consulting, LLC
Date Received:	08/02/18	Project:	FH Brooklyn, F&BI 808108
Date Extracted:	08/06/18	Lab ID:	808108-01
Date Analyzed:	08/07/18	Data File:	080651.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	57	121
Toluene-d8	100	63	127
4-Bromofluorobenzene	97	60	133

Compounds:	Concentration ug/L (ppb)
Methyl t-butyl ether (MTBE)	<1
Benzene	32
Toluene	2.7
Ethylbenzene	9.3
m,p-Xylene	3.9
o-Xylene	3.0

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-17-080218	Client:	Aspect Consulting, LLC
Date Received:	08/02/18	Project:	FH Brooklyn, F&BI 808108
Date Extracted:	08/06/18	Lab ID:	808108-02
Date Analyzed:	08/07/18	Data File:	080652.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	57	121
Toluene-d8	100	63	127
4-Bromofluorobenzene	96	60	133

Compounds:	Concentration ug/L (ppb)
Methyl t-butyl ether (MTBE)	<1
Benzene	45
Toluene	4.0
Ethylbenzene	27
m,p-Xylene	60
o-Xylene	27

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	Method Blank	Client:	Aspect Consulting, LLC
Date Received:	Not Applicable	Project:	FH Brooklyn, F&BI 808108
Date Extracted:	08/06/18	Lab ID:	08-1707 mb
Date Analyzed:	08/06/18	Data File:	080630.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	57	121
Toluene-d8	99	63	127
4-Bromofluorobenzene	98	60	133

Compounds:	Concentration ug/L (ppb)
Methyl t-butyl ether (MTBE)	<1
Benzene	<0.35
Toluene	<1
Ethylbenzene	<1
m,p-Xylene	<2
o-Xylene	<1

Date of Report: 08/15/18
Date Received: 08/02/18
Project: FH Brooklyn, F&BI 808108
Date Extracted: 08/07/18
Date Analyzed: 08/07/18

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 47-140)
MW-25-080218 808108-01	210 x	<250	102
MW-17-080218 808108-02	860 x	<250	119
Method Blank 08-1722 MB	<50	<250	122

Date of Report: 08/15/18
Date Received: 08/02/18
Project: FH Brooklyn, F&BI 808108

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TPH AS GASOLINE USING METHOD NWTPH-Gx

Laboratory Code: 808097-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
Gasoline	ug/L (ppb)	<100	<100	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Gasoline	ug/L (ppb)	1,000	110	69-134

Date of Report: 08/15/18
Date Received: 08/02/18
Project: FH Brooklyn, F&BI 808108

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260C

Laboratory Code: 808105-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Acceptance Criteria
Methyl t-butyl ether (MTBE)	ug/L (ppb)	50	<1	97	74-127
Benzene	ug/L (ppb)	50	<0.35	96	76-125
Toluene	ug/L (ppb)	50	<1	92	76-122
Ethylbenzene	ug/L (ppb)	50	<1	94	69-135
m,p-Xylene	ug/L (ppb)	100	<2	95	69-135
o-Xylene	ug/L (ppb)	50	<1	96	60-140

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Methyl t-butyl ether (MTBE)	ug/L (ppb)	50	101	98	64-147	3
Benzene	ug/L (ppb)	50	96	97	69-134	1
Toluene	ug/L (ppb)	50	93	93	72-122	0
Ethylbenzene	ug/L (ppb)	50	93	96	77-124	3
m,p-Xylene	ug/L (ppb)	100	95	97	83-125	2
o-Xylene	ug/L (ppb)	50	97	98	81-121	1

Date of Report: 08/15/18
Date Received: 08/02/18
Project: FH Brooklyn, F&BI 808108

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	ug/L (ppb)	2,500	96	104	61-133	8

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.

808108

SAMPLE CHAIN OF CUSTODY ME 08-03-18

D03 / VW2

Page # 1 of 1

Report To Adam Griffin
Company Aspect Consulting LLC
Address 401 2nd Ave S, #201
City, State, ZIP Seattle, WA 98104
Phone _____ Email agriffin@aspectconsulting.com

SAMPLERS (*signature*)

PROJECT NAME: FH Brooklyn

PO #

REMARKS: cVOCs to be invoiced seperately

INVOICE TO

TURNAROUND TIME
- [X] Standard Turnaround
- [ ] RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
- [X] Dispose after 30 days
- [ ] Archive Samples
- [ ] Other

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	~~VOCs by 8260C~~	SVOCs by 8270D	PAHs 8270D SIM	BTEX, MTBE	cVOCs			Notes
						ANALYSES REQUESTED											
MW-25-080218	01 A-G	8/2/18	1505	water	7		X	X		X			X	X			
MW-17-080218	02 T	8/2/18	1610	water	7		X	X		X			X	X			
MW-100-080218	03 T	8/2/18	N/A	water	7	(NO)	NO	X		NO (AH)	(AH)		X	X			Analyze NWTPH-Gx only
																	Samples ~~received~~ at 4 °C

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Andrew Yantofski	Aspect	8/2/18	3:26PM
Received by:	[illegible]	FEDEX	8/2/18	3:26PM
Relinquished by:				
Received by:	[illegible]	[illegible]	8/2/18	[illegible]

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

3012 16th Avenue West
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fbi@isomedia.com
www.friedmanandbruya.com

September 6, 2018

Adam Griffin, Project Manager
Aspect Consulting, LLC
350 Madison Ave. N.
Bainbridge Island, WA 98110-1810

Dear Mr Griffin:

Included are the additional results from the testing of material submitted on August 23, 2018 from the FH Brooklyn, F&BI 808534 project. There are 9 pages included in this report.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Data Aspect
ASP0906R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on August 23, 2018 by Friedman & Bruya, Inc. from the Aspect Consulting, LLC FH Brooklyn, F&BI 808534 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Aspect Consulting, LLC
808534 -01	MW-25-082218
808534 -02	MW-26-082218
808534 -03	MW-18-082218
808534 -04	Trip Blank
808534 -05	MW-100-082218

cis-1,2-Dichloroethene and trichloroethene exceeded the calibration range of the instrument in sample MW-25-082218 and MW-26-082218. In addition, the trichloroethene detection in sample MW-18-082218 may be due to carryover from a previous sample injection. The data were flagged accordingly. There was insufficient volume for sampled MW-25-08218 and MW-18-082218 to reanalyze.

All other quality control requirements were acceptable.

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-25-082218	Client:	Aspect Consulting, LLC
Date Received:	08/23/18	Project:	FH Brooklyn, F&BI 808534
Date Extracted:	08/24/18	Lab ID:	808534-01
Date Analyzed:	08/24/18	Data File:	082424.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	57	121
Toluene-d8	98	63	127
4-Bromofluorobenzene	99	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	13
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	28
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	230 ve
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	270 ve
Tetrachloroethene	59

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-26-082218	Client:	Aspect Consulting, LLC
Date Received:	08/23/18	Project:	Projec
Date Extracted:	08/24/18	Lab ID:	808534-02
Date Analyzed:	08/24/18	Data File:	082425.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	57	121
Toluene-d8	99	63	127
4-Bromofluorobenzene	100	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	26
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	110
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	440 ve
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	810 ve
Tetrachloroethene	7.5

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-26-082218	Client:	Aspect Consulting, LLC
Date Received:	08/23/18	Project:	FH Brooklyn, F&BI 808534
Date Extracted:	08/24/18	Lab ID:	808534-02 1/10
Date Analyzed:	08/29/18	Data File:	082914.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	57	121
Toluene-d8	96	63	127
4-Bromofluorobenzene	96	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	23
Chloroethane	<10
1,1-Dichloroethene	<10
Methylene chloride	<50
trans-1,2-Dichloroethene	100
1,1-Dichloroethane	<10
cis-1,2-Dichloroethene	430
1,2-Dichloroethane (EDC)	<10
1,1,1-Trichloroethane	<10
Trichloroethene	810
Tetrachloroethene	<10

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-18-082218	Client:	Aspect Consulting, LLC
Date Received:	08/23/18	Project:	FH Brooklyn, F&BI 808534
Date Extracted:	08/24/18	Lab ID:	808534-03
Date Analyzed:	08/24/18	Data File:	082426.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	57	121
Toluene-d8	98	63	127
4-Bromofluorobenzene	99	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	1.1 c
Tetrachloroethene	2.9

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	Trip Blank	Client:	Aspect Consulting, LLC
Date Received:	08/23/18	Project:	FH Brooklyn, F&BI 808534
Date Extracted:	08/24/18	Lab ID:	808534-04
Date Analyzed:	08/24/18	Data File:	082422.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	103	57	121
Toluene-d8	98	63	127
4-Bromofluorobenzene	98	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	Method Blank	Client:	Aspect Consulting, LLC
Date Received:	Not Applicable	Project:	FH Brooklyn, F&BI 808534
Date Extracted:	08/24/18	Lab ID:	08-1800 mb
Date Analyzed:	08/24/18	Data File:	082421.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	57	121
Toluene-d8	99	63	127
4-Bromofluorobenzene	100	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

Date of Report: 09/06/18
Date Received: 08/23/18
Project: FH Brooklyn, F&BI 808534

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260C

Laboratory Code: 808486-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Acceptance Criteria
Vinyl chloride	ug/L (ppb)	50	<0.2	96	36-166
Chloroethane	ug/L (ppb)	50	<1	91	46-160
1,1-Dichloroethene	ug/L (ppb)	50	<1	108	60-136
Methylene chloride	ug/L (ppb)	50	<5	99	67-132
trans-1,2-Dichloroethene	ug/L (ppb)	50	<1	102	72-129
1,1-Dichloroethane	ug/L (ppb)	50	<1	99	70-128
cis-1,2-Dichloroethene	ug/L (ppb)	50	<1	99	71-127
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	<1	93	69-133
1,1,1-Trichloroethane	ug/L (ppb)	50	<1	107	60-146
Trichloroethene	ug/L (ppb)	50	<1	95	66-135
Tetrachloroethene	ug/L (ppb)	50	<1	100	10-226

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Vinyl chloride	ug/L (ppb)	50	95	95	50-154	0
Chloroethane	ug/L (ppb)	50	90	90	58-146	0
1,1-Dichloroethene	ug/L (ppb)	50	108	113	67-136	5
Methylene chloride	ug/L (ppb)	50	101	105	39-148	4
trans-1,2-Dichloroethene	ug/L (ppb)	50	104	108	68-128	4
1,1-Dichloroethane	ug/L (ppb)	50	101	104	79-121	3
cis-1,2-Dichloroethene	ug/L (ppb)	50	100	104	80-123	4
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	95	96	73-132	1
1,1,1-Trichloroethane	ug/L (ppb)	50	106	109	83-130	3
Trichloroethene	ug/L (ppb)	50	96	98	80-120	2
Tetrachloroethene	ug/L (ppb)	50	100	103	76-121	3

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.

808534

SAMPLE CHAIN OF CUSTODY

ME 08-23-18

UW2/A03

Page # 1 of 1

Report To Adam Griffin

Company Aspect

Address 401 2nd Ave S

City, State, ZIP Seattle, WA 98104

Phone _____ Email agriffin@aspectconsulting.com

SAMPLERS (*signature*)

PROJECT NAME: FH Brooklyn

PO #:

REMARKS: CVOCs to be invoiced separately

INVOICE TO:

TURNAROUND TIME
- ☑ Standard Turnaround
- ☐ RUSH _____
- Rush charges authorized by: _____

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

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM	BTEX MTBE	cVOCs			Notes
						ANALYSES REQUESTED											
MW-25-082218	01A-D	8/22/18	1550	W	4		X	X		X			X	X			
MW-26-082218	02	↓	1635	W	4		X	X		X			X	X			
MW-18-082218	03	↓	1655	W	4		X	X		X			X	X			
Trip Blank	04A-B			W	2					X			X	X			
MW-100-082218	05A-C	8/22/18	1800	W	3			X									
													Samples received at 2 °C				

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Delia Massey	Aspect	8/23/18	0600
Received by: ROKE	ROKE	Rotex SDC	23/Aug 18	1034
Relinquished by:				
Received by:	Nhan Phan	FEBT	8/23/18	1130

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

September 5, 2018

Adam Griffin, Project Manager
Aspect Consulting, LLC
350 Madison Ave. N.
Bainbridge Island, WA 98110-1810

Dear Mr Griffin:

Included are the results from the testing of material submitted on August 23, 2018 from the FH Brooklyn, F&BI 808534 project. There are 12 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Data Aspect
ASP0905R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on August 23, 2018 by Friedman & Bruya, Inc. from the Aspect Consulting, LLC FH Brooklyn, F&BI 808534 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Aspect Consulting, LLC
808534 -01	MW-25-082218
808534 -02	MW-26-082218
808534 -03	MW-18-082218
808534 -04	Trip Blank
808534 -05	MW-100-082218

All quality control requirements were acceptable.

Date of Report: 09/05/18
Date Received: 08/23/18
Project: FH Brooklyn, F&BI 808534
Date Extracted: 08/27/18
Date Analyzed: 08/27/18

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Gasoline Range	Surrogate (% Recovery) (Limit 51-134)
MW-25-082218 808534-01	420	98
MW-26-082218 808534-02	940	103
MW-18-082218 808534-03	<100	96
MW-100-082218 808534-05	<100	95
Method Blank 08-1767 MB	<100	97

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-25-082218	Client:	Aspect Consulting, LLC
Date Received:	08/23/18	Project:	FH Brooklyn, F&BI 808534
Date Extracted:	08/24/18	Lab ID:	808534-01
Date Analyzed:	08/24/18	Data File:	082424.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	57	121
Toluene-d8	98	63	127
4-Bromofluorobenzene	99	60	133

Compounds:	Concentration ug/L (ppb)
Methyl t-butyl ether (MTBE)	<1
1,2-Dichloroethane (EDC)	<1
Benzene	9.7
Toluene	<1
1,2-Dibromoethane (EDB)	<1
Ethylbenzene	<1
m,p-Xylene	<2
o-Xylene	<1

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-26-082218	Client:	Aspect Consulting, LLC
Date Received:	08/23/18	Project:	FH Brooklyn, F&BI 808534
Date Extracted:	08/24/18	Lab ID:	808534-02
Date Analyzed:	08/24/18	Data File:	082425.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	57	121
Toluene-d8	99	63	127
4-Bromofluorobenzene	100	60	133

Compounds:	Concentration ug/L (ppb)
Methyl t-butyl ether (MTBE)	<1
1,2-Dichloroethane (EDC)	<1
Benzene	28
Toluene	1.9
1,2-Dibromoethane (EDB)	<1
Ethylbenzene	14
m,p-Xylene	<2
o-Xylene	1.2

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-18-082218	Client:	Aspect Consulting, LLC
Date Received:	08/23/18	Project:	FH Brooklyn, F&BI 808534
Date Extracted:	08/24/18	Lab ID:	808534-03
Date Analyzed:	08/24/18	Data File:	082426.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	57	121
Toluene-d8	98	63	127
4-Bromofluorobenzene	99	60	133

Compounds:	Concentration ug/L (ppb)
Methyl t-butyl ether (MTBE)	<1
1,2-Dichloroethane (EDC)	<1
Benzene	<0.35
Toluene	<1
1,2-Dibromoethane (EDB)	<1
Ethylbenzene	<1
m,p-Xylene	<2
o-Xylene	<1

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	Trip Blank	Client:	Aspect Consulting, LLC
Date Received:	08/23/18	Project:	FH Brooklyn, F&BI 808534
Date Extracted:	08/24/18	Lab ID:	808534-04
Date Analyzed:	08/24/18	Data File:	082422.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	103	57	121
Toluene-d8	98	63	127
4-Bromofluorobenzene	98	60	133

Compounds:	Concentration ug/L (ppb)
Methyl t-butyl ether (MTBE)	<1
1,2-Dichloroethane (EDC)	<1
Benzene	<0.35
Toluene	<1
1,2-Dibromoethane (EDB)	<1
Ethylbenzene	<1
m,p-Xylene	<2
o-Xylene	<1

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	Method Blank	Client:	Aspect Consulting, LLC
Date Received:	Not Applicable	Project:	FH Brooklyn, F&BI 808534
Date Extracted:	08/24/18	Lab ID:	08-1800 mb
Date Analyzed:	08/24/18	Data File:	082421.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	57	121
Toluene-d8	99	63	127
4-Bromofluorobenzene	100	60	133

Compounds:	Concentration ug/L (ppb)
Methyl t-butyl ether (MTBE)	<1
1,2-Dichloroethane (EDC)	<1
Benzene	<0.35
Toluene	<1
1,2-Dibromoethane (EDB)	<1
Ethylbenzene	<1
m,p-Xylene	<2
o-Xylene	<1

Date of Report: 09/05/18
Date Received: 08/23/18
Project: FH Brooklyn, F&BI 808534
Date Extracted: 08/24/18
Date Analyzed: 08/24/18

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 47-140)
MW-25-082218 808534-01	58 x	<250	104
MW-26-082218 808534-02	130 x	<250	109
MW-18-082218 808534-03	99 x	<250	111
Method Blank 08-1897 MB	<50	<250	105

Date of Report: 09/05/18
Date Received: 08/23/18
Project: FH Brooklyn, F&BI 808534

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TPH AS GASOLINE USING METHOD NWTPH-Gx

Laboratory Code: 808560-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
Gasoline	ug/L (ppb)	<100	<100	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Gasoline	ug/L (ppb)	1,000	107	69-134

Date of Report: 09/05/18
Date Received: 08/23/18
Project: FH Brooklyn, F&BI 808534

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260C

Laboratory Code: 808486-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Acceptance Criteria
Methyl t-butyl ether (MTBE)	ug/L (ppb)	50	<1	101	74-127
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	<1	93	69-133
Benzene	ug/L (ppb)	50	<0.35	96	76-125
Toluene	ug/L (ppb)	50	<1	94	76-122
1,2-Dibromoethane (EDB)	ug/L (ppb)	50	<1	97	69-134
Ethylbenzene	ug/L (ppb)	50	<1	95	69-135
m,p-Xylene	ug/L (ppb)	100	<2	96	69-135
o-Xylene	ug/L (ppb)	50	<1	96	60-140

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Methyl t-butyl ether (MTBE)	ug/L (ppb)	50	100	102	64-147	2
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	95	96	73-132	1
Benzene	ug/L (ppb)	50	97	99	69-134	2
Toluene	ug/L (ppb)	50	95	96	72-122	1
1,2-Dibromoethane (EDB)	ug/L (ppb)	50	97	99	82-125	2
Ethylbenzene	ug/L (ppb)	50	96	98	77-124	2
m,p-Xylene	ug/L (ppb)	100	97	98	83-125	1
o-Xylene	ug/L (ppb)	50	98	99	81-121	1

Date of Report: 09/05/18
Date Received: 08/23/18
Project: FH Brooklyn, F&BI 808534

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	ug/L (ppb)	2,500	96	84	61-133	13

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.

808534

SAMPLE CHAIN OF CUSTODY

ME 08-23-18

UW2/A03

Page # 1 of 1

Report To Adam Griffin

Company Aspect

Address 401 2nd Ave S

City, State, ZIP Seattle, WA 98104

Phone _____ Email agriffin@aspectconsulting.com

SAMPLERS (*signature*)

PROJECT NAME: FH Brooklyn

PO #:

REMARKS: CVOCs to be invoiced separately

INVOICE TO:

TURNAROUND TIME
- ☑ Standard Turnaround
- ☐ RUSH _____
- Rush charges authorized by: _____

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

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM	BTEX MTBE	cVOCs			Notes
						ANALYSES REQUESTED											
MW-25-082218	01A-D	8/22/18	1550	W	4		X	X		X			X	X			
MW-26-082218	02	↓	1635	W	4		X	X		X			X	X			
MW-18-082218	03	↓	1655	W	4		X	X		X			X	X			
Trip Blank	04A-B			W	2					X			X	X			
MW-100-082218	05A-C	8/22/18	1800	W	3			X									
													Samples received at 2 °C				

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Delia Massey	Aspect	8/23/18	0600
Received by: ROKE	ROKE	Rotex SDC	23/Aug 18	1034
Relinquished by:				
Received by:	Nhan Phan	FEBT	8/23/18	1130

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

September 5, 2018

Adam Griffin, Project Manager
Aspect Consulting, LLC
350 Madison Ave. N.
Bainbridge Island, WA 98110-1810

Dear Mr Griffin:

Included are the results from the testing of material submitted on August 29, 2018 from the FH Brooklyn, F&BI 808656 project. There are 4 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Data Aspect, Breeyn Greer, Bob Hanford, Fasih Khan
ASP0905R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on August 29, 2018 by Friedman & Bruya, Inc. from the Aspect Consulting, LLC FH Brooklyn, F&BI 808656 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Aspect Consulting, LLC
808656 -01	W10N3-198-082918
808656 -02	W11N3-198-082918
808656 -03	W11N4-198-082918
808656 -04	W11N4-195.5-082918

All quality control requirements were acceptable.

Date of Report: 09/05/18
Date Received: 08/29/18
Project: FH Brooklyn, F&BI 808656
Date Extracted: 08/30/18
Date Analyzed: 08/30/18

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
W10N3-198-082918 808656-01	<0.02	<0.02	<0.02	<0.06	<5	87
W11N3-198-082918 808656-02	<0.02	<0.02	<0.02	<0.06	<5	90
W11N4-198-082918 808656-03	<0.02	<0.02	<0.02	<0.06	<5	88
W11N4-195.5-082918 808656-04	0.025	0.10	0.35	2.4	22	89
Method Blank 08-1775 MB	<0.02	<0.02	<0.02	<0.06	<5	87

Date of Report: 09/05/18
Date Received: 08/29/18
Project: FH Brooklyn, F&BI 808656

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 808638-01 (Duplicate)

Analyte	Reporting Units	Sample Result (Wet Wt)	Duplicate Result (Wet Wt)	RPD (Limit 20)
Benzene	mg/kg (ppm)	<0.02	<0.02	nm
Toluene	mg/kg (ppm)	<0.02	<0.02	nm
Ethylbenzene	mg/kg (ppm)	<0.02	<0.02	nm
Xylenes	mg/kg (ppm)	<0.06	<0.06	nm
Gasoline	mg/kg (ppm)	<5	<5	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/kg (ppm)	0.5	83	69-120
Toluene	mg/kg (ppm)	0.5	83	70-117
Ethylbenzene	mg/kg (ppm)	0.5	88	65-123
Xylenes	mg/kg (ppm)	1.5	86	66-120
Gasoline	mg/kg (ppm)	20	85	71-131

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.

808656

SAMPLE CHAIN OF CUSTODY

ME 08-29-18

A02/151

Report To ADAM, BREEYN, FASIH, ROBERT

Company ASPECT

Address SEATTLE

City, State, ZIP WA

Phone _____ Email _____

SAMPLERS (*signature*)

PROJECT NAME: FH BROOKLYN

PO #

REMARKS

INVOICE TO

Page # 1 of 1

TURNAROUND TIME
- ☐ Standard Turnaround
- ☒ RUSH
- Rush charges authorized by:

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

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM					Notes
W10 N3 - 198-082918	01A-C	8/29/18	1350	S	3			X	X								
W11 N3 - 198-082918	02	"	1340	"	"			X	X								
W11 N4 - 198-082918	03	"	1400	"	"			X	X								
W11 N4 - 195-082918	04	"	1500	"	"			X	X								

Samples received at 2 °C

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	FASIH KHAN	ASPECT	8/29/18	1625
Received by:	Liz Webber	FTBI	8/29/18	1625
Relinquished by:				
Received by:				

Samples received at _____ °C

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

September 5, 2018

Adam Griffin, Project Manager
Aspect Consulting, LLC
350 Madison Ave. N.
Bainbridge Island, WA 98110-1810

Dear Mr Griffin:

Included are the results from the testing of material submitted on August 30, 2018 from the FH Brooklyn, F&BI 808673 project. There are 4 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Data Aspect, Bob Hanford, Fasih Khan, Breeyn Greer
ASP0905R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on August 30, 2018 by Friedman & Bruya, Inc. from the Aspect Consulting, LLC FH Brooklyn, F&BI 808673 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Aspect Consulting, LLC
808673 -01	W10N5-191.5-083018
808673 -02	W10N6-193.5-083018
808673 -03	W9N4-193.5-083018

All quality control requirements were acceptable.

Date of Report: 09/05/18
Date Received: 08/30/18
Project: FH Brooklyn, F&BI 808673
Date Extracted: 08/30/18
Date Analyzed: 08/30/18

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
W10N5-191.5-083018 808673-01	<0.02	<0.02	<0.02	<0.06	<5	87
W10N6-193.5-083018 808673-02	<0.02	<0.02	<0.02	<0.06	<5	86
W9N4-193.5-083018 808673-03	<0.02	<0.02	<0.02	<0.06	<5	86
Method Blank 08-1775 MB	<0.02	<0.02	<0.02	<0.06	<5	87

Date of Report: 09/05/18
Date Received: 08/30/18
Project: FH Brooklyn, F&BI 808673

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 808638-01 (Duplicate)

Analyte	Reporting Units	Sample Result (Wet Wt)	Duplicate Result (Wet Wt)	RPD (Limit 20)
Benzene	mg/kg (ppm)	<0.02	<0.02	nm
Toluene	mg/kg (ppm)	<0.02	<0.02	nm
Ethylbenzene	mg/kg (ppm)	<0.02	<0.02	nm
Xylenes	mg/kg (ppm)	<0.06	<0.06	nm
Gasoline	mg/kg (ppm)	<5	<5	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/kg (ppm)	0.5	83	69-120
Toluene	mg/kg (ppm)	0.5	83	70-117
Ethylbenzene	mg/kg (ppm)	0.5	88	65-123
Xylenes	mg/kg (ppm)	1.5	86	66-120
Gasoline	mg/kg (ppm)	20	85	71-131

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.

808673

SAMPLE CHAIN OF CUSTODY

ME 08/30/18 VSI / CT

Page # 1 of 1

Report To ADAM, ROBERT, FASIH, BREEYN

Company ASPECT

Address SEATTLE

City, State, ZIP WA

Phone _____ Email _____

SAMPLERS (*signature*)

PROJECT NAME: FH BROOKLYN

PO #

REMARKS

INVOICE TO

TURNAROUND TIME
- ☐ Standard Turnaround
- ☒ RUSH Same day

Rush charges authorized by: FK MC 8/30

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

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM					Notes
						ANALYSES REQUESTED											
W10N5-191.5-08[illegible]18	01 A-C	8/30/18	1140	S	3			X	X								
W10N6-193.5-08[illegible]18	02	↓	1115	↓	↓			X	X								
W9N4-193.5-08[illegible]18	03	↓	1125	↓	↓			X	X								

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	FASIH KHAN	ASPECT	8/30/18	1210
Received by:	ERIC CHOWNS	F&B	8/30/18	1210
Relinquished by:				
Received by:				

Samples received at 4 °C

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

September 12, 2018

Adam Griffin, Project Manager
Aspect Consulting, LLC
350 Madison Ave. N.
Bainbridge Island, WA 98110-1810

Dear Mr Griffin:

Included are the results from the testing of material submitted on September 10, 2018 from the FH Brooklyn, F&BI 809139 project. There are 4 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Data Aspect, Bob Hanford, Fasih Khan, Breeyn Greer
ASP0912R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on September 10, 2018 by Friedman & Bruya, Inc. from the Aspect Consulting, LLC FH Brooklyn, F&BI 809139 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Aspect Consulting, LLC
809139 -01	W18N4-188-091018
809139 -02	AB07-BTM-091018
809139 -03	AB07-SW1-091018
809139 -04	AB07-SW2-091018

All quality control requirements were acceptable.

Date of Report: 09/12/18
Date Received: 09/10/18
Project: FH Brooklyn, F&BI 809139
Date Extracted: 09/10/18
Date Analyzed: 09/10/18

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
W18N4-188-091018 809139-01	<0.02	<0.02	<0.02	<0.06	<5	84
AB07-BTM-091018 809139-02	<0.02	<0.02	<0.02	<0.06	<5	80
AB07-SW1-091018 809139-03	<0.02	<0.02	<0.02	<0.06	<5	82
AB07-SW2-091018 809139-04	<0.02	<0.02	<0.02	<0.06	<5	83
Method Blank 08-1955 MB	<0.02	<0.02	<0.02	<0.06	<5	83

Date of Report: 09/12/18
Date Received: 09/10/18
Project: FH Brooklyn, F&BI 809139

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 809139-01 (Duplicate)

Analyte	Reporting Units	Sample Result (Wet Wt)	Duplicate Result (Wet Wt)	RPD (Limit 20)
Benzene	mg/kg (ppm)	<0.02	<0.02	nm
Toluene	mg/kg (ppm)	<0.02	<0.02	nm
Ethylbenzene	mg/kg (ppm)	<0.02	<0.02	nm
Xylenes	mg/kg (ppm)	<0.06	<0.06	nm
Gasoline	mg/kg (ppm)	<5	<5	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/kg (ppm)	0.5	92	69-120
Toluene	mg/kg (ppm)	0.5	93	70-117
Ethylbenzene	mg/kg (ppm)	0.5	95	65-123
Xylenes	mg/kg (ppm)	1.5	94	66-120
Gasoline	mg/kg (ppm)	20	90	71-131

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.

SAMPLE CHAIN OF CUSTODY

809139

NE 09-10-18

BOI/USDS

Page 1 of

Report To ADAM, ROBERT, FASIH, BREEYN

Company ASPECT

Address SEATTLE

City, State, ZIP WA

Phone _____ Email _____

SAMPLERS (*signature*)

PROJECT NAME: FH-BROOKLYN

PO #

REMARKS

INVOICE TO

TURNAROUND TIME
- ☐ Standard Turnaround
- ☒ RUSH
- Rush charges authorized by:

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

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM					Notes
						ANALYSES REQUESTED											
W18N4-188-09/0/18	01 A-C	09/10/18	1215	S	3			X	X								
AB07-BTM-09/0/18	02		1230					X	X								
AB07-SW1-09/0/18	03		1235					X	X								
AB07-SW1-09/0/18 SW2	04		1240					X	X								* Sample labelled AB07-SW2-09/0/18 EWB

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	FASIH KHAN	ASPECT	09/10/18	1355
Received by:	Liz Webber-Bruya	F?B	09/10/18	1355
Relinquished by:				
Received by:				

Samples received at 3 °C

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

September 18, 2018

Adam Griffin, Project Manager
Aspect Consulting, LLC
350 Madison Ave. N.
Bainbridge Island, WA 98110-1810

Dear Mr Griffin:

Included are the results from the testing of material submitted on September 13, 2018 from the FH Brooklyn, F&BI 809215 project. There are 4 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Data Aspect, Bob Hanford, Fasih Khan
ASP0918R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on September 13, 2018 by Friedman & Bruya, Inc. from the Aspect Consulting, LLC FH Brooklyn project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Aspect Consulting, LLC
809215 -01	W9N8-191.5-091318
809215 -02	W6S8-191.5-091318

All quality control requirements were acceptable.

Date of Report: 09/18/18
Date Received: 09/13/18
Project: FH Brooklyn, F&BI 809215
Date Analyzed: 09/13/18

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
W9N8-191.5-091318 809215-01	<0.02	<0.02	<0.02	<0.06	<5	82
W6S8-191.5-091318 809215-02	<0.02	<0.02	<0.02	<0.06	<5	84
Method Blank 08-1960 MB	<0.02	<0.02	<0.02	<0.06	<5	81

Date of Report: 09/18/18
Date Received: 09/13/18
Project: FH Brooklyn, F&BI 809215

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 809207-03 (Duplicate)

Analyte	Reporting Units	Sample Result (Wet Wt)	Duplicate Result (Wet Wt)	RPD (Limit 20)
Benzene	mg/kg (ppm)	<0.02	<0.02	nm
Toluene	mg/kg (ppm)	<0.02	<0.02	nm
Ethylbenzene	mg/kg (ppm)	<0.02	<0.02	nm
Xylenes	mg/kg (ppm)	<0.06	<0.06	nm
Gasoline	mg/kg (ppm)	<5	<5	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/kg (ppm)	0.5	98	69-120
Toluene	mg/kg (ppm)	0.5	98	70-117
Ethylbenzene	mg/kg (ppm)	0.5	100	65-123
Xylenes	mg/kg (ppm)	1.5	98	66-120
Gasoline	mg/kg (ppm)	20	99	71-131

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.

809215

SAMPLE CHAIN OF CUSTODY

ME 09-13-18

Page # 1 of 1 BEI / VSI

Report To ADAM, ROBERT, FASIH

Company ASPECT

Address SEATTLE

City, State, ZIP WA

Phone _____ Email _____

SAMPLERS (*signature*)

PROJECT NAME: FH BROOKLYN

PO #

REMARKS

INVOICE TO

TURNAROUND TIME
- ☐ Standard Turnaround
- ☒ RUSH
- Rush charges authorized by:

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

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM					Notes
						ANALYSES REQUESTED											
W9N8-191.5-091318	01 A-C	09/13/18	1405	S	3			X	V								ID on label W9S8-191.5-09/13 09/13/18
W6S8-191.5-091318	02 V	09/13/18	1410	S	3			X	X								

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	FASIH KHAN	ASPECT	09/13/18	1520
Received by:	Nhan Phan	FEBI	9/13/18	1520
Relinquished by:				
Received by:				

Samples received at 23 °C

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

APPENDIX F

Cadman Soil Disposal Tracking Sheet

CADMAN HEIDELBERG CEMENT GROUP

CONTAMINATED SOIL					IMPACTED SOIL		
Invoice Date	**Invoice Number**	**Product Description**	**Quantity**	**Unit**	**Product Description**	**Quantity**	**Unit**
06/25/18	5526071	CLASS 3 SOILS (TN)	61.82	Ton	--	0	Ton
06/26/18	5526449	CLASS 3 SOILS (TN)	66.14	Ton	--	0	Ton
07/05/18	5528616	--	0	Ton	CLASS 2 SOILS (TN)	53.05	Ton
07/05/18	5528616	CLASS 3 SOILS (TN)	387.18	Ton	--	0	Ton
07/10/18	5529630	CLASS 3 SOILS (TN)	399.04	Ton	--	0	Ton
07/12/18	5530453	--	0	Ton	CLASS 2 SOILS (TN)	188.83	Ton
07/13/18	5530828	CLASS 3 SOILS (TN)	277.96	Ton	--	0	Ton
07/18/18	5531994	CLASS 3 SOILS (TN)	757.78	Ton	--	0	Ton
07/27/18	5534563	--	0	Ton	CLASS 2 SOILS (TN)	475.33	Ton
08/14/18	5539023	CLASS 3 SOILS (TN)	722.48	Ton	--	0	Ton
08/15/18	5539414	CLASS 3 SOILS (TN)	806.13	Ton	--	0	Ton
08/21/18	5540870	CLASS 3 SOILS (TN)	532.09	Ton	--	0	Ton
08/22/18	5541166	--	0	Ton	CLASS 2 SOILS (TN)	96.46	Ton
08/22/18	5541166	CLASS 3 SOILS (TN)	643.63	Ton	--	0	Ton
08/24/18	5541822	--	0	Ton	CLASS 2 SOILS (TN)	276.11	Ton
08/24/18	5541822	CLASS 3 SOILS (TN)	487.85	Ton	--	0	Ton
08/27/18	5542202	CLASS 3 SOILS (TN)	414.62	Ton	--	0	Ton
09/05/18	5544607	CLASS 3 SOILS (TN)	473.03	Ton	--	0	Ton
09/06/18	5545040	--	0	Ton	CLASS 2 SOILS (TN)	140.78	Ton
09/06/18	5545040	CLASS 3 SOILS (TN)	591.93	Ton	--	0	Ton
09/07/18	5545437	CLASS 3 SOILS (TN)	181.1	Ton	--	0	Ton
09/18/18	5548382	CLASS 3 SOILS (TN)	34.29	Ton	--	0	Ton
10/03/18	5553139	--	0	Ton	CLASS 2 SOILS (TN)	28.71	Ton
Total			6837.07			1259.27	

APPENDIX G

Dewatering Pretreatment System Reports

September 7, 2018

Eran Fields
FH Brooklyn, LLC
2251 Linda Flora Drive
Los Angeles, CA 90077

Re: 4700 Brooklyn U-District Stormwater Treatment Report for August 2018

This report summarizes the water treatment operations from August 1, 2018 through August 31, 2018 for the 4700 Brooklyn Remediation Project as performed by Clear Water Services, LLC (Clear Water).

There is currently a 100-gpm nominal flow chitosan-enhanced sand filtration (CESF) with granular activated carbon (GAC) system onsite. System mobilization began on July 24th and was completed on July 26th. The electrical and programming components for the system were installed on August 10th. The discharge line was installed on August 13th.

During the month of August, a total of **916,656 gallons** of water was discharged by the system. Water was discharged within state and local water quality parameters from the system to Portage Bay for **18** days during this reporting period. The average discharge rate for the system was **128 gpm**. Total rainfall during this reporting period was **0.04 inches**.

Treatment System Operations

Treatment system discharge details as well as a discussion of system upsets for this reporting period are indicated below. Treatment system monitoring data are acquired by technicians as well as computerized collection via a programmable logic controller (PLC). Treatment system technicians review effluent water quality data on regular intervals to demonstrate the quality of treated water. The PLC records data at 15-minute intervals and transmits the data to Clear Water's headquarters. The data collected can be monitored in real time by Clear Water personnel. Daily Operations Logs are recorded digitally on a mobile device in the system control unit onsite which are automatically saved to Clear Water's account to the application service.

System Discharge Volumes and Water Quality Parameters

The 100-gpm nominal CESF system treated and discharged stormwater to Portage Bay during this reporting period.

Total gallons treated and gallons discharged, as well as a summary of pH and turbidity results are presented in the following pages of this document. It is common for gallons treated and gallons discharged to differ due to treatment system operation events, such as backflush and recirculation.

Turbidity and pH parameters were within the regulatory limits (less than 10 nephelometric turbidity units, or NTU, and between 6.5 and 8.5 standard units, or s.u.) for all system discharges. Residual chitosan tests were routinely conducted during system operations, with all results indicating that no residual chitosan was present in system effluent.

Operational Notes and Recommendations

The system had normal operations with no major upsets to the system during this reporting period.

The treatment system treated 989,072 gallons of stormwater and discharged 916,656 gallons within the benchmarks/limits of the NPDES Construction Stormwater permit (WA-0024651). During this reporting period, approximately 7.3% of the treated influent was either backflushed or recirculated. Sodium bicarbonate and anhydrous citric acid were used to adjust the pH as necessary.

Total Rainfall

Clear Water uses NOAA's Quality Controlled Local Climatological Data (QCLCD) to monitor monthly rainfall totals. The following table summarizes the precipitation for the duration of this reporting period for the project. Precipitation data included in this table was collected from the QCLCD station at the Seattle Boeing Field (#24234), located about 10 miles from the project site.

Daily Rainfall Totals			
Date	Rainfall (inches)	Date	Rainfall (inches)
8/1/2018	0.00	8/17/2018	0.00
8/2/2018	Trace	8/18/2018	0.00
8/3/2018	Trace	8/19/2018	0.00
8/4/2018	0.00	8/20/2018	0.00
8/5/2018	0.00	8/21/2018	0.00
8/6/2018	0.00	8/22/2018	0.00
8/7/2018	0.00	8/23/2018	0.00
8/8/2018	0.00	8/24/2018	0.00
8/9/2018	0.00	8/25/2018	0.00
8/10/2018	0.00	8/26/2018	0.02
8/11/2018	0.02	8/27/2018	0.00
8/12/2018	0.00	8/28/2018	0.00
8/13/2018	0.00	8/29/2018	0.00
8/14/2018	0.00	8/30/2018	0.00
8/15/2018	0.00	8/31/2018	0.00
8/16/2018	0.00		
Total inches:	**0.04**		

If you have any questions regarding the information presented in this report or operations at the project site, please contact Duncan Medlin at (360) 280-0508.

Report Prepared By:

Kelli Quist
Project Engineer
CLEAR WATER SERVICES

Report Reviewed By:

Duncan Medlin
Project Manager
CLEAR WATER SERVICES

CLEAR WATER SERVICES

MONTHLY SUMMARY REPORT

4700 U-District

AUGUST 2018

Downloaded: 9/7/2018

Date	TIME	PRETREAT FLOW (GPM)	PRETREAT PH	INFLUENT FLOW (GAL)	INFLUENT FLOW (GPM)	INFLUENT TURBIDITY (NTU)	INFLUENT PH	DISCHARGE FLOW (GAL)	DISCHARGE FLOW (GPM)	DISCHARGE TURBIDITY (NTU)	DISCHARGE PH	RECIRC FLOW (GAL)	RECIRC TURBIDITY (NTU)	RECIRC PH
8/13/2018														
	11:32	0	7.3	956	336	57.5	3.81	0	0	0	0	541	12.5	4.08
	11:47	0	7.2	3704	158	16	6.26	0	0	0	0	2064	0.9	6.64
	12:02	0	6.9	2231	151	11.7	7.04	2,286	156	0.8	7.4	41	1.3	7.41
	12:17	506	6.7	2308	278	11.9	7.14	2,277	152	0.7	7.39	0	0	0
	12:31	0	6.9	2875	144	11.7	7.18	2,012	134	0.9	7.4	0	0	0
	12:46	508	6.7	2141	285	12.1	7.2	2,249	150	0.6	7.38	0	0	0
	13:01	0	6.8	2252	0	12.9	7.18	1,205	121	1	7.36	15	0.8	7.35
	13:16	0	6.7	1356	153	13.7	7.2	1,371	152	0.7	7.35	54	0.9	7.39
	13:32	503	6.8	2627	274	13.5	7.2	2,124	142	0.6	7.35	0	0	0
	13:47	0	7	1671	0	14.1	7.22	1,171	112	0.9	7.37	26	0.6	7.37
	AVERAGES/TOTALS	506	6.90	22,121	222	17.5	6.74	14,695	140	0.8	7.38	2,741	2.8	6.71
	MAXIMUM	508	7.30	3,704	336	57.5	7.22	2,286	156	1.0	7.40	2,064	12.5	7.41
	MINIMUM	503	6.70	956	144	11.7	3.81	1,171	112	0.6	7.35	15	0.6	4.08
8/14/2018														
	17:32	0	6.7	496	105	10.6	7.21	504	105	0.6	7.32	14	2	7.27
	17:47	0	6.5	889	0	5.1	7.37	854	104	0.5	7.54	26	0.6	7.55
	AVERAGES/TOTALS		6.60	1,385	105	7.9	7.29	1,358	105	0.6	7.43	40	1.3	7.41
	MAXIMUM		6.70	889	105	10.6	7.37	854	105	0.6	7.54	26	2.0	7.55
	MINIMUM		6.50	496	105	5.1	7.21	504	104	0.5	7.32	14	0.6	7.27
8/15/2018														
	8:17	0	8.6	2266	104	5	7.58	592	108	0.7	7.79	579	0.9	7.76
	8:32	0	8.7	1533	105	4.7	7.59	1,631	108	0.5	7.71	0	0	0
	8:47	0	8.9	260	0	4.7	7.63	247	108	0.5	7.71	28	0.5	7.72

Date	TIME	PRETREAT FLOW (GPM)	PRETREAT PH	INFLUENT FLOW (GAL)	INFLUENT FLOW (GPM)	INFLUENT TURBIDITY (NTU)	INFLUENT PH	DISCHARGE FLOW (GAL)	DISCHARGE FLOW (GPM)	DISCHARGE TURBIDITY (NTU)	DISCHARGE PH	RECIRC FLOW (GAL)	RECIRC TURBIDITY (NTU)	RECIRC PH
AVERAGES/TOTALS			8.73	4,059	105	4.8	7.60	2,470	108	0.6	7.74	607	0.7	7.74
	MAXIMUM		8.90	2,266	105	5.0	7.63	1,631	108	0.7	7.79	579	0.9	7.76
	MINIMUM		8.60	260	104	4.7	7.58	247	108	0.5	7.71	28	0.5	7.72
8/17/2018														
	10:47	0	8.3	2926	149	2	7.67	1,356	126	0.5	7.91	487	1	7.7
	11:02	0	7.5	2253	150	0.8	7.81	2,354	156	0.4	7.91	0	0	0
	11:17	0	6.7	2246	157	0.8	7.85	2,332	157	0.4	7.94	0	0	0
	11:32	522	6.7	3008	146	0.8	7.84	443	149	0.4	7.94	1573	0.5	7.94
	11:47	0	7.3	2239	145	0.8	7.83	2,149	156	0.4	7.92	194	0.4	7.92
	12:02	517	7.5	2229	150	0.8	7.87	2,327	155	0.4	7.95	0	0	0
	12:17	0	8	3000	149	0.8	7.94	2,053	137	0.5	8.02	0	0	0
	12:32	0	8.3	2244	148	1.1	7.98	2,414	160	0.4	8.05	0	0	0
	12:47	0	8.6	2220	148	1.2	7.99	2,364	159	0.5	8.07	0	0	0
	13:02	0	8.3	2998	152	1.2	7.99	2,076	138	0.6	8.07	0	0	0
	13:17	0	7.5	2226	140	2.3	7.98	2,371	158	0.6	8.06	0	0	0
	13:32	0	6.7	2224	148	2.5	7.97	2,358	157	0.6	8.05	0	0	0
	13:47	150	7.1	2980	151	2.5	7.97	2,049	136	0.7	8.06	0	0	0
	14:02	0	7.4	2230	153	2.9	7.96	2,358	158	0.7	8.04	0	0	0
	14:17	0	7.7	2223	149	3.5	7.93	2,372	157	0.7	8.01	0	0	0
	14:32	514	8	2978	146	5.1	7.89	2,023	135	0.9	7.97	0	0	0
	14:47	516	8.2	2229	148	5.8	7.87	2,348	156	1	7.94	0	0	0
	15:02	521	8.3	2216	147	7.1	7.83	2,329	156	0.9	7.9	0	0	0
	15:17	506	8.5	2975	154	7.9	7.8	2,052	136	0.9	7.88	0	0	0
	15:32	514	8.5	2233	135	8.4	7.77	2,332	157	1	7.85	0	0	0
	15:47	517	8.5	2239	144	10	7.73	2,341	156	0.8	7.8	0	0	0
	16:02	0	8	2972	153	10.6	7.71	2,019	134	0.8	7.79	0	0	0
	16:17	0	7.5	2227	150	11	7.7	2,341	156	0.9	7.77	0	0	0
	16:32	0	6.7	2223	149	11.3	7.67	2,336	155	0.8	7.75	0	0	0

Date	TIME	PRETREAT FLOW (GPM)	PRETREAT PH	INFLUENT FLOW (GAL)	INFLUENT FLOW (GPM)	INFLUENT TURBIDITY (NTU)	INFLUENT PH	DISCHARGE FLOW (GAL)	DISCHARGE FLOW (GPM)	DISCHARGE TURBIDITY (NTU)	DISCHARGE PH	RECIRC FLOW (GAL)	RECIRC TURBIDITY (NTU)	RECIRC PH
	16:47	507	6.8	2861	138	11.4	7.66	2,016	135	0.8	7.75	0	0	0
	17:02	513	7	2271	148	11.6	7.67	2,306	153	0.9	7.75	0	0	0
	17:17	511	7.1	2238	146	12.7	7.64	2,320	155	0.8	7.73	0	0	0
	17:32	509	7.4	2834	145	13.7	7.61	2,023	136	0.7	7.7	0	0	0
	17:47	515	7.4	2281	156	13.9	7.59	2,284	152	0.9	7.68	0	0	0
	18:02	0	7.3	2219	152	15.2	7.56	2,301	154	0.7	7.65	0	0	0
	18:17	515	7.6	2727	142	15.6	7.55	2,069	139	0.6	7.65	0	0	0
	18:32	0	7.5	2391	145	16.2	7.54	2,241	148	0.9	7.64	0	0	0
	18:47	0	7.6	2198	146	16.5	7.52	2,311	154	0.7	7.62	0	0	0
	19:02	526	7.5	2597	266	16.9	7.5	2,092	141	0.6	7.61	0	0	0
	19:17	0	7.6	2498	148	17.7	7.49	2,181	145	0.9	7.6	0	0	0
	19:32	0	7.7	2210	148	17.8	7.49	2,319	154	0.7	7.59	0	0	0
	19:47	0	7.6	2485	256	18.2	7.48	2,162	145	0.6	7.58	0	0	0
	20:02	0	7.6	2612	149	18.2	7.47	2,130	141	0.9	7.58	0	0	0
	20:17	0	7.7	2196	146	18.4	7.45	2,318	154	0.7	7.56	0	0	0
	20:32	0	7.7	2367	261	18.9	7.45	2,207	148	0.7	7.56	0	0	0
	20:47	0	7.6	2717	145	18.8	7.44	2,048	136	0.9	7.56	0	0	0
	21:02	0	7.7	2197	142	18.9	7.44	2,248	151	0.8	7.56	0	0	0
	21:17	513	7.3	2235	261	19.2	7.43	2,234	150	0.7	7.55	0	0	0
	21:32	0	7.2	2809	149	19.2	7.42	2,006	133	1	7.55	0	0	0
	21:47	0	7.2	2196	144	19.3	7.42	2,260	151	0.8	7.54	0	0	0
	22:02	0	7.2	2180	264	20.3	7.43	2,259	151	0.7	7.55	0	0	0
	22:17	0	7	2869	149	20.3	7.42	1,959	131	1.1	7.56	0	0	0
	22:32	0	7.1	2166	147	20.4	7.42	2,264	151	0.9	7.56	0	0	0
	22:47	519	6.7	2029	153	20.6	7.41	2,115	151	0.8	7.55	5	0.7	7.54
	23:02	517	6.7	2736	154	20.9	7.41	1,762	129	1.1	7.55	27	0.8	7.53
	23:17	0	6.4	2024	0	22	7.44	2,081	151	1	7.55	10	1.1	7.54
	23:32	0	6.7	1567	146	21.2	7.44	1,596	151	0.8	7.55	20	0.8	7.54
	23:47	0	6.8	1577	251	21.3	7.43	1,477	149	0.8	7.55	74	0.8	7.55

Date	TIME	PRETREAT FLOW (GPM)	PRETREAT PH	INFLUENT FLOW (GAL)	INFLUENT FLOW (GPM)	INFLUENT TURBIDITY (NTU)	INFLUENT PH	DISCHARGE FLOW (GAL)	DISCHARGE FLOW (GPM)	DISCHARGE TURBIDITY (NTU)	DISCHARGE PH	RECIRC FLOW (GAL)	RECIRC TURBIDITY (NTU)	RECIRC PH
AVERAGES/TOTALS		496	7.48	127,825	161	11.6	7.66	113,086	148	0.7	7.76	2,390	0.8	7.66
MAXIMUM		526	8.60	3,008	266	22.0	7.99	2,414	160	1.1	8.07	1,573	1.1	7.94
MINIMUM		150	6.40	1,567	135	0.8	7.41	443	126	0.4	7.54	5	0.4	7.53
8/18/2018														
	0:02	0	7.1	1733	19	21	7.41	894	65	1.2	7.55	31	1.4	7.56
	0:17	14	7.8	243	0	20.1	7.33	431	30	1.1	7.55	7	1.2	7.55
	0:32	0	7.6	2730	147	21.4	7.41	1,622	113	1.5	7.54	9	1.2	7.53
	0:47	518	7.2	2187	148	21.7	7.45	2,275	151	1.1	7.56	0	0	0
	1:02	0	6.8	2174	141	22.7	7.43	2,257	151	0.9	7.56	0	0	0
	1:17	0	7	2863	152	22.9	7.43	1,926	130	1.2	7.56	0	0	0
	1:32	519	6.9	1783	0	23.1	7.44	1,843	150	1.2	7.55	3	1.1	7.54
	2:02	0	7.4	1228	146	23.1	7.4	1,246	151	1.1	7.54	20	1.2	7.53
	2:17	14	7.5	2169	261	23.8	7.44	2,259	150	0.9	7.57	0	0	0
	2:32	0	7.3	2886	140	23.9	7.43	1,948	130	1.4	7.57	0	0	0
	2:47	0	6.5	2170	141	23.8	7.45	2,244	150	1.2	7.56	0	0	0
	3:02	0	6.4	2168	26	23.9	7.45	2,248	150	1	7.57	0	0	0
	3:17	0	7.2	342	0	24.8	7.46	219	125	1.2	7.57	5	1.3	7.57
	3:47	0	7.3	1752	139	25.2	7.42	1,805	150	1.1	7.53	19	1.3	7.55
	4:02	0	7.2	2178	146	24.2	7.47	2,253	150	0.9	7.56	0	0	0
	4:17	508	6.7	2177	135	24.2	7.48	2,242	149	0.9	7.57	0	0	0
	4:32	0	6.5	2832	144	24.3	7.48	1,939	129	1.3	7.58	0	0	0
	4:47	0	7.2	314	0	24.2	7.49	298	149	1.4	7.58	37	1.4	7.57
	5:17	0	7.1	2191	143	24.6	7.46	2,221	150	1.3	7.55	25	1.5	7.54
	5:32	0	7	2158	250	24.2	7.49	2,243	149	1.1	7.57	0	0	0
	5:47	0	6.9	2837	152	24.3	7.5	1,945	129	1.5	7.59	0	0	0
	6:02	530	6.7	1533	0	24.2	7.5	1,551	150	1.4	7.58	21	1.3	7.58
	6:32	0	7.6	678	144	24	7.43	676	151	1.3	7.53	36	1.3	7.55
	6:47	530	6.9	2153	145	25.1	7.49	2,227	149	1.1	7.58	0	0	0

Date	TIME	PRETREAT FLOW (GPM)	PRETREAT PH	INFLUENT FLOW (GAL)	INFLUENT FLOW (GPM)	INFLUENT TURBIDITY (NTU)	INFLUENT PH	DISCHARGE FLOW (GAL)	DISCHARGE FLOW (GPM)	DISCHARGE TURBIDITY (NTU)	DISCHARGE PH	RECIRC FLOW (GAL)	RECIRC TURBIDITY (NTU)	RECIRC PH
	7:02	0	7	2853	135	25.4	7.49	1,939	129	1.6	7.6	0	0	0
	7:17	91	7.2	1686	0	25.3	7.49	1,741	149	1.4	7.59	0	1.3	7.58
	7:47	0	7.5	1007	145	25.4	7.45	1,007	149	1.4	7.55	19	1.4	7.55
	8:02	527	6.9	2257	257	25.6	7.49	2,198	149	1.2	7.58	0	0	0
	8:17	0	6.8	2804	142	25.7	7.5	1,979	132	1.7	7.6	0	0	0
	8:32	0	7.2	1265	0	25.6	7.49	1,317	150	1.4	7.59	0	1.3	7.57
	9:02	0	7.4	1122	136	26.3	7.44	1,146	152	1.3	7.55	19	1.3	7.64
	9:17	511	6.9	2346	324	26.6	7.47	2,175	145	1.1	7.57	0	0	0
	9:32	0	6.8	2932	144	26.2	7.47	2,091	138	1.7	7.58	0	0	0
	9:47	0	7.2	1182	0	26.4	7.46	1,272	150	1.3	7.57	0	1.3	7.57
	10:17	0	7.5	830	143	26.7	7.41	857	150	1.2	7.53	20	1.3	7.64
	10:32	512	6.8	2098	313	26.8	7.44	2,233	149	1.1	7.56	0	0	0
	10:47	0	6.9	3154	143	27.5	7.44	1,995	133	1.8	7.57	0	0	0
	11:02	496	6.9	1416	0	27.1	7.44	1,459	147	1.4	7.56	36	1.3	7.55
	11:17	0	7.1	91	0	28.1	7.34	77	149	1.3	7.55	20	1.3	7.56
	11:32	0	7.7	3044	141	28.2	7.42	229	149	1.3	7.51	1598	1.9	7.56
	11:47	26	7.5	2100	144	27	7.44	1,949	147	1.4	7.56	258	1.6	7.55
	12:02	0	6.8	2086	143	26.9	7.44	2,172	145	1.3	7.56	0	0	0
	12:17	0	6.8	3163	143	27.4	7.43	1,980	131	1.8	7.57	0	0	0
	12:32	517	7	1220	0	27.1	7.43	1,265	145	1.5	7.56	3	1.4	7.56
	13:02	0	7.2	931	138	27.3	7.39	955	147	1.4	7.54	23	1.5	7.65
	13:17	0	7.1	2080	141	27.9	7.41	2,185	145	1.3	7.55	0	0	0
	13:32	0	6.7	3169	145	28.6	7.42	1,964	131	1.7	7.56	0	0	0
	13:47	508	6.5	1048	0	27.8	7.43	1,084	145	1.6	7.55	0	1.5	7.55
	14:17	0	7.1	1023	147	28.3	7.38	1,071	146	1.4	7.54	0	1.5	7.63
	14:32	516	6.7	2088	133	29	7.41	2,184	145	1.3	7.55	0	0	0
	14:47	506	7	1851	0	29.8	7.41	1,138	131	1.4	7.56	5	1.4	7.58
	15:17	0	7.3	734	138	30.2	7.37	736	147	1.5	7.53	33	1.5	7.66
	15:32	506	6.9	2112	144	29.1	7.41	2,204	148	1.3	7.55	0	0	0

Date	TIME	PRETREAT FLOW (GPM)	PRETREAT PH	INFLUENT FLOW (GAL)	INFLUENT FLOW (GPM)	INFLUENT TURBIDITY (NTU)	INFLUENT PH	DISCHARGE FLOW (GAL)	DISCHARGE FLOW (GPM)	DISCHARGE TURBIDITY (NTU)	DISCHARGE PH	RECIRC FLOW (GAL)	RECIRC TURBIDITY (NTU)	RECIRC PH
	15:47	0	7	2259	0	29.5	7.42	1,567	136	1.3	7.56	5	1.3	7.6
	16:17	0	7.3	838	156	30.1	7.4	845	155	1.5	7.54	18	1.3	7.67
	16:32	515	6.8	2220	147	29	7.44	2,319	154	1.4	7.56	0	0	0
	16:47	0	6.4	2023	0	28.2	7.45	2,069	154	1.3	7.58	38	1.2	7.59
	17:32	507	6.9	2370	148	28.6	7.44	1,500	143	1.3	7.57	23	1.3	7.67
	17:47	0	6.8	2619	150	28.2	7.48	2,337	156	2	7.61	0	0	0
	18:02	0	6.5	1271	0	28.6	7.48	1,323	160	1.5	7.61	0	1.5	7.62
	18:47	0	6.8	2154	163	28.4	7.46	2,223	162	1.4	7.61	0	1.5	7.68
	19:02	0	6.6	3329	154	29.3	7.49	2,188	145	1.9	7.63	0	0	0
	19:17	0	6.4	812	0	28.2	7.5	857	163	1.7	7.63	0	1.7	7.62
	19:47	0	7.5	64	159	26.2	7.38	41	169	1.7	7.67	21	1.7	7.67
	20:02	0	6.7	2340	155	28.8	7.49	2,453	163	1.6	7.63	0	0	0
	20:17	0	7	907	0	28.3	7.52	937	162	1.5	7.64	7	1.5	7.66
	20:47	523	6.8	2213	323	29.2	7.5	1,760	155	1.5	7.63	10	1.5	7.64
	21:02	0	6.5	2941	154	28.7	7.53	2,314	154	2.2	7.66	0	0	0
	21:17	0	7	542	0	28.2	7.54	539	165	1.7	7.66	41	1.7	7.65
	21:47	0	7.2	777	155	28.1	7.48	785	165	1.7	7.63	21	1.7	7.66
	22:02	0	6.4	2339	0	28.6	7.54	2,446	164	1.6	7.67	0	0	0
	22:17	0	7	194	0	28.3	7.55	203	163	1.6	7.67	3	1.6	7.66
	22:47	0	7	3325	153	29.6	7.52	2,165	146	2.1	7.68	0	1.6	7.65
	23:02	0	6.4	1995	0	28.2	7.55	2,086	164	1.9	7.69	0	1.7	7.7
	23:47	0	6.9	1788	149	28.5	7.54	1,847	164	1.7	7.68	21	1.8	7.66
AVERAGES/TOTALS		424	6.99	138,491	157	26.4	7.45	120,218	145	1.4	7.58	2,455	1.4	7.60
MAXIMUM		530	7.80	3,329	324	30.2	7.55	2,453	169	2.2	7.69	1,598	1.9	7.70
MINIMUM		14	6.40	64	19	20.1	7.33	41	30	0.9	7.51	3	1.1	7.53
8/19/2018														
	0:02	0	7	1459	0	28.8	7.56	1,511	164	1.7	7.7	9	1.6	7.7
	0:32	527	6.9	1471	310	30.7	7.53	706	134	1.8	7.68	21	1.6	7.67

Date	TIME	PRETREAT FLOW (GPM)	PRETREAT PH	INFLUENT FLOW (GAL)	INFLUENT FLOW (GPM)	INFLUENT TURBIDITY (NTU)	INFLUENT PH	DISCHARGE FLOW (GAL)	DISCHARGE FLOW (GPM)	DISCHARGE TURBIDITY (NTU)	DISCHARGE PH	RECIRC FLOW (GAL)	RECIRC TURBIDITY (NTU)	RECIRC PH
	0:47	0	6.7	2741	154	29.2	7.57	2,351	159	2.3	7.71	0	0	0
	1:02	0	7	944	0	28.9	7.59	995	164	1.8	7.71	0	1.8	7.71
	1:32	0	7.3	504	155	29.6	7.52	503	167	1.7	7.66	20	1.8	7.69
	1:47	0	6.5	2363	158	29.1	7.57	2,463	165	1.7	7.71	0	0	0
	2:02	0	7	398	0	29.1	7.58	412	164	1.7	7.71	0	1.7	7.71
	2:32	0	7.2	2673	161	30.6	7.54	1,502	140	2.6	7.72	0	1.7	7.69
	2:47	0	6.5	2366	0	29	7.59	2,439	162	2	7.73	0	0	0
	3:02	0	7	15	0	28.9	7.6	0	163	1.9	7.74	21	1.9	7.73
	3:32	0	7	1256	154	29.3	7.55	1,269	163	1.8	7.71	22	1.9	7.7
	3:47	530	6.6	1983	0	29.4	7.59	2,024	162	1.8	7.74	7	2.1	7.73
	4:32	0	7.2	1232	148	29.3	7.56	1,265	163	1.8	7.66	22	2	7.7
	4:47	525	6.5	2343	0	29.2	7.6	2,431	162	1.8	7.73	0	0	0
	5:02	0	7	118	0	29.2	7.61	119	163	1.7	7.74	0	1.7	7.72
	5:32	0	6.8	1989	157	29.9	7.59	2,021	162	1.7	7.72	23	1.7	7.71
	5:47	0	7	1269	0	29.5	7.62	1,286	161	1.7	7.74	31	1.7	7.73
	6:17	0	7.3	435	161	31.5	7.54	407	163	1.7	7.68	41	1.7	7.72
	6:32	0	6.5	2357	148	29.5	7.6	2,408	161	1.7	7.74	0	0	0
	6:47	0	7	479	0	29.6	7.62	478	160	1.6	7.75	23	1.6	7.75
	7:17	0	7.1	1166	162	30.2	7.58	1,203	160	1.6	7.72	0	1.7	7.71
	7:32	0	6.4	2069	0	29.6	7.61	2,143	159	1.6	7.75	0	1.6	7.73
	8:17	0	6.8	1857	145	29.7	7.59	1,901	159	1.6	7.72	5	1.6	7.71
	8:32	0	7	1341	0	29.6	7.62	1,386	157	1.6	7.74	6	1.6	7.74
	9:02	0	7.4	118	150	32.3	7.52	120	162	1.6	7.73	0	1.6	7.75
	9:17	0	6.6	2311	138	29.4	7.58	2,381	158	1.6	7.72	0	0	0
	9:32	0	7	811	0	29.3	7.59	822	157	1.6	7.72	4	1.6	7.71
	10:02	0	7.3	571	153	30.3	7.51	556	159	1.6	7.67	38	1.6	7.75
	10:17	0	6.5	2280	153	29.3	7.55	2,348	156	1.5	7.7	0	0	0
	10:32	0	7	376	0	29.3	7.56	386	155	1.5	7.7	12	1.5	7.71
	11:02	0	7.1	944	147	29.8	7.49	939	157	1.5	7.66	20	1.5	7.73

Date	TIME	PRETREAT FLOW (GPM)	PRETREAT PH	INFLUENT FLOW (GAL)	INFLUENT FLOW (GPM)	INFLUENT TURBIDITY (NTU)	INFLUENT PH	DISCHARGE FLOW (GAL)	DISCHARGE FLOW (GPM)	DISCHARGE TURBIDITY (NTU)	DISCHARGE PH	RECIRC FLOW (GAL)	RECIRC TURBIDITY (NTU)	RECIRC PH
	11:17	0	6.4	2246	0	29.1	7.52	2,320	155	1.5	7.67	0	0	0
	11:32	0	7	36	0	29	7.53	40	154	1.5	7.69	0	1.5	7.66
	12:02	0	7	1239	146	29.7	7.49	1,227	154	1.5	7.64	38	1.5	7.71
	12:17	0	6.5	1960	0	29	7.5	1,973	153	1.5	7.66	29	1.5	7.66
	13:02	0	7	1402	149	29.6	7.48	1,427	154	1.5	7.63	21	1.5	7.71
	13:17	0	6.5	1856	0	29.1	7.5	1,900	152	1.5	7.64	0	1.5	7.65
	14:02	0	7	1471	148	29.6	7.48	1,484	152	1.5	7.64	37	1.5	7.71
	14:17	514	6.5	1715	0	28.7	7.5	1,764	150	1.5	7.64	0	1.5	7.64
	15:02	0	7	1485	154	29.8	7.49	1,504	150	1.5	7.65	20	1.5	7.72
	15:17	526	6.5	1700	0	29	7.51	1,737	149	1.5	7.66	12	1.5	7.65
	16:02	0	7	1355	148	29.8	7.49	1,378	149	1.5	7.65	20	1.6	7.71
	16:17	0	6.4	1806	0	29.1	7.52	1,851	147	1.5	7.67	0	1.6	7.68
	17:02	0	7.1	1172	150	30.1	7.5	1,187	148	1.6	7.66	20	1.6	7.72
	17:17	0	6.4	2000	0	29.1	7.54	2,064	145	1.6	7.68	0	1.6	7.7
	18:02	0	7.1	935	143	32	7.51	959	147	1.6	7.66	20	1.6	7.71
	18:17	0	6.4	2109	0	29.2	7.55	2,161	144	1.6	7.69	0	0	0
	18:32	0	7	112	0	29.3	7.56	104	142	1.6	7.7	9	1.6	7.71
	19:02	0	7.2	667	133	30.6	7.52	659	146	1.6	7.66	21	1.6	7.71
	19:17	0	6.5	2089	139	29.3	7.55	2,134	142	1.6	7.7	0	0	0
	19:32	0	7	444	0	29.4	7.57	461	141	1.6	7.7	0	1.6	7.7
	20:02	0	7.3	391	130	29.7	7.52	397	145	1.7	7.67	0	1.6	7.71
	20:17	0	6.6	2064	135	29.6	7.57	2,120	142	1.6	7.7	0	0	0
	20:32	0	7	715	0	29.7	7.58	737	139	1.6	7.72	0	1.6	7.72
	21:02	0	7.5	20	139	26.4	7.49	0	0	0	0	18	1.6	7.68
	21:17	0	6.7	2076	136	30.1	7.57	2,095	140	1.6	7.72	0	1.6	7.72
	21:32	51	7	1117	0	29.7	7.61	1,142	138	1.6	7.74	0	1.6	7.72
	22:17	0	6.9	1609	140	30.8	7.58	1,615	140	1.7	7.72	34	1.6	7.7
	22:32	527	6.5	1592	0	30.2	7.62	1,602	136	1.6	7.75	18	1.6	7.73
	23:17	0	7.1	1118	137	30.4	7.58	1,109	138	1.6	7.72	35	1.7	7.71

Date	TIME	PRETREAT FLOW (GPM)	PRETREAT PH	INFLUENT FLOW (GAL)	INFLUENT FLOW (GPM)	INFLUENT TURBIDITY (NTU)	INFLUENT PH	DISCHARGE FLOW (GAL)	DISCHARGE FLOW (GPM)	DISCHARGE TURBIDITY (NTU)	DISCHARGE PH	RECIRC FLOW (GAL)	RECIRC TURBIDITY (NTU)	RECIRC PH
	23:32	0	6.4	1977	0	30.6	7.62	2,033	135	1.7	7.76	0	0	0
	23:47	0	7	66	0	30.7	7.64	67	134	1.7	7.77	0	1.7	7.73
AVERAGES/TOTALS		457	6.87	82,783	153	29.6	7.56	82,026	152	1.7	7.70	677	1.6	7.71
MAXIMUM		530	7.50	2,741	310	32.3	7.64	2,463	167	2.6	7.77	41	2.1	7.75
MINIMUM		51	6.40	15	130	26.4	7.48	40	134	1.5	7.63	4	1.5	7.64
8/20/2018														
	0:17	0	7.3	564	140	32	7.56	552	138	1.7	7.7	22	1.7	7.7
	0:32	0	6.6	1981	133	30.7	7.62	2,013	134	1.7	7.76	0	0	0
	0:47	0	7	642	0	30.7	7.64	650	132	1.7	7.77	0	1.7	7.78
	1:32	0	6.8	1884	125	30.8	7.6	1,920	134	1.7	7.74	19	1.7	7.72
	1:47	527	6.8	1279	0	31.2	7.64	1,308	131	1.7	7.77	0	1.7	7.76
	2:32	0	7.1	1175	127	31.5	7.61	1,167	133	1.7	7.73	14	1.7	7.72
	2:47	0	6.4	1890	0	31.4	7.64	1,941	129	1.7	7.77	0	0	0
	3:02	0	7	123	0	31.5	7.66	96	127	1.7	7.78	31	1.7	7.77
	3:32	0	7.4	334	123	32.7	7.6	300	133	1.8	7.72	31	1.7	7.72
	3:47	0	6.7	1914	122	31.5	7.64	1,927	129	1.7	7.77	0	0	0
	4:02	0	7	963	0	31.6	7.66	972	126	1.7	7.77	0	1.7	7.78
	4:47	0	7	1300	120	31.9	7.64	1,326	130	1.7	7.76	0	1.7	7.73
	5:02	0	6.4	1847	0	31.8	7.66	1,876	124	1.7	7.78	0	0	0
	5:17	0	7	31	0	31.8	7.67	30	122	1.7	7.78	0	1.7	7.78
	5:47	0	7.3	365	125	34.6	7.62	360	130	1.8	7.74	15	1.7	7.75
	6:02	0	6.7	1846	126	31.9	7.66	1,875	125	1.7	7.79	0	0	0
	6:17	0	7	949	0	31.9	7.69	969	121	1.7	7.79	0	1.7	7.8
	7:02	0	7	1245	114	32.4	7.65	1,255	126	1.7	7.77	0	1.7	7.73
	7:17	0	6.4	1775	0	32.1	7.69	1,800	120	1.7	7.81	0	0	0
	7:32	0	7	149	0	32.1	7.69	150	118	1.7	7.81	4	1.7	7.79
	8:02	0	7.3	473	122	33.6	7.63	436	126	1.7	7.75	29	1.7	7.74
	8:17	0	6.7	1793	123	32.8	7.67	1,807	120	1.7	7.79	0	0	0

Date	TIME	PRETREAT FLOW (GPM)	PRETREAT PH	INFLUENT FLOW (GAL)	INFLUENT FLOW (GPM)	INFLUENT TURBIDITY (NTU)	INFLUENT PH	DISCHARGE FLOW (GAL)	DISCHARGE FLOW (GPM)	DISCHARGE TURBIDITY (NTU)	DISCHARGE PH	RECIRC FLOW (GAL)	RECIRC TURBIDITY (NTU)	RECIRC PH
	8:32	0	7	951	0	32.5	7.69	955	117	1.7	7.8	0	1.7	7.84
	9:17	0	7.1	2914	153	43.4	7.64	1,627	136	2.7	7.79	311	19.3	7.8
	9:32	0	6.5	2124	0	33.3	7.67	2,221	165	2.5	7.81	0	2.4	7.81
	10:17	0	7.2	855	156	35.6	7.59	862	163	2.1	7.74	22	2.2	7.75
	10:32	0	6.5	2356	0	33.9	7.63	2,434	162	2.1	7.78	0	0	0
	11:17	0	7	1389	159	35.3	7.57	1,423	162	2	7.74	0	2	7.74
	11:32	0	7	1847	0	34.2	7.6	1,886	161	2	7.75	16	1.9	7.74
	12:02	0	7.3	616	160	39.4	7.56	606	162	1.8	7.72	23	1.9	7.73
	12:17	0	6.5	2336	151	35.9	7.59	2,412	160	1.9	7.74	0	0	0
	12:32	0	7	310	0	35.8	7.59	322	159	1.9	7.74	0	1.9	7.75
	12:47	0	7	914	154	38.2	7.57	933	161	1.8	7.72	11	1.9	7.73
	13:02	0	6.5	1905	0	36.2	7.59	1,963	160	1.8	7.75	4	1.8	7.77
	15:17	0	6.5	1008	129	136.9	7.52	0	0	0	0	153	13	7.73
	15:32	501	6.9	782	0	37	7.63	339	135	4	7.77	222	6.7	7.77
	16:02	0	7.1	1656	134	36.5	7.71	1,708	139	2.7	7.74	0	12.5	7.93
	16:17	0	7	1993	135	34.8	7.67	2,097	139	2.5	7.76	0	0	0
	16:32	506	7	1793	0	35	7.67	1,877	138	2.4	7.76	0	2.3	7.82
	17:02	0	7.3	614	131	38.4	7.76	580	135	2.4	7.73	27	6	8.01
	17:17	0	6.6	2015	131	36.1	7.69	2,087	140	2.4	7.75	0	0	0
	17:32	0	6.5	2003	122	36.5	7.67	2,083	139	2.4	7.75	0	0	0
	17:47	103	7	334	0	36.6	7.67	346	138	2.4	7.76	0	2.4	7.81
	18:17	0	7.4	302	139	41.2	7.79	279	139	2.5	7.74	35	2.5	8.02
	18:32	0	6.7	2013	137	36.9	7.7	1,995	133	2.5	7.74	0	0	0
	18:47	0	6.5	1989	130	37.2	7.67	1,982	133	2.6	7.75	0	0	0
	19:02	0	6.5	534	0	37.2	7.67	530	133	2.7	7.76	4	2.7	7.77
	19:47	0	7	1518	139	38.9	7.73	1,482	131	2.7	7.72	19	2.7	8.03
	20:02	0	7	1705	0	38.5	7.68	1,721	133	2.9	7.74	12	2.9	7.76
	20:32	0	7.5	120	136	49.5	7.79	97	132	3	7.8	18	2.9	7.99
	20:47	0	6.7	1989	135	39.2	7.71	1,956	130	3.1	7.73	0	0	0

Date	TIME	PRETREAT FLOW (GPM)	PRETREAT PH	INFLUENT FLOW (GAL)	INFLUENT FLOW (GPM)	INFLUENT TURBIDITY (NTU)	INFLUENT PH	DISCHARGE FLOW (GAL)	DISCHARGE FLOW (GPM)	DISCHARGE TURBIDITY (NTU)	DISCHARGE PH	RECIRC FLOW (GAL)	RECIRC TURBIDITY (NTU)	RECIRC PH
	21:02	0	7	1128	0	39.2	7.68	1,097	130	3.4	7.74	4	3.4	7.78
	21:32	0	7.3	436	132	40.8	7.77	449	136	3.1	7.72	0	3.5	7.99
	21:47	0	6.6	2003	133	39.3	7.7	2,035	135	3.7	7.74	0	0	0
	22:02	0	7	797	0	39.5	7.68	813	135	3.8	7.74	9	3.8	7.74
	22:32	0	7.3	648	133	40.9	7.76	641	135	3.5	7.72	6	3.8	7.99
	22:47	0	6.6	1992	129	39.7	7.7	2,026	134	4.1	7.74	0	0	0
	23:02	0	7	593	0	39.7	7.69	599	133	4.1	7.74	0	4.1	7.75
	23:32	0	7.2	730	134	41.1	7.76	736	134	3.8	7.71	3	4.1	7.97
	23:47	0	6.5	1981	133	39.9	7.7	1,996	132	4.4	7.74	0	0	0
	AVERAGES/TOTALS	409	6.90	75,715	134	37.4	7.66	73,925	136	2.4	7.75	1,064	3.4	7.80
	MAXIMUM	527	7.50	2,914	160	136.9	7.79	2,434	165	4.4	7.81	311	19.3	8.03
	MINIMUM	103	6.40	31	114	30.7	7.52	30	117	1.7	7.70	3	1.7	7.70
8/21/2018														
	0:02	0	7	500	0	40.1	7.69	494	131	4.5	7.75	17	4.5	7.73
	0:32	0	7.2	682	121	41.2	7.76	659	132	4.1	7.71	21	4.5	7.97
	0:47	0	6.6	1967	131	41	7.7	1,963	132	4.7	7.73	0	0	0
	1:02	0	7	584	0	41	7.69	584	132	4.7	7.74	0	4.7	7.76
	1:32	0	7.3	476	131	42.1	7.77	455	131	4.2	7.72	18	4.8	8
	1:47	0	6.6	1936	131	40.8	7.7	1,954	130	4.9	7.73	0	0	0
	2:02	0	7	808	0	41.2	7.69	806	131	5	7.73	0	5	7.75
	2:32	0	7.4	145	133	47.9	7.81	129	129	4.7	7.78	18	5	8
	2:47	0	6.8	1933	128	41.4	7.72	1,880	126	5	7.73	0	0	0
	3:02	0	7	1121	0	41.8	7.69	1,103	126	5.2	7.74	4	5.3	7.75
	3:47	0	6.9	1638	127	42	7.75	1,610	126	5.2	7.74	17	5.3	7.99
	4:02	529	6.7	1586	0	42.2	7.7	1,521	125	5.5	7.75	32	5.5	7.72
	4:47	0	7.1	1148	127	43.2	7.76	1,114	122	5.3	7.73	0	5.6	7.98
	5:02	0	6.4	1874	0	43.5	7.72	1,816	121	5.7	7.76	0	0	0
	5:17	0	7	187	0	43.7	7.71	182	120	5.7	7.76	0	5.7	7.74

Date	TIME	PRETREAT FLOW (GPM)	PRETREAT PH	INFLUENT FLOW (GAL)	INFLUENT FLOW (GPM)	INFLUENT TURBIDITY (NTU)	INFLUENT PH	DISCHARGE FLOW (GAL)	DISCHARGE FLOW (GPM)	DISCHARGE TURBIDITY (NTU)	DISCHARGE PH	RECIRC FLOW (GAL)	RECIRC TURBIDITY (NTU)	RECIRC PH
	5:47	0	7.3	560	123	44.9	7.8	545	122	5.1	7.72	0	5.7	7.99
	6:02	0	6.6	1853	126	43.7	7.73	1,841	123	5.7	7.75	0	0	0
	6:17	0	7	773	0	44.3	7.73	758	121	5.7	7.77	0	5.7	7.76
	7:02	0	6.9	1752	126	45	7.76	1,686	122	5.6	7.74	29	5.8	7.98
	7:17	516	6.7	1441	0	45.2	7.72	1,422	121	5.8	7.77	0	5.9	7.77
	8:02	0	6.9	1757	113	46.1	7.76	1,722	119	5.7	7.75	0	5.9	7.99
	8:17	0	6.9	1803	123	46.8	7.72	1,790	119	5.9	7.76	0	0	0
	8:32	0	7	1438	0	47.1	7.72	1,385	119	6	7.77	31	6.1	7.79
	9:02	0	7.3	806	121	49.4	7.78	771	120	5.7	7.74	17	6.1	7.99
	9:17	515	7.1	1790	123	48.4	7.72	1,776	118	5.9	7.75	0	0	0
	9:32	0	6.6	1795	120	49.3	7.71	1,789	119	6	7.75	0	0	0
	9:47	0	7.1	655	0	49.4	7.71	654	118	6.1	7.76	3	6.1	7.76
	10:02	0	7.5	442	117	53.5	7.76	403	117	5.8	7.73	28	6.1	7.95
	10:17	0	7.5	2078	137	57.5	7.7	1,468	115	6.2	7.74	260	19.2	7.76
	10:32	507	7	2012	134	49.6	7.69	2,044	136	8.1	7.75	0	0	0
	10:47	0	6.7	2000	134	50.4	7.68	2,040	136	7.8	7.74	0	0	0
	11:02	0	6.6	1994	134	51.3	7.68	2,029	135	7.7	7.75	0	0	0
	11:17	0	7	797	0	52	7.68	819	135	7.6	7.75	0	7.6	7.74
	11:47	0	7.1	1258	133	53.8	7.71	1,258	137	7.4	7.71	18	7.5	7.93
	12:02	0	7	2012	136	53.1	7.66	2,024	135	7.4	7.72	0	0	0
	12:17	0	6.5	1852	0	53.5	7.66	1,873	134	7.3	7.73	0	7.3	7.72
	12:47	0	7.5	263	131	58.9	7.69	235	136	7.1	7.72	33	7.3	7.89
	13:02	0	6.7	1995	134	55.6	7.67	2,021	135	7.2	7.71	0	0	0
	13:17	0	6.7	1973	138	56.3	7.64	2,003	134	7.1	7.71	0	0	0
	13:32	0	7	914	0	57.1	7.64	897	133	6.6	7.74	30	4.5	7.73
	14:02	0	7	1160	259	60.6	7.68	1,034	130	4.7	7.69	20	5.3	7.86
	14:17	0	7	2717	136	60	7.64	1,560	124	6.8	7.72	258	23.5	7.73
	14:32	20	6.9	2018	128	59.5	7.63	2,050	136	6.6	7.71	0	0	0
	14:47	0	6.4	1437	0	60.1	7.63	1,475	136	6.4	7.71	0	6.2	7.7

Date	TIME	PRETREAT FLOW (GPM)	PRETREAT PH	INFLUENT FLOW (GAL)	INFLUENT FLOW (GPM)	INFLUENT TURBIDITY (NTU)	INFLUENT PH	DISCHARGE FLOW (GAL)	DISCHARGE FLOW (GPM)	DISCHARGE TURBIDITY (NTU)	DISCHARGE PH	RECIRC FLOW (GAL)	RECIRC TURBIDITY (NTU)	RECIRC PH
	15:32	0	7	1496	133	62.9	7.64	1,515	137	6.1	7.69	17	6.3	7.85
	15:47	0	6.9	2012	126	62.4	7.63	2,041	137	6	7.7	0	0	0
	16:02	0	6.5	1451	0	63.1	7.61	1,447	134	5.9	7.7	3	5.9	7.71
	16:47	0	6.9	1679	142	65.7	7.63	1,702	135	5.6	7.68	3	5.9	7.82
	17:02	0	6.8	2006	132	66	7.62	2,019	135	5.6	7.7	0	0	0
	17:17	0	6.5	1245	0	67	7.61	1,251	134	5.5	7.69	16	5.5	7.69
	18:02	0	7	1605	131	70.3	7.63	1,579	135	5	7.67	32	5.6	7.8
	18:17	0	6.8	2005	131	70.1	7.62	2,034	135	5.2	7.69	0	0	0
	18:32	0	6.5	1366	0	70.3	7.61	1,330	134	5	7.69	33	5	7.69
	19:17	0	7.1	1300	135	72.3	7.63	1,222	130	4.3	7.66	35	5.1	7.77
	19:32	519	6.9	1979	136	72.6	7.62	1,984	131	4.7	7.69	0	0	0
	19:47	0	6.4	1642	0	73.2	7.61	1,642	131	4.6	7.69	3	4.5	7.68
	20:32	0	7.2	778	125	76	7.64	746	131	3.4	7.64	35	4.6	7.74
	20:47	0	6.5	1968	125	74.6	7.63	1,958	130	4.1	7.68	0	0	0
	21:02	0	6.4	1959	0	75.3	7.62	2,036	136	4.1	7.69	0	0	0
	21:17	519	6.9	197	0	75.8	7.63	202	135	4	7.69	0	4	7.69
	21:47	0	7.5	111	134	83.5	7.62	104	133	3.8	7.7	8	4.1	7.75
	22:02	0	6.8	1939	133	77	7.64	1,923	128	3.3	7.67	0	0	0
	22:17	0	6.7	1943	144	77.4	7.64	1,893	127	3.6	7.7	0	0	0
	22:32	0	6.5	908	0	78.2	7.65	887	128	3.6	7.71	0	3.6	7.71
	23:17	0	7.1	1162	131	79.3	7.64	1,108	126	2.6	7.66	30	3.6	7.79
	23:32	508	6.7	1921	130	80.3	7.66	1,879	125	3.2	7.71	0	0	0
	23:47	0	6.4	1811	0	80.9	7.65	1,803	125	3.2	7.71	0	3.1	7.72
AVERAGES/TOTALS		454	6.89	94,413	133	56.9	7.68	91,947	129	5.4	7.72	1,069	6.2	7.81
MAXIMUM		529	7.50	2,717	259	83.5	7.81	2,050	137	8.1	7.78	260	23.5	8.00
MINIMUM		20	6.40	111	113	40.1	7.61	104	115	2.6	7.64	3	3.1	7.68
8/22/2018														
	0:32	0	7.5	32	128	77.3	7.6	0	0	0	0	32	3.2	7.79

Date	TIME	PRETREAT FLOW (GPM)	PRETREAT PH	INFLUENT FLOW (GAL)	INFLUENT FLOW (GPM)	INFLUENT TURBIDITY (NTU)	INFLUENT PH	DISCHARGE FLOW (GAL)	DISCHARGE FLOW (GPM)	DISCHARGE TURBIDITY (NTU)	DISCHARGE PH	RECIRC FLOW (GAL)	RECIRC TURBIDITY (NTU)	RECIRC PH
	0:47	0	6.8	1891	124	83.6	7.66	1,889	126	2.6	7.69	0	0	0
	1:02	0	6.7	1889	126	82.9	7.66	1,889	125	3.1	7.72	0	0	0
	1:17	0	6.4	1107	0	83.2	7.66	1,086	125	3.1	7.72	16	3.1	7.72
	2:02	0	7.3	550	123	85.5	7.63	522	124	2	7.67	17	3.1	7.74
	2:17	0	6.7	1869	122	85.9	7.66	1,851	123	2.8	7.71	0	0	0
	2:32	0	6.6	1858	119	86.6	7.66	1,854	123	2.9	7.73	0	0	0
	2:47	0	6.4	651	0	88	7.66	645	123	2.9	7.74	7	2.9	7.75
	3:32	0	7.2	845	121	88.8	7.62	803	123	1.9	7.67	26	2.9	7.73
	3:47	0	6.6	1831	126	88.3	7.66	1,816	121	2.6	7.73	0	0	0
	4:02	0	6.5	1831	110	88.6	7.66	1,820	121	2.6	7.74	0	0	0
	4:17	0	6.4	422	0	89	7.66	424	121	2.6	7.75	3	2.6	7.74
	5:02	0	7.2	927	120	91.1	7.63	906	120	1.7	7.69	17	2.7	7.74
	5:17	0	6.6	1777	116	91.4	7.66	1,770	118	2.3	7.74	0	0	0
	5:32	0	6.5	1796	120	92.8	7.67	1,758	118	2.4	7.75	0	0	0
	5:47	0	6.5	372	0	93	7.69	352	118	2.4	7.76	15	2.4	7.73
	6:32	0	7.2	878	120	94.3	7.62	842	117	1.5	7.7	17	2.5	7.75
	6:47	0	6.6	1760	119	95.2	7.68	1,719	115	2.1	7.74	0	0	0
	7:02	0	6.5	1755	116	95.6	7.69	1,727	115	2.2	7.76	0	0	0
	7:17	0	6.5	521	0	96.2	7.69	518	114	2.2	7.76	3	2.2	7.76
	8:02	0	7.1	824	265	107.4	7.63	535	103	2.5	7.69	16	6.6	7.73
	8:17	0	7	2553	135	56	7.66	1,831	123	4.4	7.76	0	0	0
	8:32	0	6.5	2001	137	26.8	7.68	2,054	136	4.8	7.77	0	0	0
	8:47	525	6.6	303	0	27.1	7.68	301	136	4.3	7.76	0	4.3	7.77
	9:32	0	7	1293	137	27.2	7.64	1,309	138	3.6	7.71	0	4.3	7.83
	9:47	0	6.5	1922	0	27.3	7.64	1,957	137	3.9	7.74	21	3.7	7.74
	10:32	0	7.2	838	137	27.7	7.6	830	138	3	7.68	32	3.7	7.8
	10:47	0	6.5	2018	129	28.1	7.62	2,028	135	3.4	7.71	0	0	0
	11:02	0	7	362	0	28.3	7.61	330	135	3.3	7.71	36	3.3	7.72
	11:32	0	7.4	340	131	28.9	7.54	342	136	2.3	7.66	0	3.3	7.78

Date	TIME	PRETREAT FLOW (GPM)	PRETREAT PH	INFLUENT FLOW (GAL)	INFLUENT FLOW (GPM)	INFLUENT TURBIDITY (NTU)	INFLUENT PH	DISCHARGE FLOW (GAL)	DISCHARGE FLOW (GPM)	DISCHARGE TURBIDITY (NTU)	DISCHARGE PH	RECIRC FLOW (GAL)	RECIRC TURBIDITY (NTU)	RECIRC PH
	11:47	0	6.7	2025	132	28.4	7.59	2,021	134	3	7.68	0	0	0
	12:02	0	7	845	0	29	7.58	843	134	3	7.7	4	3	7.7
	12:47	0	6.9	1734	139	28.7	7.55	1,706	135	2.5	7.66	18	3.1	7.79
	13:02	512	6.5	1480	0	29	7.56	1,468	134	2.6	7.68	6	2.5	7.68
	13:47	0	7.1	1001	126	28.2	7.52	1,001	134	2	7.64	0	2.6	7.78
	14:02	0	6.4	2015	0	28.8	7.55	2,001	133	2.4	7.68	0	0	0
	14:17	0	7	203	0	29	7.55	193	131	2.2	7.68	8	2.2	7.68
	14:47	0	7.4	185	141	30.4	7.45	171	135	2	7.68	19	2.3	7.78
	15:02	0	6.7	2007	131	28.1	7.54	1,985	132	1.9	7.66	0	0	0
	15:17	508	7	1049	0	28.9	7.54	1,047	131	2	7.68	0	1.9	7.67
	16:02	0	7	1257	124	28	7.53	1,243	131	1.5	7.65	0	2	7.78
	16:17	0	6.5	1968	0	28.7	7.55	1,941	131	1.7	7.68	0	0	0
	17:02	0	7.4	303	139	32.2	7.5	298	130	1.4	7.66	3	1.7	7.77
	17:17	0	6.7	1960	132	27.3	7.56	1,951	130	1.4	7.66	0	0	0
	17:32	491	7	987	0	28.3	7.57	971	129	1.5	7.68	0	1.5	7.68
	18:17	0	7.1	1154	134	27.1	7.55	1,115	129	1.2	7.65	18	1.5	7.77
	18:32	0	6.4	1912	0	27.9	7.57	1,905	127	1.3	7.69	0	0	0
	18:47	0	7	163	0	28.3	7.58	163	127	1.3	7.7	0	1.3	7.69
	19:17	0	7.5	33	130	19.9	7.49	0	0	0	0	32	1.3	7.78
	19:32	0	6.8	1942	127	27.4	7.57	1,896	127	1.1	7.67	0	0	0
	19:47	511	6.6	1279	0	27.2	7.59	1,260	126	1.1	7.7	7	1.1	7.71
	20:32	0	7.2	751	129	27	7.58	719	126	0.9	7.66	17	1.2	7.77
	20:47	0	6.6	1880	129	26.9	7.6	1,861	125	1	7.7	0	0	0
	21:02	0	7	571	0	28.3	7.62	562	124	1	7.72	12	1	7.72
	21:47	0	7	1378	130	26.2	7.61	1,347	123	0.8	7.68	0	1	7.74
	22:02	0	6.4	1870	0	26.7	7.64	1,825	122	0.8	7.73	0	0	0
	22:47	0	7.5	50	117	26.4	7.58	31	123	0.8	7.72	18	0.8	7.72
	23:02	0	6.8	1859	118	25.9	7.64	1,788	120	0.7	7.72	0	0	0
	23:17	519	6.5	1367	0	26.4	7.67	1,317	119	0.8	7.76	0	0.8	7.78

Date	TIME	PRETREAT FLOW (GPM)	PRETREAT PH	INFLUENT FLOW (GAL)	INFLUENT FLOW (GPM)	INFLUENT TURBIDITY (NTU)	INFLUENT PH	DISCHARGE FLOW (GAL)	DISCHARGE FLOW (GPM)	DISCHARGE TURBIDITY (NTU)	DISCHARGE PH	RECIRC FLOW (GAL)	RECIRC TURBIDITY (NTU)	RECIRC PH
AVERAGES/TOTALS		511	6.83	72,244	131	50.3	7.61	70,337	126	2.2	7.70	420	2.5	7.74
MAXIMUM		525	7.50	2,553	265	107.4	7.69	2,054	138	4.8	7.77	36	6.6	7.83
MINIMUM		491	6.40	32	110	19.9	7.45	31	103	0.7	7.64	3	0.8	7.67
8/23/2018														
	0:02	0	7.3	563	121	25.9	7.61	543	120	0.8	7.71	15	0.8	7.76
	0:17	0	6.7	1833	118	25.5	7.66	1,747	117	0.7	7.75	0	0	0
	0:32	0	7	877	0	26.4	7.69	846	117	0.7	7.77	0	0.7	7.78
	1:17	0	7.1	1011	125	25.5	7.65	958	117	0.6	7.74	15	0.7	7.74
	1:32	0	6.5	1789	124	25.7	7.69	1,740	115	0.6	7.78	0	0	0
	1:47	0	7	478	0	25.8	7.7	461	115	0.7	7.79	0	0.7	7.81
	2:32	0	7	1332	117	25	7.66	1,288	114	0.6	7.76	4	0.7	7.76
	2:47	0	6.5	1749	0	25.5	7.7	1,679	112	0.6	7.79	0	0	0
	3:02	0	7	177	0	25.4	7.71	167	112	0.6	7.8	0	0.6	7.81
	3:47	0	7	1544	112	24.7	7.67	1,441	111	0.5	7.77	28	0.6	7.75
	4:02	0	6.4	1710	0	25.5	7.71	1,629	109	0.5	7.8	0	0	0
	4:17	0	7	57	0	25.3	7.71	54	108	0.5	7.8	0	0.5	7.81
	5:02	0	6.9	1588	119	24.4	7.68	1,523	108	0.5	7.78	5	0.5	7.75
	5:17	0	6.4	1665	0	25.1	7.71	1,594	107	0.5	7.81	0	0	0
	6:17	0	7	1530	109	24.4	7.68	1,465	107	0.5	7.79	0	0.5	7.77
	6:32	0	6.5	1643	0	24.6	7.72	1,568	104	0.5	7.81	0	0	0
	6:47	0	7	120	0	24.5	7.73	106	105	0.5	7.82	20	0.5	7.84
	7:32	0	7	1449	109	24.9	7.69	1,385	104	0.5	7.79	14	0.5	7.76
	7:47	0	6.5	1566	111	24.3	7.72	1,520	101	0.4	7.82	0	0	0
	8:02	0	7	210	0	24.2	7.73	204	102	0.4	7.82	9	0.4	7.84
	8:47	0	7.1	1249	102	24.3	7.69	1,195	101	0.4	7.8	14	0.4	7.77
	9:02	0	6.5	1540	108	23.9	7.73	1,489	99	0.4	7.82	0	0	0
	9:17	0	7	457	0	24.1	7.73	442	98	0.4	7.83	9	0.4	7.81
	10:02	0	7.2	938	99	24.6	7.69	913	101	0.4	7.8	0	0.4	7.78

Date	TIME	PRETREAT FLOW (GPM)	PRETREAT PH	INFLUENT FLOW (GAL)	INFLUENT FLOW (GPM)	INFLUENT TURBIDITY (NTU)	INFLUENT PH	DISCHARGE FLOW (GAL)	DISCHARGE FLOW (GPM)	DISCHARGE TURBIDITY (NTU)	DISCHARGE PH	RECIRC FLOW (GAL)	RECIRC TURBIDITY (NTU)	RECIRC PH
	10:17	0	6.6	1527	108	24.1	7.72	1,454	98	0.4	7.82	0	0	0
	10:32	0	7	786	0	24.1	7.73	748	97	0.4	7.82	15	0.4	7.82
	11:32	0	7.2	986	102	24.7	7.66	929	99	0.5	7.78	12	0.4	7.75
	11:47	0	6.7	1485	97	24.1	7.71	1,413	95	0.4	7.81	0	0	0
	12:02	0	7	940	0	24.4	7.73	931	93	0.4	7.83	0	0.4	7.84
	13:02	0	7.2	506	98	23.1	7.66	470	98	0.5	7.77	22	0.4	7.79
	13:17	0	7.1	515	0	33	7.7	500	95	0.3	7.78	0	0.3	7.79
	14:02	0	7.5	72	100	28.6	7.62	74	99	0.5	7.76	0	0.4	7.76
	14:17	0	7.1	1488	105	14.6	7.71	1,427	95	0.3	7.75	0	0	0
	14:32	0	6.6	1414	81	15.2	7.74	1,362	91	0.3	7.78	0	0	0
	14:47	0	6.5	591	0	14.2	7.74	578	89	0.4	7.79	0	0.4	7.78
	16:17	0	7.4	274	102	15.6	7.59	241	95	0.8	7.73	25	0.4	7.75
	16:32	0	6.9	1444	98	12.9	7.69	1,396	92	0.3	7.73	0	0	0
	16:47	0	6.5	1364	0	13.7	7.72	1,320	88	0.3	7.76	0	0	0
	17:02	0	6.5	90	0	13.3	7.73	85	86	0.4	7.77	0	0.4	7.79
	18:47	0	7.1	834	97	10.6	7.65	806	90	0.5	7.73	0	0.4	7.69
	19:02	0	6.7	1312	85	12.2	7.72	1,279	85	0.3	7.75	0	0	0
	19:17	0	6.5	895	0	12.7	7.74	905	83	0.3	7.77	0	0.3	7.77
	21:17	0	7.3	503	86	12.3	7.66	480	87	0.6	7.73	5	0.4	7.71
	21:32	0	6.8	1261	87	11.3	7.74	1,260	84	0.3	7.76	0	0	0
	21:47	0	6.4	1192	0	11.9	7.77	1,197	80	0.3	7.79	0	0	0
	22:02	0	6.4	94	0	12.9	7.78	80	78	0.3	7.8	19	0.3	7.84
AVERAGES/TOTALS			6.86	46,648	105	21.5	7.70	44,892	100	0.5	7.78	231	0.5	7.78
	MAXIMUM		7.50	1,833	125	33.0	7.78	1,747	120	0.8	7.83	28	0.8	7.84
	MINIMUM		6.40	57	81	10.6	7.59	54	78	0.3	7.71	4	0.3	7.69
8/24/2018														
	0:02	0	7.2	818	88	10.1	7.71	794	86	0.5	7.79	0	0.4	7.77
	0:17	0	6.7	1225	75	10.8	7.79	1,241	82	0.3	7.82	0	0	0

Date	TIME	PRETREAT FLOW (GPM)	PRETREAT PH	INFLUENT FLOW (GAL)	INFLUENT FLOW (GPM)	INFLUENT TURBIDITY (NTU)	INFLUENT PH	DISCHARGE FLOW (GAL)	DISCHARGE FLOW (GPM)	DISCHARGE TURBIDITY (NTU)	DISCHARGE PH	RECIRC FLOW (GAL)	RECIRC TURBIDITY (NTU)	RECIRC PH
	0:32	0	6.5	972	0	11.2	7.81	995	78	0.3	7.84	0	0.3	7.84
	2:47	0	7.3	415	87	9	7.69	390	87	0.6	7.8	20	0.4	7.75
	3:02	0	6.9	1247	86	10.2	7.78	1,253	83	0.3	7.82	0	0	0
	3:17	0	6.5	1130	73	10.5	7.81	1,165	78	0.3	7.83	0	0	0
	3:32	0	6.5	158	0	10.5	7.81	172	75	0.3	7.83	0	0.3	7.81
	5:47	0	7.1	893	73	8.7	7.72	902	82	0.4	7.81	6	0.4	7.76
	6:02	0	6.7	1108	66	10	7.8	1,162	77	0.3	7.83	0	0	0
	6:17	0	6.4	884	0	9.1	7.81	956	72	0.3	7.83	5	0.3	7.83
	8:32	0	7.4	60	86	6.6	7.67	63	86	0.5	7.77	8	0.4	7.76
	8:47	0	7	1180	82	10.1	7.75	1,248	83	0.4	7.82	0	0	0
	9:02	0	6.6	1062	68	8.8	7.8	1,174	78	0.3	7.84	0	0	0
	9:17	0	6.5	479	0	8.7	7.81	535	74	0.3	7.84	0	0.3	7.84
	9:47	0	6.5	693	224	38.8	7.74	431	71	0.7	7.8	9	0.3	7.76
	10:02	0	6.3	1403	0	46.7	7.78	53	100	3.6	7.84	538	6.1	7.86
	13:32	0	7.3	1620	139	7.5	7.65	1,460	131	1.1	7.78	19	1.9	7.75
	13:47	0	6.6	2097	130	7.5	7.71	2,047	136	0.7	7.8	0	0	0
	14:02	0	6.4	590	0	7.7	7.72	583	137	0.6	7.81	0	0.6	7.83
	16:32	0	7.4	56	140	3.5	7.5	35	136	0.8	7.78	18	0.9	7.73
	16:47	0	6.7	2072	139	5.9	7.68	2,038	136	0.7	7.78	0	0	0
	17:02	0	6.5	938	0	6.5	7.72	913	136	0.5	7.8	11	0.5	7.79
	20:02	0	6.8	1919	137	5.3	7.71	1,776	129	0.7	7.82	0	0.7	7.75
	20:17	0	6.4	1246	0	5.9	7.78	1,160	129	0.4	7.85	0	0.4	7.84
	23:02	0	6.9	1629	138	5.1	7.73	1,536	133	0.6	7.86	18	0.6	7.81
	23:17	0	6.4	1543	0	5.5	7.8	1,481	132	0.4	7.88	4	0.4	7.88
AVERAGES/TOTALS			6.75	27,437	108	10.8	7.74	25,563	101	0.6	7.82	656	0.8	7.80
	MAXIMUM		7.40	2,097	224	46.7	7.81	2,047	137	3.6	7.88	538	6.1	7.88
	MINIMUM		6.30	56	66	3.5	7.50	35	71	0.3	7.77	4	0.3	7.73

8/25/2018

Date	TIME	PRETREAT FLOW (GPM)	PRETREAT PH	INFLUENT FLOW (GAL)	INFLUENT FLOW (GPM)	INFLUENT TURBIDITY (NTU)	INFLUENT PH	DISCHARGE FLOW (GAL)	DISCHARGE FLOW (GPM)	DISCHARGE TURBIDITY (NTU)	DISCHARGE PH	RECIRC FLOW (GAL)	RECIRC TURBIDITY (NTU)	RECIRC PH
	2:02	0	7.4	120	139	3.3	7.7	100	134	1.5	7.85	13	0.6	7.85
	2:17	0	6.7	2072	136	5	7.78	1,980	132	0.6	7.9	0	0	0
	2:32	0	6.5	960	0	5.1	7.84	920	131	0.4	7.92	0	0.4	7.91
	5:02	0	6.9	1630	131	4.6	7.79	1,571	133	0.6	7.92	18	0.5	7.87
	5:17	0	6.4	1544	0	5	7.86	1,523	132	0.4	7.95	0	0.4	7.93
	8:02	0	7.4	66	135	2.8	7.75	33	132	0.6	7.87	32	0.5	7.87
	8:17	0	6.7	2034	143	4.4	7.82	1,973	132	0.5	7.93	0	0	0
	8:32	0	6.4	1108	0	4.7	7.87	1,080	130	0.3	7.95	0	0.4	7.95
	11:17	0	7.2	719	134	3.4	7.77	685	129	0.8	7.9	18	0.5	7.87
	11:32	0	6.5	2005	136	3.8	7.84	1,914	128	0.3	7.93	0	0	0
	11:47	0	6.4	426	0	3.8	7.87	409	127	0.3	7.94	0	0.3	7.93
	14:32	0	7	1305	138	3.6	7.75	1,253	129	0.5	7.88	0	0.5	7.85
	14:47	0	6.4	1836	0	3.4	7.82	1,754	128	0.3	7.9	5	0.3	7.88
	17:32	0	7.4	132	138	2.5	7.67	125	129	1.2	7.86	0	0.5	7.84
	17:47	0	6.7	1996	129	3.3	7.78	1,921	128	0.4	7.88	0	0	0
	18:02	0	6.5	1090	0	3.3	7.84	1,064	128	0.3	7.9	0	0.3	7.92
	20:47	0	6.9	1565	124	2.9	7.79	1,468	126	0.5	7.9	0	0.5	7.84
	21:02	0	6.4	1600	0	3.2	7.85	1,536	125	0.3	7.92	0	0.3	7.91
	23:47	0	7	1369	128	2.6	7.79	1,287	125	0.5	7.9	15	0.5	7.88
AVERAGES/TOTALS			6.78	23,577	134	3.7	7.80	22,596	129	0.5	7.91	101	0.4	7.89
MAXIMUM			7.40	2,072	143	5.1	7.87	1,980	134	1.5	7.95	32	0.6	7.95
MINIMUM			6.40	66	124	2.5	7.67	33	125	0.3	7.85	5	0.3	7.84
8/26/2018														
	0:02	0	6.5	1792	0	2.6	7.86	1,727	126	0.3	7.93	0	0.3	7.95
	2:47	0	7.2	798	134	2.6	7.79	744	124	0.6	7.91	16	0.4	7.9
	3:02	0	6.5	1959	136	2.6	7.87	1,860	124	0.3	7.94	0	0	0
	3:17	0	6.5	434	0	2.6	7.9	407	124	0.3	7.96	28	0.3	7.95
	5:47	0	7.2	677	131	2.5	7.79	625	125	0.7	7.92	19	0.4	7.9

Date	TIME	PRETREAT FLOW (GPM)	PRETREAT PH	INFLUENT FLOW (GAL)	INFLUENT FLOW (GPM)	INFLUENT TURBIDITY (NTU)	INFLUENT PH	DISCHARGE FLOW (GAL)	DISCHARGE FLOW (GPM)	DISCHARGE TURBIDITY (NTU)	DISCHARGE PH	RECIRC FLOW (GAL)	RECIRC TURBIDITY (NTU)	RECIRC PH
	6:02	0	6.6	1948	126	2.6	7.87	1,873	124	0.3	7.94	0	0	0
	6:17	0	6.5	572	0	2.6	7.9	562	125	0.3	7.96	6	0.3	7.97
	8:47	0	7.1	856	126	2.5	7.8	807	124	0.6	7.92	7	0.4	7.91
	9:02	0	6.5	1948	132	2.6	7.88	1,856	124	0.3	7.96	0	0	0
	9:17	0	6.4	383	0	2.6	7.91	371	123	0.3	7.97	0	0.3	7.96
	11:47	0	7.3	359	130	3.1	7.74	342	124	1	7.9	0	0.4	7.88
	12:02	0	6.7	1922	131	2.7	7.83	1,848	123	0.3	7.91	0	0	0
	12:17	0	6.4	876	0	2.7	7.87	865	123	0.3	7.93	0	0.3	7.94
	15:02	0	7.2	837	133	62.7	7.81	774	123	0.6	7.9	32	0.4	7.9
	15:17	0	6.5	1905	130	5.4	7.89	1,848	123	0.3	7.92	0	0	0
	15:32	0	6.5	476	0	3.9	7.91	462	122	0.3	7.94	0	0.3	7.94
	18:17	0	6.9	1529	126	5	7.86	1,422	121	0.4	7.91	32	0.4	7.91
	18:32	0	6.4	1657	0	2.7	7.91	1,558	121	0.3	7.93	0	0.3	7.93
	21:17	0	7	1178	127	3.2	7.88	1,096	122	0.5	7.94	30	0.4	7.95
	21:32	0	6.4	1878	0	2.8	7.96	1,821	121	0.3	7.98	0	0	0
	21:47	0	6.5	157	0	2.6	7.97	151	120	0.3	7.99	0	0.3	7.99
AVERAGES/TOTALS			6.70	24,141	130	5.8	7.87	23,019	123	0.4	7.94	170	0.3	7.93
MAXIMUM			7.30	1,959	136	62.7	7.97	1,873	126	1.0	7.99	32	0.4	7.99
MINIMUM			6.40	157	126	2.5	7.74	151	120	0.3	7.90	6	0.3	7.88
8/27/2018														
	0:17	0	7.1	844	127	2.7	7.89	809	121	0.6	7.94	0	0.3	7.96
	0:32	0	6.5	1862	123	2.6	7.97	1,797	120	0.3	7.98	0	0	0
	0:47	0	6.5	434	0	2.6	7.97	416	119	0.3	7.99	0	0.3	8.01
	3:17	0	7.4	0	126	2.6	7.85	0	0	0	0	16	0.3	7.97
	3:32	0	6.8	1865	121	2.6	7.94	1,796	120	0.4	7.97	0	0.3	7.95
	3:47	0	6.4	1269	0	2.5	7.99	1,239	119	0.3	8.01	0	0.3	8.02
	6:32	0	6.9	1507	125	2.5	7.94	1,441	119	0.4	7.98	30	0.3	7.98
	6:47	0	6.5	1598	0	2.2	8.01	1,546	120	0.3	8.02	0	0.3	8.04

Date	TIME	PRETREAT FLOW (GPM)	PRETREAT PH	INFLUENT FLOW (GAL)	INFLUENT FLOW (GPM)	INFLUENT TURBIDITY (NTU)	INFLUENT PH	DISCHARGE FLOW (GAL)	DISCHARGE FLOW (GPM)	DISCHARGE TURBIDITY (NTU)	DISCHARGE PH	RECIRC FLOW (GAL)	RECIRC TURBIDITY (NTU)	RECIRC PH
	9:17	0	7.4	63	127	2.2	7.88	62	122	0.5	7.97	0	0.5	7.96
	9:32	0	6.8	1816	116	2.2	7.94	1,771	119	0.4	7.97	0	0	0
	9:47	0	6.5	1187	0	2.2	7.98	1,163	119	0.3	7.99	12	0.3	8
	10:02	0	6.6	32	124	2.3	7.93	30	120	0.4	8	12	0.4	7.99
	10:17	0	6.5	722	0	2.3	7.96	705	117	0.5	7.98	0	0.4	7.99
	13:32	0	7	1389	124	2.4	7.81	1,332	118	0.5	7.86	15	0.4	7.87
	13:47	0	6.4	1815	0	2.3	7.86	1,762	118	0.3	7.89	0	0	0
	14:02	0	6.4	121	0	2.3	7.87	119	117	0.3	7.9	0	0.3	7.9
	15:02	499	7.8	60	117	3	7.67	28	119	0.4	7.9	29	0.4	7.85
	15:17	0	7.9	1840	125	2.4	7.82	1,755	117	0.4	7.86	0	0	0
	15:32	0	7.9	1828	122	2.5	7.86	1,760	117	0.3	7.89	0	0	0
	15:47	0	7.9	1788	114	2.7	7.86	1,740	116	0.4	7.9	0	0	0
	16:02	513	7.5	1758	111	2.7	7.87	1,738	115	0.4	7.9	0	0	0
	16:17	0	7.3	1761	115	2.7	7.88	1,711	114	0.4	7.91	0	0	0
	16:32	0	7.4	1718	114	3.3	7.9	1,717	113	0.4	7.91	0	0	0
	16:47	502	7.2	1740	111	3.3	7.9	1,683	113	0.4	7.91	0	0	0
	17:02	0	6.8	1702	109	3.4	7.9	1,675	112	0.4	7.92	0	0	0
	17:17	0	6.7	1685	115	3.7	7.9	1,650	110	0.4	7.93	0	0	0
	17:32	0	6.4	1259	0	3.7	7.9	1,233	110	0.4	7.93	0	0.4	7.94
	18:17	0	7.2	821	108	4.8	7.84	798	110	0.7	7.89	11	0.4	7.88
	18:32	0	6.6	1642	110	4.8	7.88	1,627	109	0.4	7.91	0	0	0
	18:47	0	6.6	1635	108	4.8	7.89	1,609	107	0.4	7.92	0	0	0
	19:02	0	6.5	681	0	4.9	7.9	638	107	0.4	7.92	27	0.4	7.92
	19:47	0	7.4	55	107	4.8	7.77	56	110	0.5	7.88	14	0.4	7.84
	20:02	0	6.9	1603	110	5.2	7.86	1,598	106	0.5	7.89	0	0	0
	20:17	0	6.5	1437	0	5.3	7.9	1,452	105	0.4	7.9	6	0.4	7.89
	21:02	0	7.5	0	107	4.8	7.77	0	0	0	0	15	0.4	7.85
	21:17	0	6.9	1578	97	5.5	7.86	1,573	105	0.4	7.88	0	0.4	7.85
	21:32	0	6.5	1541	0	5.7	7.89	1,536	103	0.3	7.9	0	0	0

Date	TIME	PRETREAT FLOW (GPM)	PRETREAT PH	INFLUENT FLOW (GAL)	INFLUENT FLOW (GPM)	INFLUENT TURBIDITY (NTU)	INFLUENT PH	DISCHARGE FLOW (GAL)	DISCHARGE FLOW (GPM)	DISCHARGE TURBIDITY (NTU)	DISCHARGE PH	RECIRC FLOW (GAL)	RECIRC TURBIDITY (NTU)	RECIRC PH
	21:47	0	7	27	0	6.2	7.89	26	100	0.3	7.89	0	0.3	7.92
	22:32	0	7.2	608	98	6.6	7.82	620	104	0.6	7.87	14	0.4	7.86
	22:47	0	6.7	1520	100	7.3	7.86	1,526	101	0.3	7.88	0	0	0
	23:02	0	6.4	928	0	7.6	7.87	923	100	0.3	7.89	0	0.3	7.91
	AVERAGES/TOTALS	505	6.94	47,739	115	3.7	7.88	46,660	113	0.4	7.92	201	0.4	7.93
	MAXIMUM	513	7.90	1,865	127	7.6	8.01	1,797	122	0.7	8.02	30	0.5	8.04
	MINIMUM	499	6.40	27	97	2.2	7.67	26	100	0.3	7.86	6	0.3	7.84
8/28/2018														
	0:02	0	7.4	122	98	7.2	7.76	131	103	1.2	7.84	12	0.3	7.83
	0:17	0	6.9	1494	101	8	7.82	1,502	100	0.4	7.86	0	0	0
	0:32	0	6.4	1437	0	8	7.85	1,435	99	0.3	7.87	0	0.3	7.88
	1:47	0	7.4	176	96	7.8	7.74	148	101	1.1	7.82	26	0.3	7.81
	2:02	0	6.9	1457	102	8.6	7.8	1,464	97	0.4	7.85	0	0	0
	2:17	0	6.4	1369	0	8.7	7.84	1,364	96	0.3	7.86	22	0.3	7.87
	4:02	0	7	1206	89	8.6	7.77	1,235	97	0.5	7.83	0	0.3	7.79
	4:17	0	6.5	1374	89	8.7	7.83	1,401	94	0.3	7.84	0	0	0
	4:32	0	6.4	357	0	8.7	7.83	378	93	0.3	7.85	0	0.3	7.84
	6:17	0	7.4	234	96	8.3	7.7	210	95	1.1	7.8	23	0.3	7.79
	6:32	0	6.9	1356	89	8.9	7.78	1,408	94	0.3	7.83	0	0	0
	6:47	0	6.5	1297	0	9	7.82	1,372	91	0.3	7.84	0	0	0
	8:47	0	7.2	870	92	9	7.72	902	92	0.5	7.8	11	0.3	7.75
	9:02	0	7.4	1267	87	9.1	7.78	1,349	90	0.3	7.8	0	0	0
	9:17	0	7.5	1214	82	9.1	7.78	1,324	88	0.3	7.8	0	0	0
	9:32	515	7.2	1189	79	9.1	7.76	1,306	87	0.3	7.79	0	0	0
	9:47	508	7.2	2367	143	13.7	7.76	1,305	99	1.1	7.8	203	24.9	7.81
	10:02	0	6.9	2113	141	9.2	7.75	2,011	134	0.7	7.79	0	0	0
	10:17	0	6.8	2104	141	10.2	7.73	2,014	134	0.6	7.78	0	0	0
	10:32	0	6.4	1287	0	10.2	7.71	1,242	134	0.6	7.78	0	0.6	7.77

Date	TIME	PRETREAT FLOW (GPM)	PRETREAT PH	INFLUENT FLOW (GAL)	INFLUENT FLOW (GPM)	INFLUENT TURBIDITY (NTU)	INFLUENT PH	DISCHARGE FLOW (GAL)	DISCHARGE FLOW (GPM)	DISCHARGE TURBIDITY (NTU)	DISCHARGE PH	RECIRC FLOW (GAL)	RECIRC TURBIDITY (NTU)	RECIRC PH
	11:17	0	7.1	1119	136	11	7.61	1,058	133	0.8	7.71	10	0.6	7.71
	11:32	503	6.8	2062	135	10.9	7.64	1,985	133	0.5	7.72	0	0	0
	11:47	0	6.4	2035	0	11.2	7.63	1,941	131	0.5	7.72	11	0.5	7.72
	12:47	0	6.8	1991	126	11.7	7.57	1,850	130	0.6	7.68	23	0.5	7.67
	13:02	0	7	1405	0	12.8	7.59	1,317	129	0.5	7.69	30	0.5	7.69
	13:47	0	6.9	2007	135	13.1	7.56	1,893	128	0.6	7.66	0	0.5	7.66
	14:02	0	6.8	2033	142	13.4	7.58	1,913	127	0.5	7.67	0	0	0
	14:17	0	6.4	1311	0	13.6	7.58	1,233	127	0.5	7.68	0	0.5	7.68
	15:02	0	6.9	1783	136	14.1	7.55	1,659	125	0.6	7.66	0	0.5	7.64
	15:17	0	6.8	2011	125	14.6	7.57	1,874	125	0.4	7.67	0	0	0
	15:32	0	6.5	1252	0	14.9	7.58	1,177	124	0.4	7.68	0	0.4	7.68
	16:32	0	7	1486	123	15.2	7.56	1,391	124	0.6	7.66	15	0.5	7.63
	16:47	0	6.4	1945	0	15.7	7.61	1,818	122	0.4	7.68	0	0	0
	17:02	0	7	103	0	15.7	7.62	95	121	0.4	7.68	12	0.4	7.67
	17:47	0	6.9	1685	132	15.7	7.59	1,572	121	0.5	7.67	17	0.5	7.64
	18:02	0	6.5	1727	0	16.3	7.63	1,625	119	0.4	7.68	0	0.4	7.67
	19:02	0	7.4	367	126	15.4	7.54	324	120	1	7.66	10	0.4	7.64
	19:17	0	6.8	1879	129	16.7	7.61	1,757	118	0.4	7.67	0	0	0
	19:32	0	6.4	1245	0	16.7	7.63	1,175	116	0.4	7.68	0	0.4	7.67
	20:32	0	7.3	498	126	16.4	7.56	463	117	0.8	7.66	0	0.4	7.62
	20:47	0	6.7	1826	122	17.7	7.62	1,723	115	0.4	7.67	0	0	0
	21:02	0	6.4	954	0	17.7	7.65	909	113	0.4	7.69	6	0.4	7.7
	22:17	0	7	1516	120	17.7	7.62	1,410	111	0.5	7.67	16	0.4	7.64
	22:32	0	6.4	1769	0	18.1	7.66	1,636	109	0.4	7.69	0	0	0
	22:47	0	6.5	173	0	18.1	7.66	161	108	0.4	7.69	0	0.4	7.69
	23:47	0	7.3	411	117	16.8	7.58	388	111	0.9	7.67	4	0.4	7.66

Date	TIME	PRETREAT FLOW (GPM)	PRETREAT PH	INFLUENT FLOW (GAL)	INFLUENT FLOW (GPM)	INFLUENT TURBIDITY (NTU)	INFLUENT PH	DISCHARGE FLOW (GAL)	DISCHARGE FLOW (GPM)	DISCHARGE TURBIDITY (NTU)	DISCHARGE PH	RECIRC FLOW (GAL)	RECIRC TURBIDITY (NTU)	RECIRC PH
AVERAGES/TOTALS		509	6.85	60,883	115	12.4	7.68	57,848	113	0.5	7.74	451	1.3	7.72
MAXIMUM		515	7.50	2,367	143	18.1	7.85	2,014	134	1.2	7.87	203	24.9	7.88
MINIMUM		503	6.40	103	79	7.2	7.54	95	87	0.3	7.66	4	0.3	7.62
8/29/2018														
	0:02	0	6.7	1709	106	18	7.64	1,610	107	0.4	7.69	0	0	0
	0:17	0	6.4	1068	0	18	7.67	1,016	105	0.4	7.7	0	0.4	7.71
	1:47	0	7	1470	106	17.4	7.63	1,396	105	0.5	7.7	10	0.4	7.67
	2:02	0	6.5	1580	102	17.7	7.69	1,514	101	0.4	7.71	0	0	0
	2:17	0	6.5	227	0	17.7	7.7	223	99	0.4	7.72	0	0.4	7.72
	3:32	0	7.2	659	106	16.2	7.6	636	103	0.7	7.7	12	0.4	7.69
	3:47	0	6.7	1500	89	16.7	7.67	1,467	98	0.4	7.71	0	0	0
	4:02	0	6.4	956	0	16.6	7.69	969	96	0.4	7.72	0	0.4	7.73
	5:32	0	7.2	814	99	16.1	7.62	786	99	0.6	7.71	23	0.4	7.67
	5:47	0	6.7	1390	93	16.4	7.69	1,409	94	0.4	7.72	0	0	0
	6:02	0	6.5	859	0	16.3	7.7	881	91	0.3	7.73	5	0.3	7.75
	7:32	0	7.3	523	100	15.3	7.61	540	97	0.7	7.7	10	0.4	7.67
	7:47	0	6.8	1319	75	15.6	7.67	1,379	92	0.4	7.72	0	0	0
	8:02	0	6.4	1005	0	15.6	7.7	1,091	87	0.3	7.72	0	0.3	7.72
	9:32	0	7.4	92	95	13	7.56	97	96	0.9	7.67	11	0.4	7.68
	9:47	0	6.9	1335	88	15.2	7.63	1,371	92	0.5	7.7	0	0	0
	10:02	0	6.5	1189	69	15.2	7.66	1,291	86	0.3	7.69	0	0	0
	10:17	0	6.5	153	0	15.2	7.66	169	84	0.3	7.68	0	0.3	7.68
	11:47	0	7.4	185	91	13.1	7.47	188	95	1.1	7.64	10	0.4	7.62
	12:02	0	6.9	1268	72	14.3	7.54	1,350	89	0.4	7.62	0	0	0
	12:17	0	6.5	1137	153	14.1	7.56	1,246	83	0.3	7.61	0	0	0
	12:32	0	6.9	334	0	20.3	7.56	120	56	0.5	7.61	4	0.5	7.61
	13:47	514	7	2832	140	16.5	7.53	716	93	2.1	7.66	393	23.5	7.66
	14:02	0	6.4	2125	0	12.9	7.57	2,027	136	1	7.65	0	0	0

Date	TIME	PRETREAT FLOW (GPM)	PRETREAT PH	INFLUENT FLOW (GAL)	INFLUENT FLOW (GPM)	INFLUENT TURBIDITY (NTU)	INFLUENT PH	DISCHARGE FLOW (GAL)	DISCHARGE FLOW (GPM)	DISCHARGE TURBIDITY (NTU)	DISCHARGE PH	RECIRC FLOW (GAL)	RECIRC TURBIDITY (NTU)	RECIRC PH
	14:17	0	6.5	180	0	12.8	7.58	171	136	0.8	7.66	0	0.8	7.68
	16:17	0	7.1	1012	144	11.4	7.51	952	136	1.3	7.65	20	0.9	7.63
	16:32	0	6.4	2094	0	11.4	7.56	2,015	134	0.7	7.66	0	0	0
	16:47	0	6.4	245	0	11.3	7.59	233	133	0.7	7.68	0	0.7	7.68
	17:47	0	7	1328	143	11	7.56	1,286	135	0.9	7.67	19	0.8	7.66
	18:02	0	6.8	2089	127	10.7	7.61	1,996	133	0.7	7.69	0	0	0
	18:17	0	6.5	1459	0	10.6	7.63	1,387	133	0.6	7.7	13	0.6	7.7
	19:02	0	7.3	501	133	10.1	7.58	464	134	1.1	7.69	18	0.7	7.69
	19:17	0	6.6	2067	138	10.3	7.63	1,976	132	0.6	7.71	0	0	0
	19:32	0	7	853	0	10.2	7.66	823	131	0.6	7.73	6	0.6	7.73
	20:17	0	6.9	1769	133	9.2	7.65	1,660	131	0.8	7.73	31	0.7	7.7
	20:32	0	6.4	1510	0	9.1	7.7	1,460	130	0.7	7.77	7	0.7	7.78
	21:17	0	7.5	19	130	8.1	7.61	0	0	0	0	19	0.7	7.75
	21:32	0	6.8	2039	137	9	7.68	1,966	131	0.8	7.76	0	0.7	7.75
	21:47	0	6.4	1246	0	9.1	7.73	1,214	130	0.6	7.79	0	0.6	7.79
	22:47	0	7	1329	130	9	7.67	1,249	129	0.8	7.77	14	0.7	7.76
	23:02	0	6.5	1927	0	9.1	7.74	1,860	128	0.6	7.8	0	0.6	7.81
AVERAGES/TOTALS		514	6.78	47,396	112	13.6	7.63	44,204	110	0.7	7.70	625	1.4	7.70
MAXIMUM		514	7.50	2,832	153	20.3	7.74	2,027	136	2.1	7.80	393	23.5	7.81
MINIMUM		514	6.40	19	69	8.1	7.47	97	56	0.3	7.61	4	0.3	7.61
8/30/2018														
	0:17	0	6.8	1801	129	10.1	7.7	1,705	127	0.7	7.79	0	0.7	7.76
	0:32	0	6.4	1491	0	9.1	7.74	1,381	126	0.6	7.81	33	0.6	7.79
	1:47	0	7.1	1113	126	11.5	7.68	1,068	124	0.8	7.79	0	0.7	7.77
	2:02	0	6.5	1959	0	10.2	7.74	1,855	124	0.6	7.81	0	0	0
	2:17	0	6.4	134	0	10.2	7.77	123	125	0.6	7.82	0	0.6	7.81
	3:32	0	6.8	1823	136	10.5	7.71	1,698	123	0.6	7.8	20	0.6	7.76
	3:47	0	6.4	1406	0	10.6	7.76	1,319	123	0.5	7.82	0	0.5	7.83

Date	TIME	PRETREAT FLOW (GPM)	PRETREAT PH	INFLUENT FLOW (GAL)	INFLUENT FLOW (GPM)	INFLUENT TURBIDITY (NTU)	INFLUENT PH	DISCHARGE FLOW (GAL)	DISCHARGE FLOW (GPM)	DISCHARGE TURBIDITY (NTU)	DISCHARGE PH	RECIRC FLOW (GAL)	RECIRC TURBIDITY (NTU)	RECIRC PH
	5:17	0	6.8	1835	130	10.8	7.71	1,710	122	0.6	7.8	32	0.6	7.78
	5:32	0	6.4	1441	0	11.2	7.76	1,361	121	0.5	7.81	0	0.5	7.83
	7:02	0	7.1	934	133	11.2	7.68	874	121	0.7	7.78	17	0.5	7.76
	7:17	0	6.5	1902	134	11.3	7.74	1,796	119	0.5	7.8	0	0	0
	7:32	0	6.5	414	0	11.6	7.77	385	119	0.4	7.82	0	0.4	7.83
	8:47	0	7.4	49	129	10.1	7.64	28	118	0.5	7.77	17	0.5	7.76
	9:02	0	6.8	1867	128	11.6	7.71	1,759	118	0.5	7.78	0	0	0
	9:17	0	6.4	1300	0	11.7	7.74	1,232	117	0.4	7.8	5	0.4	7.81
	10:47	0	7.3	342	119	11.6	7.61	290	118	1	7.74	29	0.5	7.71
	11:02	0	6.7	1832	119	12.2	7.67	1,719	115	0.4	7.75	0	0	0
	11:17	0	6.5	974	0	12.7	7.71	917	115	0.4	7.77	0	0.4	7.76
	13:02	0	7	1416	121	12.7	7.61	1,306	114	0.5	7.72	14	0.5	7.72
	13:17	0	6.5	1781	0	12.8	7.67	1,693	113	0.4	7.72	0	0	0
	13:32	0	6.5	60	0	12.8	7.68	56	111	0.4	7.73	0	0.4	7.74
	14:47	0	7.2	403	255	15.2	7.54	0	0	0	0	160	3.4	7.71
	15:02	0	6.5	2624	140	9.4	7.63	1,364	137	1.2	7.72	450	7.4	7.73
	15:17	0	7	283	0	6	7.65	269	135	0.6	7.72	0	0.6	7.72
	16:32	0	6.7	2001	136	6	7.61	1,928	138	0.8	7.71	20	0.8	7.69
	16:47	0	6.5	1199	0	5.9	7.65	1,129	132	0.6	7.73	0	0.6	7.75
	18:47	0	6.8	1732	139	5.9	7.62	1,651	137	0.7	7.72	32	0.7	7.7
	19:02	0	6.5	1421	0	5.7	7.66	1,352	132	0.5	7.73	0	0.5	7.76
	21:02	0	7.2	753	144	5.6	7.63	716	137	0.9	7.74	18	0.7	7.71
	21:17	0	6.5	2082	142	5.5	7.69	1,947	130	0.5	7.75	0	0	0
	21:32	0	6.4	345	0	5.5	7.71	320	129	0.5	7.76	0	0.5	7.78
	23:32	0	6.8	1875	133	5.5	7.67	1,781	136	0.7	7.76	18	0.7	7.72
	23:47	0	6.4	1325	0	5.5	7.72	1,226	129	0.5	7.77	0	0.5	7.76

Date	TIME	PRETREAT FLOW (GPM)	PRETREAT PH	INFLUENT FLOW (GAL)	INFLUENT FLOW (GPM)	INFLUENT TURBIDITY (NTU)	INFLUENT PH	DISCHARGE FLOW (GAL)	DISCHARGE FLOW (GPM)	DISCHARGE TURBIDITY (NTU)	DISCHARGE PH	RECIRC FLOW (GAL)	RECIRC TURBIDITY (NTU)	RECIRC PH
AVERAGES/TOTALS			6.71	41,917	139	9.6	7.68	37,958	125	0.6	7.77	865	0.9	7.76
MAXIMUM			7.40	2,624	255	15.2	7.77	1,947	138	1.2	7.82	450	7.4	7.83
MINIMUM			6.40	49	119	5.5	7.54	28	111	0.4	7.71	5	0.4	7.69
8/31/2018														
	1:47	0	7.4	87	139	5	7.61	70	136	0.7	7.71	13	0.7	7.69
	2:02	0	6.7	2087	138	5.3	7.69	2,062	137	0.6	7.76	0	0	0
	2:17	0	6.4	1087	0	5.3	7.74	1,088	136	0.5	7.77	0	0.5	7.77
	4:32	0	6.9	1773	147	5.2	7.69	1,699	133	0.7	7.77	17	0.7	7.7
	4:47	0	6.5	1505	0	5.2	7.74	1,399	128	0.5	7.78	0	0.5	7.76
	6:47	0	7.4	15	140	3.6	7.61	0	0	0	0	15	0.7	7.72
	7:02	0	6.8	2035	135	5.2	7.71	1,890	127	0.7	7.78	0	0.7	7.72
	7:17	0	6.4	1226	0	5.2	7.76	1,112	123	0.5	7.79	0	0.6	7.79
	9:32	0	6.9	1526	134	5.2	7.66	1,370	125	0.7	7.76	34	0.7	7.72
	9:47	0	6.4	1758	0	5.2	7.71	1,621	124	0.6	7.76	23	0.6	7.76
	11:17	0	7.2	1146	122	5	7.62	1,067	125	0.7	7.72	0	0.7	7.67
	11:32	515	6.8	2009	137	5.1	7.67	1,857	123	0.6	7.74	0	0	0
	11:47	0	6.5	2000	132	5.1	7.69	1,827	122	0.6	7.74	0	0	0
	12:02	503	6.7	407	0	5.2	7.71	371	123	0.6	7.76	12	0.6	7.72
	12:47	0	7	1353	126	5.2	7.64	1,299	129	0.7	7.72	18	0.6	7.67
	13:02	0	6.4	1968	0	5.2	7.68	1,785	120	0.6	7.74	0	0	0
	13:17	0	6.9	132	0	5.2	7.71	88	120	0.6	7.75	28	0.6	7.74
	13:32	503	6.9	1651	145	8.5	7.66	0	124	0.6	7.7	596	5.4	7.73
	13:47	0	6.8	2152	142	5.1	7.7	1,943	135	1.2	7.76	99	11.3	7.76
	14:02	0	6.3	1062	0	5.2	7.71	1,004	135	0.9	7.77	0	1	7.74
	15:02	0	6.9	1821	147	5.2	7.63	1,668	135	1	7.72	31	1	7.68
	15:17	0	7	1513	0	5.7	7.67	800	118	1.2	7.74	76	15.1	7.74
	16:02	0	7	1504	140	7.7	7.63	1,422	136	1.6	7.71	0	1.3	7.67
	16:17	0	6.5	1821	0	5.2	7.68	1,712	134	0.9	7.74	0	0.9	7.74

Date	TIME	PRETREAT FLOW (GPM)	PRETREAT PH	INFLUENT FLOW (GAL)	INFLUENT FLOW (GPM)	INFLUENT TURBIDITY (NTU)	INFLUENT PH	DISCHARGE FLOW (GAL)	DISCHARGE FLOW (GPM)	DISCHARGE TURBIDITY (NTU)	DISCHARGE PH	RECIRC FLOW (GAL)	RECIRC TURBIDITY (NTU)	RECIRC PH
	17:17	0	7.1	1089	139	5.2	7.64	1,031	137	1.1	7.72	19	1	7.66
	17:32	0	6.5	2165	0	5.5	7.7	1,722	128	0.9	7.76	3	0.9	7.78
	18:32	0	7.2	1069	135	9.8	7.64	963	139	1.9	7.73	67	5.6	7.7
	18:47	0	6.5	2110	142	6.1	7.7	2,014	135	1	7.76	0	0	0
	19:02	522	6.7	279	0	6.3	7.72	261	131	1	7.77	0	1	7.75
	20:02	0	6.8	1926	136	7.2	7.67	1,835	134	1.1	7.75	33	1	7.69
	20:17	0	6.5	1334	0	7.5	7.72	962	123	0.9	7.77	6	1	7.78
	21:17	0	7.1	1197	149	11.5	7.65	1,131	137	1.9	7.74	14	1.1	7.71
	21:32	0	6.4	2119	0	7.3	7.72	2,086	138	1.1	7.77	0	0	0
	21:47	537	6.5	74	0	7.3	7.74	68	137	1	7.78	5	1	7.8
	22:47	0	6.9	1571	137	7.6	7.68	1,400	128	1.1	7.76	18	1.1	7.7
	23:02	0	6.5	1727	0	9.2	7.73	1,227	115	1	7.79	4	1.1	7.78
AVERAGES/TOTALS		516	6.76	50,298	138	6.1	7.68	43,854	129	0.9	7.75	1,131	2.0	7.73
MAXIMUM		537	7.40	2,165	149	11.5	7.76	2,086	139	1.9	7.79	596	15.1	7.80
MINIMUM		503	6.30	15	122	3.6	7.61	68	115	0.5	7.70	3	0.5	7.66

MONTHLY SUMMARY

AVERAGES/TOTALS	469	6.91	989,072	136	24.2	7.64	916,656	128	1.5	7.74	15,894	2.0	7.74
MAXIMUM	537	8.90	3,704	336	136.9	8.01	2,463	169	8.1	8.07	2,064	24.9	8.04
MINIMUM	14	6.30	15	19	0.8	3.81	26	30	0.3	7.32	3	0.3	4.08

NOTE: ALL ZERO DATA POINTS FOR DISCHARGE ARE EXCLUDED FROM SUMMARY CALCULATIONS. MONTHLY SUMMARY VALUES ARE CALCULATED FROM 15 MINUTE INTERVAL DATA POINTS, AND NOT DAILY SUMMARIES.

October 10, 2018

Eran Fields
FH Brooklyn, LLC
2251 Linda Flora Drive
Los Angeles, CA 90077

Re: 4700 Brooklyn U-District Stormwater Treatment Report for September 2018

This report summarizes the water treatment operations from September 1, 2018 through September 30, 2018 for the 4700 Brooklyn Remediation Project as performed by Clear Water Services, LLC (Clear Water).

There is currently a 100-gpm nominal flow chitosan-enhanced sand filtration (CESF) with granular activated carbon (GAC) system onsite. System mobilization began on July 24th and was completed on July 26th. The electrical and programming components for the system were installed on August 10th. The discharge line was installed on August 13th.

During this reporting period, a total of **575,368 gallons** of water was discharged by the system. Water was discharged within state and local water quality parameters from the system to Portage Bay. The average discharge rate for the system was **140 gpm**. A total of **1,492,024 gallons** has been discharged to date. Total rainfall during this reporting period was **1.42 inches**.

Treatment System Operations

Treatment system discharge details as well as a discussion of system upsets for this reporting period are indicated below. Treatment system monitoring data are acquired by technicians as well as computerized collection via a programmable logic controller (PLC). A monthly data summary is included at the end of this report. Treatment system technicians review effluent water quality data on regular intervals to demonstrate the quality of treated water. The PLC records data at 15-minute intervals and transmits the data to Clear Water's headquarters. The data collected can be monitored in real time by Clear Water personnel. Daily Operations Logs are recorded digitally on a mobile device in the system control unit onsite which are automatically saved to Clear Water's account to the application service.

System Discharge Volumes and Water Quality Parameters

The 100-gpm nominal CESF system treated and discharged stormwater to Portage Bay during this reporting period.

Total gallons treated and gallons discharged, as well as a summary of pH and turbidity results are presented in the following pages of this document. It is common for gallons treated and gallons discharged to differ due to treatment system operation events, such as backflush and recirculation.

Turbidity and pH parameters were within the regulatory limits (less than 10 nephelometric turbidity units, or NTU, and between 6.5 and 8.5 standard units, or s.u.) for all system discharges. Residual chitosan tests were routinely conducted during system operations, with all results indicating that no residual chitosan was present in system effluent.

Operational Notes and Recommendations

The system had normal operations with no major upsets to the system during this reporting period.

The treatment system treated 756,510 gallons of stormwater and discharged 575,368 gallons within the benchmarks/limits of the NPDES Construction Stormwater permit (WA-0024651). During this reporting period, approximately 24% of the treated influent was either backflushed or recirculated. The system has been running on automated operations, with field technicians checking in daily to check the site, run backflushes on the sand filters, clean the turbidimeter cuvettes, and perform other maintenance as necessary.

Total Rainfall

Clear Water uses NOAA's Quality Controlled Local Climatological Data (QCLCD) to monitor monthly rainfall totals. The following table summarizes the precipitation for the duration of this reporting period for the project. Precipitation data included in this table was collected from the QCLCD station at the Seattle Boeing Field (#24234), located about 10 miles from the project site.

Daily Rainfall Totals			
Date	Rainfall (inches)	Date	Rainfall (inches)
9/1/2018	0.00	9/16/2018	0.19
9/2/2018	0.00	9/17/2018	0.00
9/3/2018	0.00	9/18/2018	0.00
9/4/2018	0.00	9/19/2018	0.04
9/5/2018	0.00	9/20/2018	0.18
9/6/2018	0.00	9/21/2018	0.06
9/7/2018	0.07	9/22/2018	0.05
9/8/2018	0.01	9/23/2018	0.00
9/9/2018	0.19	9/24/2018	0.00
9/10/2018	0.01	9/25/2018	0.00
9/11/2018	0.05	9/26/2018	0.00
9/12/2018	0.00	9/27/2018	0.00
9/13/2018	0.19	9/28/2018	0.00
9/14/2018	0.29	9/29/2018	0.00
9/15/2018	0.09	9/30/2018	Trace
Total inches:	**1.42**		

If you have any questions regarding the information presented in this report or operations at the project site, please contact Duncan Medlin at (360) 280-0508.

Report Prepared By:

Kelli Quist
Project Engineer
CLEAR WATER SERVICES

Report Reviewed By:

Duncan Medlin
Project Manager
CLEAR WATER SERVICES

CLEAR WATER SERVICES

MONTHLY SUMMARY REPORT

4700 U-District

SEPTEMBER 2018

Downloaded: 10/10/2018

Date	TIME	PRETREAT FLOW (GPM)	PRETREAT PH	INFLUENT FLOW (GAL)	INFLUENT FLOW (GPM)	INFLUENT TURBIDITY (NTU)	INFLUENT PH	DISCHARGE FLOW (GAL)	DISCHARGE FLOW (GPM)	DISCHARGE TURBIDITY (NTU)	DISCHARGE PH	RECIRC FLOW (GAL)	RECIRC TURBIDITY (NTU)	RECIRC PH
9/1/2018														
	0:02	0	7.4	166	148	20.7	7.62	137	137	4.2	7.71	20	1.1	7.7
	0:17	0	6.7	2116	136	7.7	7.7	2,035	136	1.2	7.77	0	0	0
	0:32	0	6.4	1076	0	7.8	7.74	1,035	135	1.1	7.79	0	1.1	7.79
	1:32	0	7.4	161	144	7.6	7.63	140	139	1.3	7.72	19	1.1	7.71
	1:47	0	6.7	2091	136	8	7.7	2,063	138	1.1	7.77	0	0	0
	2:02	0	6.5	905	0	8.8	7.75	631	121	1.1	7.79	6	1.2	7.78
	3:17	0	7.1	1375	142	9.7	7.67	1,343	141	1.6	7.75	35	1.2	7.7
	3:32	0	6.4	2111	0	8.1	7.73	2,042	136	1.1	7.79	0	0	0
	3:47	0	6.4	69	0	8.1	7.75	67	134	1.1	7.8	0	1.1	7.78
	4:47	0	7.3	280	137	7.9	7.64	249	140	1.4	7.73	33	1.2	7.72
	5:02	0	6.6	2092	133	8.5	7.71	1,999	134	1.1	7.78	0	0	0
	5:17	0	6.5	861	0	9.4	7.75	458	107	1.2	7.79	19	1.1	7.79
	6:32	0	7	1452	146	11	7.67	1,405	141	1.8	7.76	20	1.2	7.71
	6:47	0	6.4	2067	0	8.7	7.74	2,014	135	1.2	7.79	0	1.1	7.79
	8:02	0	7.4	146	138	8.2	7.64	104	139	1.3	7.71	26	1.2	7.71
	8:17	516	7	2476	166	11.2	7.71	1,176	118	1.9	7.77	170	10.9	7.79
	8:32	0	6.5	2310	0	8.7	7.75	2,228	148	1.7	7.82	0	8.3	7.83
	8:47	0	6.5	77	0	8.7	7.76	69	146	1.4	7.81	0	1.4	7.82
	10:17	0	6.8	2059	145	9	7.67	1,966	146	1.9	7.76	11	1.4	7.68
	10:32	0	6.4	1338	0	9.1	7.72	1,271	145	1.4	7.8	25	1.4	7.8
	12:02	54	7.2	2400	154	10.1	7.62	1,048	120	2.5	7.74	229	14.9	7.74
	12:17	0	6.5	2269	0	9.2	7.67	2,192	147	1.7	7.76	0	0	0
	12:32	0	6.5	187	0	18.4	7.69	184	146	1.6	7.77	0	1.6	7.76

Date	TIME	PRETREAT FLOW (GPM)	PRETREAT PH	INFLUENT FLOW (GAL)	INFLUENT FLOW (GPM)	INFLUENT TURBIDITY (NTU)	INFLUENT PH	DISCHARGE FLOW (GAL)	DISCHARGE FLOW (GPM)	DISCHARGE TURBIDITY (NTU)	DISCHARGE PH	RECIRC FLOW (GAL)	RECIRC TURBIDITY (NTU)	RECIRC PH
	14:02	0	7.1	1136	157	9.1	7.55	1,082	148	1.8	7.66	20	1.6	7.61
	14:17	0	6.4	2298	0	9.7	7.61	1,885	144	1.7	7.7	78	17.1	7.71
	15:47	0	7.6	19	157	8.8	7.46	0	0	0	0	19	2.2	7.6
	16:02	0	6.8	2300	154	11.9	7.59	2,272	152	1.9	7.68	0	2.4	7.64
	16:17	0	6.5	1254	0	10.3	7.63	1,258	152	1.6	7.71	0	1.6	7.72
	18:02	0	6.8	2133	144	9.2	7.62	2,073	146	1.7	7.71	0	1.7	7.64
	18:17	0	6.5	1371	0	10.9	7.67	1,103	139	1.7	7.75	10	1.8	7.75
	19:47	0	7.5	214	154	27.1	7.57	188	150	3.1	7.67	22	1.7	7.65
	20:02	0	6.7	2289	152	10.2	7.64	2,279	152	1.8	7.73	0	0	0
	20:17	0	6.5	1125	0	10.2	7.69	1,108	152	1.7	7.77	39	1.7	7.76
	21:47	0	7.3	400	144	14.9	7.61	387	151	2	7.72	20	1.7	7.7
	22:02	0	6.6	2252	147	10.2	7.69	2,277	151	1.7	7.78	0	0	0
	22:17	0	6.5	737	0	11.1	7.74	561	139	1.8	7.82	17	2.2	7.82
	AVERAGES/TOTALS	285	6.79	47,612	147	10.5	7.67	42,329	140	1.7	7.75	838	3.0	7.73
	MAXIMUM	516	7.60	2,476	166	27.1	7.76	2,279	152	4.2	7.82	229	17.1	7.83
	MINIMUM	54	6.40	19	133	7.6	7.46	67	107	1.1	7.66	6	1.1	7.60
9/2/2018														
	0:02	0	7.1	1459	149	15.1	7.68	1,414	149	2.1	7.78	20	1.9	7.74
	0:17	0	6.4	2250	0	10.2	7.74	2,222	148	1.8	7.83	0	0	0
	0:32	0	6.5	77	0	10.2	7.76	74	148	1.7	7.83	0	1.7	7.82
	2:02	0	6.9	1701	153	10.2	7.7	1,660	147	1.9	7.8	23	1.8	7.76
	2:17	0	6.5	1630	0	10.6	7.76	1,349	139	1.8	7.83	5	1.9	7.84
	4:02	0	7	1587	153	13.7	7.71	1,562	149	2.2	7.81	0	1.9	7.76
	4:17	0	6.5	1994	0	10.3	7.78	1,978	148	1.9	7.86	0	1.8	7.86
	6:02	0	6.9	1614	143	10.4	7.72	1,558	147	1.9	7.81	33	1.9	7.74
	6:17	0	6.5	1619	0	10.8	7.79	1,520	143	1.8	7.85	0	2.3	7.85
	8:32	0	7.1	1957	162	11.1	7.72	1,915	153	2.2	7.8	38	2	7.73
	8:47	0	6.4	2187	0	10.6	7.78	2,178	152	1.9	7.85	0	1.9	7.88

Date	TIME	PRETREAT FLOW (GPM)	PRETREAT PH	INFLUENT FLOW (GAL)	INFLUENT FLOW (GPM)	INFLUENT TURBIDITY (NTU)	INFLUENT PH	DISCHARGE FLOW (GAL)	DISCHARGE FLOW (GPM)	DISCHARGE TURBIDITY (NTU)	DISCHARGE PH	RECIRC FLOW (GAL)	RECIRC TURBIDITY (NTU)	RECIRC PH
	10:32	0	7.1	1121	156	11.4	7.61	1,073	148	2	7.72	20	1.9	7.66
	10:47	0	6.5	2064	0	10.7	7.66	2,009	146	1.9	7.75	0	1.9	7.75
	12:32	0	7.4	262	148	17.9	7.46	259	150	2.1	7.67	0	1.9	7.62
	12:47	0	6.6	2248	146	10.9	7.57	2,225	148	1.9	7.67	0	0	0
	13:02	0	6.5	807	0	10.7	7.6	773	147	1.9	7.69	39	1.9	7.7
	14:47	0	7.1	1164	156	12.6	7.53	1,109	148	2.1	7.66	36	2	7.6
	15:02	0	6.4	2126	0	11	7.59	2,082	143	2	7.69	9	2	7.7
	15:17	0	6.6	1006	0	12.2	7.63	102	61	2	7.7	343	2.6	7.7
	15:32	0	6.6	0	0	10.5	7.62	126	23	2	7.67	6	2	7.65
	15:47	0	7.1	0	0	9.2	7.52	15	25	2.1	7.61	0	0	0
	16:02	0	7.1	0	0	9.1	7.53	49	24	2.1	7.63	6	2.1	7.62
	16:17	0	6.6	1091	150	12.1	7.6	1,113	139	2.3	7.67	0	0	0
	16:32	0	6.5	884	0	10.7	7.66	877	154	2.1	7.72	13	2.1	7.75
	18:32	0	6.9	1627	155	11.6	7.63	1,613	153	2.2	7.74	21	2.2	7.63
	18:47	0	6.4	1528	0	10.6	7.71	1,514	152	2.1	7.78	5	2.1	7.79
	20:32	0	7.1	914	144	12.5	7.65	899	151	2.2	7.74	0	2.1	7.67
	20:47	0	6.5	2230	0	10.6	7.73	2,222	151	2	7.79	0	2	7.8
	22:47	0	6.7	2127	150	10.9	7.73	2,102	150	2.1	7.78	0	2.1	7.71
	23:02	0	6.4	1055	0	10.7	7.78	1,044	148	2	7.83	0	2	7.84
AVERAGES/TOTALS			6.73	40,329	151	11.3	7.67	38,636	133	2.0	7.75	617	2.0	7.74
	MAXIMUM		7.40	2,250	162	17.9	7.79	2,225	154	2.3	7.86	343	2.6	7.88
	MINIMUM		6.40	77	143	9.1	7.46	15	23	1.7	7.61	5	1.7	7.60
9/3/2018														
	0:47	0	7	1323	157	10.9	7.71	1,300	146	2.2	7.78	0	2.1	7.7
	1:02	0	6.5	1829	0	11.2	7.79	1,809	147	2	7.84	0	2	7.85
	3:02	0	6.7	2078	142	11	7.75	1,990	145	2.1	7.81	20	2.1	7.73
	3:17	0	6.4	1175	0	11.2	7.8	1,149	142	2	7.85	0	2	7.85
	5:02	0	7	1157	140	11.1	7.75	1,115	143	2.2	7.8	9	2.1	7.71

Date	TIME	PRETREAT FLOW (GPM)	PRETREAT PH	INFLUENT FLOW (GAL)	INFLUENT FLOW (GPM)	INFLUENT TURBIDITY (NTU)	INFLUENT PH	DISCHARGE FLOW (GAL)	DISCHARGE FLOW (GPM)	DISCHARGE TURBIDITY (NTU)	DISCHARGE PH	RECIRC FLOW (GAL)	RECIRC TURBIDITY (NTU)	RECIRC PH
	5:17	0	6.4	2017	0	11.2	7.82	1,963	143	2	7.86	0	2	7.89
	7:17	0	6.7	2059	145	11.2	7.77	2,005	143	2.1	7.84	0	2.1	7.72
	7:32	0	6.4	1127	0	11.3	7.84	1,087	141	2	7.88	0	2	7.89
	9:17	0	7.3	447	151	11	7.69	434	144	2.3	7.76	5	2	7.7
	9:32	0	6.5	2183	141	11.3	7.76	2,093	141	2	7.84	0	0	0
	9:47	0	6.4	564	0	11.3	7.8	552	137	2	7.86	0	2	7.87
	11:32	0	6.8	1787	159	13.3	7.65	790	115	2.8	7.73	99	11.1	7.74
	11:47	0	6.5	2505	164	11.5	7.72	2,149	150	2.9	7.81	115	17.7	7.81
	12:02	0	6.5	513	0	11.3	7.75	494	153	2.5	7.82	5	2.5	7.82
	14:17	0	7.1	1213	155	11.5	7.58	1,195	154	2.7	7.71	0	2.6	7.62
	14:32	0	6.4	2220	0	11.6	7.65	2,162	152	2.6	7.75	0	2.5	7.77
	16:47	0	6.9	1645	153	11.4	7.65	1,604	153	2.7	7.74	18	2.7	7.65
	17:02	0	6.5	1758	0	11.6	7.73	1,756	153	2.6	7.8	0	2.6	7.81
	19:17	0	6.9	1793	148	11.6	7.7	1,754	152	2.8	7.77	21	2.7	7.67
	19:32	0	6.5	1666	0	11.7	7.78	1,660	151	2.6	7.83	10	2.6	7.83
	21:32	0	7.3	467	150	11.4	7.7	457	152	3	7.76	7	2.7	7.7
	21:47	0	6.6	2278	149	11.7	7.78	2,270	151	2.7	7.84	0	0	0
	22:02	0	6.5	687	0	11.7	7.84	684	150	2.7	7.87	0	2.7	7.86
AVERAGES/TOTALS			6.69	34,491	150	11.4	7.74	32,472	146	2.4	7.81	309	3.5	7.77
	MAXIMUM		7.30	2,505	164	13.3	7.84	2,270	154	3.0	7.88	115	17.7	7.89
	MINIMUM		6.40	447	140	10.9	7.58	434	115	2.0	7.71	5	2.0	7.62
9/4/2018														
	0:02	0	7.2	912	157	11.7	7.74	870	150	2.8	7.8	20	2.7	7.73
	0:17	0	6.5	2259	155	11.7	7.83	2,237	150	2.7	7.87	0	0	0
	0:32	0	6.5	308	0	12.2	7.88	297	149	2.7	7.9	16	2.7	7.9
	2:32	0	7	1565	143	12.2	7.79	1,520	149	2.8	7.85	20	2.7	7.78
	2:47	0	6.5	1888	0	12.7	7.87	1,844	148	2.7	7.91	0	2.7	7.92
	5:02	0	6.8	2075	147	12.7	7.82	2,028	148	2.8	7.88	20	2.7	7.78

Date	TIME	PRETREAT FLOW (GPM)	PRETREAT PH	INFLUENT FLOW (GAL)	INFLUENT FLOW (GPM)	INFLUENT TURBIDITY (NTU)	INFLUENT PH	DISCHARGE FLOW (GAL)	DISCHARGE FLOW (GPM)	DISCHARGE TURBIDITY (NTU)	DISCHARGE PH	RECIRC FLOW (GAL)	RECIRC TURBIDITY (NTU)	RECIRC PH
	5:17	0	6.5	1373	0	12.7	7.89	1,354	147	2.7	7.93	0	2.7	7.93
	7:32	0	6.8	2120	151	12.8	7.84	2,088	147	2.8	7.89	0	2.8	7.78
	7:47	0	6.5	1333	0	13.1	7.9	1,315	146	2.7	7.95	0	2.8	7.94
	9:17	0	7.3	641	153	13.1	7.77	604	144	2.9	7.8	19	2.8	7.73
	9:32	0	6.6	2216	154	13.1	7.82	2,172	145	2.7	7.87	0	0	0
	9:47	0	6.5	659	0	13.1	7.86	646	143	2.7	7.88	3	2.7	7.89
	11:02	0	6.9	1692	139	13.5	7.71	1,648	143	2.7	7.75	0	2.7	7.67
	11:17	0	6.5	1748	0	13.8	7.76	1,722	143	2.7	7.8	4	2.7	7.8
	11:47	0	6.4	1750	0	16.7	7.73	617	107	4.1	7.75	132	14	7.74
	12:02	0	6.4	1692	0	13.9	7.77	1,506	150	3.7	7.8	113	9.6	7.81
	14:02	0	6.7	2189	143	13.9	7.64	2,096	148	3.6	7.73	0	3.5	7.63
	14:17	0	6.5	1057	0	13.9	7.7	995	147	3.5	7.77	20	3.5	7.78
	15:47	0	7	1177	148	13.9	7.65	1,106	148	3.6	7.72	0	3.6	7.63
	16:02	0	6.5	2029	0	14	7.72	1,963	147	3.6	7.79	0	3.6	7.81
	17:47	0	6.8	1740	159	13.8	7.71	1,654	147	3.7	7.76	22	3.7	7.63
	18:02	0	6.5	1481	0	14.2	7.79	1,418	146	3.7	7.84	0	3.7	7.83
	19:32	0	7.3	270	143	13.8	7.69	224	149	4	7.72	35	3.8	7.67
	19:47	0	6.6	2279	156	14.4	7.78	2,211	147	3.8	7.82	0	0	0
	20:02	0	6.4	649	0	14.4	7.83	617	145	3.8	7.86	14	3.8	7.86
	21:32	0	7.3	374	155	14.1	7.73	326	147	4.3	7.74	37	4.1	7.72
	21:47	0	6.5	2289	157	15.2	7.8	2,201	146	4.1	7.84	0	0	0
	22:02	0	6.4	578	0	15.2	7.86	544	145	4.1	7.88	4	4.1	7.88
	23:47	0	6.7	2291	145	15.5	7.81	2,174	145	4.1	7.83	0	4.1	7.73
AVERAGES/TOTALS			6.69	42,634	150	13.6	7.78	39,997	145	3.3	7.83	479	3.9	7.78
MAXIMUM			7.30	2,291	159	16.7	7.90	2,237	150	4.3	7.95	132	14.0	7.94
MINIMUM			6.40	270	139	11.7	7.64	224	107	2.7	7.72	3	2.7	7.63
9/5/2018														
	0:02	0	6.4	983	0	15.6	7.86	946	145	4	7.89	0	4	7.89

Date	TIME	PRETREAT FLOW (GPM)	PRETREAT PH	INFLUENT FLOW (GAL)	INFLUENT FLOW (GPM)	INFLUENT TURBIDITY (NTU)	INFLUENT PH	DISCHARGE FLOW (GAL)	DISCHARGE FLOW (GPM)	DISCHARGE TURBIDITY (NTU)	DISCHARGE PH	RECIRC FLOW (GAL)	RECIRC TURBIDITY (NTU)	RECIRC PH
	1:47	0	6.8	1874	162	15.7	7.81	1,760	144	3.9	7.85	20	4	7.77
	2:02	0	6.4	1394	0	16.3	7.88	1,291	143	3.9	7.91	34	3.9	7.9
	3:47	0	7.1	1184	142	16.2	7.8	1,106	143	4	7.82	0	4	7.75
	4:02	0	6.4	2143	0	16.4	7.87	2,028	142	3.9	7.91	6	4	7.93
	5:47	0	7.4	0	149	15.5	7.84	0	0	0	0	7	4.2	7.77
	6:02	0	6.7	2242	154	16.6	7.84	2,130	142	4.2	7.88	0	4.2	7.79
	6:17	0	6.4	921	0	16.6	7.89	871	140	4.2	7.92	0	4.2	7.93
	7:02	0	6.8	424	0	16.4	7.85	354	142	3.2	7.82	55	4.1	7.83
	7:17	0	6.4	1234	0	16.6	7.88	1,123	140	2.8	7.88	38	2.8	7.86
	9:02	0	7.3	357	146	15.5	7.78	285	142	0.8	7.77	53	20.6	7.73
	9:17	0	6.6	2241	136	7.7	7.83	2,080	139	0.5	7.88	0	0	0
	9:32	0	6.5	735	0	7.7	7.88	688	138	0.5	7.91	0	0.5	7.91
	11:17	0	6.9	1649	149	7.3	7.69	1,549	141	0.5	7.74	33	0.5	7.65
	11:32	0	6.5	1557	0	7.8	7.75	1,490	138	0.5	7.8	0	0.5	7.8
	13:32	0	6.8	1955	142	7.3	7.64	1,814	139	0.5	7.72	19	0.5	7.61
	13:47	0	6.5	1288	0	7.4	7.71	1,214	136	0.5	7.77	0	0.5	7.77
	15:47	0	7.2	711	149	7.1	7.63	655	137	0.7	7.71	19	0.6	7.61
	16:02	0	6.5	2143	151	7.4	7.71	2,021	136	0.5	7.78	0	0	0
	16:17	0	6.5	395	0	7.3	7.76	370	135	0.5	7.81	0	0.5	7.8
	18:17	0	7	1367	150	7.2	7.72	1,298	136	0.6	7.76	0	0.6	7.64
	18:32	0	6.4	1812	0	7.3	7.8	1,720	135	0.5	7.83	0	0.5	7.85
	20:32	0	7	1250	147	7.2	7.76	1,142	134	0.6	7.78	35	0.5	7.66
	20:47	0	6.4	1884	0	7.3	7.84	1,776	134	0.5	7.85	35	0.5	7.87
	22:47	0	7	1171	142	7.2	7.82	1,102	134	0.6	7.8	0	0.5	7.71
	23:02	0	6.4	2077	0	7.3	7.89	1,963	131	0.4	7.88	0	0	0
AVERAGES/TOTALS			6.70	34,991	148	11.1	7.80	32,776	139	1.7	7.83	354	2.9	7.78
	MAXIMUM		7.40	2,242	162	16.6	7.89	2,130	145	4.2	7.92	55	20.6	7.93
	MINIMUM		6.40	357	136	7.1	7.63	285	131	0.4	7.71	6	0.5	7.61

Date	TIME	PRETREAT FLOW (GPM)	PRETREAT PH	INFLUENT FLOW (GAL)	INFLUENT FLOW (GPM)	INFLUENT TURBIDITY (NTU)	INFLUENT PH	DISCHARGE FLOW (GAL)	DISCHARGE FLOW (GPM)	DISCHARGE TURBIDITY (NTU)	DISCHARGE PH	RECIRC FLOW (GAL)	RECIRC TURBIDITY (NTU)	RECIRC PH
9/6/2018														
	1:02	0	7.3	210	145	6.6	7.81	197	135	0.9	7.75	21	0.5	7.72
	1:17	0	6.6	2058	143	7.3	7.87	1,982	132	0.4	7.86	0	0	0
	1:32	0	6.5	816	0	7.3	7.93	787	131	0.4	7.9	6	0.4	7.9
	3:32	0	6.8	1942	129	7.2	7.87	1,869	131	0.5	7.87	0	0.5	7.75
	3:47	0	6.4	1271	0	7.2	7.94	1,228	129	0.4	7.93	9	0.4	7.96
	5:47	0	6.8	1846	135	7.2	7.87	1,771	129	0.5	7.88	16	0.4	7.78
	6:02	0	6.4	1253	0	7.3	7.94	1,187	128	0.4	7.94	0	0.4	7.93
	8:02	0	6.8	1668	129	6.9	7.88	1,544	129	0.5	7.89	27	0.4	7.77
	8:17	0	6.4	1462	0	7.3	7.94	1,410	127	0.4	7.95	0	0.4	7.97
	10:17	0	7	1310	137	6.3	7.77	1,243	128	0.5	7.78	3	0.4	7.68
	10:32	0	6.5	1798	0	6.3	7.83	1,721	125	0.4	7.85	0	0.4	7.86
	12:32	0	7	1313	123	6.3	7.69	1,258	126	0.5	7.72	16	0.4	7.62
	12:47	0	6.5	1807	0	6.4	7.74	1,690	123	0.4	7.77	31	0.4	7.79
	14:17	0	6.8	1846	132	6.3	7.69	1,759	124	0.5	7.74	17	0.4	7.62
	14:32	0	6.4	1330	0	6.4	7.74	1,273	122	0.4	7.79	0	0.4	7.77
	16:17	0	7.3	465	128	6.2	7.69	440	126	0.7	7.73	17	0.4	7.63
	16:32	0	6.6	1926	126	7.3	7.75	1,832	122	0.4	7.8	0	0	0
	16:47	0	6.5	834	0	7.6	7.79	786	121	0.4	7.83	10	0.4	7.85
	18:32	0	7.4	62	121	6.1	7.67	32	122	0.5	7.67	29	0.5	7.64
	18:47	0	6.8	1888	119	8	7.79	1,812	121	0.5	7.81	0	0	0
	19:02	0	6.5	1245	0	8.9	7.84	1,218	119	0.4	7.86	0	0.4	7.88
	21:02	0	6.9	1569	124	11.2	7.83	1,518	120	0.5	7.82	15	0.5	7.69
	21:17	0	6.4	1499	0	12.8	7.89	1,469	117	0.4	7.89	10	0.4	7.92
	23:17	0	6.9	1514	123	17.2	7.86	1,466	118	0.5	7.84	0	0.4	7.7
	23:32	0	6.4	1563	0	17.4	7.92	1,525	116	0.4	7.9	0	0.4	7.92

Date	TIME	PRETREAT FLOW (GPM)	PRETREAT PH	INFLUENT FLOW (GAL)	INFLUENT FLOW (GPM)	INFLUENT TURBIDITY (NTU)	INFLUENT PH	DISCHARGE FLOW (GAL)	DISCHARGE FLOW (GPM)	DISCHARGE TURBIDITY (NTU)	DISCHARGE PH	RECIRC FLOW (GAL)	RECIRC TURBIDITY (NTU)	RECIRC PH
AVERAGES/TOTALS			6.72	34,495	130	8.2	7.82	33,017	125	0.5	7.83	227	0.4	7.79
MAXIMUM			7.40	2,058	145	17.4	7.94	1,982	135	0.9	7.95	31	0.5	7.97
MINIMUM			6.40	62	119	6.1	7.67	32	116	0.4	7.67	3	0.4	7.62
9/7/2018														
	1:32	0	7.1	824	116	19.6	7.88	819	117	0.6	7.84	0	0.4	7.76
	1:47	0	6.5	1726	108	20.6	7.91	1,707	114	0.4	7.91	0	0	0
	2:02	0	6.5	469	0	20.6	7.95	479	112	0.4	7.92	0	0.4	7.93
	3:47	0	7.3	349	119	20.9	7.9	345	115	0.8	7.81	14	0.4	7.77
	4:02	0	6.7	1696	113	23.1	7.91	1,677	112	0.4	7.91	0	0	0
	4:17	0	6.5	904	0	23.1	7.95	915	111	0.4	7.94	0	0.4	7.92
	6:17	0	6.9	1578	102	25.1	7.9	1,584	111	0.4	7.89	9	0.4	7.8
	6:32	0	6.4	1382	0	25.7	7.95	1,418	108	0.3	7.94	0	0.3	7.98
	9:02	0	6.8	595	108	24.8	7.85	610	110	0.6	7.8	14	0.4	7.72
	9:17	0	6.4	1344	0	25.6	7.85	1,352	106	0.3	7.88	0	0.3	7.93
	14:17	0	7.1	884	103	24.1	7.75	897	108	0.6	7.76	0	0.4	7.62
	14:32	0	6.6	1536	92	25.7	7.74	1,554	104	0.3	7.79	0	0	0
	14:47	0	6.5	592	0	25.7	7.77	606	102	0.3	7.79	5	0.3	7.79
	16:47	0	7	1049	102	24.9	7.76	1,089	106	0.4	7.76	14	0.4	7.61
	17:02	0	6.5	1444	94	25.5	7.8	1,502	100	0.3	7.82	0	0	0
	17:17	0	6.5	349	0	25.4	7.84	362	99	0.3	7.84	0	0.3	7.85
	20:32	0	7.3	286	94	22.1	7.88	288	105	1	7.75	0	0.4	7.7
	20:47	0	6.8	1409	87	24.3	7.86	1,493	99	0.3	7.86	0	0	0
	21:02	0	6.5	1134	0	24.3	7.9	1,225	96	0.3	7.89	0	0.3	7.89
AVERAGES/TOTALS			6.73	19,550	103	23.7	7.86	19,922	107	0.4	7.85	56	0.4	7.81
MAXIMUM			7.30	1,726	119	25.7	7.95	1,707	117	1.0	7.94	14	0.4	7.98
MINIMUM			6.40	286	87	19.6	7.74	288	96	0.3	7.75	5	0.3	7.61
9/8/2018														
	1:02	0	7.3	270	101	21.7	7.93	278	102	1	7.78	10	0.4	7.73

Date	TIME	PRETREAT FLOW (GPM)	PRETREAT PH	INFLUENT FLOW (GAL)	INFLUENT FLOW (GPM)	INFLUENT TURBIDITY (NTU)	INFLUENT PH	DISCHARGE FLOW (GAL)	DISCHARGE FLOW (GPM)	DISCHARGE TURBIDITY (NTU)	DISCHARGE PH	RECIRC FLOW (GAL)	RECIRC TURBIDITY (NTU)	RECIRC PH
	1:17	0	6.8	1345	83	23.9	7.88	1,444	96	0.3	7.91	0	0	0
	1:32	0	6.4	1172	0	23.9	7.92	1,299	91	0.3	7.93	0	0.3	7.92
	6:02	0	7	1020	83	22.7	7.89	1,119	95	0.5	7.88	16	0.4	7.72
	6:17	0	6.6	1175	76	23.7	7.88	1,326	88	0.3	7.93	0	0	0
	6:32	0	6.4	433	0	23.9	7.91	493	86	0.3	7.94	0	0.3	7.95
	10:47	0	7.2	1410	148	39.4	7.89	416	79	1.9	7.79	82	16.6	7.83
	11:02	0	6.5	2337	0	23.6	7.84	2,195	150	1.2	7.93	78	27.8	7.91
	11:17	0	6.4	188	0	23.9	7.84	150	151	0.8	7.95	38	0.9	7.93
	16:02	0	7	1351	156	22.4	7.87	1,269	149	0.9	7.81	39	1	7.66
	16:17	0	6.4	1887	0	23.9	7.8	1,811	149	0.7	7.87	0	0.7	7.89
	21:32	0	7.4	220	156	19.1	7.92	194	152	1.3	7.75	21	0.9	7.73
	21:47	0	6.6	2291	149	24.8	7.88	2,227	149	0.7	7.89	0	0	0
	22:02	0	6.5	793	0	25.6	7.83	776	149	0.7	7.93	0	0.7	7.92
AVERAGES/TOTALS			6.75	15,892	119	24.5	7.88	14,997	120	0.8	7.88	284	4.5	7.84
MAXIMUM			7.40	2,337	156	39.4	7.93	2,227	152	1.9	7.95	82	27.8	7.95
MINIMUM			6.40	188	76	19.1	7.80	150	79	0.3	7.75	10	0.3	7.66
9/9/2018														
	3:32	0	7	1318	155	25.3	7.91	1,267	145	0.8	7.9	0	0.8	7.73
	3:47	0	6.4	1957	0	26.7	7.84	1,877	148	0.7	7.98	34	0.7	7.99
	9:17	0	6.9	1463	151	26	7.9	1,367	143	0.8	7.89	0	0.8	7.75
	9:32	0	6.4	1828	0	26.9	7.84	1,724	144	0.7	7.97	16	0.7	8.01
	16:02	0	7.3	549	153	26.6	7.84	506	144	1.3	7.76	10	1.1	7.64
	16:17	0	6.5	2221	163	28.5	7.77	2,133	142	1	7.85	0	0	0
	16:32	0	6.5	521	0	28.5	7.73	500	143	1	7.9	4	1	7.9
	20:02	0	7	1208	151	27.7	7.84	1,160	142	1.1	7.84	0	1.1	7.75
	20:17	0	6.4	2081	0	28.8	7.82	2,008	140	1	7.94	0	1	7.96

Date	TIME	PRETREAT FLOW (GPM)	PRETREAT PH	INFLUENT FLOW (GAL)	INFLUENT FLOW (GPM)	INFLUENT TURBIDITY (NTU)	INFLUENT PH	DISCHARGE FLOW (GAL)	DISCHARGE FLOW (GPM)	DISCHARGE TURBIDITY (NTU)	DISCHARGE PH	RECIRC FLOW (GAL)	RECIRC TURBIDITY (NTU)	RECIRC PH
AVERAGES/TOTALS			6.71	13,146	155	27.2	7.83	12,542	143	0.9	7.89	64	0.9	7.84
MAXIMUM			7.30	2,221	163	28.8	7.91	2,133	148	1.3	7.98	34	1.1	8.01
MINIMUM			6.40	521	151	25.3	7.73	500	140	0.7	7.76	4	0.7	7.64
9/10/2018														
	0:17	0	6.9	1960	144	28.4	7.89	1,835	138	1.2	7.94	16	1.2	7.8
	0:32	0	6.5	1487	0	29.3	7.9	1,423	139	1.1	8.02	5	1.1	8.03
	4:17	0	7.4	267	146	27.4	7.94	248	139	1.7	7.83	18	1.3	7.82
	4:32	0	6.7	2172	140	29.2	7.9	2,075	138	1.2	7.98	0	0	0
	4:47	0	6.4	998	0	29.5	7.92	947	137	1.2	8.03	0	1.2	8.05
	8:17	0	7.1	1047	144	30.5	7.92	954	137	1.5	7.91	34	1.4	7.8
	8:32	0	6.4	2121	0	31.3	7.91	2,010	135	1.3	8.02	0	0	0
	8:47	0	6.5	69	0	31.6	7.94	69	135	1.3	8.04	0	1.3	8.05
	11:47	0	7.3	1617	157	28.6	7.88	56	102	2.2	7.78	516	20.1	7.85
	12:02	0	6.8	2330	155	12.3	7.87	2,020	149	0.7	7.96	209	19.6	7.86
	16:02	0	6.8	1869	156	6	7.82	1,824	149	0.5	7.87	0	0.7	7.71
	16:17	0	6.4	1341	0	5.7	7.84	1,276	147	0.4	7.97	4	0.4	7.98
	19:47	0	7.2	679	151	5.4	7.9	673	149	0.6	7.86	0	0.5	7.78
	20:02	0	6.5	2268	156	5.7	7.91	2,210	147	0.4	7.99	0	0	0
	20:17	0	6.5	335	0	5.7	7.97	336	147	0.4	8.04	0	0.4	8.04
	23:32	0	7.3	442	144	5	7.95	403	148	0.7	7.87	16	0.4	7.82
	23:47	0	6.5	2262	154	5.2	7.96	2,213	146	0.4	8.03	0	0	0
AVERAGES/TOTALS			6.78	23,264	150	18.6	7.91	20,572	140	1.0	7.95	818	3.8	7.89
MAXIMUM			7.40	2,330	157	31.6	7.97	2,213	149	2.2	8.04	516	20.1	8.05
MINIMUM			6.40	69	140	5.0	7.82	56	102	0.4	7.78	4	0.4	7.71
9/11/2018														
	0:02	0	6.5	569	0	5.2	8.02	515	146	0.4	8.08	38	0.4	8.08
	3:32	0	6.9	1697	148	5	7.95	1,673	149	0.5	7.99	5	0.4	7.84
	3:47	0	6.5	1526	0	5.2	8	1,497	146	0.4	8.09	6	0.4	8.1

Date	TIME	PRETREAT FLOW (GPM)	PRETREAT PH	INFLUENT FLOW (GAL)	INFLUENT FLOW (GPM)	INFLUENT TURBIDITY (NTU)	INFLUENT PH	DISCHARGE FLOW (GAL)	DISCHARGE FLOW (GPM)	DISCHARGE TURBIDITY (NTU)	DISCHARGE PH	RECIRC FLOW (GAL)	RECIRC TURBIDITY (NTU)	RECIRC PH
	7:32	0	6.9	1623	142	4.7	7.96	1,596	148	0.5	7.99	19	0.4	7.85
	7:47	0	6.4	1635	0	4.8	7.99	1,617	148	0.4	8.09	5	0.4	8.08
	11:17	0	7.2	662	156	4.6	7.92	633	148	0.6	7.88	18	0.4	7.79
	11:32	0	6.5	2225	150	4.8	7.92	2,196	146	0.4	8.02	0	0	0
	11:47	0	6.5	337	0	4.8	7.97	333	147	0.4	8.06	0	0.4	8.06
	12:17	0	6.4	1385	0	4.7	7.96	1,325	144	0.4	7.96	19	0.4	7.88
	17:02	0	6.7	2184	148	4.6	7.89	2,121	143	0.5	7.93	19	0.6	7.74
	17:17	0	6.5	1047	0	4.8	7.94	1,029	141	0.4	8.05	4	0.4	8.06
	21:02	0	7.1	955	149	4.8	7.97	894	143	0.6	7.96	36	0.5	7.86
	21:17	0	6.4	2190	0	4.8	8	2,127	141	0.4	8.09	0	0	0
	21:32	0	6.5	140	0	4.7	8.06	141	141	0.4	8.14	0	0.4	8.11
AVERAGES/TOTALS			6.64	18,175	149	4.8	7.97	17,697	145	0.5	8.02	169	0.4	7.95
MAXIMUM			7.20	2,225	156	5.2	8.06	2,196	149	0.6	8.14	38	0.6	8.11
MINIMUM			6.40	140	142	4.6	7.89	141	141	0.4	7.88	4	0.4	7.74
9/12/2018														
	1:02	0	7.1	871	147	4.8	7.98	844	142	0.6	7.98	16	0.5	7.84
	1:17	0	6.5	2152	0	4.7	8.02	2,120	140	0.4	8.13	0	0	0
	1:32	0	6.5	215	0	4.7	8.08	207	139	0.4	8.19	0	0.4	8.18
	5:02	0	7.1	975	133	4.7	7.99	952	140	0.6	8.03	0	0.5	7.88
	5:17	0	6.4	2127	0	4.8	8.02	2,076	138	0.4	8.15	0	0	0
	5:32	0	6.5	105	0	5.1	8.08	102	138	0.4	8.17	5	0.4	8.19
	9:02	0	7.3	195	259	4.9	7.99	176	140	1	7.9	15	0.5	7.86
	9:17	0	6.6	3024	164	6.7	8	1,253	150	1.1	8.13	664	13.6	8.06
	9:32	0	7	629	0	5.2	8.05	604	151	0.8	8.16	0	0.8	8.16
	11:47	0	6.8	2136	144	7.6	7.97	2,037	152	0.8	8.04	0	0.8	7.85
	12:02	0	6.5	1253	0	5.9	8.04	1,224	153	0.7	8.14	0	0.7	8.14
	15:32	0	7.2	1177	148	9.5	7.9	1,100	148	1	7.94	21	0.9	7.75
	15:47	0	6.5	2312	0	7.3	7.97	2,270	151	0.8	8.1	0	0	0

Date	TIME	PRETREAT FLOW (GPM)	PRETREAT PH	INFLUENT FLOW (GAL)	INFLUENT FLOW (GPM)	INFLUENT TURBIDITY (NTU)	INFLUENT PH	DISCHARGE FLOW (GAL)	DISCHARGE FLOW (GPM)	DISCHARGE TURBIDITY (NTU)	DISCHARGE PH	RECIRC FLOW (GAL)	RECIRC TURBIDITY (NTU)	RECIRC PH
	16:02	0	6.5	209	0	7.4	8.03	188	152	0.8	8.14	28	0.8	8.15
	19:17	0	7.4	603	162	8.1	7.98	562	151	1.2	7.96	21	1	7.87
	19:32	0	6.6	2274	150	8.6	8.03	2,263	152	0.9	8.14	0	0	0
	19:47	0	6.5	870	0	8.1	8.12	873	151	0.9	8.21	0	0.9	8.21
	23:17	0	7.4	503	158	11.5	8.04	459	152	1.4	7.98	36	1.1	7.91
	23:32	0	6.7	2276	146	8.1	8.09	2,278	151	1	8.19	0	0	0
	23:47	0	6.5	903	0	8.5	8.17	902	150	1	8.27	0	1	8.28
AVERAGES/TOTALS			6.78	24,809	161	6.8	8.03	22,490	147	0.8	8.10	806	1.6	8.02
	MAXIMUM		7.40	3,024	259	11.5	8.17	2,278	153	1.4	8.27	664	13.6	8.28
	MINIMUM		6.40	105	133	4.7	7.90	102	138	0.4	7.90	5	0.4	7.75
9/13/2018														
	3:47	0	7	1914	154	8.8	8.08	1,889	151	1.2	8.14	19	1.1	7.95
	4:02	0	6.5	1911	0	9	8.17	1,895	151	1.1	8.26	37	1.1	8.28
	8:02	0	7.6	150	142	10.6	8.08	143	144	1.7	7.98	0	1.3	7.95
	8:17	0	6.8	2255	148	10.2	8.11	2,252	151	1.3	8.18	0	0	0
	8:32	0	6.5	1333	0	10.5	8.19	1,338	149	1.3	8.28	0	1.3	8.29
	12:47	0	7.4	592	139	8.1	8	552	149	0.8	7.98	19	12.1	7.89
	13:02	0	6.7	2238	151	4.8	8.04	2,219	148	0.5	8.14	0	0	0
	13:17	0	6.5	886	0	4.9	8.12	868	144	0.5	8.22	6	0.4	8.24
	17:32	0	7.4	757	148	4.7	7.99	680	145	0.8	8	36	0.7	7.88
	17:47	0	6.6	2213	149	4.9	8.03	2,145	143	0.6	8.16	0	0	0
	18:02	0	6.5	871	0	4.8	8.11	844	141	0.6	8.24	0	0.6	8.25
	22:32	0	7.4	622	151	4.7	8.07	580	144	0.9	8.06	18	0.6	7.98
	22:47	0	6.7	2224	145	4.8	8.09	2,160	144	0.6	8.24	0	0	0
	23:02	0	6.5	973	0	4.8	8.17	992	145	0.6	8.31	4	0.6	8.31
AVERAGES/TOTALS			6.86	18,939	147	6.8	8.09	18,557	146	0.9	8.16	139	2.0	8.10
	MAXIMUM		7.60	2,255	154	10.6	8.19	2,252	151	1.7	8.31	37	12.1	8.31
	MINIMUM		6.50	150	139	4.7	7.99	143	141	0.5	7.98	4	0.4	7.88

Date	TIME	PRETREAT FLOW (GPM)	PRETREAT PH	INFLUENT FLOW (GAL)	INFLUENT FLOW (GPM)	INFLUENT TURBIDITY (NTU)	INFLUENT PH	DISCHARGE FLOW (GAL)	DISCHARGE FLOW (GPM)	DISCHARGE TURBIDITY (NTU)	DISCHARGE PH	RECIRC FLOW (GAL)	RECIRC TURBIDITY (NTU)	RECIRC PH
9/14/2018														
	3:17	0	7.4	534	149	4.7	8.1	500	144	1.1	8.08	14	0.7	8
	3:32	0	6.7	2195	148	4.7	8.1	2,165	144	0.7	8.26	0	0	0
	3:47	0	6.5	1047	0	4.7	8.17	1,046	144	0.7	8.32	0	0.7	8.32
	8:17	0	7.2	1518	152	3.8	8.1	1,485	141	0.9	8.18	18	0.8	7.99
	8:32	0	6.5	2162	0	4.4	8.13	2,161	144	0.8	8.29	0	0	0
	8:47	0	6.5	215	0	4.7	8.17	217	142	0.8	8.31	0	0.8	8.31
	13:32	0	7	1963	143	3.7	7.99	1,895	140	1	8.11	17	0.9	7.91
	13:47	0	6.4	1845	0	3.8	8.04	1,844	140	0.9	8.19	0	0.9	8.22
	18:47	0	7.5	322	130	3.9	7.99	281	139	2	7.99	25	1.5	7.93
	19:02	0	6.8	2117	142	3.8	8.01	2,045	136	1.4	8.14	0	0	0
	19:17	0	6.5	1298	0	3.8	8.07	1,285	139	1.3	8.22	0	1.3	8.22
	23:47	0	7.6	144	154	4.2	8.04	105	140	1.8	7.99	32	1.4	7.96
AVERAGES/TOTALS			6.88	15,360	145	4.2	8.08	15,029	141	1.1	8.17	106	1.0	8.10
MAXIMUM			7.60	2,195	154	4.7	8.17	2,165	144	2.0	8.32	32	1.5	8.32
MINIMUM			6.40	144	130	3.7	7.99	105	136	0.7	7.99	14	0.7	7.91
9/15/2018														
	0:02	0	6.8	2143	141	3.7	8.05	2,117	141	1.4	8.2	0	0	0
	0:17	0	6.5	1470	0	3.7	8.13	1,447	139	1.3	8.27	4	1.3	8.29
	5:02	0	7.3	934	134	3.6	8.07	897	137	1.5	8.13	18	1.3	8
	5:17	0	6.6	2071	138	3.7	8.1	2,064	137	1.3	8.25	0	0	0
	5:32	0	6.5	692	0	3.6	8.17	684	136	1.3	8.27	0	1.3	8.26
	10:02	0	7.4	563	269	11.7	8.02	168	110	2.9	8.02	99	15.4	8.03
	10:17	0	6.9	2756	139	4.4	8.04	1,832	135	2.6	8.18	185	32.2	8.16
	10:32	0	6.4	1570	0	3.7	8.11	1,557	148	1.7	8.22	0	1.7	8.22
	15:02	0	7.3	710	147	4.6	7.96	673	150	2.4	8.01	18	2.1	7.89
	15:17	0	6.5	2255	147	3.9	7.99	2,205	148	2.1	8.14	0	0	0
	15:32	0	6.5	413	0	4.1	8.03	409	147	2.1	8.18	0	2.1	8.19

Date	TIME	PRETREAT FLOW (GPM)	PRETREAT PH	INFLUENT FLOW (GAL)	INFLUENT FLOW (GPM)	INFLUENT TURBIDITY (NTU)	INFLUENT PH	DISCHARGE FLOW (GAL)	DISCHARGE FLOW (GPM)	DISCHARGE TURBIDITY (NTU)	DISCHARGE PH	RECIRC FLOW (GAL)	RECIRC TURBIDITY (NTU)	RECIRC PH
	19:47	0	7.2	1121	151	5.3	8.01	1,119	149	2.7	8.11	0	2.6	7.99
	20:02	0	6.4	2256	0	5.1	8.04	2,215	147	2.6	8.22	0	0	0
	20:17	0	6.5	182	0	5.1	8.08	181	146	2.6	8.25	0	2.6	8.26
	AVERAGES/TOTALS		6.77	19,136	158	4.7	8.06	17,568	141	2.0	8.18	324	6.3	8.13
	MAXIMUM		7.40	2,756	269	11.7	8.17	2,215	150	2.9	8.27	185	32.2	8.29
	MINIMUM		6.40	182	134	3.6	7.96	168	110	1.3	8.01	4	1.3	7.89
9/16/2018														
	0:32	0	7.4	453	146	5.9	8.01	400	149	2.8	8.03	32	2.5	7.96
	0:47	0	6.6	2234	150	5.6	8.03	2,205	147	2.5	8.21	0	0	0
	1:02	0	6.5	748	0	5.5	8.09	736	148	2.5	8.26	0	2.5	8.24
	5:32	0	6.9	1823	146	5.7	8.01	1,783	148	3	8.12	19	2.9	7.98
	5:47	0	6.5	1616	0	6	8.07	1,613	151	3	8.22	17	3	8.22
	10:17	0	7.4	460	137	7.4	8.01	402	148	3.8	8.02	31	3.5	7.95
	10:32	0	6.6	2234	141	7.3	8.02	2,224	148	3.6	8.17	0	0	0
	10:47	0	6.4	772	0	7.3	8.08	761	145	3.6	8.22	7	3.6	8.21
	15:02	0	7.3	609	152	7.5	7.91	592	148	5.2	7.99	19	5	7.91
	15:17	0	6.5	2228	153	7.4	7.94	2,241	150	5	8.1	0	0	0
	15:32	0	6.4	746	0	7.7	8	748	150	5	8.16	7	5	8.15
	19:02	527	6.8	425	267	12.2	7.91	0	0	0	0	165	20.8	7.97
	19:17	0	7.2	1319	0	9.4	7.96	0	149	7.1	8.14	556	12.7	8.1
	20:47	0	7.5	319	145	17.3	7.95	311	155	1.8	8.04	20	2.6	8.02
	21:02	0	6.7	2225	142	9	8.03	2,308	154	0.9	8.18	0	0	0
	21:17	0	6.5	1137	0	9	8.13	1,174	153	0.8	8.25	0	0.8	8.26
	AVERAGES/TOTALS	527	6.83	19,348	158	8.1	8.01	17,498	150	3.4	8.14	873	5.4	8.08
	MAXIMUM	527	7.50	2,234	267	17.3	8.13	2,308	155	7.1	8.26	556	20.8	8.26
	MINIMUM	527	6.40	319	137	5.5	7.91	311	145	0.8	7.99	7	0.8	7.91
9/17/2018														
	1:47	0	7.1	1437	153	9.4	8.02	1,424	150	1	8.14	23	0.8	8

Date	TIME	PRETREAT FLOW (GPM)	PRETREAT PH	INFLUENT FLOW (GAL)	INFLUENT FLOW (GPM)	INFLUENT TURBIDITY (NTU)	INFLUENT PH	DISCHARGE FLOW (GAL)	DISCHARGE FLOW (GPM)	DISCHARGE TURBIDITY (NTU)	DISCHARGE PH	RECIRC FLOW (GAL)	RECIRC TURBIDITY (NTU)	RECIRC PH
	2:02	0	6.4	2019	0	9.1	8.08	2,056	149	0.9	8.26	4	0.9	8.28
	6:32	0	7	1528	149	11.2	8.01	1,519	148	0.9	8.14	19	0.9	8
	6:47	0	6.4	1987	0	10.5	8.09	1,947	147	0.9	8.25	37	0.9	8.26
	10:02	0	7.4	1714	152	13.1	7.98	0	154	3.6	8.08	701	6.2	8.09
	10:17	0	6.6	2193	146	11.7	8.04	2,192	149	1.3	8.2	37	14.5	8.15
	10:32	0	6.5	697	0	11.7	8.11	707	148	1.2	8.23	0	1.1	8.23
	16:02	0	7.5	209	146	16.2	7.79	185	149	1.6	7.91	22	1.4	7.86
	16:17	0	6.7	2208	142	14.2	7.89	2,221	148	1.3	8.03	0	0	0
	16:32	0	6.4	1175	0	14.2	7.94	1,186	147	1.3	8.11	0	1.3	8.12
	21:02	0	6.9	1514	144	15.7	7.94	1,524	148	1.5	8.11	0	1.4	8.03
	21:17	0	6.5	1635	0	15.6	8.02	1,657	149	1.4	8.21	0	1.4	8.23
AVERAGES/TOTALS			6.78	18,316	147	12.7	7.99	16,618	149	1.4	8.14	843	2.8	8.11
MAXIMUM			7.50	2,208	153	16.2	8.11	2,221	154	3.6	8.26	701	14.5	8.28
MINIMUM			6.40	209	142	9.1	7.79	185	147	0.9	7.91	4	0.8	7.86
9/18/2018														
	1:32	0	7.1	1183	148	16.5	7.98	1,167	148	1.7	8.14	20	1.6	8.03
	1:47	0	6.4	2098	0	16.6	8.09	2,084	147	1.6	8.26	6	1.6	8.29
	6:17	0	6.7	2213	152	17.8	8.03	2,227	151	1.9	8.2	36	1.8	8.03
	6:32	0	6.5	1060	0	17.7	8.14	1,110	152	1.9	8.3	3	1.9	8.32
	10:17	527	7.2	210	275	14.5	7.91	0	0	0	0	176	1.4	8.03
	10:32	0	7.2	2902	142	3.2	8.01	820	148	0.7	8.23	1095	3.4	8.17
	10:47	0	6.4	2196	0	2.6	8.12	2,219	148	0.7	8.26	0	0	0
	11:02	0	6.5	108	0	2.6	8.16	114	146	0.7	8.27	0	0.7	8.26
	15:02	0	7.4	239	143	4.7	7.71	221	149	0.8	7.89	8	0.7	7.82
	15:17	0	6.6	2208	148	2.9	7.85	2,232	148	0.6	8.03	0	0	0
	15:32	0	6.5	730	0	2.9	7.92	736	149	0.5	8.12	0	0.5	8.13
	20:02	0	7.2	927	149	3.4	7.91	899	150	0.6	8.05	23	0.6	7.96
	20:17	0	6.4	2200	0	3.1	8	2,229	150	0.6	8.19	0	0	0

Date	TIME	PRETREAT FLOW (GPM)	PRETREAT PH	INFLUENT FLOW (GAL)	INFLUENT FLOW (GPM)	INFLUENT TURBIDITY (NTU)	INFLUENT PH	DISCHARGE FLOW (GAL)	DISCHARGE FLOW (GPM)	DISCHARGE TURBIDITY (NTU)	DISCHARGE PH	RECIRC FLOW (GAL)	RECIRC TURBIDITY (NTU)	RECIRC PH
	20:32	0	6.5	182	0	3.1	8.06	190	146	0.6	8.24	0	0.6	8.25
AVERAGES/TOTALS		527	6.76	18,456	165	8.0	7.99	16,248	149	1.0	8.17	1,367	1.3	8.12
MAXIMUM		527	7.40	2,902	275	17.8	8.16	2,232	152	1.9	8.30	1,095	3.4	8.32
MINIMUM		527	6.40	108	142	2.6	7.71	114	146	0.5	7.89	3	0.5	7.82
9/19/2018														
	0:47	0	7.2	731	148	3.2	7.95	697	149	0.6	8.08	37	0.5	7.98
	1:02	0	6.5	2185	77	3.1	8.05	2,211	148	0.6	8.23	0	0	0
	1:17	0	6.5	273	0	3	8.13	263	147	0.6	8.28	30	0.6	8.28
	5:17	0	7.3	368	142	3.3	7.98	373	150	0.6	8.08	0	0.6	8.04
	5:32	0	6.6	2202	152	3	8.08	2,203	147	0.6	8.24	0	0	0
	5:47	0	6.5	614	0	3	8.17	620	146	0.6	8.3	0	0.6	8.29
	9:47	0	7.4	182	155	3.6	7.9	151	150	0.7	8.03	36	0.6	8
	10:02	0	6.6	2197	151	3.1	7.99	2,209	147	0.6	8.17	0	0	0
	10:17	0	6.5	808	0	3	8.07	803	147	0.6	8.24	0	0.6	8.24
	11:17	0	6.8	176	266	3.5	7.82	37	151	0.6	7.97	96	0.6	7.98
	11:32	0	6.5	2060	0	4.5	7.95	445	149	1.7	8.16	628	3.6	8.09
	15:32	0	7.4	114	151	10.8	7.66	110	152	1.1	7.87	0	1.1	7.84
	15:47	0	6.6	2220	146	3.4	7.86	2,238	149	0.9	8.04	0	0	0
	16:02	0	6.5	815	0	3.4	7.94	815	148	0.8	8.15	0	0.8	8.15
	20:47	0	6.8	1756	137	3.4	7.93	1,792	149	0.8	8.1	0	0.9	7.93
	21:02	0	6.5	1430	0	3.3	8.04	1,439	148	0.8	8.23	7	0.8	8.25
AVERAGES/TOTALS			6.76	18,131	153	3.8	7.97	16,406	149	0.8	8.14	834	0.9	8.09
MAXIMUM			7.40	2,220	266	10.8	8.17	2,238	152	1.7	8.30	628	3.6	8.29
MINIMUM			6.50	114	77	3.0	7.66	37	146	0.6	7.87	7	0.5	7.84
9/20/2018														
	1:17	0	7.1	892	158	3.8	7.93	897	149	0.9	8.1	0	0.9	8.01
	1:32	0	6.4	2211	0	3.5	8.05	2,218	148	0.9	8.23	0	0	0
	1:47	0	6.5	37	0	3.6	8.12	37	150	0.9	8.26	0	0.9	8.28

Date	TIME	PRETREAT FLOW (GPM)	PRETREAT PH	INFLUENT FLOW (GAL)	INFLUENT FLOW (GPM)	INFLUENT TURBIDITY (NTU)	INFLUENT PH	DISCHARGE FLOW (GAL)	DISCHARGE FLOW (GPM)	DISCHARGE TURBIDITY (NTU)	DISCHARGE PH	RECIRC FLOW (GAL)	RECIRC TURBIDITY (NTU)	RECIRC PH
	5:47	0	7.2	704	147	3.8	7.93	713	150	0.9	8.1	0	0.8	7.99
	6:02	0	6.4	2196	0	3.6	8.04	2,207	147	0.9	8.24	0	0	0
	6:17	0	6.5	220	0	3.6	8.12	181	147	0.9	8.29	35	0.9	8.27
	9:47	0	7	2686	147	4.6	7.99	931	149	1.5	8.24	719	3.3	8.12
	10:02	0	6.4	1766	0	3.6	8.12	1,795	149	1.2	8.28	0	1.2	8.29
	14:32	0	6.9	1618	150	4.6	7.89	1,633	149	1.4	8.08	0	1.5	7.91
	14:47	0	6.5	1579	0	4.8	8	1,554	149	1.4	8.21	37	1.4	8.21
	19:17	0	7.2	787	154	4.9	7.88	778	149	2	8.04	18	2	7.92
	19:32	0	6.4	2204	0	5.2	8.01	2,203	148	2	8.2	0	0	0
	19:47	0	6.5	144	0	5.2	8.08	152	147	2	8.26	0	2	8.26
AVERAGES/TOTALS			6.69	17,044	151	4.2	8.01	15,299	149	1.3	8.19	809	1.5	8.13
	MAXIMUM		7.20	2,686	158	5.2	8.12	2,218	150	2.0	8.29	719	3.3	8.29
	MINIMUM		6.40	37	147	3.5	7.88	37	147	0.9	8.04	18	0.8	7.91
9/21/2018														
	0:02	0	6.8	1985	152	5.4	7.97	1,980	148	2.5	8.15	16	2.5	7.96
	0:17	0	6.5	1180	0	5.5	8.1	1,154	147	2.5	8.26	36	2.5	8.27
	4:32	0	6.7	2120	148	5.7	7.99	2,152	148	2.4	8.17	8	2.4	8.02
	4:47	0	6.5	1002	0	6.2	8.11	992	147	2.4	8.26	0	2.5	8.26
	9:02	0	7	1288	154	7.3	7.96	1,257	148	3.3	8.12	36	3.2	8
	9:17	0	6.4	1940	0	7.3	8.1	1,952	147	3.3	8.24	5	3.4	8.26
	13:17	0	7.1	1096	148	5.9	7.83	1,082	144	4.5	8.03	21	4.6	7.92
	13:32	0	6.5	2059	0	6.1	7.97	2,043	144	4.6	8.15	0	4.6	8.19
	18:02	0	6.9	1546	148	7.3	7.87	1,513	144	7.2	8.08	21	7.3	7.93
	18:17	0	6.5	1501	0	7.3	8	1,528	145	7.2	8.21	0	7.2	8.22
	22:17	0	7.3	290	155	7.9	7.85	257	147	8.6	8.01	36	8.4	7.98
	22:32	0	6.6	2164	143	8	8.01	2,157	144	8.5	8.2	0	0	0
	22:47	0	6.4	678	0	8.1	8.11	649	144	8.5	8.28	35	8.5	8.27

Date	TIME	PRETREAT FLOW (GPM)	PRETREAT PH	INFLUENT FLOW (GAL)	INFLUENT FLOW (GPM)	INFLUENT TURBIDITY (NTU)	INFLUENT PH	DISCHARGE FLOW (GAL)	DISCHARGE FLOW (GPM)	DISCHARGE TURBIDITY (NTU)	DISCHARGE PH	RECIRC FLOW (GAL)	RECIRC TURBIDITY (NTU)	RECIRC PH
AVERAGES/TOTALS			6.71	18,849	150	6.8	7.99	18,716	146	5.0	8.17	214	4.8	8.11
MAXIMUM			7.30	2,164	155	8.1	8.11	2,157	148	8.6	8.28	36	8.5	8.27
MINIMUM			6.40	290	143	5.4	7.83	257	144	2.4	8.01	5	2.4	7.92
9/22/2018														
	2:32	0	7.4	19	144	7.4	7.86	0	0	0	0	20	7.6	8.02
	2:47	0	6.7	2168	145	9.6	8.02	2,164	144	7.7	8.2	0	7.6	8.02
	3:02	0	6.4	973	0	11.6	8.16	966	143	7.6	8.29	5	7.6	8.29
	7:02	0	6.9	1513	147	12.7	7.99	1,472	144	5.7	8.15	16	5.7	8
	7:17	0	6.5	1604	0	9.8	8.14	1,574	143	5.7	8.27	12	5.7	8.29
	14:02	0	6.8	463	137	12.3	7.82	429	144	9.2	7.97	35	8.8	7.86
	14:17	0	6.5	1263	0	11.8	7.95	1,247	142	9	8.11	9	9	8.17
	20:47	0	7.5	392	138	13.8	7.93	0	0	0	0	404	12.6	7.97
	21:02	0	7.5	2179	144	13.8	8.07	0	0	0	0	2175	12.4	8.19
	21:17	0	7.5	2150	149	14.1	8.2	0	0	0	0	2171	12.4	8.3
	21:32	0	7.5	2146	140	14.1	8.25	0	0	0	0	2140	12.3	8.34
	21:47	0	7.5	2146	151	14	8.28	0	0	0	0	2128	12.3	8.35
	22:02	0	7.5	2144	146	13.7	8.29	0	0	0	0	2131	12.2	8.36
	22:17	0	7.5	2146	140	13.7	8.3	0	0	0	0	2122	12.1	8.36
	22:32	0	7.4	2130	139	13.6	8.32	0	0	0	0	2121	12	8.36
	22:47	0	7.4	2127	143	13.5	8.32	0	0	0	0	2117	12	8.36
	23:02	0	7.4	2113	140	13.5	8.32	0	0	0	0	2104	11.9	8.36
	23:17	0	7.4	2109	139	13.2	8.32	0	0	0	0	2104	11.9	8.36
	23:32	0	7.9	2111	134	13.1	8.32	0	0	0	0	2099	11.9	8.36
	23:47	0	7.9	2102	134	13.2	8.33	0	0	0	0	2075	11.9	8.35
AVERAGES/TOTALS			7.26	33,998	142	12.6	8.16	7,852	143	7.5	8.17	25,988	10.5	8.23
MAXIMUM			7.90	2,179	151	14.1	8.33	2,164	144	9.2	8.29	2,175	12.6	8.36
MINIMUM			6.40	19	134	7.4	7.82	429	142	5.7	7.97	5	5.7	7.86
9/23/2018														

Date	TIME	PRETREAT FLOW (GPM)	PRETREAT PH	INFLUENT FLOW (GAL)	INFLUENT FLOW (GPM)	INFLUENT TURBIDITY (NTU)	INFLUENT PH	DISCHARGE FLOW (GAL)	DISCHARGE FLOW (GPM)	DISCHARGE TURBIDITY (NTU)	DISCHARGE PH	RECIRC FLOW (GAL)	RECIRC TURBIDITY (NTU)	RECIRC PH
	0:02	0	7.9	2088	130	13.1	8.33	0	0	0	0	2092	11.9	8.35
	0:17	0	7.9	2086	138	13.1	8.32	0	0	0	0	2075	11.9	8.35
	0:32	0	7.9	2067	134	13.1	8.32	0	0	0	0	2083	11.9	8.36
	0:47	0	7.9	2074	133	13.1	8.31	0	0	0	0	2063	11.9	8.36
	1:02	0	7.9	2057	136	13.1	8.33	0	0	0	0	2070	11.9	8.36
	1:17	0	7.8	2056	132	13.1	8.32	0	0	0	0	2032	11.9	8.35
	1:32	0	7.8	2040	136	13.1	8.32	0	0	0	0	2042	11.9	8.35
	1:47	0	7.8	2035	131	13.1	8.32	0	0	0	0	2035	12	8.36
	2:02	0	8	2034	136	13.1	8.31	0	0	0	0	2028	12	8.36
	2:17	0	7.9	2016	125	13.1	8.33	0	0	0	0	2036	12	8.35
	2:32	0	7.9	2026	140	13.1	8.32	0	0	0	0	2039	12	8.35
	2:47	0	8	1999	133	13.1	8.31	0	0	0	0	2021	12	8.35
	3:02	0	7.9	1999	133	13.1	8.31	0	0	0	0	2016	12	8.36
	3:17	0	7.9	1990	137	13.1	8.31	0	0	0	0	2014	12	8.36
	3:32	0	8	1983	125	13.1	8.32	0	0	0	0	1992	12	8.36
	3:47	0	8	1995	126	12.9	8.32	0	0	0	0	2010	12.1	8.35
	4:02	0	8	1983	136	12.8	8.32	0	0	0	0	1994	12.1	8.36
	4:17	0	8	1980	136	12.7	8.32	0	0	0	0	1982	12.1	8.37
	4:32	0	8	1998	138	12.7	8.31	0	0	0	0	1964	12.1	8.37
	4:47	0	8	1990	135	12.8	8.32	0	0	0	0	1966	12.1	8.36
	5:02	0	8	1973	126	12.7	8.32	0	0	0	0	1982	12.1	8.35
	5:17	0	8	1981	129	12.7	8.31	0	0	0	0	1972	12.1	8.36
	5:32	0	8	1970	131	12.7	8.31	0	0	0	0	1959	12.2	8.36
	5:47	0	8	1959	131	12.7	8.31	0	0	0	0	1974	12.1	8.36
	6:02	0	8	1958	129	12.6	8.32	0	0	0	0	1959	12.1	8.36
	6:17	0	8	1965	125	12.7	8.31	0	0	0	0	1948	12.1	8.35
	6:32	126	8	1948	127	12.7	8.31	0	0	0	0	1930	12.1	8.35
	6:47	0	8	1950	123	12.7	8.3	0	0	0	0	1940	12	8.35
	7:02	0	8	1940	126	12.7	8.3	0	0	0	0	1957	12	8.35

Date	TIME	PRETREAT FLOW (GPM)	PRETREAT PH	INFLUENT FLOW (GAL)	INFLUENT FLOW (GPM)	INFLUENT TURBIDITY (NTU)	INFLUENT PH	DISCHARGE FLOW (GAL)	DISCHARGE FLOW (GPM)	DISCHARGE TURBIDITY (NTU)	DISCHARGE PH	RECIRC FLOW (GAL)	RECIRC TURBIDITY (NTU)	RECIRC PH
	7:17	0	8	1945	127	12.7	8.3	0	0	0	0	1955	12	8.35
	7:32	0	8	1940	134	12.7	8.3	0	0	0	0	1929	11.9	8.34
	7:47	0	8	1915	121	12.7	8.29	0	0	0	0	1924	11.9	8.34
	8:02	0	8	1920	130	12.6	8.29	0	0	0	0	1939	11.9	8.35
	8:17	0	7.9	1909	137	12.6	8.29	0	0	0	0	1943	11.8	8.35
	8:32	0	8	1884	126	12.7	8.3	0	0	0	0	1900	11.8	8.34
	8:47	0	8	1889	126	12.7	8.29	0	0	0	0	1924	11.7	8.33
	9:02	0	8	1902	125	12.7	8.29	0	0	0	0	1894	11.7	8.33
	9:17	0	8	1874	130	12.7	8.28	0	0	0	0	1917	11.7	8.34
	9:32	0	8	1884	127	12.7	8.28	0	0	0	0	1905	11.7	8.33
	9:47	0	8	1877	117	12.6	8.28	0	0	0	0	1901	11.7	8.33
	10:02	0	7.9	1889	117	12.7	8.27	0	0	0	0	1890	11.7	8.31
	10:17	0	7.9	1868	122	12.7	8.25	0	0	0	0	1896	11.7	8.31
	10:32	0	8	1878	125	12.7	8.24	0	0	0	0	1903	11.7	8.31
	10:47	0	8	1857	129	12.7	8.22	0	0	0	0	1881	11.7	8.29
	11:02	0	8	1844	125	12.7	8.21	0	0	0	0	1868	11.7	8.28
	11:17	0	8	1854	120	12.8	8.19	0	0	0	0	1877	11.8	8.25
	11:32	0	8	1866	118	12.8	8.18	0	0	0	0	1861	11.8	8.26
	11:47	0	8	1864	122	12.8	8.17	0	0	0	0	1869	11.8	8.26
	12:02	0	7.9	1844	121	12.8	8.16	0	0	0	0	1854	11.9	8.25
	12:17	0	7.9	1840	126	12.8	8.16	0	0	0	0	1864	11.9	8.25
	12:32	0	8	1857	120	12.8	8.15	0	0	0	0	1841	12	8.23
	12:47	0	8	1843	123	12.8	8.15	0	0	0	0	1868	12	8.25
	13:02	0	8	1845	124	12.8	8.14	0	0	0	0	1850	12.1	8.25
	13:17	0	8	1831	127	12.8	8.14	0	0	0	0	1843	12.1	8.25
	13:32	0	8	1857	124	12.8	8.14	0	0	0	0	1824	12.2	8.24
	13:47	0	8	1843	129	12.8	8.14	0	0	0	0	1846	12.3	8.25
	14:02	0	8	1844	120	12.8	8.14	0	0	0	0	1823	12.4	8.26
	14:17	0	8.1	1829	240	13.1	8.14	556	123	1.1	8.25	1302	12.3	8.26

Date	TIME	PRETREAT FLOW (GPM)	PRETREAT PH	INFLUENT FLOW (GAL)	INFLUENT FLOW (GPM)	INFLUENT TURBIDITY (NTU)	INFLUENT PH	DISCHARGE FLOW (GAL)	DISCHARGE FLOW (GPM)	DISCHARGE TURBIDITY (NTU)	DISCHARGE PH	RECIRC FLOW (GAL)	RECIRC TURBIDITY (NTU)	RECIRC PH
	14:32	0	7.9	2856	149	14.1	8.15	1,833	126	1.5	8.26	47	18.4	8.26
	14:47	501	7.6	2185	146	13.1	8.15	2,222	148	0.1	8.27	0	0	0
	15:02	0	6.9	2172	138	13.8	8.16	2,199	147	0.2	8.29	0	0	0
	15:17	0	6.4	1589	0	13.8	8.17	1,621	147	0.2	8.3	0	0.2	8.3
	22:17	0	6.9	1628	157	16.5	7.98	1,607	148	0.6	8.21	19	0.4	8
	22:32	0	6.5	1674	0	16.4	8.06	1,696	148	0.3	8.31	0	0.3	8.3
AVERAGES/TOTALS		314	7.88	124,536	131	13.0	8.25	11,734	141	0.6	8.27	112,332	11.5	8.32
MAXIMUM		501	8.10	2,856	240	16.5	8.33	2,222	148	1.5	8.31	2,092	18.4	8.37
MINIMUM		126	6.40	1,589	117	12.6	7.98	556	123	0.1	8.21	19	0.2	8.00
9/24/2018														
	4:02	0	7.4	244	149	17.6	7.96	220	149	1.3	8.06	21	0.3	8.04
	4:17	0	6.6	2187	146	16.6	8.03	2,198	147	0.3	8.26	0	0	0
	4:32	0	6.5	769	0	16.7	8.13	777	146	0.3	8.33	0	0.3	8.31
	10:02	0	6.7	2152	143	20.4	8.03	2,134	148	0.5	8.21	38	0.3	8.04
	10:17	0	6.5	909	0	20.7	8.13	921	147	0.4	8.29	0	0.4	8.3
	17:02	0	6.7	1961	152	21.6	7.89	1,952	148	0.7	8.07	12	0.7	7.86
	17:17	0	6.5	1151	0	20.6	8	1,133	147	0.6	8.21	18	0.6	8.25
	22:47	0	7.3	432	141	20.3	7.94	445	148	1.1	8.07	0	0.7	8.05
	23:02	0	6.5	2187	149	20.2	8.07	2,221	147	0.7	8.26	0	0	0
	23:17	0	6.4	514	0	20.4	8.2	477	147	0.7	8.33	37	0.7	8.32
AVERAGES/TOTALS			6.71	12,506	147	19.5	8.04	12,478	147	0.7	8.21	126	0.5	8.15
MAXIMUM			7.40	2,187	152	21.6	8.20	2,221	149	1.3	8.33	38	0.7	8.32
MINIMUM			6.40	244	141	16.6	7.89	220	146	0.3	8.06	12	0.3	7.86
9/25/2018														
	4:32	0	6.9	1417	143	20.2	8.05	1,440	148	0.9	8.22	0	0.8	8.11
	4:47	0	6.4	1650	0	20.5	8.21	1,660	147	0.8	8.34	11	0.8	8.37
	10:17	0	7.4	148	148	20.8	7.92	112	149	1.4	8.03	40	1	8.04
	10:32	0	6.7	2277	147	21	8.04	1,940	146	1.9	8.19	269	16.3	8.17

Date	TIME	PRETREAT FLOW (GPM)	PRETREAT PH	INFLUENT FLOW (GAL)	INFLUENT FLOW (GPM)	INFLUENT TURBIDITY (NTU)	INFLUENT PH	DISCHARGE FLOW (GAL)	DISCHARGE FLOW (GPM)	DISCHARGE TURBIDITY (NTU)	DISCHARGE PH	RECIRC FLOW (GAL)	RECIRC TURBIDITY (NTU)	RECIRC PH
	10:47	0	6.7	292	0	20.6	8.16	296	148	1.1	8.26	6	1.1	8.25
	11:02	0	6.7	477	0	2.7	8.1	445	148	1.1	8.19	36	0.9	8.18
	11:17	0	6.4	746	0	16.9	7.61	733	148	1.2	7.63	19	1.4	7.42
	18:32	0	7.2	773	146	3.5	7.83	738	148	1.7	7.61	37	1.5	7.32
	18:47	0	6.5	2179	141	2.6	8.01	2,198	147	1.5	7.73	0	0	0
	19:02	0	6.5	333	0	2.8	8.02	331	146	1.5	7.79	0	1.5	7.79
AVERAGES/TOTALS			6.74	10,292	145	13.2	8.00	9,893	148	1.3	8.00	418	2.8	7.96
	MAXIMUM		7.40	2,277	148	21.0	8.21	2,198	149	1.9	8.34	269	16.3	8.37
	MINIMUM		6.40	148	141	2.6	7.61	112	146	0.8	7.61	6	0.8	7.32
9/26/2018														
	0:32	0	7.2	803	155	3.3	7.91	775	148	1.7	7.74	35	1.5	7.54
	0:47	0	6.4	2189	0	2.7	8.05	2,205	147	1.5	7.82	0	0	0
	1:02	0	6.5	256	0	2.6	8.06	257	147	1.5	7.85	0	1.5	7.84
	6:17	0	7.3	569	150	2.9	7.88	565	149	2	7.75	19	1.7	7.64
	6:32	0	6.5	2186	141	2.7	8.03	2,217	147	1.7	7.82	0	0	0
	6:47	0	6.5	476	0	2.7	8.05	474	146	1.7	7.85	0	1.7	7.84
	9:32	0	6.6	1384	146	2.8	7.95	1,402	147	1.8	7.73	3	1.7	7.65
	9:47	0	6.5	756	0	2.6	8.01	774	146	1.8	7.79	0	1.8	7.78
	16:32	0	7.3	445	150	3.2	7.67	451	149	3.3	7.53	0	3.1	7.32
	16:47	0	6.6	2189	147	2.8	7.91	2,228	147	2.9	7.62	0	0	0
	17:02	0	6.5	692	0	2.8	7.94	696	146	3	7.71	0	3	7.72
	22:17	0	7.1	849	149	4.6	7.89	802	147	3.5	7.65	37	3.3	7.39
	22:32	0	6.5	2183	0	2.8	8.03	2,182	146	3.3	7.75	0	0	0
	22:47	0	6.5	38	0	3	8.04	37	145	3.4	7.8	0	3.4	7.8
AVERAGES/TOTALS			6.71	15,015	148	3.0	7.96	15,065	147	2.4	7.74	94	2.3	7.65
	MAXIMUM		7.30	2,189	155	4.6	8.06	2,228	149	3.5	7.85	37	3.4	7.84
	MINIMUM		6.40	38	141	2.6	7.67	37	145	1.5	7.53	3	1.5	7.32
9/27/2018														

Date	TIME	PRETREAT FLOW (GPM)	PRETREAT PH	INFLUENT FLOW (GAL)	INFLUENT FLOW (GPM)	INFLUENT TURBIDITY (NTU)	INFLUENT PH	DISCHARGE FLOW (GAL)	DISCHARGE FLOW (GPM)	DISCHARGE TURBIDITY (NTU)	DISCHARGE PH	RECIRC FLOW (GAL)	RECIRC TURBIDITY (NTU)	RECIRC PH
	4:02	0	6.9	1487	148	3.2	7.95	1,453	146	3.6	7.75	26	3.5	7.51
	4:17	0	6.4	1581	0	3.1	8.03	1,596	145	3.5	7.81	0	3.5	7.82
	9:32	0	7	1053	145	3.6	7.68	1,056	146	4.1	7.62	19	3.9	7.43
	9:47	0	6.6	2887	144	4.6	7.79	1,194	133	4.2	7.67	685	7.7	7.73
	10:02	0	6.4	910	0	3.1	7.79	851	149	4.5	7.72	74	4.5	7.73
	20:17	0	7.1	2141	146	5	7.76	2,192	149	6.2	7.63	0	6.1	7.16
	20:32	0	6.5	2077	0	3.7	7.88	2,089	147	6.1	7.76	16	6.1	7.79
AVERAGES/TOTALS			6.70	12,136	146	3.8	7.84	10,431	145	4.6	7.71	820	5.0	7.60
MAXIMUM			7.10	2,887	148	5.0	8.03	2,192	149	6.2	7.81	685	7.7	7.82
MINIMUM			6.40	910	144	3.1	7.68	851	133	3.5	7.62	16	3.5	7.16
9/28/2018														
	3:17	0	6.7	2320	150	5	7.78	998	122	6	7.75	275	14.5	7.74
	3:32	0	6.4	984	0	3.1	7.87	1,009	148	5.4	7.79	0	5.3	7.81
	7:32	0	6.7	1919	146	3.6	7.77	1,945	148	5.3	7.69	0	5.3	7.45
	7:47	0	6.4	1052	0	3.2	7.85	1,067	146	5.3	7.76	0	5.3	7.78
	12:17	504	6.8	1280	274	5.6	7.53	621	136	2.1	7.47	188	1.7	7.54
	12:32	0	6.5	2998	0	5.8	7.67	883	120	2.6	7.65	530	6.5	7.62
AVERAGES/TOTALS		504	6.58	10,553	190	4.4	7.75	6,523	137	4.5	7.69	993	6.4	7.66
MAXIMUM		504	6.80	2,998	274	5.8	7.87	1,945	148	6.0	7.79	530	14.5	7.81
MINIMUM		504	6.40	984	146	3.1	7.53	621	120	2.1	7.47	188	1.7	7.45
9/29/2018														
	4:47	0	6.9	1932	150	8.3	7.72	1,982	148	1.6	7.72	20	1.5	7.13
	5:02	0	6.4	1520	0	5	7.85	1,547	147	1.4	7.77	11	1.4	7.81
	19:32	0	7.2	1039	144	10.8	7.77	1,040	148	2.1	7.59	22	1.7	7.14
	19:47	0	6.8	2951	147	6.2	8.07	1,833	129	3	7.87	84	12.7	7.95
	20:02	0	6.5	1312	0	5.2	8.09	1,342	149	2.3	7.99	5	2.2	8
	22:32	0	7.2	533	145	9.4	7.81	522	149	2	7.79	23	2	7.65
	22:47	0	6.5	2182	138	5.3	8	2,188	146	1.8	7.91	0	0	0

Date	TIME	PRETREAT FLOW (GPM)	PRETREAT PH	INFLUENT FLOW (GAL)	INFLUENT FLOW (GPM)	INFLUENT TURBIDITY (NTU)	INFLUENT PH	DISCHARGE FLOW (GAL)	DISCHARGE FLOW (GPM)	DISCHARGE TURBIDITY (NTU)	DISCHARGE PH	RECIRC FLOW (GAL)	RECIRC TURBIDITY (NTU)	RECIRC PH
	23:02	0	6.5	286	0	5.2	8.02	293	147	1.8	7.97	8	1.8	7.98
AVERAGES/TOTALS			6.75	11,755	145	6.9	7.92	10,747	145	2.0	7.83	173	3.3	7.67
	MAXIMUM		7.20	2,951	150	10.8	8.09	2,188	149	3.0	7.99	84	12.7	8.00
	MINIMUM		6.40	286	138	5.0	7.72	293	129	1.4	7.59	5	1.4	7.13
9/30/2018														
	2:47	0	6.7	1902	276	6.1	7.85	1,301	130	2	7.83	20	1.7	7.6
	3:02	0	6.5	1148	0	5.9	7.95	707	128	3.3	7.93	24	11.5	7.92
	5:47	0	7.4	62	146	6	7.53	37	150	1.9	7.67	19	1.9	7.58
	6:02	0	6.6	2174	148	7.2	7.83	2,206	148	1.8	7.81	0	0	0
	6:17	0	6.5	813	0	6	7.9	797	147	1.7	7.88	35	1.6	7.88
	11:32	0	7.1	1005	146	7.3	7.71	1,002	148	2.7	7.67	21	1.9	7.44
	11:47	0	6.5	2111	0	8.5	7.94	1,570	134	2.7	7.82	6	2.3	7.95
	17:32	0	7	1560	136	8.5	7.84	1,597	148	2.6	7.72	0	2.4	7.49
	17:47	0	6.5	1977	0	7.8	7.99	2,042	148	2.3	7.88	0	2.4	7.91
AVERAGES/TOTALS			6.76	12,752	170	7.0	7.84	11,259	142	2.3	7.80	125	3.2	7.72
	MAXIMUM		7.40	2,174	276	8.5	7.99	2,206	150	3.3	7.93	35	11.5	7.95
	MINIMUM		6.50	62	136	5.9	7.53	37	128	1.7	7.67	6	1.6	7.44

MONTHLY SUMMARY

AVERAGES/TOTALS	394	6.90	756,510	144	11.0	7.94	575,368	140	1.8	7.95	151,599	4.2	7.96
MAXIMUM	527	8.10	3,024	276	39.4	8.33	2,308	155	9.2	8.34	2,175	32.2	8.37
MINIMUM	54	6.40	19	76	2.6	7.46	15	23	0.1	7.47	3	0.2	7.13

NOTE: ALL ZERO DATA POINTS FOR DISCHARGE ARE EXCLUDED FROM SUMMARY CALCULATIONS. MONTHLY SUMMARY VALUES ARE CALCULATED FROM 15 MINUTE INTERVAL DATA POINTS, AND NOT DAILY SUMMARIES.

November 5, 2018

Eran Fields
FH Brooklyn, LLC
2251 Linda Flora Drive
Los Angeles, CA 90077

Re: 4700 Brooklyn U-District Stormwater Treatment Report for October 2018

This report summarizes the water treatment operations from October 1, 2018 through October 31, 2018 for the 4700 Brooklyn Remediation Project as performed by Clear Water Services, LLC (Clear Water).

There is currently a 100-gpm nominal flow chitosan-enhanced sand filtration (CESF) with granular activated carbon (GAC) system onsite. System mobilization began on July 24th and was completed on July 26th. The electrical and programming components for the system were installed on August 10th. The discharge line was installed on August 13th. The system was demobilized from October 29th through 31st.

During this reporting period, a total of **350,260 gallons** of water was discharged by the system. Water was discharged within state and local water quality parameters from the system to Portage Bay. The average discharge rate for the system was **145 gpm**. A total of **1,842,284 gallons** has been discharged to date. Total rainfall during this reporting period was **2.40 inches**.

Treatment System Operations

Treatment system discharge details as well as a discussion of system upsets for this reporting period are indicated below. Treatment system monitoring data are acquired by technicians as well as computerized collection via a programmable logic controller (PLC). A monthly data summary is included at the end of this report. Treatment system technicians review effluent water quality data on regular intervals to demonstrate the quality of treated water. The PLC records data at 15-minute intervals and transmits the data to Clear Water's headquarters. The data collected can be monitored in real time by Clear Water personnel. Daily Operations Logs are recorded digitally on a mobile device in the system control unit onsite which are automatically saved to Clear Water's account to the application service.

System Discharge Volumes and Water Quality Parameters

The 100-gpm nominal CESF system treated and discharged stormwater to Portage Bay during this reporting period.

Total gallons treated and gallons discharged, as well as a summary of pH and turbidity results are presented in the following pages of this document. It is common for gallons treated and gallons discharged to differ due to treatment system operation events, such as backflush and recirculation.

Turbidity and pH parameters were within the regulatory limits (less than 10 nephelometric turbidity units, or NTU, and between 6.5 and 8.5 standard units, or s.u.) for all system discharges. Residual chitosan tests were routinely conducted during system operations, with all results indicating that no residual chitosan was present in system effluent.

Operational Notes and Recommendations

The system had normal operations with no major upsets to the system during this reporting period.

The treatment system treated 368,761 gallons of stormwater and discharged 350,260 gallons within the permit benchmarks/limits. During this reporting period, approximately 5% of the treated influent was either backflushed or recirculated. The system has been running on automated operations, with field technicians checking in daily to check the site, run backflushes on the sand filters and perform other maintenance as necessary.

Total Rainfall

Clear Water uses NOAA's Quality Controlled Local Climatological Data (QCLCD) to monitor monthly rainfall totals. The following table summarizes the precipitation for the duration of this reporting period for the project. Precipitation data included in this table was collected from the QCLCD station at the Seattle Boeing Field (#24234), located about 10 miles from the project site.

Daily Rainfall Totals			
Date	Rainfall (inches)	Date	Rainfall (inches)
10/1/2018	0.01	10/17/2018	0.00
10/2/2018	Trace	10/18/2018	0.00
10/3/2018	0.00	10/19/2018	0.00
10/4/2018	0.00	10/20/2018	0.00
10/5/2018	0.01	10/21/2018	0.00
10/6/2018	0.00	10/22/2018	0.00
10/7/2018	Trace	10/23/2018	Trace
10/8/2018	0.03	10/24/2018	0.00
10/9/2018	0.03	10/25/2018	Trace
10/10/2018	0.00	10/26/2018	1.05
10/11/2018	0.00	10/27/2018	0.89
10/12/2018	0.00	10/28/2018	0.32
10/13/2018	0.00	10/29/2018	0.01
10/14/2018	0.00	10/30/2018	0.04
10/15/2018	0.00	10/31/2018	0.01
10/16/2018	0.00		
Total inches:	**2.40**		

If you have any questions regarding the information presented in this report or operations at the project site, please contact Duncan Medlin at (360) 280-0508.

Report Prepared By:

Kelli Quist
Project Engineer
CLEAR WATER SERVICES

Report Reviewed By:

Duncan Medlin
Project Manager
CLEAR WATER SERVICES

CLEAR WATER SERVICES

MONTHLY SUMMARY REPORT

4700 U-District

OCTOBER 2018

Downloaded: 11/5/2018

Date	TIME	PRETREAT FLOW (GPM)	PRETREAT PH	INFLUENT FLOW (GAL)	INFLUENT FLOW (GPM)	INFLUENT TURBIDITY (NTU)	INFLUENT PH	DISCHARGE FLOW (GAL)	DISCHARGE FLOW (GPM)	DISCHARGE TURBIDITY (NTU)	DISCHARGE PH	RECIRC FLOW (GAL)	RECIRC TURBIDITY (NTU)	RECIRC PH
10/1/2018														
	0:17	0	6.9	1663	151	7.8	7.81	1,686	147	2.2	7.81	0	2.2	7.52
	0:32	0	6.5	1517	0	8.2	7.92	1,165	136	2.1	7.89	24	2.2	7.92
	8:47	0	7.2	1756	148	12	7.7	1,768	148	2	7.51	20	1.5	7.24
	9:02	0	6.5	2160	0	8.3	7.81	2,199	147	1.6	7.56	0	0	0
	9:17	0	6.5	177	0	8.3	7.82	183	147	1.6	7.58	0	1.6	7.6
	11:17	0	7.3	578	152	8.4	7.61	546	147	1.8	7.43	38	1.7	7.31
	11:32	0	6.5	2578	0	8.7	7.78	2,011	136	1.6	7.51	14	1.7	7.6
	12:47	0	7.1	1126	150	10.1	7.65	1,145	148	1.9	7.46	6	1.7	7.35
	13:02	0	6.4	2069	0	8.8	7.76	2,107	148	1.7	7.52	10	1.7	7.55
	14:47	0	6.7	1978	140	9.2	7.7	1,986	148	1.8	7.47	21	1.8	7.27
	15:02	0	6.5	1100	0	10.1	7.77	1,028	144	1.8	7.53	23	1.9	7.51
	17:17	0	7.4	965	143	11.5	7.57	966	148	1.8	7.35	21	1.8	7.26
	17:32	0	6.7	2152	141	10.6	7.7	2,199	147	1.7	7.42	0	0	0
	17:47	0	6.5	867	0	10.7	7.73	850	147	1.7	7.48	36	1.7	7.52
	19:32	0	7.3	320	133	11.3	7.48	301	150	1.9	7.37	21	1.7	7.23
	19:47	0	6.6	2159	147	11.3	7.67	2,217	147	1.6	7.43	0	0	0
	20:02	0	6.4	650	0	11.4	7.7	666	147	1.6	7.48	0	1.6	7.46
	22:02	0	7	1257	138	11.7	7.56	1,257	148	1.7	7.39	21	1.7	7.22
	22:17	0	6.5	1825	0	12.7	7.64	1,820	146	1.6	7.44	35	1.6	7.42
AVERAGES/TOTALS			6.76	26,897	144	10.1	7.70	26,100	146	1.8	7.51	290	1.8	7.44
	MAXIMUM		7.40	2,578	152	12.7	7.92	2,217	150	2.2	7.89	38	2.2	7.92
	MINIMUM		6.40	177	133	7.8	7.48	183	136	1.6	7.35	6	1.5	7.22
10/2/2018														

Date	TIME	PRETREAT FLOW (GPM)	PRETREAT PH	INFLUENT FLOW (GAL)	INFLUENT FLOW (GPM)	INFLUENT TURBIDITY (NTU)	INFLUENT PH	DISCHARGE FLOW (GAL)	DISCHARGE FLOW (GPM)	DISCHARGE TURBIDITY (NTU)	DISCHARGE PH	RECIRC FLOW (GAL)	RECIRC TURBIDITY (NTU)	RECIRC PH
	0:32	0	6.8	1633	143	12.9	7.54	1,663	147	1.7	7.36	20	1.7	7.16
	0:47	0	6.4	1410	0	13.1	7.6	1,436	146	1.6	7.4	0	1.6	7.42
	3:02	0	7	1235	145	13.1	7.49	1,266	147	1.8	7.3	0	1.7	7.14
	3:17	0	6.4	1795	0	13.2	7.56	1,813	145	1.7	7.34	8	1.7	7.34
	5:47	0	6.9	1571	145	13.8	7.46	1,582	146	1.8	7.27	19	1.7	7.09
	6:02	0	6.5	1503	0	13.8	7.52	1,481	146	1.7	7.31	36	1.7	7.32
	8:32	0	6.9	1532	139	14.8	7.44	1,538	146	1.8	7.25	10	1.8	7.1
	8:47	0	6.4	1617	0	14.2	7.51	1,637	145	1.7	7.29	0	1.7	7.28
	12:17	524	7.3	1272	148	18	7.33	292	98	2.5	7.22	227	2.4	7.12
	12:32	0	6.5	2362	148	15.5	7.43	2,142	143	2.6	7.24	0	0	0
	12:47	0	6.5	550	0	15.3	7.45	551	147	2.2	7.25	12	2.2	7.24
	16:47	0	7.2	826	156	17	7.3	842	148	2.8	7.15	0	2.6	6.97
	17:02	0	6.5	2178	0	16.7	7.45	2,215	148	2.6	7.22	0	0	0
	17:17	0	6.5	110	0	16.5	7.46	111	148	2.6	7.26	0	2.6	7.22
	21:32	0	7.3	325	151	17.8	7.33	295	148	2.8	7.25	36	2.4	7.11
	21:47	0	6.6	2174	137	16.8	7.51	2,199	147	2.3	7.32	0	0	0
	22:02	0	6.5	609	0	16.8	7.55	585	147	2.3	7.33	33	2.3	7.34
AVERAGES/TOTALS		524	6.72	22,702	146	15.3	7.47	21,648	144	2.1	7.28	401	2.0	7.20
MAXIMUM		524	7.30	2,362	156	18.0	7.60	2,215	148	2.8	7.40	227	2.6	7.42
MINIMUM		524	6.40	110	137	12.9	7.30	111	98	1.6	7.15	8	1.6	6.97
10/3/2018														
	2:47	0	6.8	1904	138	16.9	7.48	1,902	147	2.3	7.32	14	2.2	7.16
	3:02	0	6.4	1232	0	16.7	7.54	1,245	146	2.2	7.34	0	2.2	7.34
	8:02	0	6.8	1862	154	17.8	7.46	1,856	150	2.3	7.3	38	2.1	7.16
	8:17	0	6.4	1274	0	17.7	7.52	1,296	153	2.2	7.31	10	2.2	7.31
	13:17	0	7.1	995	153	18.4	7.23	995	148	2.5	7.09	0	2.3	6.95
	13:32	0	6.5	2077	0	18.3	7.32	2,075	146	2.4	7.13	0	2.4	7.14
	19:02	0	6.8	1795	156	18.9	7.36	1,766	146	2.7	7.19	34	2.6	7.01

Date	TIME	PRETREAT FLOW (GPM)	PRETREAT PH	INFLUENT FLOW (GAL)	INFLUENT FLOW (GPM)	INFLUENT TURBIDITY (NTU)	INFLUENT PH	DISCHARGE FLOW (GAL)	DISCHARGE FLOW (GPM)	DISCHARGE TURBIDITY (NTU)	DISCHARGE PH	RECIRC FLOW (GAL)	RECIRC TURBIDITY (NTU)	RECIRC PH
	19:17	0	6.4	1397	0	18.8	7.44	1,402	146	2.7	7.23	0	2.7	7.26
AVERAGES/TOTALS			6.65	12,536	150	17.9	7.42	12,537	148	2.4	7.24	96	2.3	7.17
	MAXIMUM		7.10	2,077	156	18.9	7.54	2,075	153	2.7	7.34	38	2.7	7.34
	MINIMUM		6.40	995	138	16.7	7.23	995	146	2.2	7.09	10	2.1	6.95
10/4/2018														
	0:32	0	7.3	350	143	19.5	7.31	334	147	3.2	7.18	18	2.7	7.09
	0:47	0	6.5	2198	142	18.9	7.45	2,200	146	2.8	7.25	0	0	0
	1:02	0	6.5	556	0	18.9	7.48	546	146	2.8	7.27	6	2.8	7.27
	6:32	0	6.9	1587	149	19.3	7.43	1,615	149	3.1	7.25	0	2.9	7.12
	6:47	0	6.4	1534	0	19.2	7.5	1,578	151	3	7.28	11	3	7.31
	12:02	0	6.7	2190	145	20.3	7.3	2,226	151	3.2	7.12	0	3.1	6.98
	12:17	0	6.5	1001	0	20.3	7.35	1,026	152	3.2	7.15	15	3.2	7.15
	18:02	0	7	1079	146	19.6	7.3	1,096	153	3.8	7.1	3	3.6	6.92
	18:17	0	6.4	2042	0	19.3	7.42	2,078	151	3.7	7.18	9	3.7	7.2
AVERAGES/TOTALS			6.69	12,537	145	19.5	7.39	12,699	150	3.2	7.20	62	3.1	7.13
	MAXIMUM		7.30	2,198	149	20.3	7.50	2,226	153	3.8	7.28	18	3.7	7.31
	MINIMUM		6.40	350	142	18.9	7.30	334	146	2.8	7.10	3	2.7	6.92
10/5/2018														
	0:02	0	6.7	2064	146	20.3	7.44	2,079	151	4	7.27	37	3.8	7.08
	0:17	0	6.5	1034	0	20.3	7.52	1,054	151	3.9	7.31	0	3.9	7.3
	7:32	0	7.6	302	151	20.7	7.36	307	153	4.9	7.21	11	4.3	7.12
	7:47	0	6.9	2222	155	20.3	7.49	2,287	152	4.4	7.29	0	0	0
	8:02	0	6.4	1499	0	20.3	7.53	1,547	151	4.4	7.31	7	4.4	7.3
	13:32	0	7.3	379	144	21.2	7.36	380	153	5.2	7.19	0	4.7	7.1
	13:47	0	6.5	2206	151	20.7	7.5	2,268	151	4.8	7.29	0	0	0
	14:02	0	6.4	555	0	20.6	7.53	564	150	4.8	7.31	4	4.8	7.29
	19:32	0	7.2	629	143	21.5	7.4	646	152	5.4	7.23	0	5	7.1
	19:47	0	6.5	2217	149	20.9	7.54	2,263	151	5.2	7.31	0	0	0

Date	TIME	PRETREAT FLOW (GPM)	PRETREAT PH	INFLUENT FLOW (GAL)	INFLUENT FLOW (GPM)	INFLUENT TURBIDITY (NTU)	INFLUENT PH	DISCHARGE FLOW (GAL)	DISCHARGE FLOW (GPM)	DISCHARGE TURBIDITY (NTU)	DISCHARGE PH	RECIRC FLOW (GAL)	RECIRC TURBIDITY (NTU)	RECIRC PH
	20:02	0	6.5	409	0	20.7	7.57	410	150	5.2	7.33	0	5.2	7.33
AVERAGES/TOTALS			6.77	13,516	148	20.7	7.48	13,805	151	4.7	7.28	59	4.5	7.20
MAXIMUM			7.60	2,222	155	21.5	7.57	2,287	153	5.4	7.33	37	5.2	7.33
MINIMUM			6.40	302	143	20.3	7.36	307	150	3.9	7.19	4	3.8	7.08
10/6/2018														
	1:17	0	7.3	244	136	22	7.32	225	151	5.9	7.19	20	5.5	7.11
	1:32	0	6.4	2881	0	22.4	7.52	1,826	127	6.1	7.34	45	12.3	7.37
	5:17	0	7	1159	142	22.6	7.47	1,188	154	6.3	7.26	21	6.1	7.15
	5:32	0	6.5	1864	0	21.7	7.55	1,965	154	6.2	7.34	0	6.2	7.35
	11:17	0	6.9	1604	145	23.3	7.45	1,666	155	6.9	7.27	20	6.6	7.09
	11:32	0	6.4	1582	0	22.9	7.54	1,657	154	6.8	7.33	0	6.8	7.32
	17:17	0	7.3	464	151	24.1	7.24	476	157	8.9	7.12	21	8.8	6.95
	17:32	0	6.5	2192	144	23.3	7.44	2,319	154	8.8	7.23	0	0	0
	17:47	0	6.5	434	0	23.3	7.48	462	154	8.8	7.27	0	8.8	7.29
	23:17	0	7.4	221	146	25.6	7.3	74	157	9.9	7.15	157	10.1	7.18
	23:32	0	6.7	2198	142	24.3	7.54	2,113	154	9.9	7.36	193	10.2	7.28
	23:47	0	6.4	910	0	23.9	7.6	952	153	9.9	7.39	10	9.9	7.39
AVERAGES/TOTALS			6.78	15,753	144	23.3	7.45	14,923	152	7.9	7.27	487	8.3	7.23
MAXIMUM			7.40	2,881	151	25.6	7.60	2,319	157	9.9	7.39	193	12.3	7.39
MINIMUM			6.40	221	136	21.7	7.24	74	127	5.9	7.12	10	5.5	6.95
10/8/2018														
	1:32	146	7.9	2161	146	19.9	7.73	639	134	1.7	7.5	762	14.1	7.46
	1:47	0	7.6	2187	140	1.1	7.73	2,321	154	0.1	7.51	0	0	0
	2:02	0	7.4	2180	153	1.6	7.73	2,325	154	0.2	7.51	0	0	0
	2:17	0	6.5	2882	0	2.4	7.72	1,957	134	0.9	7.51	24	10	7.5
	2:32	0	6.5	19	0	3	7.72	0	100	0.8	7.51	7	0.6	7.51
	6:32	0	6.9	1424	142	6.9	7.59	1,511	154	1.1	7.47	0	0.5	7.25
	6:47	0	6.4	1689	0	2.7	7.69	1,750	153	0.3	7.49	37	0.3	7.48

Date	TIME	PRETREAT FLOW (GPM)	PRETREAT PH	INFLUENT FLOW (GAL)	INFLUENT FLOW (GPM)	INFLUENT TURBIDITY (NTU)	INFLUENT PH	DISCHARGE FLOW (GAL)	DISCHARGE FLOW (GPM)	DISCHARGE TURBIDITY (NTU)	DISCHARGE PH	RECIRC FLOW (GAL)	RECIRC TURBIDITY (NTU)	RECIRC PH
	11:02	0	7.3	399	150	3.6	7.49	395	155	1.1	7.34	37	0.4	7.22
	11:17	0	6.5	2209	262	2.7	7.64	2,290	153	0.4	7.44	0	0	0
	11:32	0	6.5	405	0	3.2	7.67	228	127	1.9	7.45	24	2.9	7.46
	17:32	0	7.1	1572	143	8.7	7.6	1,624	155	1.3	7.45	21	0.7	7.14
	17:47	0	6.5	2089	0	5	7.69	2,210	155	0.5	7.49	26	0.5	7.48
	23:32	0	7.1	853	144	6	7.58	885	154	1	7.42	8	0.4	7.21
	23:47	0	6.5	2240	0	5.4	7.71	2,220	151	0.5	7.48	4	0.8	7.44
	AVERAGES/TOTALS	146	6.91	22,309	160	5.2	7.66	20,355	145	0.8	7.47	950	2.8	7.38
	MAXIMUM	146	7.90	2,882	262	19.9	7.73	2,325	155	1.9	7.51	762	14.1	7.51
	MINIMUM	146	6.40	19	140	1.1	7.49	228	100	0.1	7.34	4	0.3	7.14
10/9/2018														
	6:47	0	6.7	1910	135	10.8	7.65	1,964	154	1	7.48	35	0.5	7.16
	7:02	516	6.7	941	0	7.3	7.77	981	153	0.7	7.54	0	0.6	7.53
	10:17	0	7.1	957	144	8.7	7.61	1,001	155	0.8	7.38	0	0.6	7.24
	10:32	0	6.5	2087	0	7.5	7.78	2,195	153	0.7	7.53	0	0.7	7.57
	16:32	0	6.8	1845	151	11	7.65	1,876	154	0.9	7.44	39	0.7	7.14
	16:47	0	6.5	1177	0	8.6	7.82	1,221	152	0.8	7.56	9	0.8	7.58
	22:32	0	6.9	1527	153	12.5	7.72	1,601	153	0.9	7.51	0	0.8	7.24
	22:47	0	6.4	1633	0	9.7	7.89	1,707	152	0.9	7.63	0	0.9	7.67
	AVERAGES/TOTALS	516	6.70	12,077	146	9.5	7.74	12,546	153	0.8	7.51	83	0.7	7.39
	MAXIMUM	516	7.10	2,087	153	12.5	7.89	2,195	155	1.0	7.63	39	0.9	7.67
	MINIMUM	516	6.40	941	135	7.3	7.61	981	152	0.7	7.38	9	0.5	7.14
10/10/2018														
	4:47	0	7.4	183	148	11.7	7.52	152	155	1.3	7.38	38	0.9	7.31
	5:02	0	6.6	2192	153	11.1	7.85	2,262	151	0.9	7.6	0	0	0
	5:17	0	6.4	808	0	11.3	7.95	832	151	1	7.68	0	1	7.69
	11:17	0	7.4	25	135	8.7	7.39	0	0	0	0	22	1.1	7.27
	11:32	0	7.2	988	0	13.1	7.69	992	152	1.3	7.5	38	1.2	7.51

Date	TIME	PRETREAT FLOW (GPM)	PRETREAT PH	INFLUENT FLOW (GAL)	INFLUENT FLOW (GPM)	INFLUENT TURBIDITY (NTU)	INFLUENT PH	DISCHARGE FLOW (GAL)	DISCHARGE FLOW (GPM)	DISCHARGE TURBIDITY (NTU)	DISCHARGE PH	RECIRC FLOW (GAL)	RECIRC TURBIDITY (NTU)	RECIRC PH
	12:02	0	7	2858	145	13.9	7.87	661	154	1.8	7.66	1200	2.6	7.59
	12:17	0	6.4	1825	0	12.8	7.95	1,911	152	1.7	7.7	0	1.6	7.7
	18:17	0	7.4	38	139	11.9	7.31	35	139	2	7.24	0	2.1	7.22
	18:32	0	6.7	2211	145	14.3	7.8	2,296	153	2	7.59	0	0	0
	18:47	0	6.5	869	0	14.2	7.95	870	153	1.9	7.69	39	1.9	7.7
	AVERAGES/TOTALS		6.90	11,997	144	12.3	7.73	10,011	151	1.5	7.56	1,337	1.6	7.50
	MAXIMUM		7.40	2,858	153	14.3	7.95	2,296	155	2.0	7.70	1,200	2.6	7.70
	MINIMUM		6.40	25	135	8.7	7.31	35	139	0.9	7.24	22	0.9	7.22
10/11/2018														
	0:47	0	6.8	1669	142	14.3	7.82	1,708	152	0.9	7.64	20	0.8	7.31
	1:02	0	6.4	1389	0	14.2	8	1,446	152	0.8	7.74	5	0.8	7.75
	6:47	0	7.3	205	147	15.9	7.65	196	154	1.2	7.51	20	0.8	7.43
	7:02	0	6.6	2188	141	15.2	7.93	2,270	151	0.8	7.72	0	0	0
	7:17	0	6.4	627	0	15.2	8.02	649	153	0.8	7.79	10	0.8	7.8
	11:02	0	7	1041	150	15.7	7.82	1,072	154	0.9	7.59	14	0.8	7.42
	11:17	0	6.5	1964	0	15.7	7.97	2,053	152	0.8	7.7	0	0.8	7.73
	16:17	0	7.1	895	151	17.1	7.63	908	151	1	7.46	19	1	7.23
	16:32	0	6.4	2192	0	16.6	7.86	2,263	151	0.9	7.6	0	0	0
	16:47	0	6.5	74	0	17	7.89	38	154	0.9	7.67	40	0.9	7.67
	22:47	0	6.9	1418	138	18.6	7.78	1,457	153	1.2	7.59	36	1.1	7.3
	23:02	0	6.4	1690	0	17.8	7.95	1,742	151	1.1	7.71	6	1.1	7.74
	AVERAGES/TOTALS		6.69	15,352	145	16.1	7.86	15,802	152	0.9	7.64	170	0.9	7.54
	MAXIMUM		7.30	2,192	151	18.6	8.02	2,270	154	1.2	7.79	40	1.1	7.80
	MINIMUM		6.40	74	138	14.2	7.63	38	151	0.8	7.46	5	0.8	7.23
10/12/2018														
	5:32	0	7.2	687	145	19.5	7.7	684	151	1.5	7.6	20	1.3	7.37
	5:47	0	6.5	2184	141	18.4	7.93	2,271	151	1.3	7.72	0	0	0
	6:02	0	6.5	365	0	18.4	7.96	378	150	1.3	7.76	0	1.3	7.74

Date	TIME	PRETREAT FLOW (GPM)	PRETREAT PH	INFLUENT FLOW (GAL)	INFLUENT FLOW (GPM)	INFLUENT TURBIDITY (NTU)	INFLUENT PH	DISCHARGE FLOW (GAL)	DISCHARGE FLOW (GPM)	DISCHARGE TURBIDITY (NTU)	DISCHARGE PH	RECIRC FLOW (GAL)	RECIRC TURBIDITY (NTU)	RECIRC PH
	11:32	521	6.7	1325	269	21.6	7.67	0	0	0	0	738	2.3	7.49
	11:47	0	6.5	2481	148	19.2	7.83	1,786	153	2	7.63	334	4	7.6
	12:02	0	6.4	540	0	18.9	7.84	563	151	1.7	7.65	0	1.7	7.64
	19:32	0	6.9	1838	148	20.1	7.75	1,923	154	2.7	7.56	0	2.7	7.16
	19:47	0	6.4	1471	0	19.4	7.89	1,527	152	2.6	7.65	0	2.6	7.65
	AVERAGES/TOTALS	521	6.64	10,891	170	19.4	7.82	9,132	152	1.9	7.65	1,092	2.3	7.52
	MAXIMUM	521	7.20	2,481	269	21.6	7.96	2,271	154	2.7	7.76	738	4.0	7.74
	MINIMUM	521	6.40	365	141	18.4	7.67	378	150	1.3	7.56	20	1.3	7.16
10/13/2018														
	3:17	0	7.3	310	271	22.8	7.64	204	138	2.9	7.43	24	2.1	7.3
	3:32	0	6.4	2836	0	21.6	7.89	1,949	130	3.1	7.67	0	0	0
	3:47	0	6.5	75	0	21	7.92	75	150	2.3	7.69	0	2.3	7.68
	8:32	0	7	1302	137	22.3	7.8	1,361	155	2.7	7.54	19	2.7	7.32
	8:47	0	6.5	1790	0	21.8	7.89	1,875	153	2.7	7.65	0	2.7	7.65
	16:32	0	6.5	2840	144	23.5	7.74	1,874	130	4.3	7.49	0	3.9	7.19
	16:47	0	6.5	325	0	23	7.83	345	151	5.8	7.61	0	4.4	7.6
	21:32	0	7	1214	147	24.2	7.73	1,254	153	4.7	7.49	0	4.7	7.25
	21:47	0	6.4	1862	0	23.9	7.87	1,957	153	4.6	7.62	4	4.6	7.65
	AVERAGES/TOTALS		6.68	12,554	175	22.7	7.81	10,894	146	3.7	7.58	47	3.4	7.46
	MAXIMUM		7.30	2,840	271	24.2	7.92	1,957	155	5.8	7.69	24	4.7	7.68
	MINIMUM		6.40	75	137	21.0	7.64	75	130	2.3	7.43	4	2.1	7.19
10/14/2018														
	5:32	0	7.4	181	153	0.2	7.49	190	148	1.5	7.41	0	1.1	7.35
	5:47	0	6.6	2181	270	0.2	7.48	2,267	152	1.1	7.64	0	0	0
	6:02	0	6.5	967	0	0.2	7.49	376	101	1.4	7.72	5	1.1	7.74
	13:47	0	7	1807	137	0.2	7.15	1,851	151	1.8	7.41	21	1.6	7.17
	14:02	0	6.4	1929	0	0.2	7.16	2,001	152	1.6	7.51	3	1.6	7.53
	22:02	0	7.5	19	149	0.2	7.29	0	0	0	0	19	3.1	7.11

Date	TIME	PRETREAT FLOW (GPM)	PRETREAT PH	INFLUENT FLOW (GAL)	INFLUENT FLOW (GPM)	INFLUENT TURBIDITY (NTU)	INFLUENT PH	DISCHARGE FLOW (GAL)	DISCHARGE FLOW (GPM)	DISCHARGE TURBIDITY (NTU)	DISCHARGE PH	RECIRC FLOW (GAL)	RECIRC TURBIDITY (NTU)	RECIRC PH
	22:17	0	6.7	2161	264	0.2	7.29	2,221	147	3.2	7.53	0	3.1	7.14
	22:32	0	6.5	1089	0	0.2	7.28	526	113	3.1	7.63	5	3.1	7.67
AVERAGES/TOTALS			6.83	10,334	195	0.2	7.33	9,432	138	2.0	7.55	53	2.1	7.39
MAXIMUM			7.50	2,181	270	0.2	7.49	2,267	152	3.2	7.72	21	3.1	7.74
MINIMUM			6.40	19	137	0.2	7.15	190	101	1.1	7.41	3	1.1	7.11
10/15/2018														
	6:32	0	7.5	648	149	14.6	7.63	630	148	0.9	7.51	31	16.1	7.35
	6:47	0	6.7	2168	147	7.8	7.85	2,210	147	0.5	7.65	0	0	0
	7:02	0	6.5	1074	0	7.7	7.89	1,094	146	0.5	7.69	0	0.5	7.67
	15:02	0	7.2	802	146	8.6	7.56	808	147	0.6	7.35	0	0.6	7.17
	15:17	0	6.5	2300	0	8.7	7.77	1,814	137	0.5	7.49	6	0.5	7.56
	23:17	0	7.4	653	144	17.8	7.63	674	149	1	7.42	0	0.5	7.18
	23:32	0	6.7	2165	143	8.8	7.88	2,219	147	0.6	7.6	0	0	0
	23:47	0	6.4	911	0	8.8	7.89	940	151	0.5	7.64	0	0.5	7.65
AVERAGES/TOTALS			6.86	10,721	146	10.4	7.76	10,389	147	0.6	7.54	37	3.1	7.43
MAXIMUM			7.50	2,300	149	17.8	7.89	2,219	151	1.0	7.69	31	16.1	7.67
MINIMUM			6.40	648	143	7.7	7.56	630	137	0.5	7.35	6	0.5	7.17
10/16/2018														
	7:32	0	7.1	1023	139	9.2	7.77	1,034	146	0.7	7.54	0	0.6	7.35
	7:47	0	6.5	2178	0	11.8	7.91	1,731	136	0.6	7.67	5	0.5	7.7
	15:17	0	7.1	2194	269	12	7.61	752	99	1.7	7.39	40	7.2	7.34
	15:32	0	6.5	2320	0	10.4	7.76	1,663	133	1.7	7.53	0	1.1	7.54
	21:17	0	7.2	771	149	17.9	7.65	780	155	1.1	7.41	38	1	7.17
	21:32	0	6.4	2194	0	11	7.85	2,317	154	1	7.6	0	0	0
	21:47	0	6.5	220	0	10.8	7.86	229	153	1	7.65	0	1	7.62
AVERAGES/TOTALS			6.76	10,900	186	11.9	7.77	8,506	139	1.1	7.54	83	1.9	7.45
MAXIMUM			7.20	2,320	269	17.9	7.91	2,317	155	1.7	7.67	40	7.2	7.70
MINIMUM			6.40	220	139	9.2	7.61	229	99	0.6	7.39	5	0.5	7.17

Date	TIME	PRETREAT FLOW (GPM)	PRETREAT PH	INFLUENT FLOW (GAL)	INFLUENT FLOW (GPM)	INFLUENT TURBIDITY (NTU)	INFLUENT PH	DISCHARGE FLOW (GAL)	DISCHARGE FLOW (GPM)	DISCHARGE TURBIDITY (NTU)	DISCHARGE PH	RECIRC FLOW (GAL)	RECIRC TURBIDITY (NTU)	RECIRC PH
10/17/2018														
	5:32	0	7	1326	271	11.5	7.76	1,389	154	1	7.58	0	0.9	7.28
	5:47	0	6.4	1929	0	11.8	7.91	891	113	1.7	7.72	35	1.8	7.73
	10:47	0	7.2	629	148	13.3	7.66	633	148	1.3	7.47	5	1.4	7.33
	11:02	0	6.4	2166	0	11.9	7.82	2,276	153	1.2	7.59	0	0	0
	11:17	0	6.5	229	0	11.7	7.82	233	153	1.1	7.63	9	1.1	7.62
	19:17	0	6.9	1512	142	13.4	7.67	1,524	153	2.7	7.41	31	2.7	7.02
	19:32	0	6.5	1600	0	12.9	7.84	1,314	142	2.7	7.57	5	2.7	7.63
AVERAGES/TOTALS			6.70	9,391	187	12.4	7.78	8,260	145	1.7	7.57	85	1.8	7.44
MAXIMUM			7.20	2,166	271	13.4	7.91	2,276	154	2.7	7.72	35	2.7	7.73
MINIMUM			6.40	229	142	11.5	7.66	233	113	1.0	7.41	5	0.9	7.02
10/18/2018														
	5:47	15	7.4	1298	150	14.1	7.77	1,284	148	2.2	7.55	21	2	7.27
	6:02	0	6.6	2163	141	13.3	7.91	2,203	147	1.9	7.67	0	0	0
	6:17	0	6.5	814	0	13.3	7.93	839	146	1.9	7.69	0	1.9	7.71
	14:02	0	6.9	1547	145	14.5	7.7	1,546	147	2.2	7.43	22	2.1	7.2
	14:17	0	6.5	1513	0	15.1	7.83	879	121	2.2	7.56	4	2.2	7.6
	22:32	0	7.3	977	151	15.9	7.72	998	147	4	7.46	0	3.6	7.21
	22:47	0	6.6	2186	148	15.3	7.92	2,296	153	3.7	7.64	0	0	0
	23:02	0	6.5	658	0	15.2	7.93	694	153	3.7	7.68	0	3.7	7.69
AVERAGES/TOTALS		15	6.79	11,156	147	14.6	7.84	10,739	145	2.7	7.59	47	2.6	7.45
MAXIMUM		15	7.40	2,186	151	15.9	7.93	2,296	153	4.0	7.69	22	3.7	7.71
MINIMUM		15	6.50	658	141	13.3	7.70	694	121	1.9	7.43	4	1.9	7.20
10/19/2018														
	6:47	0	6.8	1600	148	15.5	7.85	1,603	146	3.9	7.6	19	3.7	7.42
	7:02	0	6.5	1406	0	15.5	7.95	953	127	3.7	7.7	6	3.8	7.72
	13:02	0	7.4	208	0	22.3	7.47	137	128	5	7.35	35	5.1	7.28
	14:17	0	7.2	528	149	16.4	7.64	512	147	5.5	7.35	21	7.8	7.23

Date	TIME	PRETREAT FLOW (GPM)	PRETREAT PH	INFLUENT FLOW (GAL)	INFLUENT FLOW (GPM)	INFLUENT TURBIDITY (NTU)	INFLUENT PH	DISCHARGE FLOW (GAL)	DISCHARGE FLOW (GPM)	DISCHARGE TURBIDITY (NTU)	DISCHARGE PH	RECIRC FLOW (GAL)	RECIRC TURBIDITY (NTU)	RECIRC PH
	14:32	0	6.4	2156	0	15.7	7.85	2,219	149	4.9	7.54	0	0	0
	14:47	0	6.5	184	0	15.7	7.87	190	153	4.9	7.64	0	4.9	7.62
	23:17	0	6.8	1916	148	16	7.88	1,935	147	7.7	7.61	22	7.4	7.24
	23:32	0	6.5	1286	0	15.7	7.99	1,266	145	7.5	7.74	3	8.4	7.74
	AVERAGES/TOTALS		6.76	9,284	148	16.6	7.81	8,815	143	5.4	7.57	106	5.9	7.46
	MAXIMUM		7.40	2,156	149	22.3	7.99	2,219	153	7.7	7.74	35	8.4	7.74
	MINIMUM		6.40	184	148	15.5	7.47	137	127	3.7	7.35	3	3.7	7.23
10/20/2018														
	5:02	0	6.4	2083	0	16.9	7.86	1,011	116	7.6	7.63	90	10.8	7.69
	11:17	0	6.7	2070	142	16.8	7.9	2,132	147	8	7.63	22	8	7.49
	11:32	0	6.4	991	0	16.4	7.98	1,017	147	7.9	7.75	0	7.9	7.77
	20:47	0	6.8	2055	144	17.1	7.93	1,835	146	10	7.66	279	10.9	7.42
	21:02	0	6.4	1267	0	16.7	8.04	1,303	146	10	7.79	0	10	7.78
	AVERAGES/TOTALS		6.54	8,466	143	16.8	7.94	7,298	140	8.7	7.69	391	9.5	7.63
	MAXIMUM		6.80	2,083	144	17.1	8.04	2,132	147	10.0	7.79	279	10.9	7.78
	MINIMUM		6.40	991	142	16.4	7.86	1,011	116	7.6	7.63	22	7.9	7.42
10/21/2018														
	5:47	0	7.5	641	142	18.4	7.84	0	153	10	7.65	648	10.5	7.63
	8:32	0	6.7	2077	141	16.7	8.02	1,889	143	10	7.8	254	10.1	7.8
	8:47	0	6.4	960	0	16.7	8.01	1,003	142	10	7.81	0	10	7.8
	AVERAGES/TOTALS		6.87	3,678	142	17.3	7.96	2,892	146	10.0	7.75	902	10.2	7.74
	MAXIMUM		7.50	2,077	142	18.4	8.02	1,889	153	10.0	7.81	648	10.5	7.80
	MINIMUM		6.40	641	141	16.7	7.84	1,003	142	10.0	7.65	254	10.0	7.63
10/22/2018														
	0:47	50	8	1273	87	16.3	7.95	145	99	0	7.71	1282	12.2	7.71
	1:02	0	7.7	1263	83	5.3	7.38	1,421	94	0.1	7.15	0	0	0
	1:17	0	7.7	1227	82	0.8	7.65	1,375	92	0.1	7.44	0	0	0
	1:32	0	7.2	1173	79	0.9	7.71	1,351	90	0.1	7.49	0	0	0

Date	TIME	PRETREAT FLOW (GPM)	PRETREAT PH	INFLUENT FLOW (GAL)	INFLUENT FLOW (GPM)	INFLUENT TURBIDITY (NTU)	INFLUENT PH	DISCHARGE FLOW (GAL)	DISCHARGE FLOW (GPM)	DISCHARGE TURBIDITY (NTU)	DISCHARGE PH	RECIRC FLOW (GAL)	RECIRC TURBIDITY (NTU)	RECIRC PH
	1:47	0	6.8	1143	76	0.9	7.71	1,315	87	0.1	7.5	0	0	0
	2:02	0	6.5	1019	0	0.9	7.71	1,159	84	0.1	7.5	0	0.1	7.54
	9:02	0	7.2	590	102	1.2	7.61	660	114	1.2	7.38	0	0.2	7.23
	9:17	0	6.7	1452	90	0.9	7.73	1,589	106	0.1	7.49	0	0	0
	9:32	0	6.4	858	0	0.9	7.74	921	103	0.1	7.5	26	0.1	7.52
	12:02	520	6.7	1510	148	2.4	7.62	30	115	0.3	7.35	585	1.2	7.4
	12:17	0	6.5	951	0	1	7.69	846	147	0.4	7.48	151	2.5	7.48
	19:47	0	6.8	1837	151	1.5	7.68	1,888	148	0.5	7.41	40	0.3	7.07
	20:02	0	6.4	1152	0	1.3	7.75	1,203	146	0.3	7.53	0	0.3	7.55
	AVERAGES/TOTALS	285	6.97	15,448	100	2.6	7.69	13,903	110	0.3	7.46	2,084	2.1	7.44
	MAXIMUM	520	8.00	1,837	151	16.3	7.95	1,888	148	1.2	7.71	1,282	12.2	7.71
	MINIMUM	50	6.40	590	76	0.8	7.38	30	84	0.1	7.15	26	0.1	7.07
10/23/2018														
	4:02	0	7.3	305	145	2.7	7.55	300	148	1	7.37	20	0.3	7.39
	4:17	0	6.6	2109	148	2.2	7.74	2,196	146	0.3	7.5	0	0	0
	4:32	0	6.4	665	0	2.3	7.77	655	145	0.3	7.56	37	0.3	7.55
	12:02	526	6.7	445	260	2.6	7.53	436	146	0.7	7.32	17	0.4	7.23
	12:17	0	6.6	2851	138	2.5	7.75	1,910	126	1	7.51	0	0	0
	12:32	0	6.5	603	0	2.3	7.77	617	145	0.4	7.53	0	0.4	7.55
	21:17	0	7.2	884	132	2.9	7.65	929	147	0.7	7.34	0	0.4	7.14
	21:32	0	6.4	2105	0	2.7	7.81	2,183	146	0.4	7.51	0	0	0
	21:47	0	6.4	175	0	2.7	7.79	187	145	0.4	7.57	0	0.4	7.55
	AVERAGES/TOTALS	526	6.68	10,142	165	2.5	7.71	9,413	144	0.6	7.47	74	0.4	7.40
	MAXIMUM	526	7.30	2,851	260	2.9	7.81	2,196	148	1.0	7.57	37	0.4	7.55
	MINIMUM	526	6.40	175	132	2.2	7.53	187	126	0.3	7.32	17	0.3	7.14
10/24/2018														
	6:02	0	6.9	1527	137	2.8	7.68	1,573	147	0.6	7.42	14	0.5	7.34
	6:17	0	6.4	1427	0	2.7	7.76	1,463	146	0.4	7.52	12	0.4	7.53

Date	TIME	PRETREAT FLOW (GPM)	PRETREAT PH	INFLUENT FLOW (GAL)	INFLUENT FLOW (GPM)	INFLUENT TURBIDITY (NTU)	INFLUENT PH	DISCHARGE FLOW (GAL)	DISCHARGE FLOW (GPM)	DISCHARGE TURBIDITY (NTU)	DISCHARGE PH	RECIRC FLOW (GAL)	RECIRC TURBIDITY (NTU)	RECIRC PH
	14:17	0	6.9	1458	139	3.5	7.63	1,474	147	0.6	7.31	33	0.6	7.1
	14:32	0	6.4	1583	0	3.4	7.76	1,634	146	0.6	7.47	0	0.6	7.5
	22:47	0	6.8	1657	140	3.8	7.74	1,684	146	0.8	7.39	19	0.8	7.14
	23:02	0	6.4	1334	0	3.8	7.81	1,368	146	0.7	7.53	38	0.7	7.55
AVERAGES/TOTALS			6.63	8,986	139	3.3	7.73	9,196	146	0.6	7.44	116	0.6	7.36
	MAXIMUM		6.90	1,657	140	3.8	7.81	1,684	147	0.8	7.53	38	0.8	7.55
	MINIMUM		6.40	1,334	137	2.7	7.63	1,368	146	0.4	7.31	12	0.4	7.10
10/25/2018														
	7:32	0	6.9	1354	143	3.9	7.69	1,365	147	0.8	7.42	27	0.7	7.37
	7:47	0	6.4	1635	0	3.8	7.77	1,707	146	0.7	7.52	0	0.6	7.52
	16:02	0	6.8	1918	142	5.3	7.76	1,965	146	0.9	7.45	19	0.9	7.29
	16:17	0	6.4	1131	0	5.2	7.81	1,167	145	0.9	7.58	7	0.8	7.59
	23:32	0	7.1	1003	143	5.5	7.68	1,028	146	1.5	7.42	18	1	7.39
	23:47	0	6.4	2066	0	5.6	7.77	2,122	144	1	7.54	5	1	7.58
AVERAGES/TOTALS			6.67	9,107	143	4.9	7.75	9,354	146	1.0	7.49	76	0.8	7.46
	MAXIMUM		7.10	2,066	143	5.6	7.81	2,122	147	1.5	7.58	27	1.0	7.59
	MINIMUM		6.40	1,003	142	3.8	7.68	1,028	144	0.7	7.42	5	0.6	7.29
10/26/2018														
	5:17	0	7.2	562	138	6	7.62	540	146	1.5	7.39	31	1.2	7.47
	5:32	0	6.5	2097	136	6.2	7.73	2,174	145	1.2	7.48	0	0	0
	5:47	0	6.5	379	0	6.3	7.74	398	144	1.2	7.54	0	1.2	7.55
	9:47	0	7.3	636	132	15.2	7.59	649	145	1.6	7.37	0	1.5	7.31
	10:02	0	7.1	2174	266	7.6	7.72	2,111	142	1.5	7.46	0	0	0
	10:17	0	6.9	2772	143	7.9	7.72	1,926	129	2.2	7.54	0	0	0
	10:32	0	7.1	1349	0	7.7	7.71	1,388	146	1.7	7.54	0	1.7	7.53
	11:32	0	7.5	36	139	8.4	7.41	36	144	1.7	7.41	0	1.8	7.41
	11:47	0	6.7	2134	134	10.1	7.67	2,198	147	1.7	7.44	0	0	0
	12:02	0	6.5	1142	0	8.4	7.7	1,167	146	1.7	7.51	0	1.8	7.5

Date	TIME	PRETREAT FLOW (GPM)	PRETREAT PH	INFLUENT FLOW (GAL)	INFLUENT FLOW (GPM)	INFLUENT TURBIDITY (NTU)	INFLUENT PH	DISCHARGE FLOW (GAL)	DISCHARGE FLOW (GPM)	DISCHARGE TURBIDITY (NTU)	DISCHARGE PH	RECIRC FLOW (GAL)	RECIRC TURBIDITY (NTU)	RECIRC PH
	21:02	0	7.2	792	144	12.6	7.58	764	147	3.3	7.38	35	2.7	7.06
	21:17	0	6.4	2133	0	11.4	7.77	2,194	146	2.7	7.52	0	0	0
	21:32	0	6.4	137	0	11.3	7.78	148	146	2.7	7.55	0	2.7	7.57
	AVERAGES/TOTALS		6.87	16,343	154	9.2	7.67	15,693	144	1.9	7.47	66	1.8	7.43
	MAXIMUM		7.50	2,772	266	15.2	7.78	2,198	147	3.3	7.55	35	2.7	7.57
	MINIMUM		6.40	36	132	6.0	7.41	36	129	1.2	7.37	31	1.2	7.06
10/27/2018														
	7:47	0	6.7	1931	141	12	7.73	1,958	146	3.2	7.53	19	3	7.28
	8:02	0	6.4	1136	0	11.7	7.81	1,163	145	3	7.6	0	3	7.58
	13:17	0	7.6	981	145	17	7.85	1,016	149	3.5	7.38	5	3.1	7.27
	13:32	529	7.6	2144	139	19.3	7.82	2,213	147	3.4	7.58	0	0	0
	13:47	0	7.9	2135	146	22.4	7.89	2,191	147	3.3	7.64	0	0	0
	14:02	0	7.8	2131	138	24.8	7.98	2,203	147	3.4	7.69	0	0	0
	14:17	0	7.9	2121	139	26.9	8.06	2,194	146	3.4	7.77	0	0	0
	14:32	151	7.9	2114	139	30.3	8.25	2,176	146	3.5	7.89	0	0	0
	14:47	0	8.2	2097	137	33.1	8.4	2,176	145	3.5	8.04	0	0	0
	15:02	0	8	2862	142	38.5	8.58	1,739	127	4.5	8.25	162	12.9	8.35
	15:17	0	8.3	2132	142	41.1	8.64	2,227	148	4.4	8.43	0	0	0
	15:32	0	8.5	2132	147	48.9	8.68	2,146	148	4.3	8.45	78	4.1	8.51
	15:47	0	8.2	2138	138	49.8	7.45	2,034	148	3.3	7.79	190	4.1	8.51
	16:02	0	8.2	2124	146	47.8	7.23	2,182	147	3.1	6.96	0	0	0
	16:17	0	7.5	2088	137	45.9	7.42	2,201	147	3.2	6.96	0	0	0
	16:32	0	6.7	2049	137	45.3	7.52	2,196	146	3.2	6.88	0	0	0
	16:47	0	6.4	964	0	44.7	7.54	1,012	145	3.2	6.87	8	3.2	6.88
	21:17	0	7.2	456	140	40.6	8.19	478	146	4.1	6.76	8	4.1	6.76
	21:32	0	6.6	2087	140	39.4	8.87	2,165	144	4.1	6.76	0	0	0
	21:47	0	6.5	724	0	38.7	8.98	746	143	4.2	6.76	0	4.2	6.77

Date	TIME	PRETREAT FLOW (GPM)	PRETREAT PH	INFLUENT FLOW (GAL)	INFLUENT FLOW (GPM)	INFLUENT TURBIDITY (NTU)	INFLUENT PH	DISCHARGE FLOW (GAL)	DISCHARGE FLOW (GPM)	DISCHARGE TURBIDITY (NTU)	DISCHARGE PH	RECIRC FLOW (GAL)	RECIRC TURBIDITY (NTU)	RECIRC PH
AVERAGES/TOTALS		340	7.51	36,546	141	33.9	8.04	36,416	145	3.6	7.50	470	4.6	7.55
MAXIMUM		529	8.50	2,862	147	49.8	8.98	2,227	149	4.5	8.45	190	12.9	8.51
MINIMUM		151	6.40	456	137	11.7	7.23	478	127	3.0	6.76	5	3.0	6.76
10/28/2018														
	0:47	0	7.1	861	138	39.1	9.4	866	145	5.1	6.79	35	5	6.8
	1:02	0	6.5	2067	0	39.5	9.65	2,145	143	5.1	6.76	0	0	0
	1:17	0	6.5	75	0	39.8	9.67	71	142	5.1	6.74	8	5.1	6.75
	10:47	0	6.7	1828	134	49.4	9.5	1,887	144	6.1	6.62	19	6.1	6.62
	11:02	0	6.5	899	0	50.8	9.57	937	144	6.1	6.63	13	6.1	6.64
AVERAGES/TOTALS			6.66	5,730	136	43.7	9.56	5,906	144	5.5	6.71	75	5.6	6.70
MAXIMUM			7.10	2,067	138	50.8	9.67	2,145	145	6.1	6.79	35	6.1	6.80
MINIMUM			6.50	75	134	39.1	9.40	71	142	5.1	6.62	8	5.0	6.62
10/29/2018														
	8:47	0	6.9	826	140	47.2	9.24	870	145	7.5	6.6	6	7.5	6.61
	9:02	0	6.2	2074	140	48.1	9.38	2,178	145	7.5	6.59	0	0	0
	9:17	0	6.1	508	0	48.7	9.41	548	143	7.5	6.58	0	7.5	6.59
AVERAGES/TOTALS			6.40	3,408	140	48.0	9.34	3,596	144	7.5	6.59	6	7.5	6.60
MAXIMUM			6.90	2,074	140	48.7	9.41	2,178	145	7.5	6.60	6	7.5	6.61
MINIMUM			6.10	508	140	47.2	9.24	548	143	7.5	6.58	6	7.5	6.59

MONTHLY SUMMARY

AVERAGES/TOTALS		350	6.81	368,761	149	15.1	7.75	350,260	145	2.7	7.45	9,745	3.0	7.37
MAXIMUM		529	8.50	2,882	271	50.8	9.67	2,325	157	10.0	8.45	1,282	16.1	8.51
MINIMUM		15	6.10	19	76	0.2	7.15	30	84	0.1	6.58	3	0.1	6.59

NOTE: ALL ZERO DATA POINTS FOR DISCHARGE ARE EXCLUDED FROM SUMMARY CALCULATIONS. MONTHLY SUMMARY VALUES ARE CALCULATED FROM 15 MINUTE INTERVAL DATA POINTS, AND NOT DAILY SUMMARIES.

APPENDIX H

Off-Property Monitoring Well Logs

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18939 120th Ave NE Suite 112
Bothell, WA, 98011

Monitoring Well: MW-17

Project: Former Chevron Station # 90129
Client: Chevron EMC
Location: 4700 Brooklyn Ave, Seattle, WA
Logged By: A. Wisher

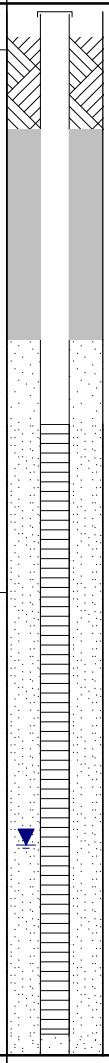
Date Started: 1/17/2018
Date Completed: 1/19/2018
Driller: Cascade Drilling
Drill Method: VAC/Sonic

Total Boring Depth: 25 ft
Hole Diameter: 9 in. in.
Well Depth: 25 ft
TOC Elevation: 215.4 ft

Well Diameter: 2 in. in
Well Screen: 10 slot ft
Filter Pack: 10/20 Colorado
Well Casing: Schedule 40 PVC

MOISTURE CONTENT	ORGANIC VAPOR (ppm)	SAMP. INTERVAL	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC LOG	DEPTH (ft)	LITHOLOGY/DESCRIPTION
						1	-ASPHALT (2.5in.)-
							-CONCRETE (10 in.)-
damp	0.6			SM		2	(SM) (SM) light brown silty SAND with 5-10% gravel, no odor, no sheen
						3	
damp	0.5			SM		4	(SM) (SM) SAA, no odor, no sheen
						5	
damp	0.3			SM		6	(SM) (SM) SAA, no odor, no sheen
						7	
dry	0.4					8	(SM) (SM) SAA, no odor, no sheen
dry	0.1			SM		9	
dry	0.1					10	(SM) (SM) SAA, no odor, no sheen
				SM		11	
						12	(SM) (SM) SAA, no odor, no sheen
				SM		13	
						14	-FILL-
damp	1,200			SM		15	(SM) (SM) dense gray silty SAND, no sheen, no odor
						16	(SM) (SM) SAA, strong sheen, strong odor
				SM		17	
						18	(SM) (SM) SAA, no sheen, no odor
	150			SM		19	
wet	0.1					20	(SM) (SM) SAA, no sheen, no odor
				SM		21	
						22	
						23	(SM) (SM) SAA, no sheen, no odor
				SM		24	
						25	-GLACIAL TILL-
							Bottom of borehole at 25.0 feet.
						26	
						27	
						28	
						29	
						30	
						31	
						32	
						33	
						34	
						35	

WELL DIAGRAM



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18939 120th Ave NE Suite 112
Bothell, WA, 98011

Monitoring Well: MW-18

Project: Former Chevron Station # 90129
Client: Chevron EMC
Location: 4700 Brooklyn Ave, Seattle, WA
Logged By: A. Wisher

Date Started: 1/18/2018
Date Completed: 1/18/2018
Driller: Cascade Drilling
Drill Method: VAC/Sonic

Total Boring Depth: 25 ft
Hole Diameter: 12 in. in.
Well Depth: 25 ft
TOC Elevation: 215.95 ft

Well Diameter: 2 in. in
Well Screen: 10 slot ft
Filter Pack: 10/20 Colorado
Well Casing: Schedule 40 PVC

MOISTURE CONTENT	ORGANIC VAPOR (ppm)	SAMP. INTERVAL	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC LOG	DEPTH (ft)	LITHOLOGY/DESCRIPTION
						1	-ASPHALT (2.0 in)-
						1	-CONCRETE (10.0 in)-
dry	0.2			SM-SP		2	(SM-SP) Light brown loose silty SAND with occasional gravel, no odor, no sheen
dry	0.0			SM-SP		4	(SM-SP) SAA, no odor, no sheen
damp	0.2			SM-SP		6	(SM-SP) Light brown loose silty coarse SAND with occasional gravel, no sheen, no odor
damp	0.1			SM-SP		8	(SM-SP) SAA, no odor, no sheen
damp	0.1			SM-SP		9	(SM-SP) SAA, no odor, no sheen
	0.1					12	-FILL-
				SM/ML		12	(SM/ML) Gray dense sandy SILT to silty SAND with 10-20% gravel
wet	0.2			SM		15	(SM) Brown silty SAND, no odor, no sheen
	0.2			SM/ML		16	(SM/ML) Gray dense silty SAND to sandy SILT with cobbles, water at 15.0 ft, no odor, no sheen
saturated				SM		19	SAA
						20	(SM) Gray soft silty SAND, no odor
				SM		22	(SM) SAA
				SM		24	(SM) Gray silty SAND, heaving
						25	Bottom of borehole at 25.0 feet.

WELL DIAGRAM

- Well Box BKH455
- Schedule 40 PVC Riser
- Concrete Seal
- Bentonite
- 10/20 Sand Filter Pack

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18939 120th Ave NE Suite 112
Bothell, WA, 98011

Monitoring Well: MW-19

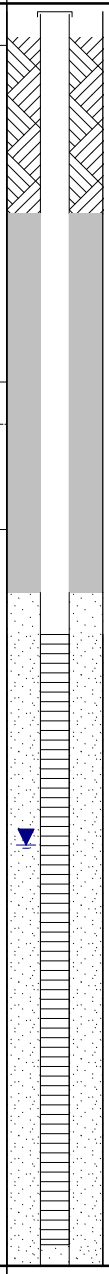
Project: Former Chevron Station # 90129
Client: Chevron EMC
Location: 4700 Brooklyn Ave, Seattle, WA
Logged By: A. Wisher

Date Started: 1/18/2017
Date Completed: 1/19/2018
Driller: Cascade Drilling
Drill Method: VAC/Sonic

Total Boring Depth: 30 ft
Hole Diameter: 9 in. in.
Well Depth: 30 ft
TOC Elevation: 216.36 ft

Well Diameter: 2 in. in
Well Screen: 10 slot ft
Filter Pack: 10/20 Colorado
Well Casing: Schedule 40 PVC

MOISTURE CONTENT	ORGANIC VAPOR (ppm)	SAMP. INTERVAL	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC LOG	DEPTH (ft)	LITHOLOGY/DESCRIPTION
						1	-ASPHALT (2.0 in)-
							-CONCRETE and LOOSE BRICKS (10.0 in)-
dry	0.1			SM		2	(SM) Light brown silty SAND with occasional cobbles, no odor, no sheen
						3	
dry	0.4					4	(SM) SAA, no odor, no sheen
				SM		5	
dry	0.1					6	
						7	
damp	0.1					8	(SM) SAA, no odor, no sheen
dry	0.1			SM		9	-FILL-
				SP-SM			(SP-SM) Dense gravelly silty SAND with 10% cobbles, no odor, no sheen
dry	0.1					10	
				SM		11	(SM) Loose silty SAND, no odor, no sheen
dry	0.3					12	
						13	(SP-SM) Light brown to black very dense gravelly silty SAND, no odor, no sheen
				SP-SM		14	
dry	0.6					15	(SM) Brown dense silty SAND, no odor, no sheen
dry	0.2					16	
				SM		17	
						18	(SM) Brown dense silty SAND with occasional cobbles, no odor, no sheen
				SM		19	
wet	0.3					20	(SM) Gray silty SAND, no odor, no sheen
						21	
				SM		22	
						23	(SM) SAA, no odor, no sheen
wet	0.3			SM		24	
wet	0.1					25	(SM) SAA, no odor, no sheen
				SM		26	(SM) SAA, no odor, no sheen
				SM		27	
wet	0.0					28	(SM) SAA, slight odor, no sheen
				SM		29	
wet	0.1					30	
							Bottom of borehole at 30.0 feet.
						31	
						32	
						33	
						34	
						35	



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18939 120th Ave NE Suite 112
Bothell, WA, 98011

Monitoring Well: MW-25

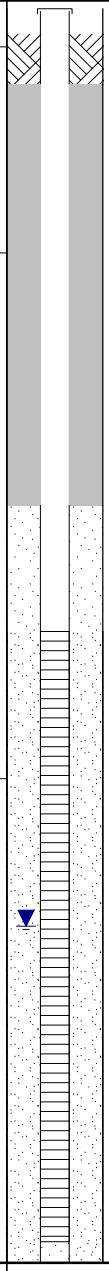
Project: Former Chevron Station # 90129
Client: Chevron EMC
Location: 4700 Brooklyn Ave, Seattle, WA
Logged By: A. Wisher

Date Started: 1/15/2018
Date Completed: 1/22/2018
Driller: Cascade Drilling
Drill Method: VAC/Sonic

Total Boring Depth: 30 ft
Hole Diameter: 9 in. in.
Well Depth: 30 ft
TOC Elevation: 212.81 ft

Well Diameter: 2 in. in
Well Screen: 10 slot ft
Filter Pack: 10/20 Colorado
Well Casing: Schedule 40 PVC

MOISTURE CONTENT	ORGANIC VAPOR (ppm)	SAMP. INTERVAL	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC LOG	DEPTH (ft)	LITHOLOGY/DESCRIPTION
						1	-ASPHALT (2.0 in)- -CONCRETE (10.5 in.)-
dry	2.0			SM		2	(SM) Light brown dense fine silty SAND with gravel and cobbles, approximately 50% silt, no odor, no sheen
						3	
dry	6.0			SM		4	(SM) Light brown dense fine silty SAND with gravel and cobbles, no odor, no sheen
						5	
dry	0.2					6	
						7	
dry	0.2					8	(SM) SAA
dry	5.0			SM		9	(SM) SAA, slight sheen, no odor
				SM		10	-FILL-
dry	3.0					11	
						12	(SM) SAA, no sheen, no odor
				SM		13	
						14	(SM) SAA, no sheen, no odor
dry	3.0			SM		15	
						16	(SM) SAA, no sheen, no odor
				SM		17	
				SM		18	(SM) SAA, no sheen, slight odor
damp	1.0					19	(SM) Gray silty SAND, no sheen, slight odor
				SM		20	
						21	
wet	0.2					22	(SM) SAA, no sheen, no odor
				SM		23	
wet	1.1					24	(SM) SAA, no sheen, no odor
				SM		25	
						26	(SM) SAA, no sheen, no odor
				SM		27	
damp	2.0			SM		28	(SM) SAA, no sheen, no odor
damp	5.2			SM		29	(SM) Gray silty SAND with gravel, no sheen, moderate odor Note: Odor volitalized quickly
						30	Bottom of borehole at 30.0 feet.
						31	
						32	
						33	
						34	
						35	



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18939 120th Ave NE Suite 112
Bothell, WA, 98011

Monitoring Well: MW-26

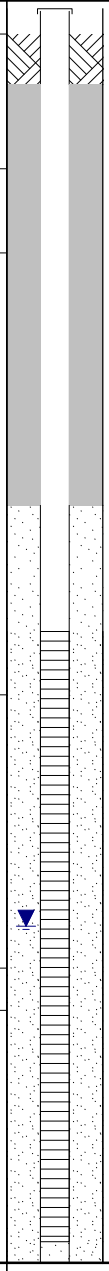
Project: Former Chevron Station # 90129
Client: Chevron EMC
Location: 4700 Brooklyn Ave, Seattle, WA
Logged By: A. Wisher

Date Started: 1/16/2018
Date Completed: 1/22/2018
Driller: Cascade Drilling
Drill Method: VAC/Sonic

Total Boring Depth: 30 ft
Hole Diameter: 9 in. in.
Well Depth: 30 ft
TOC Elevation: 213.45 ft

Well Diameter: 2 in. in
Well Screen: 10 slot ft
Filter Pack: 10/20 Colorado
Well Casing: Schedule 40 PVC

MOISTURE CONTENT	ORGANIC VAPOR (ppm)	SAMP. INTERVAL	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC LOG	DEPTH (ft)	LITHOLOGY/DESCRIPTION
						1	-ASPHALT (4.0 in)-
							-CONCRETE (6.0 in)-
damp	1.4			SM/ML		3	(SM/ML) Light brown loose silty SAND to sandy SILT, 1/16- 1 in. cobbles, no sheen, no odor
dry	0.3					4	Note: wood and debris at 4.0 ft
				SM		5	(SM) Light brown mottled very dense silty fine SAND with gravel, no sheen, no odor
moist	0.2					6	(SM) Light brown silty fine SAND, no sheen, no odor
				SM		7	
moist	0.3					8	(SM) Light brown medium dense silty SAND with occasional cobbles, no sheen, no odor
				SM		9	
moist	0.1					10	(SM) SAA, no sheen, no odor
				SM		11	
moist	0.4					12	(SM) SAA, no sheen, no odor
				SM		13	
moist	0.1					14	(SM) SAA, no sheen, no odor
				SM		15	(SM) SAA, no sheen, no odor
				SM			-FILL-
moist	4.1					16	(SM) SAA, slight sheen, no odor
						17	(SM) Gray silty SAND with organic pockets (charcoal), no sheen, moderate odor
moist	3.7			SM		18	
moist	2.5					19	
						20	(SM) SSA, no sheen, moderate odor
				SM		21	
wet	0.5					22	(SM) SSA, no sheen, moderate odor
				SM		23	(GP) Gravel pocket
				GP		24	(SM) SSA, no sheen, moderate odor
moist	1.1			SM		25	
						26	(SM) SSA, no sheen, moderate odor
				SM		27	
						28	(SM) SSA, no sheen, no odor
				SM		29	(SM) SSA, no sheen, no odor
moist	4.1			SM		30	
							Bottom of borehole at 30.0 feet.
						31	
						32	
						33	
						34	
						35	



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18939 120th Ave NE Suite 112
Bothell, WA, 98011

Monitoring Well: MW-27

Project: Former Chevron Station # 90129
Client: Chevron EMC
Location: 4700 Brooklyn Ave, Seattle, WA
Logged By: A. Wisher

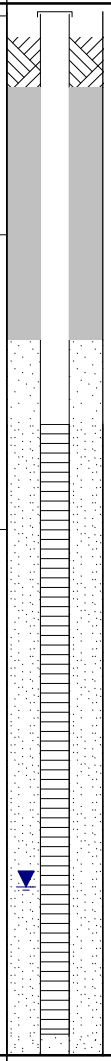
Date Started: 1/16/2018
Date Completed: 1/23/2018
Driller: Cascade Drilling
Drill Method: VAC/Sonic

Total Boring Depth: 25 ft
Hole Diameter: 9 in. in.
Well Depth: 25 ft
TOC Elevation: 214.43 ft

Well Diameter: 2 in. in
Well Screen: 10 slot ft
Filter Pack: 10/20 Colorado
Well Casing: Schedule 40 PVC

MOISTURE CONTENT	ORGANIC VAPOR (ppm)	U.S.C.S. SYMBOL	DEPTH (ft)	LITHOLOGY/DESCRIPTION
			0	-CONCRETE SIDEWALK (4.0 in)-
dry	0.1	SM	2	(SM) Light brown loose silty fine SAND with occasional gravel, no odor, no sheen
moist	0.4	SM	4	(SM) Dark brown hard silty SAND with occasional gravel, no odor, no sheen
			5	-FILL-
moist	0.6	ML/SM	6	(ML/SM) Light brown dense sandy SILT to silty SAND, occasional gravel, no odor, no sheen
wet	0.4	SP	8	(SP) Brown medium SAND with trace silt and pebbles, no odor, no sheen
dry	1.2	SP	10	(SP) SAA, no odor, no sheen
dry	2.1		11	
dry	30.1	SP	12	(SP) SAA, moderate odor, no sheen
			12	-GLACIAL TILL-
dry	16.0	SM	14	(SM) Gray hard silty SAND, moderate odor, no sheen
dry	50.0	SM	15	(SM) SAA, moderate odor, no sheen
damp	18.1		16	(SM) SAA, moderate odor, no sheen
damp	27.2	SM	18	(SM) SAA, moderate odor, no sheen
damp	65.5	SM	20	(SM) SAA, moderate odor, no sheen
wet	12.5	SM	22	(SM) SAA, slight odor, no sheen
wet	4.1		23	
wet	5.1	SM	25	(SM) SAA, no odor, no sheen
			25	Bottom of borehole at 25.0 feet.

WELL DIAGRAM



Well Box
Schedule 40 PVC Riser
Concrete Seal
Bentonite
10/20 Sand Filter Pack

leidos

18939 120th Ave NE Suite 112
Bothell, WA, 98011

Monitoring Well: MW-28

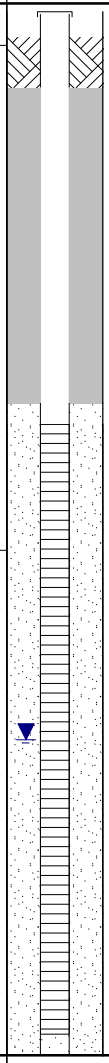
Project: Former Chevron Station # 90129
Client: Chevron EMC
Location: 4700 Brooklyn Ave, Seattle, WA
Logged By: A. Wisher

Date Started: 1/17/2018
Date Completed: 1/23/2018
Driller: Cascade Drilling
Drill Method: VAC/Sonic

Total Boring Depth: 25 ft
Hole Diameter: 9 in. in.
Well Depth: 25 ft
TOC Elevation: 214.44 ft

Well Diameter: 2 in. in
Well Screen: 10 slot ft
Filter Pack: 10/20 Colorado
Well Casing: Schedule 40 PVC

MOISTURE CONTENT	ORGANIC VAPOR (ppm)	SAMP. INTERVAL	ANALYTICAL SAMPLE	U.S.C.S. SYMBOL	GRAPHIC LOG	DEPTH (ft)	LITHOLOGY/DESCRIPTION
						1	-CONCRETE SIDEWALK (12 in.)-
damp	0.3			SM		2	(SM) Light brown loose silty SAND with occasional pebbles, no odor, no sheen
wet	0.3			SM		4	(SM) Light brown loose silty SAND, approximately 30% silt with occasional pebbles, no odor, no sheen
damp	0.8			SM		6	(SM) Light brown loose silty SAND with occasional pebbles, no odor, no sheen
damp	0.6			SM		8	(SM) SAA, no odor, no sheen
dry	20.1			SM		10	(SM) SAA, no odor, no sheen
dry	50			SM		12	(SM) SAA, moderate odor, no sheen
dry	100.3					13	-FILL-
	205			SM		14	no sheen, moderate odor (SM) Dark gray silty SAND, moderate odor, no sheen
				SM		16	(SM) SAA, slight odor, no sheen
				SM		18	(SM) SAA, slight odor, no sheen
				SM		20	(SM) SAA, contains large woody debris, slight odor, no sheen
				SM		22	(SM) SAA, contains woody debris, slight odor, no sheen
moist	10.8			SM		23	(SM) SAA, slight odor, no sheen
wet	25			SM		24	(SM) SAA, slight odor, no sheen
						25	Bottom of borehole at 25.0 feet.



APPENDIX I

Groundwater Monitoring Logs

Aspect CONSULTING

Sample number MW-17-080218

GROUNDWATER SAMPLING RECORD

WELL NUMBER: MW-17 Page: 1 of 1

Project Name: FH Brooklyn
Project Number: 160092
Date: 8/2/2018
Sampled by: Andrew Yonkofski
Measuring Point of Wel Top of Casing
Screened Interval (ft. TOC) —
Filter Pack Interval (ft. TOC) —

Starting Water Level (ft TOC): 16.71
Casing Stickup (ft): —
Total Depth (ft TOC): 24.80
Casing Diameter (inches): 2"

Casing Volume — (ft Water) x — (Lpfv)(gpf) = — (L)(gal)
Casing volumes: 3/4"= 0.02 gpf 2" = 0.16 gpf 4" = 0.65 gpf 6" = 1.47 gpf
3/4"= 0.09 Lpf 2" = 0.62 Lpf 4" = 2.46 Lpf 6" = 5.56 Lpf

Sample Intake Depth (ft TOC): ~20'

PURGING MEASUREMENTS

Criteria:		Typical 0.1-0.5 Lpm	Stable	na	± 3%	± 10%	± 0.1	± 10 mV	± 10%	
Time	Cumul. Volume (gal or L)	Purge Rate (gpm or Lpm)	Water Level (ft)	Temp. (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Comments
1549	—	0.25	16.71	—	—	—	—	—	—	
1553	1	↓	16.82	17.1	470.6	0.35	6.48	47.3	>99.9	Silty/grey
1557	2		16.86	17.0	471.3	1.21	6.43	47.6	>99.9	
(AM) ~~1601~~ 1550	3		16.89	16.9	475.8	0.53	6.38	47.8	>999	
~~1603~~ 1553	4		16.89	16.8	488.8	0.56	6.42	44.9	>99.9	
(AM) ~~1604~~ 1554	5		16.90	16.8	493.5	0.54	6.44	43.1	>99.9	

Total Liters Purged: 5.0
Total Casing Volumes Removed: —

Ending Water Level (ft TOC): 16.90
Ending Total Depth (ft TOC): 24.80

SAMPLE INVENTORY

Time	Volume	Bottle Type	Quantity	Filtration	Preservation	Appearance: Color	Appearance: Turbidity & Sediment	Remarks
(AM) 1610	~~1310~~ 40 mL	VOA	6	No	HCl			lots of silt, cloudy, light grey
1610	~~1310~~ 250mL	Amber	1	No	N/A			
1615	~~1315~~ 40mL	VOA	6	No	HCl			
1615	1315 250mL	Amber	1	No	N/A			

"MW-100"

METHODS

Parameters measured with (instrument model & serial number): Blue YSI / Red turbidimeter / Red interface probe
Purging Equipment: Peristaltic
Decon Equipment: Spray bottles / shop towels
Disposal of Discharged Water: Onsite treatment system operated by Clear Water
Observations/Comments: Duplicate taken & labeled "MW-100"

Aspect CONSULTING

Sample number MW-25-080218

GROUNDWATER SAMPLING RECORD

WELL NUMBER: MW-25 Page: 1 of 1

Project Name: FH Brooklyn
Date: 8/2/2018
Sampled by: Andrew Yonkofski
Measuring Point of Wel Top of Casing
Screened Interval (ft. TOC) —
Filter Pack Interval (ft. TOC) —

Project Number: 160092
Starting Water Level (ft TOC): 15.53
Casing Stickup (ft): —
Total Depth (ft TOC): 30.15'
Casing Diameter (inches): 2"

Casing Volume — (ft Water) x — (Lpfv)(gpf) = — (L)(gal)
Casing volumes: 3/4"= 0.02 gpf 2" = 0.16 gpf 4" = 0.65 gpf 6" = 1.47 gpf
3/4"= 0.09 Lpf 2" = 0.62 Lpf 4" = 2.46 Lpf 6" = 5.56 Lpf

Sample Intake Depth (ft TOC): ~25'

PURGING MEASUREMENTS

Criteria:		Typical 0.1-0.5 Lpm	Stable	na	± 3%	± 10%	± 0.1	± 10 mV	± 10%	
Time	Cumul. Volume (gal or (L))	Purge Rate (gpm or (pm))	Water Level (ft)	Temp. (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Comments
1440	—	0.25	15.53	—	—	—	—	—	—	
1444	1.0		15.58	17.7	506.9	1.05	6.70	68.3	82.4	Orange iron bacteria
1448	2.0		15.61	16.9	432.0	0.40	6.50	51.3	799.9	in purge H_2O
1452	3.0		15.62	16.7	434.5	0.84	6.45	62.8	799.9	
1456	4.0		15.64	16.7	462.7	0.80	6.49	66.2	799.9	
(AM) 1500	5.0		15.65	16.6	432.0	0.88	6.53	72.4	83.1	

Total Liters Purged: 5.0
Total Casing Volumes Removed: —

Ending Water Level (ft TOC): 16.90
Ending Total Depth (ft TOC): 30.15'

SAMPLE INVENTORY

Time	Volume	Bottle Type	Quantity	Filtration	Preservation	Appearance		Remarks
						Color	Turbidity & Sediment	
1505	240 mL	40 mL VOA	6	No	N/A	Clear	w/ lots of orange suspended iron	
1505	250 mL	250 mL Amber	1	No	N/A	bacteria.		

METHODS

Parameters measured with (instrument model & serial number): Blue YSI / Red Turbidimeter / Red interface probe
Purging Equipment: Peristaltic
Decon Equipment: Spray bottles / shop towels
Disposal of Discharged Water: Onsite treatment system operated by Clear Water
Observations/Comments: Water in vault above TOC.

Aspect CONSULTING

Sample number _____

GROUNDWATER SAMPLING RECORD

WELL NUMBER: MW-26 **Page:** 1 of 1

Project Name: FH Brooklyn
Project Number: 160092
Date: 8/2/2018
Sampled by: Andrew Yonkofski
Measuring Point of Wel: Top of Casing
Screened Interval (ft. TOC): —
Filter Pack Interval (ft. TOC): —
Starting Water Level (ft TOC): 15.62
Casing Stickup (ft): N/A
~~Total Depth (ft TOC)~~: LNAPL: 15.52 below TOC
Casing Diameter (inches): 2"

Casing Volume ____ (ft Water) x ____ (Lpfv)(gpf) = ____ (L)(gal)
Casing volumes: 3/4"= 0.02 gpf 2" = 0.16 gpf 4" = 0.65 gpf 6" = 1.47 gpf
3/4"= 0.09 Lpf 2" = 0.62 Lpf 4" = 2.46 Lpf 6" = 5.56 Lpf
Sample Intake Depth (ft TOC): —

PURGING MEASUREMENTS

Criteria:		Typical 0.1-0.5 Lpm	Stable	na	± 3%	± 10%	± 0.1	± 10 mV	± 10%	
Time	Cumul. Volume (gal or L)	Purge Rate (gpm or Lpm)	Water Level (ft)	Temp. (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Comments

Not sampled due to presence of LNAPL

Total Liters Purged: _____ Total Casing Volumes Removed: _____

Ending Water Level (ft TOC): _____ Ending Total Depth (ft TOC): _____

SAMPLE INVENTORY

Time	Volume	Bottle Type	Quantity	Filtration	Preservation	Appearance		Remarks
						Color	Turbidity & Sediment	

Not sampled

METHODS

Parameters measured with (instrument model & serial number): Red interface probe
Purging Equipment: Peristaltic Decon Equipment: Spray bottles / shop towels
Disposal of Discharged Water: Onsite treatment system operated by Clear Water
Observations/Comments: _____

Aspect CONSULTING

Sample number _____

GROUNDWATER SAMPLING RECORD

WELL NUMBER: MW28 **Page:** 1 of 1

Project Name: FH Brooklyn
Project Number: 160092
Date: 8/2/2018
Sampled by: Andrew Yonkofski
Measuring Point of Wel Top of Casing
Screened Interval (ft. TOC) —
Filter Pack Interval (ft. TOC) —
Starting Water Level (ft TOC): 16.20
Casing Stickup (ft): N/A
~~Total Depth (ft TOC):~~ LNAPL: 16.20 ft BTOC
Casing Diameter (inches): 2"

Casing Volume _____ (ft Water) x _____ (Lpfv)(gpf) = _____ (L)(gal)
Casing volumes: 3/4"= 0.02 gpf 2" = 0.16 gpf 4" = 0.65 gpf 6" = 1.47 gpf
3/4"= 0.09 Lpf 2" = 0.62 Lpf 4" = 2.46 Lpf 6" = 5.56 Lpf
Sample Intake Depth (ft TOC): —

PURGING MEASUREMENTS

Criteria:		Typical 0.1-0.5 Lpm	Stable	na	± 3%	± 10%	± 0.1	± 10 mV	± 10%	
Time	Cumul. Volume (gal or L)	Purge Rate (gpm or Lpm)	Water Level (ft)	Temp. (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Comments

Not sampled due to presence of LNAPL

Total Liters Purged: _____ Total Casing Volumes Removed: _____

Ending Water Level (ft TOC): _____ Ending Total Depth (ft TOC): _____

SAMPLE INVENTORY

Time	Volume	Bottle Type	Quantity	Filtration	Preservation	Appearance		Remarks
						Color	Turbidity & Sediment	

Not Sampled

METHODS

Parameters measured with (instrument model & serial number): Red interface probe
Purging Equipment: ~~Peristaltic~~ Decon Equipment: Spray bottles / shop towels
Disposal of Discharged Water: Onsite treatment system operated by Clear Water
Observations/Comments: LNAPL measured @ 16.20' below TOC.

SAMPLE CHAIN OF CUSTODY

Page # 1 of 1

Report To Adam Griffin
Company Aspect
Address 401 2nd Ave S
City, State, ZIP Seattle, WA 98104
Phone _____ Email agriffin@aspectconsulting.com

SAMPLERS (*signature*)

PROJECT NAME: FH Brooklyn
PO #:

REMARKS: CVOCs to be invoiced separately
INVOICE TO:

TURNAROUND TIME
☑ Standard Turnaround
☐ RUSH _____
Rush charges authorized by: _____

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

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	ANALYSES REQUESTED: TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM					Notes
MW-25-082218		8/22/18	1550	W	4		X	X		X							
MW-26-082218		↓	1635	W	4		X	X		X							
MW-18-082218		↓	1655	W	4		X	X		X							
Trip Blank				W	2					X							
MW-100-082218		8/22/18	1800	W	3			X									

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Delia Massey	Aspect	8/23/18	0600
Received by:				
Relinquished by:				
Received by:				

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

Aspect CONSULTING

Sample number MW-17

GROUNDWATER SAMPLING RECORD

WELL NUMBER: MW-17 Page: 1 of 1

Project Name: FH Brooklyn
Date: 8/22/2018
Sampled by: DIM
Measuring Point of Well: TOC
Screened Interval (ft. TOC)
Filter Pack Interval (ft. TOC)

Project Number: 160092
Starting Water Level (ft TOC): 24.51
Casing Stickup (ft):
Total Depth (ft TOC): ~~24.85~~
Casing Diameter (inches): 2"

Casing Volume _____ (ft Water) x _____ (Lpfv)(gpf) = _____ (L)(gal)
Casing volumes: 3/4"= 0.02 gpf 2" = 0.16 gpf 4" = 0.65 gpf 6" = 1.47 gpf
3/4"= 0.09 Lpf 2" = 0.62 Lpf 4" = 2.46 Lpf 6" = 5.56 Lpf

Sample Intake Depth (ft TOC):

PURGING MEASUREMENTS

Criteria:		Typical 0.1-0.5 Lpm	Stable	na	± 3%	± 10%	± 0.1	± 10 mV	± 10%	
Time	Cumul. Volume (gal or L)	Purge Rate (gpm or Lpm)	Water Level (ft)	Temp. (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Comments
			24.51							

Total Gallons Purged: ~~MW~~ 0
Total Casing Volumes Removed:
Ending Water Level (ft TOC):
Ending Total Depth (ft TOC):

SAMPLE INVENTORY

Time	Volume	Bottle Type	Quantity	Filtration	Preservation	Appearance		Remarks
						Color	Turbidity & Sediment	

METHODS

Parameters measured with (instrument model & serial number): red Interface probe
Purging Equipment: Peristaltic
Decon Equipment: Alconox and water
Disposal of Discharged Water: Onsite treatment system operated by Clear Water
Observations/Comments: Not enough water to sample.

Aspect CONSULTING

Sample number: MW-18-082218 / MW-100-082218

GROUNDWATER SAMPLING RECORD

WELL NUMBER: MW-18 Page: 1 of 1

Project Name: FH Brooklyn
Project Number: 160092
Date: 8/22/2018
Starting Water Level (ft TOC): 22.36
Sampled by: DIM
Casing Stickup (ft):
Measuring Point of Well: TOC
Total Depth (ft TOC): 24.55
Screened Interval (ft. TOC)
Casing Diameter (inches): 2"
Filter Pack Interval (ft. TOC)

Casing Volume _____ (ft Water) x 0.16 (Lpfv)(gpf) = _____ (L)(gal)
Casing volumes: 3/4"= 0.02 gpf 2" = 0.16 gpf 4" = 0.65 gpf 6" = 1.47 gpf
3/4"= 0.09 Lpf 2" = 0.62 Lpf 4" = 2.46 Lpf 6" = 5.56 Lpf
Sample Intake Depth (ft TOC): midscreen

PURGING MEASUREMENTS

Criteria:		Typical 0.1-0.5 Lpm	Stable	na	± 3%	± 10%	± 0.1	± 10 mV	± 10%	
Time	Cumul. Volume (gal or (L))	Purge Rate (gpm or (Lpm))	Water Level (ft)	Temp. (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Comments
1433	0	0.25	22.36						clear	start purging
1438	1	↓	23.75	19.2	602	1.14	6.79	74.5	55.4	
										went dry @ 1441
1635										sample

Total Gallons Purged: 0.5
Total Casing Volumes Removed:
Ending Water Level (ft TOC): 24.35
Ending Total Depth (ft TOC): 24.55

SAMPLE INVENTORY

Time	Volume	Bottle Type	Quantity	Filtration	Preservation	Appearance		Remarks
						Color	Turbidity & Sediment	
1635	40mL	VOA	3	N	HCl			
1635	250mL	Amber	1	N	N/A			
1800	40mL	VOA	3	N	HCl			MW-100-082218

METHODS

Parameters measured with (instrument model & serial number): YSI - orange / Geotech turbidimeter / red interface probe
Purging Equipment: Peristaltic
Decon Equipment: Alconox and water
Disposal of Discharged Water: Onsite treatment system operated by Clear Water
Observations/Comments: No NAPL. Went dry after 5 min. ~~MW~~ sample @ 1635 once water had returned.

Aspect CONSULTING

Sample number MW-25-082218

GROUNDWATER SAMPLING RECORD

WELL NUMBER: MW-25 Page: 1 of 1

Project Name: FH Brooklyn
Project Number: 160092
Date: 8/22/2018
Starting Water Level (ft TOC): 16.96 trace LNAPL
Sampled by: DIM
Casing Stickup (ft):
Measuring Point of Well: TOC
Total Depth (ft TOC): 30.15
Screened Interval (ft. TOC)
Casing Diameter (inches): 2"
Filter Pack Interval (ft. TOC)

Casing Volume _____ (ft Water) x 0.16 (Lpfv)(gpf) = _____ (L)(gal)
Casing volumes: 3/4"= 0.02 gpf 2" = 0.16 gpf 4" = 0.65 gpf 6" = 1.47 gpf
3/4"= 0.09 Lpf 2" = 0.62 Lpf 4" = 2.46 Lpf 6" = 5.56 Lpf
Sample Intake Depth (ft TOC): mid screen

PURGING MEASUREMENTS

Criteria:		Typical 0.1-0.5 Lpm	Stable	na	± 3%	± 10%	± 0.1	± 10 mV	± 10%	
Time	Cumul. Volume (gal or (L))	Purge Rate (gpm or (Lpm))	Water Level (ft)	Temp. (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Comments
1526	0	0.25	16.96						clear	start purging
1531	1	↓	17.08	18.6	713	0.41	7.39	22.5	81.9	
1536	2	↓	17.12	18.4	708	0.48	7.37	11.4	63.1	
1541	3	↓	17.11	18.2	705	0.38	7.24	7.2	58.8	
1546	4	↓	17.11	18.3	704	0.37	7.37	2.6	40.1	20 min - sample

Total ~~Gallons~~ L Purged: 4.0
Total Casing Volumes Removed:
Ending Water Level (ft TOC): 17.11
Ending Total Depth (ft TOC): 30.15

SAMPLE INVENTORY

Time	Volume	Bottle Type	Quantity	Filtration	Preservation	Appearance		Remarks
						Color	Turbidity & Sediment	
1550	250mL	Amber	1	N	N/A		40.4	orange iron ↓ DX
1550	40mL	VOA	3	N	HCl		40.4	↓ VOCs

METHODS

Parameters measured with (instrument model & serial number): YSI - orange / geotech turbidimeter
Purging Equipment: Peristaltic
Decon Equipment: Alconox and water
Disposal of Discharged Water: Onsite treatment system operated by Clear Water
Observations/Comments: Trace LNAPL. Orange iron particles

Aspect CONSULTING

Sample number MW-26-082218

GROUNDWATER SAMPLING RECORD

WELL NUMBER: MW-26 Page: 1 of 1

Project Name: FH Brooklyn
Project Number: 160092
Date: 8/22/2018
Starting Water Level (ft TOC): 22.72 trace LNAPL
Sampled by: DIM
Casing Stickup (ft):
Measuring Point of Well: TOC
Total Depth (ft TOC): 30.45
Screened Interval (ft. TOC)
Casing Diameter (inches): 2"
Filter Pack Interval (ft. TOC)

Casing Volume _____ (ft Water) x _____ (Lpfv)(gpf) = _____ (L)(gal)
Casing volumes: 3/4"= 0.02 gpf 2" = 0.16 gpf 4" = 0.65 gpf 6" = 1.47 gpf
3/4"= 0.09 Lpf 2" = 0.62 Lpf 4" = 2.46 Lpf 6" = 5.56 Lpf

Sample Intake Depth (ft TOC): midscreen

PURGING MEASUREMENTS

Criteria:		Typical 0.1-0.5 Lpm	Stable	na	± 3%	± 10%	± 0.1	± 10 mV	± 10%	
Time	Cumul. Volume (gal or L)	Purge Rate (gpm or Lpm)	Water Level (ft)	Temp. (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Comments
1618	0	0.5	22.72						clear	Start purging
1622	2	↑	22.86	19.4	483	2.11	7.00	79.5	85.2	
1626	4	|	22.89	18.9	481.5	2.08	6.97	82.0	62.4	
1630	6	|	22.92	18.8	489.9	1.99	6.93	86.1	32.4	
1634	8	↓	22.93	18.8	495.5	1.52	7.01	77.8	23.4	sample

Total Gallons Purged: 8 L
Total Casing Volumes Removed: —
Ending Water Level (ft TOC): 22.93
Ending Total Depth (ft TOC): 30.45

SAMPLE INVENTORY

Time	Volume	Bottle Type	Quantity	Filtration	Preservation	Appearance		Remarks
						Color	Turbidity & Sediment	
1635	40ml	VOA	3	N	HCl		18.5	
1635	250ml	Amber	1	N	NA		18.5	

METHODS

Parameters measured with (instrument model & serial number): YSI orange / geotech turbidmeter / red Interface probe
Purging Equipment: Peristaltic
Decon Equipment: Alconox and water
Disposal of Discharged Water: Onsite treatment system operated by Clear Water
Observations/Comments: trace LNAPL, orange iron particles.

Aspect CONSULTING

Sample number MW-28-082218

GROUNDWATER SAMPLING RECORD

WELL NUMBER: MW-28 Page: 1 of 1

Project Name: FH Brooklyn
Date: 8/22/2018
Sampled by: DIM
Measuring Point of Well: TOC
Screened Interval (ft. TOC)
Filter Pack Interval (ft. TOC)

Project Number: 160092
Starting Water Level (ft TOC): 24.39 LNAPL 24.41 water
Casing Stickup (ft):
Total Depth (ft TOC): 25.35
Casing Diameter (inches): 2"

Casing Volume _____ (ft Water) x _____ (Lpfv)(gpf) = _____ (L)(gal)
Casing volumes: 3/4"= 0.02 gpf 2" = 0.16 gpf 4" = 0.65 gpf 6" = 1.47 gpf
3/4"= 0.09 Lpf 2" = 0.62 Lpf 4" = 2.46 Lpf 6" = 5.56 Lpf

Sample Intake Depth (ft TOC):

PURGING MEASUREMENTS

Criteria:		Typical 0.1-0.5 Lpm	Stable	na	± 3%	± 10%	± 0.1	± 10 mV	± 10%	
Time	Cumul. Volume (gal or L)	Purge Rate (gpm or Lpm)	Water Level (ft)	Temp. (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Comments

Total Gallons Purged:
Total Casing Volumes Removed:
Ending Water Level (ft TOC):
Ending Total Depth (ft TOC):

SAMPLE INVENTORY

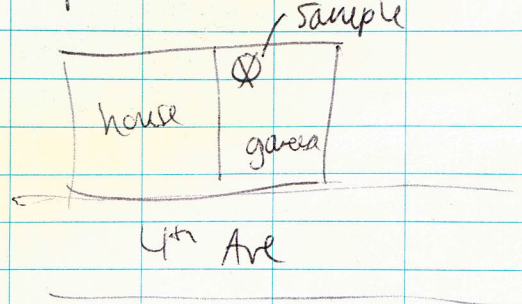
Time	Volume	Bottle Type	Quantity	Filtration	Preservation	Appearance		Remarks
						Color	Turbidity & Sediment	

METHODS

Parameters measured with (instrument model & serial number):
Purging Equipment: Peristaltic
Decon Equipment: Alconox and water
Disposal of Discharged Water: Onsite treatment system operated by Clear Water
Observations/Comments: 24.39 LNAPL 24.41 water. water is black, strong petroleum odor
Can't get enough water to sample.

8/21/18 Vayu DTM

0900 onsite 70°F, smoky
Emilie let me into garage.
Opened cleanout closest to exca



0915 Collected sample w/ peristaltic pump. sump-082118
Water is clear, no sheen, no odor.

0930 offsite to lab

8/22/18 FH Brooklyn GW DTM

1400 Onsite, 80°F, smoky
YSI orange already calibrated
Brian onsite check in, get bailer + interface probe

1425 MW-18
1441 went dry @ 1441 after 5 min purge, move on.
1455 MW-17
Not enough water
1511 MW-19
DTW = 24.08
TD = 29.67
1520 MW-25 - no car!
1635 sample
phone call w/ Adam
1655 MW-18
sample,
1
1715 MW-27
24.15 product
24.23 water
24.9 TD
~~not enough~~
MW-28 not enough water

Rite in the Rain.

Back to MW-18 to get field dup.

1830 offsite

SAMPLE CHAIN OF CUSTODY

Report To Adam Griffin
Company Aspect Consulting
Address 401 2nd Ave S #201
City, State, ZIP Seattle WA
Phone 612 232 7343 Email agriffin@aspectconsulting.com

SAMPLERS (*signature*): Breeyn Greer

PROJECT NAME	PO #
FH Brooklyn	160092
REMARKS	**INVOICE TO**
CUOCs invoiced Separately	AP

Page # 1 of 1

TURNAROUND TIME
☑ Standard Turnaround
☐ RUSH
Rush charges authorized by:

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

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM					Notes
						ANALYSES REQUESTED											
MW-18-083118		8/31/18	1355	W	~~3~~ 4		X	X		X							Dx if possible
MW-25-083118		8/31/18	1215	↓	4		X	X		X							
MW-26-083118		8/31/18	1000	↓	4		X	X		X							

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: Breeyn Greer	Breeyn Greer	Aspect	8/31/18	1516
Received by:	Nhan Phan	FBI	8/31/18	1516
Relinquished by:				
Received by:				

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

Aspect CONSULTING

Sample number MW-26-083118

GROUNDWATER SAMPLING RECORD

WELL NUMBER: MW-26 Page: 1 of 1

Project Name: FH Brooklyn
Date: 8/31/18
Sampled by: BMG
Measuring Point of Well: TOC
Screened Interval (ft. TOC) –
Filter Pack Interval (ft. TOC) –

Project Number:
Starting Water Level (ft TOC): 22.00
Casing Stickup (ft): –
Total Depth (ft TOC): 32.5
Casing Diameter (inches): 2"

Casing Volume _____ (ft Water) x _____ (Lpfv)(gpf) = _____ (L)(gal)
Casing volumes: 3/4"= 0.02 gpf 2" = 0.16 gpf 4" = 0.65 gpf 6" = 1.47 gpf
3/4"= 0.09 Lpf 2" = 0.62 Lpf 4" = 2.46 Lpf 6" = 5.56 Lpf

Sample Intake Depth (ft TOC): –

PURGING MEASUREMENTS

Criteria:		Typical 0.1-0.5 Lpm	Stable	na	± 3%	± 10%	± 0.1	± 10 mV	± 10%	
Time	Cumul. Volume (gal or L)	Purge Rate (gpm or Lpm)	Water Level (ft)	Temp. (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Comments
1150		0.1	22.00							Start @ 1150
1155			22.12	17.3	548	1.05	6.55	51.2		Slow pump
1200			22.12	17.6	548	1.07	10.65	43.4		
1205			22.13	17.2	547	1.00	6.66	38.7		
1210			22.12	17.3	545	1.03	6.65	35.1		End @ 1210
1215										

Total Gallons Purged: _____ Total Casing Volumes Removed: _____

Ending Water Level (ft TOC): _____ Ending Total Depth (ft TOC): –

SAMPLE INVENTORY

Time	Volume	Bottle Type	Quantity	Filtration	Preservation	Appearance		Remarks
						Color	Turbidity & Sediment	
1215	40 ml	VOA	3	–	HCl			MW-26-083118
1215	1 L	Amber	1	–	–			

METHODS

Parameters measured with (instrument model & serial number): YSI - Orange
Purging Equipment: Geotech Peristaltic Decon Equipment: Alconox + H_2O
Disposal of Discharged Water: Baker Tank Treatment onsite
Observations/Comments: no Turbidimeter

Aspect CONSULTING

Sample number MW-25-083118

GROUNDWATER SAMPLING RECORD

WELL NUMBER: MW-25 Page: 1 of 1

Project Name: Braklyn
Date: 8/31/18
Sampled by: BMG
Measuring Point of Well: TOC N
Screened Interval (ft. TOC) —
Filter Pack Interval (ft. TOC) —

Project Number: 160092
Starting Water Level (ft TOC): 17.65
Casing Stickup (ft): —
Total Depth (ft TOC): 30.15
Casing Diameter (inches): 2"

Casing Volume _____ (ft Water) x _____ (Lpfv)(gpf) = _____ (L)(gal)
Casing volumes: 3/4"= 0.02 gpf 2" = 0.16 gpf 4" = 0.65 gpf 6" = 1.47 gpf
3/4"= 0.09 Lpf 2" = 0.62 Lpf 4" = 2.46 Lpf 6" = 5.56 Lpf

Sample Intake Depth (ft TOC): —

PURGING MEASUREMENTS

Criteria:		Typical 0.1-0.5 Lpm	Stable	na	± 3%	± 10%	± 0.1	± 10 mV	± 10%	
Time	Cumul. Volume (gal or L)	Purge Rate (gpm or Lpm)	Water Level (ft)	Temp. (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Comments
0930	0	0.2 lpm	17.65	~~16.8~~	~~726~~	~~0.57~~				Start @ 0930
0935		0.15	17.75	16.8	726	0.57	5.42	41		slow pump
0940		↓	17.74	16.9	715	0.34	5.55	24		
0945			17.73	16.8	714	0.28	5.64	15		
0950			17.74	17.0	713	0.23	5.74	9		
0955		↓	17.78	16.8	712	0.23	5.85	3		End @ 0955

Total Gallons Purged: 1 gal
Total Casing Volumes Removed: —
Ending Water Level (ft TOC): 17.78
Ending Total Depth (ft TOC): —

SAMPLE INVENTORY

Time	Volume	Bottle Type	Quantity	Filtration	Preservation	Appearance: Color	Appearance: Turbidity & Sediment	Remarks
1000	40 ml	VOA	3	-	HCl	Clear	no	MW-25-083118
1000	250 ml	Amber	1	-	-	↓	↓	

METHODS

Parameters measured with (instrument model & serial number): YSI - Orange
Purging Equipment: Peristaltic - Geotech
Decon Equipment: Alconox + H_2O
Disposal of Discharged Water: Baker Tank (dewatering) onsite
Observations/Comments: to Turbidity meter

Aspect CONSULTING

Sample number MW-18-083118

GROUNDWATER SAMPLING RECORD

WELL NUMBER: MW-18 Page: 1 of 1

Project Name: FH Brooklyn
Date: 8/31/18
Sampled by: BMG
Measuring Point of Well: TOC
Screened Interval (ft. TOC) –
Filter Pack Interval (ft. TOC) –

Project Number:
Starting Water Level (ft TOC): 23.71
Casing Stickup (ft): –
Total Depth (ft TOC): 24.50
Casing Diameter (inches): 2"

Casing Volume _____ (ft Water) x _____ (Lpfv)(gpf) = _____ (L)(gal)
Casing volumes: 3/4"= 0.02 gpf 2" = 0.16 gpf 4" = 0.65 gpf 6" = 1.47 gpf
3/4"= 0.09 Lpf 2" = 0.62 Lpf 4" = 2.46 Lpf 6" = 5.56 Lpf

Sample Intake Depth (ft TOC): –

PURGING MEASUREMENTS

Criteria:		Typical 0.1-0.5 Lpm	Stable	na	± 3%	± 10%	± 0.1	± 10 mV	± 10%	
Time	Cumul. Volume (gal or L)	Purge Rate (gpm or Lpm)	Water Level (ft)	Temp. (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Comments
1330		0.2	23.70	19.0	618	2.3	6.64	0.8	–	well dry
1331			24.50							
1340			24.38							
1350			24.20							attempt VOA collection

Total Gallons Purged: _____ Total Casing Volumes Removed: _____

Ending Water Level (ft TOC): _____ Ending Total Depth (ft TOC): _____

SAMPLE INVENTORY

Time	Volume	Bottle Type	Quantity	Filtration	Preservation	Appearance		Remarks
						Color	Turbidity & Sediment	
1355	40 ml	VOA	3	–	HCl	none	Sl. turbid	MW-18-083118 lots of sand ↳ went dry again

METHODS

Parameters measured with (instrument model & serial number): _____

Purging Equipment: _____ Decon Equipment: _____

Disposal of Discharged Water: _____

Observations/Comments: _____

APPENDIX J

Vapor Intrusion Evaluation Memo

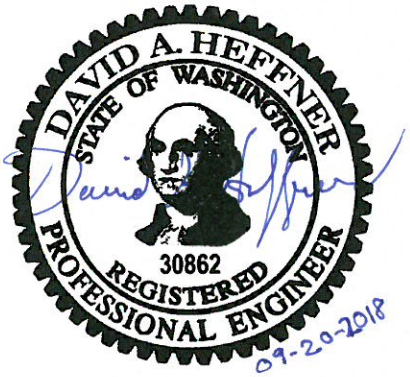
MEMORANDUM

Project No.: 160092

September 20, 2018

To: Eran Fields, FH Brooklyn, LLC

cc: Bill Joyce, Joyce Ziker Parkinson PLLC



From: Adam Griffin, P.E.
Senior Remediation Engineer

Dave Heffner, P.E.
Associate Remediation Engineer

Re: **Vapor Intrusion Evaluation**
Redevelopment of 4700 Brooklyn Ave. Property

Aspect Consulting, LLC (Aspect) concludes that a chemical vapor barrier is required by applicable Washington State Department of Ecology (Ecology) regulations and guidance (Ecology, 2016) to protect against exposure from vapor intrusion at the new development planned at 4700 Brooklyn Avenue in Seattle. Our conclusion is based on groundwater quality results from MW-17 through MW-19 and MW-25 through MW-28 installed and sampled during off-property Remedial Investigation (RI) by Chevron in January 2018. Three additional sampling events have been performed in August 2018 as part of the Interim Action Work Plan activities. A soil vapor probe was also installed as part of off-property RI activities, but Chevron has been unable to sample soil gas at this location.

The groundwater samples were analyzed for petroleum hydrocarbon (PHC) contaminants and selected chlorinated volatile organic compounds (CVOCs). The detected analytes include benzene, toluene, ethylbenzene, total xylenes, total petroleum hydrocarbon in the gasoline and diesel ranges, tetrachloroethene, and its degradation products trichloroethene and vinyl chloride. Results for these analytes from all events are summarized in Table 1 and compared to the groundwater screening levels for vapor intrusion from Ecology's CLARC Master Table.

With the exception of MW-19, all monitoring wells exhibit screening level exceedances for both PHC and CVOC contaminants during the January 2018 event[1] which indicates a potential vapor intrusion concern via the groundwater-to-soil gas-to indoor air exposure pathway per Ecology guidance. Therefore, based on exceedances of Ecology's established screening levels and MTCA's implementing regulations, a chemical vapor barrier is required to protect against exposure from vapor intrusion.

Based on this evaluation, the required minimum extent of the chemical vapor barrier (plan view) is shown on Figure 1.

Reference

Washington State Department of Ecology (Ecology), 2016, Guidance for Evaluating Soil Vapor Intrusion in Washington State: Investigation and Remedial Action, Toxics Cleanup Program Publication No. 09-09-047, Review Draft Revised February 2016.

Limitations

Work for this project was performed for the FH Brooklyn, LLC (Client), and this memorandum was prepared in accordance with generally accepted professional practices for the nature and conditions of work completed in the same or similar localities, at the time the work was performed. This memorandum does not represent a legal opinion. No other warranty, expressed or implied, is made.

All reports prepared by Aspect Consulting for the Client apply only to the services described in the Agreement(s) with the Client. Any use or reuse by any party other than the Client is at the sole risk of that party, and without liability to Aspect Consulting. Aspect Consulting's original files/reports shall govern in the event of any dispute regarding the content of electronic documents furnished to others.

Attachments:

Table 1 - Groundwater Analytical Results for Off-Property Monitoring Wells and Comparison to Vapor Intrusion Screening Levels

Figure 1 - Minimum Extent of Chemical Vapor Barrier

V:\160092 - 4700 Brooklyn Ave\Deliverables\Vapor Intrusion Memo\Vapor barrier memo_20180920.docx

[1] Subsequent groundwater sampling results are included in Table 1. However, they are not considered for evaluation for potential vapor intrusion exposure because they were collected during dewatering activities and are not considered to be a representative basis of evaluation. As much as 15 feet of drawdown (below static groundwater elevation) was occurring at the time these samples were collected.

TABLE 1. Groundwater Analytical Results for Off-Property Monitoring Wells and Comparison to Vapor Intrusion Screening Levels

Project No. 160092, Chevron Service Station No. 90129, 4700 Brooklyn Avenue, Seattle, Washington

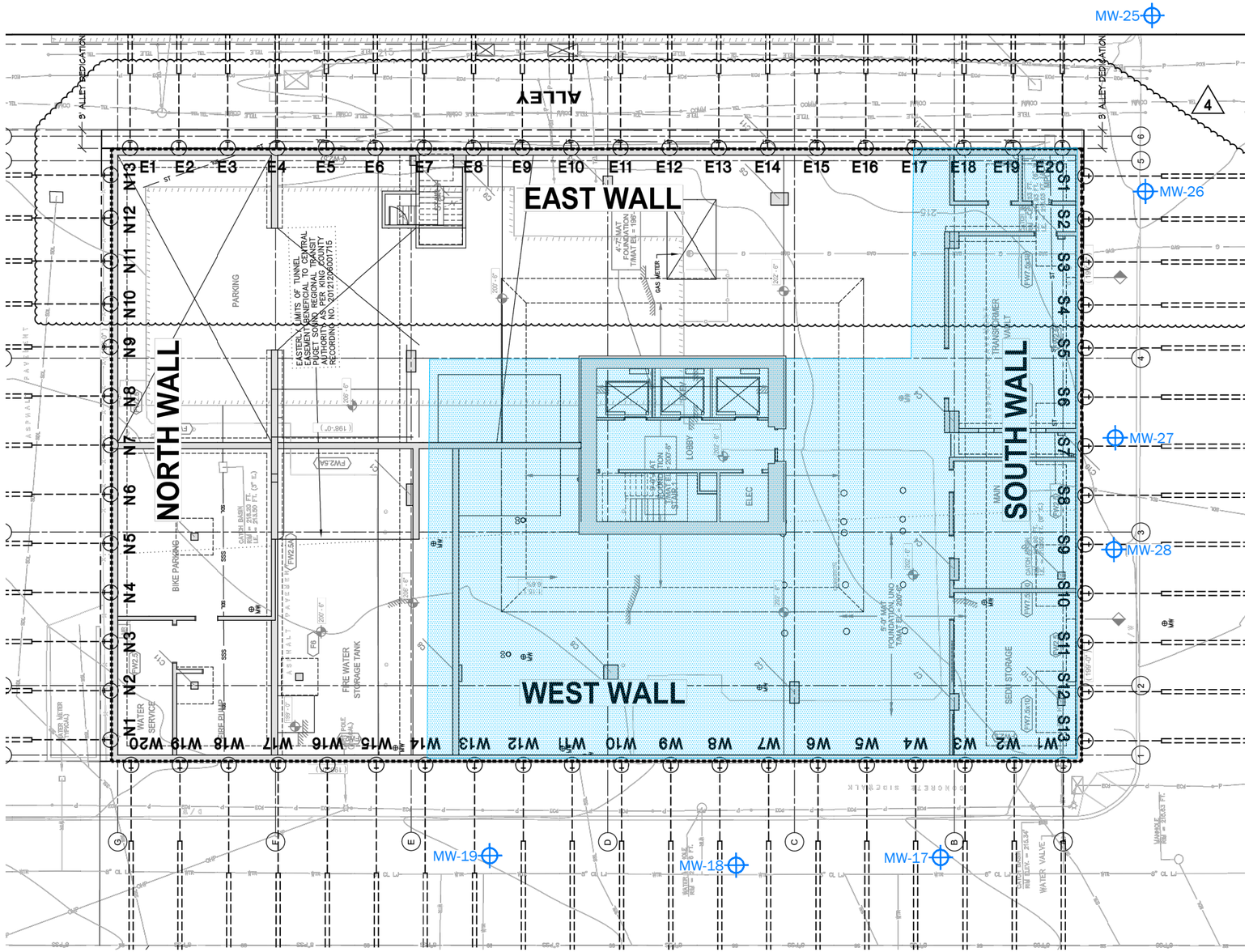
Well ID	Sample Date	TPH-DRO	TPH-GRO	Benzene	Toluene	Ethyl-benzene	Total Xylenes	PCE	TCE	Vinyl Chloride
MW-17	1/30/18	110	2,800	120	5	39	99	120	35	<0.5
	8/2/18	860	2,800	45	4	27	87	110	28	0.23
		Dry due to Dewatering Operations								
MW-18	1/30/18	85	360	91	4	0.90	0.50	9	3	<0.5
	8/22/18	99x	<100	<0.35	<1	<1	<2	2.9	1.1	<0.2
	8/31/18	180	<100	<0.35	<1	<1	<2	1.6	<1	<0.2
MW-19	1/30/18	<46	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
MW-25	1/30/18	<46	900	78	8	110	36	24	50	77
	8/2/18	210	1200	32	3	9.3	6.9	25	480	81
	8/22/18	58	420	10	<1	<1	<2	59	270	13
	8/31/18	<50	440	12	<1	<1	<2	43	360	12
MW-26	1/30/18	<46	570	18	3	37	2	370	2,100	59
	8/2/18	LNAPL Present - no sample collected								
	8/22/18	130x	940	28	2	14	1.2	<10	810	23
	8/31/18	120 x	1300	23	<1	<1	<2	44	1400	12
MW-27	1/30/18	170	6,700	48	20	350	410[4]	<0.5	20	6
MW-28	1/30/18	150	5,800	120	12	330	210	64	230	3
	8/2/18	LNAPL Present - no sample collected								
	8/22/18	Dry due to Dewatering Operations								
Vapor Intrusion Screening Level[2]		**(Note 3)**		**2.4**	**15,600**	**2,780**	**310[4]**	**22.9**	**1.55**	**0.347**

DRO diesel-range organics
GRO gasoline-range organics
PCE tetrachloroethene
TCE trichloroethene
TPH total petroleum hydrocarbon

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

Notes:

1) Groundwater samples were collected on January 30/31, 2018. Only analytes detected in at least one sample are shown in this table. All concentrations are in micrograms per liter (µg/L). Shading indicates an exceedance of the vapor intrusion screening level.
2) Vapor intrusion screening levels were obtained from Ecology's CLARC Master Table (*2015 Groundwater Screening Level, Method B*) on 7/17/18. When both cancer and noncancer values are provided in CLARC, the more stringent value is shown in this table.
3) The CLARC Master Table provides screening levels for several volatile petroleum hydrocarbon (VPH) fractions, but not for TPH-DRO or TPH-GRO.
4) The screening level of 310 µg/L is for m-xylene. The total xylenes concentration of 410 µg/L detected at MW-27 represents a screening level exceedance only if it is predominantly m-xylene.



LEGEND

P1 (I) SOLDIER PILE

SOIL ANCHOR

B BUILDING GRID LOCATION

FACE OF SOLDIER PILE WALL

100 EXISTING GRADE CONTOUR

PROPOSED BUILDING WALL

Minimum Extent of Chemical Vapor Barrier on Subsurface Walls and Floors
(This extent would not include areas with the center mat foundation, which is 9 ft. thick and would prevent any potential vapor migration.)

MW-28 Monitoring Well Location

0 20 40 Feet

Source: Shoring details taken from sheet number SH2.1 of Temporary Shoring Wall Plans, Revision 4, prepared by Ground Support, PLLC, dated 04/06/2018.

Minimum Extent of Chemical Vapor Barrier

4700 Brooklyn Avenue
Seattle, Washington

Aspect Consulting	Sep-2018	BY: ACG/CMV	FIGURE NO. 1
	PROJECT NO. 160092	REVISED BY: SCC	

CAD Path: Q:\4700 Brooklyn Avenue NE\160092 Vapor Intrusion Eval\160092-01.dwg Fig 1 || Date Saved: Sep 19, 2018 2:16pm || User: scudd

APPENDIX K

Chemical Vapor Barrier Product Information

PREPRUFE® 300R & 160R

Pre-applied waterproofing membranes that bond integrally to poured concrete for use below slabs or behind basement walls on confined sites

Although not the specified below grade waterproofing system, MH has no objections to use of the GCP Preprufe waterproofing.
MH also understands the waterproofing will be limited to the foundation walls only, while a different sheet vapor barrier will be used for underslab water vapor diffusion control.

Description

Preprufe® 300R & 160R membranes are unique composite sheets comprised of a thick HDPE film, pressure sensitive adhesive and weather resistant protective coating. Designed with Advanced Bond Technology™, Preprufe 300R & 160R membranes form a unique, integral bond to poured concrete, preventing both the ingress and lateral migration of water while providing a robust barrier to water, moisture and gas.

The Preprufe R System includes:

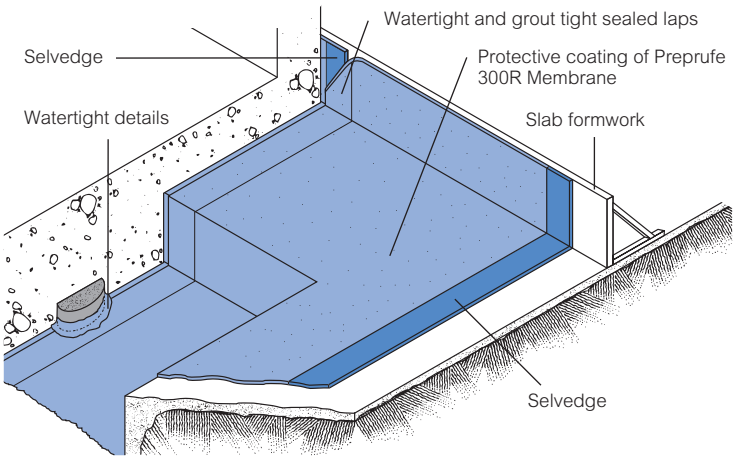
- **Preprufe® 300R**—heavy-duty grade for use below slabs and on rafts (i.e. mud slabs). Designed to accept the placing of heavy reinforcement using conventional concrete spacers.
- **Preprufe® 160R**—thinner grade for blindside, zero property line applications against soil retention systems.Vertical use only.
- **Preprufe® Tape LT**—for covering cut edges, roll ends, penetrations and detailing (temperatures between 25°F (-4°C) and 86°F (+30°C)).
- **Preprufe® Tape HC**—for covering cut edges, roll ends, penetrations and detailing (minimum 50°F (10°C)).
- **Preprufe® CJ Tape LT**—for construction joints, and detailing (temperatures between 25°F (-4°C) and 86°F (+30°C)).
- **Preprufe® CJ Tape HC**—for construction joints, and detailing (minimum 50°F (10°C)).
- **Bituthene® Liquid Membrane**—for sealing around penetrations, etc.
- **Adcor™ ES**—waterstop for joints in concrete walls and floors
- **Preprufe® Tieback Covers**—preformed cover for soil retention wall tieback heads
- **Preprufe® Preformed Corners**—preformed inside and outside corners

Preprufe® 300R & 160R membranes are applied either horizontally to smooth prepared concrete, carton forms or well rolled and compacted earth or crushed stone substrate; or vertically to permanent formwork or adjoining structures. Concrete is then cast directly against the adhesive side of the membranes. The specially developed Preprufe adhesive layers work together to form a continuous and integral seal to the structure.

Preprufe® products can be returned up the inside face of slab formwork but is not recommended for conventional twin-sided formwork on walls, etc. Use Bituthene® self adhesive membrane or Procor® fluid-applied me to walls after removal of formwork for a fully b system to all structural surfaces.

Advantages

- **Forms a unique continuous adhesive bond to concrete poured against it**—prevents wat migration and makes it unaffected by ground settlement beneath slabs
- **Fully-adhered watertight laps** and detailing
- **Provides a barrier to water, moisture and gas**—physically isolates the structure from the surrounding ground
- **BBA Certified** for basement Grades 2, 3, & 4 to BS 8102:1990
- **Zero permeance** to moisture
- **Solar reflective**—reduced temperature gain
- **Simple and quick to install**—requiring no priming or fillets
- **Can be applied to permanent formwork**—allows maximum use of confined sites
- **Self protecting**—can be trafficked immediately after application and ready for immediate placing of reinforcement
- **Unaffected by wet conditions**—cannot activate prematurely
- **Inherently waterproof, non-reactive system:**



Drawings are for illustration purposes only.
Please refer to graceconstruction.com for specific application details.

BBA BRITISH BOARD OF AGREMENT CERTIFICATE No. 97/3325

- not reliant on confining pressures or hydration
- unaffected by wet/dry cycling

- **Chemical resistant**—effective in most types of soils and waters, protects structure from salt or sulphate attack

Installation

The most current application instructions, detail drawings and technical letters can be viewed at graceconstruction.com. For other technical information contact your local Grace representative.

Preprufe® 300R & 160R membranes are supplied in rolls 4 ft (1.2 m) wide, with a selvedge on one side to provide self-adhered laps for continuity between rolls. The rolls of Preprufe Membrane and Preprufe Tape are interwound with a disposable plastic release liner which must be removed before placing reinforcement and concrete.

Substrate Preparation

All surfaces—It is essential to create a sound and solid substrate to eliminate movement during the concrete pour. Substrates must be regular and smooth with no gaps or voids greater than 0.5 in. (12 mm). Grout around all penetrations such as utility conduits, etc. for stability (see Figure 1).

Horizontal—The substrate must be free of loose aggregate and sharp protrusions. Avoid curved or rounded substrates. When installing over earth or crushed stone, ensure substrate is well compacted to avoid displacement of substrate due to traffic or concrete pour. The surface does not need to be dry, but standing water must be removed.

Vertical—Use concrete, plywood, insulation or other approved facing to sheet piling to provide support to the membrane. Board systems such as timber lagging must be close butted to provide support and not more than 0.5 in. (12 mm) out of alignment.

Membrane Installation

Preprufe® membranes can be applied at temperatures of 25°F (-4°C) or above. When installing Preprufe product in cold or marginal weather conditions 55°F (<13°C) the use of Preprufe Tape LT is recommended at all laps and detailing. Preprufe Tape LT should be applied to clean, dry surfaces and the release liner must be removed immediately after application. Alternatively, Preprufe Low Temperature (LT) membrane is available for low temperature condition applications. Refer to Preprufe LT data sheet and Grace Tech Letter 16 for more information.

Horizontal substrates—Place the membrane HDPE film side to the substrate with the clear plastic release liner facing towards the concrete pour. End laps should be staggered to avoid a build up of layers. Leave plastic release liner in position until overlap procedure is completed (see Figure 2).

Accurately position succeeding sheets to overlap the previous sheet 3 in. (75 mm) along the marked selvedge. Ensure the underside of the succeeding sheet is clean, dry and free from contamination before attempting to overlap. Peel back the plastic release liner from between the overlaps as the two layers are bonded together. Ensure a continuous bond is achieved without creases and roll firmly with a heavy roller. Completely remove the plastic liner to expose the protective coating. Any initial tack will quickly disappear products.

Refer to Grace Tech Letter 15 for information on suitable rebar chairs for Preprufe products.

Vertical substrates—Mechanically fasten the membrane vertically using fasteners appropriate to the substrate with the the clear plastic release liner facing towards the concrete pour. The membrane may be installed in any convenient length. Fastening can be made through the selvedge using a small and low profile head fastener so that the membrane lays flat and allows firmly rolled overlaps. Immediately remove the plastic release liner.

Ensure the underside of the succeeding sheet is clean, dry and free from contamination before attempting to overlap. Roll firmly to ensure a watertight seal.

Roll ends and cut edges—Overlap all roll ends and cut edges by a minimum 3 in. (75 mm) and ensure the area is clean and free from contamination, wiping with a damp cloth if necessary. Allow to dry and apply Preprufe® Tape LT (or HC in hot climates) centered over the lap edges and roll firmly (see Figure 3). Immediately remove printed plastic release liner from the tape.

Details

Detail drawings are available at graceconstruction.com.

Membrane Repair

Inspect the membrane before installation of reinforcement steel, formwork and final placement of concrete. The membrane can be easily cleaned by power washing if required. Repair damage by wiping the area with a damp cloth to ensure the area is clean and free from dust, and allow to dry. Repair small punctures (0.5 in. (12 mm) or less) and slices by applying Preprufe® Tape centered over the damaged area. Repair holes and large punctures by applying a patch of Preprufe membrane, which extends 6 in. (150 mm) beyond the damaged area. Seal all edges of the patch with Preprufe Tape. Any areas of damaged adhesive should be covered with Preprufe Tape. Where exposed selvedge has lost adhesion or laps have not been sealed, ensure the area is clean and dry and cover with fresh Preprufe Tape. All Preprufe Tape must be rolled firmly and the tinted release liner removed. Alternatively, use a hot air gun or similar to activate the adhesive using caution not to damage the membrane and firmly roll lap to achieve continuity.

Pouring of Concrete

Ensure the plastic release liner is removed from all areas of Preprufe membrane and tape.

It is recommended that concrete be poured within 56 days (42 days in hot climates) of application of the membrane. Following proper ACI guidelines, concrete must be placed carefully and consolidated properly to avoid damage to the membrane. Never use a sharp object to consolidate the concrete.

Removal of Formwork

Preprufe® membranes can be applied to removable formwork, such as slab perimeters, elevator and lift pits, etc. Once the concrete is poured the formwork must remain in place until the concrete has gained sufficient compressive strength to develop the surface bond. Preprufe membranes are not recommended for conventional twin-sided wall forming systems, see Grace Tech Letter 13 for information on forming systems used with Preprufe products.

Figure 1

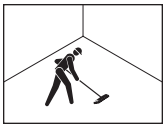


Figure 2

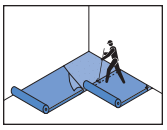
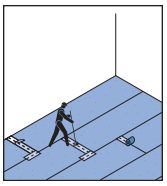
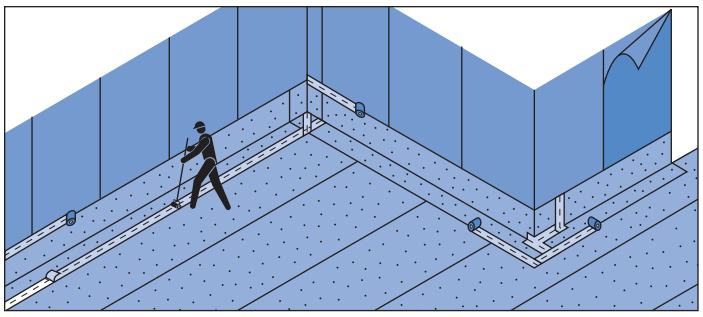


Figure 3

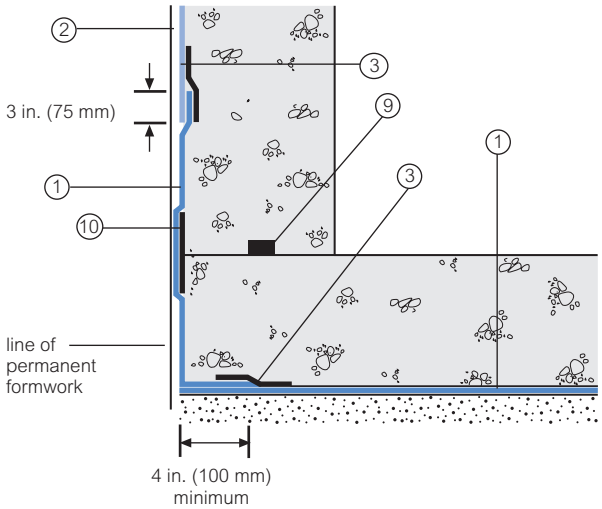




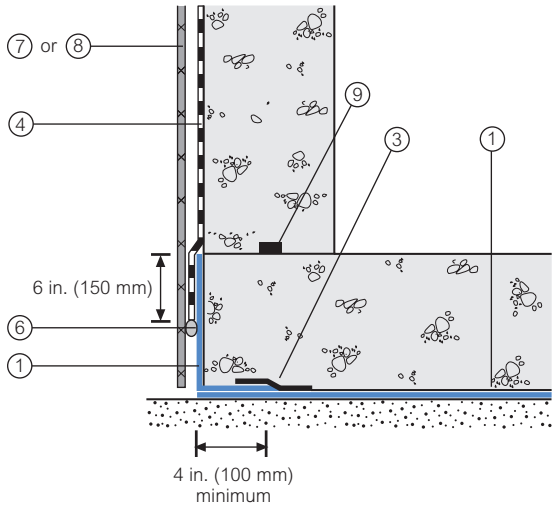
Detail Drawings

Details shown are typical illustrations and not working details. For a list of the most current details, visit us at graceconstruction.com. For technical assistance with detailing and problem solving please call toll free at 866-333-3SBM (3726).

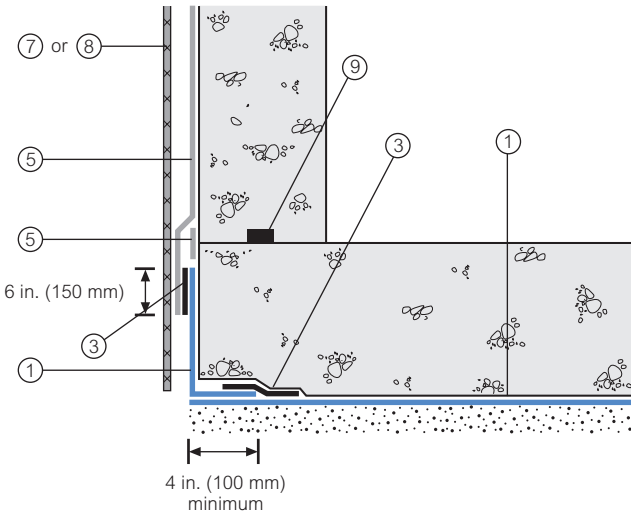
Wall base detail against permanent shutter



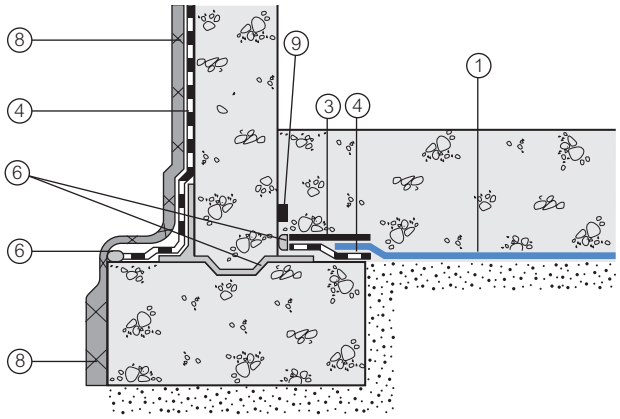
Bituthene® wall base detail (Option 1)



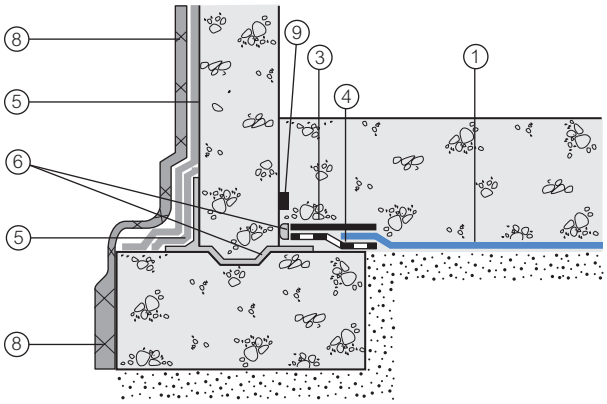
Procor® wall base detail (Option 1)



Bituthene® wall base detail (Option 2)



Procor® wall base detail (Option 2)



1 Preprufe® 300R
2 Preprufe® 160R
3 Preprufe® Tape
4 Bituthene®
5 Procor®
6 Bituthene® Liquid Membrane
7 Approved Protection Course
8 Hydroduct®
9 Adcor™ ES
10 Preprufe® CJ Tape

Supply

Dimensions (Nominal)	Preprufe 300R Membrane	Preprufe 160R Membrane	Preprufe Tape (LT or HC*)
Thickness	0.046 in. (1.2 mm)	0.032 in. (0.8 mm)	
Roll size	4 ft x 98 ft (1.2 m x 30 m)	4 ft x 115 ft (1.2 m x 35 m)	4 in. x 49 ft (100 mm x 15 m)
Roll area	392 ft² (36 m²)	460 ft² (42 m²)	
Roll weight	108 lbs (50 kg)	92 lbs (42 kg)	4.3 lbs (2 kg)
Minimum side/end laps	3 in. (75 mm)	3 in. (75 mm)	3 in. (75 mm)

Physical Properties

Property	Typical Value 300R	Typical Value 160R	Test Method
Color	white	white	
Thickness	0.046 in. (1.2 mm)	0.032 in. (0.8 mm)	ASTM D3767
Lateral Water Migration Resistance	Pass at 231 ft (71 m) of hydrostatic head pressure	Pass at 231 ft (71 m) of hydrostatic head pressure	ASTM D5385, modified[1]
Low temperature flexibility	Unaffected at -20°F (-29°C)	Unaffected at -20°F (-29°C)	ASTM D1970
Resistance to hydrostatic head	231 ft (71 m)	231 ft (71 m)	ASTM D5385, modified[2]
Elongation	500%	500%	ASTM D412, modified[3]
Tensile strength, film	4000 psi (27.6 MPa)	4000 psi (27.6 MPa)	ASTM D412
Crack cycling at -9.4°F (-23°C), 100 cycles	Unaffected, Pass	Unaffected, Pass	ASTM C836
Puncture resistance	221 lbs (990 N)	100 lbs (445 N)	ASTM E154
Peel adhesion to concrete	5 lbs/in. (880 N/m)	5 lbs/in. (880 N/m)	ASTM D903, modified[4]
Lap peel adhesion	5 lbs/in. (880 N/m)	5 lbs/in. (880 N/m)	ASTM D1876, modified[5]
Permeance to water vapor transmission	0.01 perms (0.6 ng/(Pa x s x m²))	0.01 perms (0.6 ng/(Pa x s x m²))	ASTM E96, method B
Water absorption	0.5%	0.5%	ASTM D570

Footnotes:

1. Lateral water migration resistance is tested by casting concrete against membrane with a hole and subjecting the membrane to hydrostatic head pressure with water. The test measures the resistance of lateral water migration between the concrete and the membrane.
2. Hydrostatic head tests of Preprufe Membranes are performed by casting concrete against the membrane with a lap. Before the concrete cures, a 0.125 in. (3 mm) spacer is inserted perpendicular to the membrane to create a gap. The cured block is placed in a chamber where water is introduced to the membrane surface up to the head indicated.
3. Elongation of membrane is run at a rate of 2 in. (50 mm) per minute.
4. Concrete is cast against the protective coating surface of the membrane and allowed to properly dry (7 days minimum). Peel adhesion of membrane to concrete is measured at a rate of 2 in. (50 mm) per minute at room temperature.
5. The test is conducted 15 minutes after the lap is formed (per Grace published recommendations) and run at a rate of 2 in. (50 mm) per minute.

Removal of Formwork (continued)

A minimum concrete compressive strength of 3000 psi (20 N/mm²) is recommended prior to stripping formwork supporting Preprufe® membranes. Premature stripping may result in displacement of the membrane and/or spalling of the concrete.

Refer to Grace Tech Letter 17 for information on removal of formwork for Preprufe products.

Specification Clauses

Preprufe 300R® or 160R membrane shall be applied with its protective coating presented to receive fresh concrete to which it will integrally bond. Only Grace Construction Products approved membranes shall be bonded to Preprufe 300R/160R product. All Preprufe 300R/160R system materials shall be supplied by Grace Construction Products, and applied strictly in accordance with their instructions. Specimen performance and formatted clauses are also available.

NOTE: Use Preprufe Tape to tie-in Procor® fluid-applied membrane with Preprufe® products.

Health and Safety

Refer to relevant Material Safety data sheet. Complete rolls should be handled by a minimum of two persons.

www.graceconstruction.com

For technical assistance call toll free at 866-333-3SBM (3726)

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GRACE

gcp applied technologies

GRACE CONSTRUCTION & PACKAGING

This is to certify that

Sound Waterproofers, Inc.

of

Seattle, WA

has attended the GCP Applied Technologies Preprufe® SCS Applicator Training School and completed the requirements necessary to install the GCP Applied Technologies Preprufe® SCS System.

Mark Franciosi

Mark Franciosi
Technical Services Manager
GCP Applied Technologies

Preprufe SCS
Waterproofing System for Shotcrete

March 22, 2016

Date

HYDRODUCT® 220

Pre-fabricated geocomposite drain for use as a combined drainage and protection layer with Grace waterproofing membranes

Description

Hydroduct® 220 is a strong, preformed 0.44 in. (11 mm) thick geocomposite drainage sheet system, comprising a hollow studded polystyrene core, covered on one side with a nonwoven, needle punched polypropylene filter fabric and on the other side with a smooth polymeric film.

Advantages

- **Enhances waterproofing—**eliminates hydrostatic pressure build-up
- **Efficient water collector/deflector—**can be used as a sandwich drainage layer between lagging and the reinforced concrete structure
- **Smooth polymeric sheet—**compatible with Preprufe®, Procor®, or Bituthene® membranes
- **Simple convenient drainage and protection layer—**serves as robust membrane protection and drainage
- **Geotextile fabric filter—**allows ground water to pass into the drain core while restricting the movement of soil particles
- **High flow capacity—**drains 17 gals/min./ft (211 L/min./m) width
- **Rot proof—**unaffected by permanent immersion in water, bacteria, dilute acids and alkalis
- **Economical—**eliminates imported aggregate drainage layers
- **Studded core—**allows water to flow to designated drainage collection points

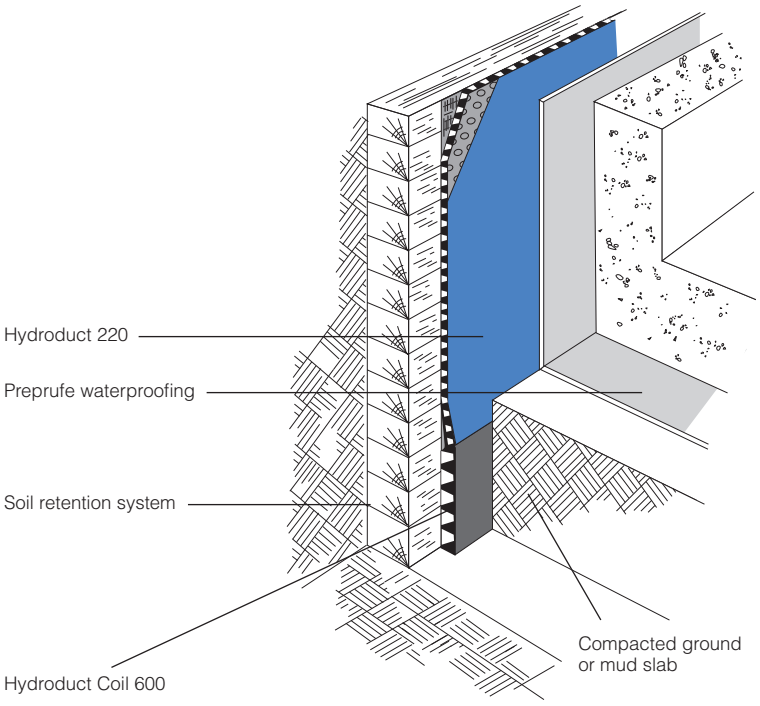
Product Advantages

- Enhances waterproofing
- Efficient water collector/deflector
- Smooth polymeric sheet
- Simple convenient drainage and protection layer
- Geotextile fabric filter
- High flow capacity
- Rot proof
- Economical

Use

Hydroduct 220 is designed primarily for use with waterproofing materials in vertical installations. Hydroduct 220 has been specially developed to provide a simple and highly practical collector and deflector of unwanted ground water on foundation walls, retaining walls, tunnels and planters. It can be used with Preprufe®, Procor®, or Bituthene® waterproof membranes. When installed it protects the membrane from damage and minimizes the build-up of percolated surface water against the structure. The construction of the studded sheet also creates an air void to isolate the structure from the effects of the surrounding ground.

Hydroduct 220 has been designed to withstand ground pressures and the compaction forces of wet concrete to maintain a high water flow capacity. The drainage sheet must be connected into the site drainage system to minimize hydrostatic build-up and collect infiltrated water using Hydroduct Coil 600 or traditional perforated pipes wrapped and linked with the geotextile filter fabric to prevent clogging.



Drawings are for illustration purposes only.
Please refer to graceconstruction.com for specific application details.

Supply

Hydroduct 220	
Roll size	4 ft x 50 ft (1.2 m x 15.2 m) 200 ft^2 (18.6 m^2)
Packaging	6 rolls/pallet
Weight	38 lbs (17.2 kg)/roll
Complementary Materials	
Preprufe Detail Tape	2 in. x 50 ft (50 mm x 15 m) roll/16 rolls per carton
Hydroduct Coil 600	50 ft (15.2 m) roll

Physical Properties

Property	Typical Value	Test Method
Drainage Core		
Polymer	High impact polystyrene	
Thickness	0.44 in. (11 mm) nominal	ASTM C366 method B
Compressive strength	15,000 lbs/ft^2 (718 kPa)	ASTM D1621 (modified)
Flow rate (gradient 1.0, load 172 kPa)	17 gal/min./ft (211 L/min./m)	ASTM D4716
Geotextile		
Type	Nonwoven	
Polymer	Polypropylene	
Weight	4.0 oz/yd^2 (136 g/m^2)	ASTM D3776
Tensile strength	100 lbs (445 N)	ASTM D4632
Apparent opening size	70 U.S. sieve (0.21 mm)	ASTM D4751
Flow rate	165 gal/min./ft^2 (6724 L/min./m^2)	ASTM D4491
CBR puncture	275 lbs (1.22 kN)	ASTM D6241

Application Procedures

Safety, Storage and Handling Information

All construction products must be handled properly. Material Safety Data Sheets (MSDS) are available at graceconstruction.com and users should acquaint themselves with this information. Carefully read detailed precaution statements on product labels and the MSDS before use.

Installation

Position Hydroduct so that the geotextile fabric filter is facing toward the groundwater, soil or overburden. The solid polymeric film provides extra protection for waterproofing such as Procor or Bituthene and should not be removed.

In vertical applications, Hydroduct 220 Drainage Composites can be applied to the substrate vertically but should extend from the perimeter discharge pipe to a point approximately 6 in. (150 mm) below the anticipated grade line.

When adhering Hydroduct 220 directly to Bituthene waterproofing membranes, Preprufe Detail Tape should be used. When using Preprufe Detail Tape, press firmly to ensure good adhesion. Substrate and job site conditions will determine the attachment pattern. Additional consideration should be given in high wind exposures. Abut adjacent rolls with excess fabric overlapping in shingle fashion.

For inside and outside corners, abut adjoining drainage composite at the corner. Cover open core with extra geotextile filter fabric.

The exposed core along the top terminations should be covered with a strip of geotextile to prevent intrusion of soil into core. At the bottom termination extend the Hydroduct 220 Drainage Composite out from the structure so that it passes behind and under the perimeter discharge pipe. Additional geotextile should be wrapped over the pipe to prevent soil intrusion.

To secure Hydroduct 220 around protrusions, apply Preprufe Detail Tape around the protrusion in a picture frame configuration. Cut Hydroduct 220 to fit snugly around the protrusion. Press the cut edge firmly into Preprufe Detail Tape.

Hydroduct 220 should be covered promptly. Do not leave Hydroduct 220 exposed to sunlight for more than two weeks. Motor vehicles, construction equipment or other trades should not be allowed directly on the Hydroduct 220.

www.graceconstruction.com

For technical assistance call toll free at 866-333-3SBM (3726)

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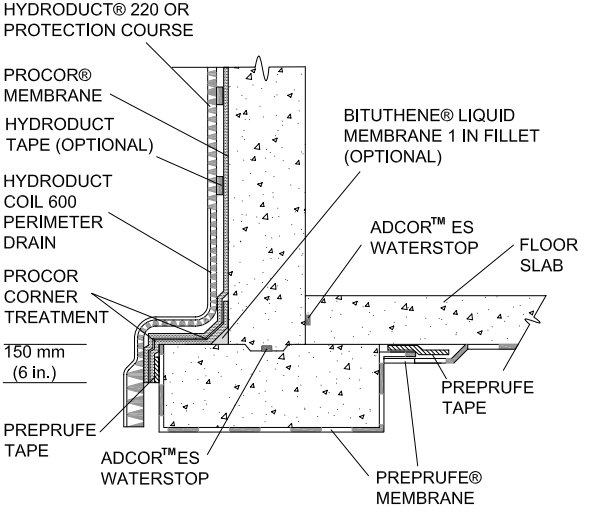
GRACE

■ 1 Foundation Wall

Floor Slab at Footing Level (Option 1)



MH understands no Preprufe will be used under the bottom slab, so several of the typical details are not applicable. Ensure project-specific details are provided/confirmed. Typical.

INSTALLATION INSTRUCTIONS

Prior to Membrane Installation, Review the Preprufe® Data Sheet

Surface Preparation

All surfaces must be sound and solid to eliminate movement during the concrete pour. Substrate must be regular and smooth with no gaps or voids greater than 0.5 in. (13 mm). The surface should also be free from loose aggregate and sharp protrusions as outlined in the Preprufe® Data Sheet section on Surface Preparation.

Detailing

1. Over rough surfaces, install a 1 inch fillet of Bituthene® Liquid Membrane in inside corner at the base of the wall.
2. Apply Preprufe® Tape at the termination of the Preprufe field membrane to ensure good adhesion with the Procor membrane.
3. Install a pre-treatment of 60 mils (1.5 mm) of Procor in the inside corner at the base of the wall, extending, at minimum, 6 in. (150 mm) onto the footing and 6 in. (150 mm) up the wall.
4. Install a pre-treatment of 60 mils (1.5 mm) of Procor on the outside corner of the footing, extending a down to completely cover the Preprufe Tape and a minimum of 6 in. (150 mm) onto the horizontal surface of the footing.
5. Install the field membrane in accordance with the Procor Data Sheet section on Installation. Extend Procor completely over Preprufe tape detail
6. Apply Hydroduct 220 according to Hydroduct 220 Data Sheet.

Special Notes

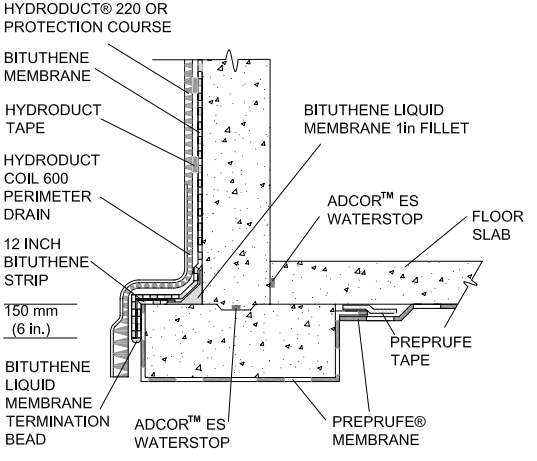
Preprufe membranes should not be used in areas where they will be permanently exposed to sunlight, weather or traffic. Protect membrane from sunlight as quickly as possible after installation.

Provide temporary protection for Preprufe at the tie-in location until the Procor tie-in is installed. The tie-in should be completed and backfilled as soon as possible. An approved protection course must be used over the exposed Preprufe and the Procor prior to backfilling.

Ensure Adcor™ ES is encapsulated with 76.2 mm (3 in.) of concrete cover minimum. Apply Adcor ES according to the installation instructions found on the data sheet.

■ 2 Foundation Wall

Floor Slab at Footing Level (Option 2)



INSTALLATION INSTRUCTIONS

Prior to Membrane Installation, Review the Preprufe® Data Sheet

Surface Preparation

All surfaces must be sound and solid to eliminate movement during the concrete pour. Substrate must be regular and smooth with no gaps or voids greater than 0.5 in. (13 mm). The surface should also be free from loose aggregate and sharp protrusions as outlined in the Preprufe® Data Sheet section on Surface Preparation.

Detailing

1. Form a .75 in. (20 mm) fillet of Bituthene Liquid Membrane in corner extending 2.5 in. (65mm) onto wall and footing.
2. Apply a 12 in. (300 mm) Bituthene Strip centered over the outside corner of the footing.
3. Apply Bituthene membrane down wall, onto horizontal surface of footing, and around outside corner of footing.
4. Extend Bituthene a minimum of 6 in. (150 mm) down vertical surface of footing, lapping onto Preprufe membrane. Preprufe installation instructions can be found on the Preprufe Data Sheet at graceconstruction.com.
5. Apply bead of Liquid membrane or Mastic on all terminations.
6. Apply Preprufe, Bituthene and Hydroduct according to the installation instructions found on the data sheet.

Special Notes

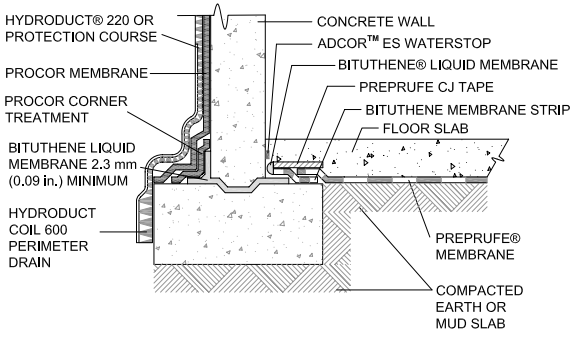
Preprufe membranes should not be used in areas where they will be permanently exposed to sunlight, weather or traffic. Protect membrane from sunlight as quickly as possible after installation

Provide temporary protection for Preprufe at the tie-in location until the Bituthene tie-in is installed. The tie-in should be completed and backfilled as soon as possible. An approved protection course must be used over the exposed Preprufe and the Bituthene prior to backfilling.

Ensure Adcor™ ES is encapsulated with 76.2 mm (3 in.) of concrete cover minimum. Apply Adcor ES according to the installation instructions found on the data sheet.

■ 3 Foundation Wall

Floor Slab at Footing Level (Option 3)



NOTE: THE FOOTING KEYWAY SHOULD BE FORMED TO CREATE A REGULAR AND UNIFORM SHAPE ALLOWING PROPER DETAILING OF THE BITUTHENE LIQUID MEMBRANE.

Prior to Membrane Installation, Review the Preprufe® Data Sheet

Surface Preparation

All surfaces must be sound and solid to eliminate movement during the concrete pour. Substrate must be regular and smooth with no gaps or voids greater than 0.5 in. (13 mm). The surface should also be free from loose aggregate and sharp protrusions as outlined in the Preprufe® Data Sheet section on Surface Preparation.

Detailing

1. Apply 90 mil (2.3 mm) thick Bituthene® Liquid Membrane on horizontal surface of footing in keyway. Extend Liquid Membrane a minimum of 2.5 in. (65 mm) onto horizontal surface of footing on each side of foundation wall, and up external foundation wall surface a minimum of 2.5 in. (65 mm).
2. Install a pre-treatment of 60 mils (1.5 mm) of Procor in the inside corner at the base of the wall, extending, at minimum, 3 in. (75 mm) onto the footing and 3 in. (75 mm) up the wall.
3. Install the field membrane in accordance with the Procor Data Sheet section on Installation
4. Extend Procor field membrane over corner treatment and onto the horizontal surface of the footing.
5. Apply Hydroduct 220 according to Hydroduct 220 Data Sheet. Hydroduct may be adhered directly to freshly applied Procor by simply placing the Hydroduct in the Procor.
6. Apply a strip of Bituthene membrane onto the Liquid Membrane that extends beyond the internal foundation wall surface.
7. Install Preprufe® in accordance with the Preprufe Data Sheet. Overlap Preprufe onto the Bituthene Strip a minimum of 3 in. (75 mm).
8. Install Preprufe CJ Tape centered over the edge of the Preprufe and adhere to the Bituthene Strip and Preprufe.
9. Apply a termination seal of Bituthene Liquid Membrane along Preprufe CJ Tape and Bituthene Strip termination.

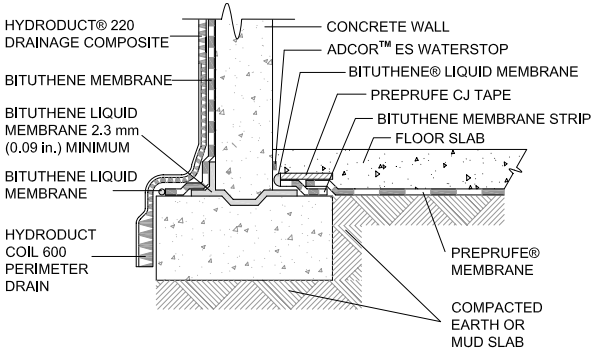
Special Notes

Preprufe membranes should not be used in areas where they will be permanently exposed to sunlight, weather or traffic. Protect membrane from sunlight as quickly as possible after installation.

Ensure Adcor™ ES is encapsulated with 76.2 mm (3 in.) of concrete cover minimum. Apply Adcor ES according to the installation instructions found on the data sheet.

■ 4 Foundation Wall

Floor Slab at Footing Level (Option 4)



NOTE: THE FOOTING KEYWAY SHOULD BE FORMED TO CREATE A REGULAR AND UNIFORM SHAPE ALLOWING PROPER DETAILING OF THE BITUTHENE LIQUID MEMBRANE.

INSTALLATION INSTRUCTIONS

Prior to Membrane Installation, Review the Preprufe® Data Sheet

Surface Preparation

All surfaces must be sound and solid to eliminate movement during the concrete pour. Substrate must be regular and smooth with no gaps or voids greater than 0.5 in. (13 mm). The surface should also be free from loose aggregate and sharp protrusions as outlined in the Preprufe® Data Sheet section on Surface Preparation.

Detailing

1. Apply Bituthene Liquid Membrane to a thickness of 90 mil (2.3 mm) on the horizontal surface of the footing in the keyway. Extend the Liquid Membrane a minimum of 2.5 in. (65 mm) onto the horizontal surface of the footing on each side of the foundation wall, and extend up the external foundation wall surface a minimum of 2.5 in. (65 mm).
2. Apply a strip of Bituthene membrane onto the Liquid Membrane that extends beyond the internal foundation wall surface.
3. Apply Preprufe® membrane in accordance with the Preprufe data sheet and overlap the Preprufe membrane onto the Bituthene Strip a minimum of 3 in. (75 mm).
4. Install Preprufe CJ Tape centered over the edge of the Preprufe membrane and adhere it to the Bituthene strip and Preprufe membrane.
5. Apply a termination seal of Bituthene Liquid Membrane along the Preprufe Tape and Bituthene Strip termination.
6. Install the Bituthene on the wall in accordance with the Bituthene Data Sheet section on installation.
7. Apply bead of Liquid Membrane or Mastic on all terminations.
8. Apply Preprufe and Hydroduct according to the installation instructions found on the data sheet.

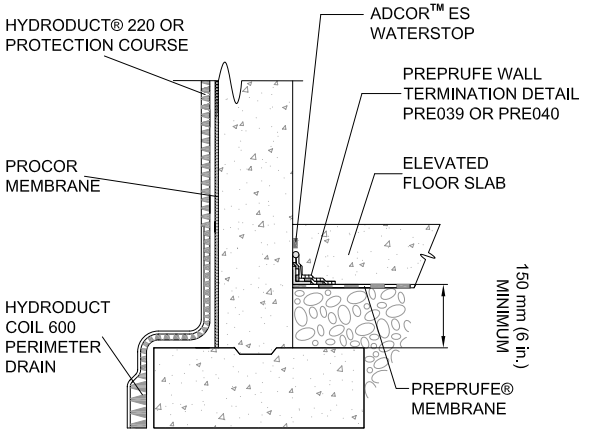
Special Notes

Preprufe membranes should not be used in areas where they will be permanently exposed to sunlight, weather or traffic. Protect membrane from sunlight as quickly as possible after installation.

Ensure Adcor™ ES is encapsulated with 76.2 mm (3 in.) of concrete cover minimum. Apply Adcor ES according to the installation instructions found on the data sheet.

■ 5 Foundation Wall

Elevated Floor Slab (Option 1)



NOTE: INTENDED FOR PROJECTS WITH PERMANENT DEWATERING OR NON-HYDROSTATIC CONDITIONS

INSTALLATION INSTRUCTIONS

Prior to Membrane Installation, Review the Preprufe® Data Sheet

Surface Preparation

All surfaces must be sound and solid to eliminate movement during the concrete pour. Substrate must be regular and smooth with no gaps or voids greater than 0.5 in. (13 mm). The surface should also be free from loose aggregate and sharp protrusions as outlined in the Preprufe® Data Sheet section on Surface Preparation.

Detailing

1. Install the Procor and Preprufe membranes in accordance with the Procor and Preprufe Data Sheet section on installation.
2. Apply Hydroduct 220 according to Hydroduct 220 Data Sheet. Hydroduct may be adhered directly to freshly sprayed Procor by simply placing the Hydroduct in the wet Procor.
3. Terminate the Preprufe at the foundation wall.
4. Apply Preprufe Wall Termination detail PRE039.

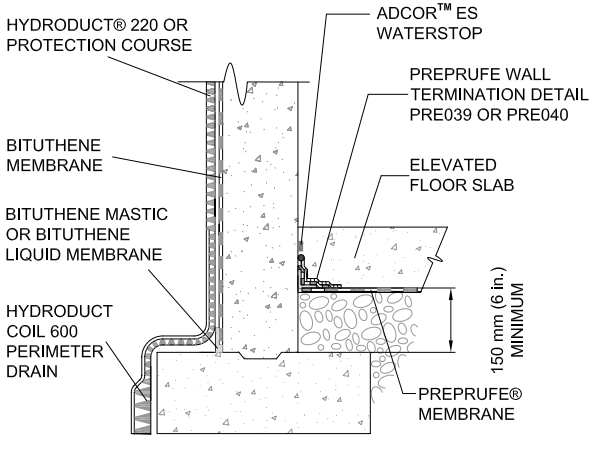
Special Notes

Preprufe membranes should not be used in areas where they will be permanently exposed to sunlight, weather or traffic. Protect membrane from sunlight as quickly as possible after installation.

Ensure Adcor™ ES is encapsulated with 76.2 mm (3 in.) of concrete cover minimum. Apply Adcor ES according to the installation instructions found on the data sheet.

■ 6 Foundation Wall

Elevated Floor Slab (Option 2)



NOTE: INTENDED FOR PROJECTS WITH PERMANENT DEWATERING OR NON-HYDROSTATIC CONDITIONS

INSTALLATION INSTRUCTIONS

Prior to Membrane Installation, Review the Preprufe® Data Sheet

Surface Preparation

All surfaces must be sound and solid to eliminate movement during the concrete pour. Substrate must be regular and smooth with no gaps or voids greater than 0.5 in. (13 mm). The surface should also be free from loose aggregate and sharp protrusions as outlined in the Preprufe® Data Sheet section on Surface Preparation.

Detailing

1. Install the field membrane in accordance with the Bituthene Data Sheet section on Installation.
2. Apply membrane to within 1 in. (25 mm) of base of wall.
3. Apply Bituthene Liquid membrane in corner, extending over membrane a minimum of 1 in. (25 mm).
4. Terminate the Preprufe at the foundation wall.
5. Apply Preprufe Wall Termination detail PRE039.
6. Apply Hydroduct 220 according to Hydroduct 220 Data Sheet.

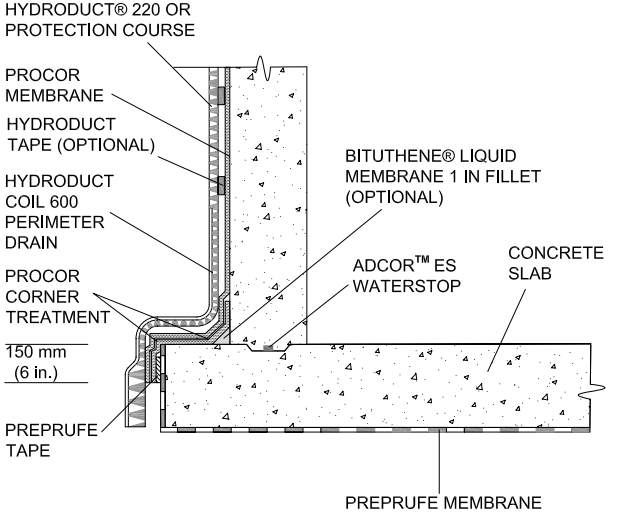
Special Notes

Preprufe membranes should not be used in areas where they will be permanently exposed to sunlight, weather or traffic. Protect membrane from sunlight as quickly as possible after installation.

Ensure Adcor™ ES is encapsulated with 76.2 mm (3 in.) of concrete cover minimum. Apply Adcor ES according to the installation instructions found on the data sheet.

■ 7 Tie into Preprufe®

At Structural Slab



INSTALLATION INSTRUCTIONS

Prior to Membrane Installation, Review the Preprufe® Data Sheet

Surface Preparation

All surfaces must be sound and solid to eliminate movement during the concrete pour. Substrate must be regular and smooth with no gaps or voids greater than 0.5 in. (13 mm). The surface should also be free from loose aggregate and sharp protrusions as outlined in the Preprufe® Data Sheet section on Surface Preparation.

Detailing

1. Install Preprufe membrane in accordance with the Preprufe Data Sheet section on installation.
2. Over rough surfaces, apply a 1 in. (25 mm) fillet of Bituthene Liquid Membrane to inside corner at the base of the wall.
3. Install a pre-treatment of 60 mils (1.5 mm) of Procor in the inside corner at the base of the wall, extending at minimum of 3 in.
   (75 mm) onto the footing and 3 in. (75 mm) up the wall.
4. Apply Preprufe Tape at the termination of the Preprufe field membrane to ensure good adhesion of the Procor membrane.
5. Install the field membrane in accordance with the Procor Data Sheet section on Installation. Extend Procor completely over Preprufe Tape detail.
6. Apply Hydroduct 220 according to Hydroduct 220 Data Sheet.

Special Notes

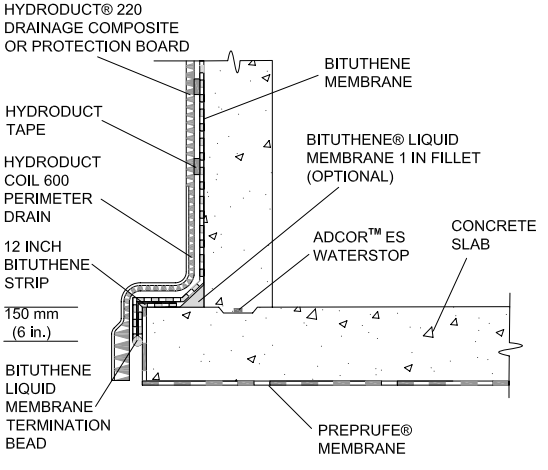
Preprufe membranes should not be used in areas where they will be permanently exposed to sunlight, weather or traffic. Protect membrane from sunlight as quickly as possible after installation.

Provide temporary protection for Preprufe at the tie-in location until the Procor tie-in is installed. The tie-in should be completed and backfilled as soon as possible. An approved protection course must be used over the exposed Preprufe and the Procor prior to backfilling.

Ensure Adcor™ ES is encapsulated with 76.2 mm (3 in.) of concrete cover minimum. Apply Adcor ES according to the installation instructions found on the data sheet.

■ 8 Foundation Wall

Structural Slab



INSTALLATION INSTRUCTIONS

Prior to Membrane Installation, Review the Preprufe® Data Sheet

Surface Preparation

All surfaces must be sound and solid to eliminate movement during the concrete pour. Substrate must be regular and smooth with no gaps or voids greater than 0.5 in. (13 mm). The surface should also be free from loose aggregate and sharp protrusions as outlined in the Preprufe® Data Sheet section on Surface Preparation.

Detailing

1. Install Preprufe membrane in accordance with the Preprufe Data Sheet section on installation.
2. Install a .75 in. (20 mm) fillet of Bituthene Liquid Membrane in corner extending 2.5 in. (65 mm) onto wall and footing. Allow to cure.
3. Apply a 12 in. (300 mm) Bituthene strip centered over the outside corner of the footing.
4. Apply Bituthene membrane down wall, onto horizontal surface of the footing, and around the outside corner of the footing.
5. Extend Bituthene a minimum of 6 in. (150 mm) down vertical surface of footing, lapping onto Preprufe membrane. Do not apply primer to the back of the Preprufe for installation of the Bituthene.
6. Apply a bead of Liquid Membrane or Mastic on all terminations.
7. Apply Hydroduct 220 according to Hydroduct 220 Data Sheet.

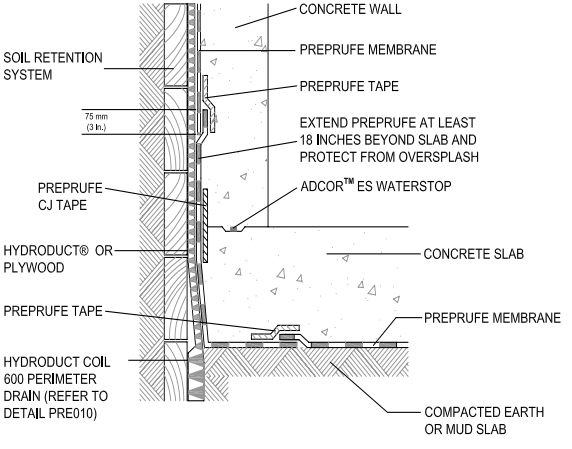
Special Notes

Preprufe membranes should not be used in areas where they will be permanently exposed to sunlight, weather or traffic. Protect membrane from sunlight as quickly as possible after installation.

Provide temporary protection for Preprufe at the tie-in location until the Bituthene tie-in is installed. The tie-in should be completed and backfilled as soon as possible. An approved protection course must be used over the exposed Preprufe and the Bituthene prior to backfilling.

Ensure Adcor™ ES is encapsulated with 76.2 mm (3 in.) of concrete cover minimum. Apply Adcor ES according to the installation instructions found on the data sheet.

■ 9 Blind Side Wall to Slab Tie-in



Prior to Membrane Installation, Review the Preprufe® Data Sheet

Surface Preparation

All surfaces must be sound and solid to eliminate movement during the concrete pour. Substrate must be regular and smooth with no gaps or voids greater than 0.5 in. (13 mm). The surface should also be free from loose aggregate and sharp protrusions as outlined in the Preprufe® Data Sheet section on Surface Preparation.

Detailing

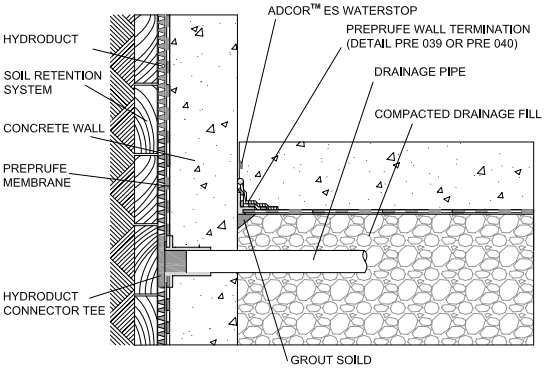
1. Install Preprufe Membrane over the mud slab or compacted earth as detailed in horizontal and vertical applications on the Preprufe Data Sheet.
2. Continue onto the vertical surface of the prepared soil retention system a minimum of 18 in. (450 mm) above the finished elevation of the structural floor slab. It is good practice to extend the Preprufe above the height of the rebar from the slab.
3. Apply Preprufe CJ Tape to the Preprufe membrane centered over the finished elevation of the concrete slab.
4. Secure the top of the membrane to temporarily hold it in place on the vertical substrate. Care should be taken to prevent damage to this exposed membrane from concrete back-splash as well as slag from rebar welding in wall forms, by keeping the release liner on and protected with protection board, plywood or other material.
5. If the exposed membrane above the slab is contaminated with concrete oversplash is the lap area, it must be cleaned down to good material before adhering Preprufe Tape.
6. Install Preprufe Membrane over the prepared vertical soil retention system according to standard application instructions on the Preprufe Data Sheet.
7. Unfasten the vertical length of the Preprufe Membrane that extends above the slab and tuck the Preprufe 160R behind the 18 in. (450 mm) length of Preprufe 300R, ensuring a minimum 3 in. (75 mm) lap.
8. Install Preprufe Tape centered over the lap.
9. Remove release liner and roll tape to ensure good adhesion using steel or vinyl cylindrical and Vee roller.

Special Notes

Preprufe membranes should not be used in areas where they will be permanently exposed to sunlight, weather or traffic. Protect membrane from sunlight as quickly as possible after installation.

Ensure Adcor™ ES is encapsulated with 76.2 mm (3 in.) of concrete cover minimum. Apply Adcor ES according to the installation instructions found on the data sheet.

■ 10 Below Slab Drainage with Hydroduct® Connector Tee



NOTE: NOT INTENDED FOR HYDROSTATIC CONDITIONS

INSTALLATION INSTRUCTIONS

Prior to Membrane Installation, Review the Preprufe® Data Sheet

Surface Preparation

All surfaces must be sound and solid to eliminate movement during the concrete pour. Substrate must be regular and smooth with no gaps or voids greater than 0.5 in. (13 mm). The surface should also be free from loose aggregate and sharp protrusions as outlined in the Preprufe® Data Sheet section on Surface Preparation.

Detailing

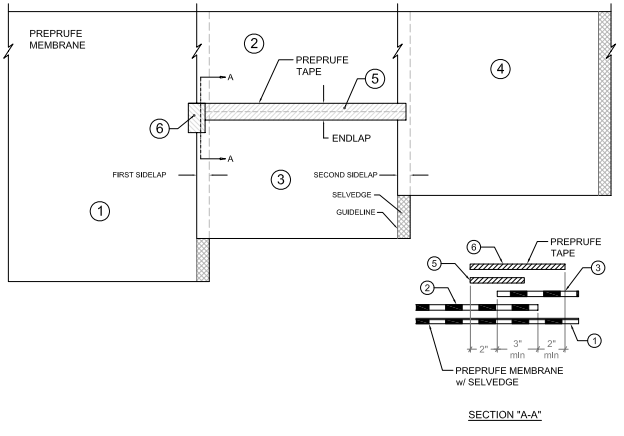
1. Install Preprufe Membrane over the compacted drainage fill as detailed in horizontal applications in the Preprufe Data Sheet.
2. Install Preprufe Membrane and Hydroduct on the soil retention system as detailed in vertical applications in the Preprufe Data Sheet.
3. Apply the Hydroduct Connector Tee to the face of the Hydroduct as described in the Hydroduct Coil 600 Data Sheet.
4. Connect a 4 in. drainage pipe on the connector tee and extend to an appropriate drainage area.
5. Seal all joints of the drainage system with 3 in. underground tape.

Special Notes

Preprufe membranes should not be used in areas where they will be permanently exposed to sunlight, weather or traffic. Protect membrane from sunlight as quickly as possible after installation.

Ensure Adcor™ ES is encapsulated with 76.2 mm (3 in.) of concrete cover minimum. Apply Adcor ES according to the installation instructions found on the data sheet.

■ 31 End Lap Detail for Wall or Slab (Option 1) Tape applied after installation of side laps



NOTE: INSTALL PREPRUFE® MEMBRANE AND TAPE IN ORDER AS SHOWN BY NUMBERS.

INSTALLATION INSTRUCTIONS

Prior to Membrane Installation, Review the Preprufe® Data Sheet

Surface Preparation

All surfaces must be sound and solid to eliminate movement during the concrete pour. Substrate must be regular and smooth with no gaps or voids greater than 0.5 in. (13 mm). The surface should also be free from loose aggregate and sharp protrusions as outlined in the Preprufe® Data Sheet section on Surface Preparation.

Detailing

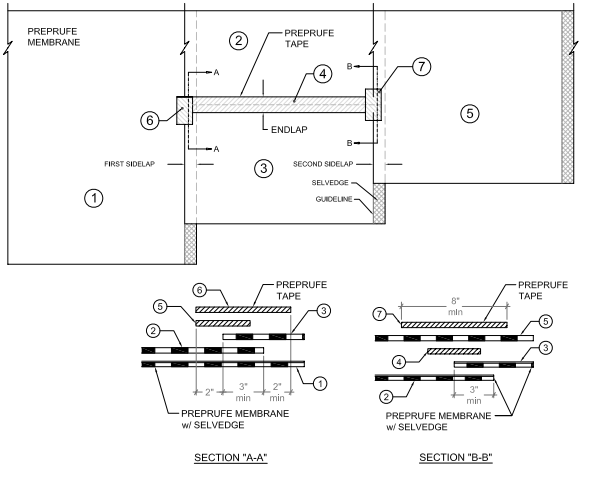
1. Apply Hydroduct® according to Hydroduct Data Sheet.
2. Install Preprufe Membrane and tape in order as shown by numbers.
3. Overlap the ends of the membrane a minimum of 3 in. (75 mm) and remove release liner from both membranes.
4. Apply Preprufe Tape over the end lap as shown and roll firmly.
5. Apply tape a minimum of 2 in. (50 mm) beyond all edges of membrane that are not sealed by the selvedge.
6. Remove release liner from tape and discard.

Special Notes

Preprufe membranes should not be used in areas where they will be permanently exposed to sunlight, weather or traffic. Protect membrane from sunlight as quickly as possible after installation.

■ 32 End Lap Detail for Wall or Slab (Option 2)

Tape applied before installation of 2nd side lap



NOTE: INSTALL PREPRUFE® MEMBRANE AND TAPE IN ORDER AS SHOWN BY NUMBERS.

INSTALLATION INSTRUCTIONS

Prior to Membrane Installation, Review the Preprufe® Data Sheet

Surface Preparation

All surfaces must be sound and solid to eliminate movement during the concrete pour. Substrate must be regular and smooth with no gaps or voids greater than 0.5 in. (13 mm). The surface should also be free from loose aggregate and sharp protrusions as outlined in the Preprufe® Data Sheet section on Surface Preparation.

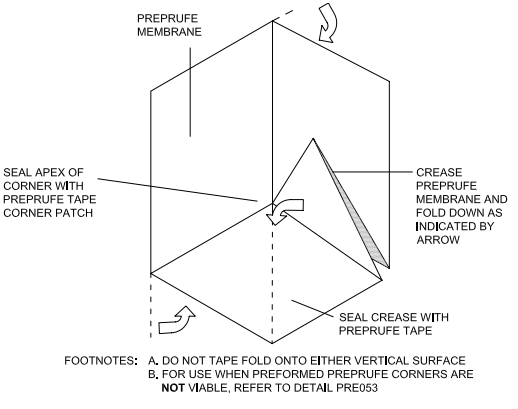
Detailing

1. Apply Hydroduct® according to Hydroduct Data Sheet.
2. Install Preprufe Membrane and tape in order as shown by numbers.
3. Overlap the ends of the membrane a minimum of 3 in. (75 mm) and remove release liner from both membranes.
4. Apply Preprufe Tape over the end lap as shown and roll firmly.
5. Apply tape a minimum of 2 in. (50 mm) beyond all edges of membrane that are not sealed by the selvedge.
6. Remove release liner from tape and discard.

Special Notes

Preprufe membranes should not be used in areas where they will be permanently exposed to sunlight, weather or traffic. Protect membrane from sunlight as quickly as possible after installation.

■ 33 Inside Corner - Custom Formed



INSTALLATION INSTRUCTIONS

Prior to Membrane Installation, Review the Preprufe® Data Sheet

Surface Preparation

All surfaces must be sound and solid to eliminate movement during the concrete pour. Substrate must be regular and smooth with no gaps or voids greater than 0.5 in. (13 mm). The surface should also be free from loose aggregate and sharp protrusions as outlined in the Preprufe® Data Sheet section on Surface Preparation.

Detailing

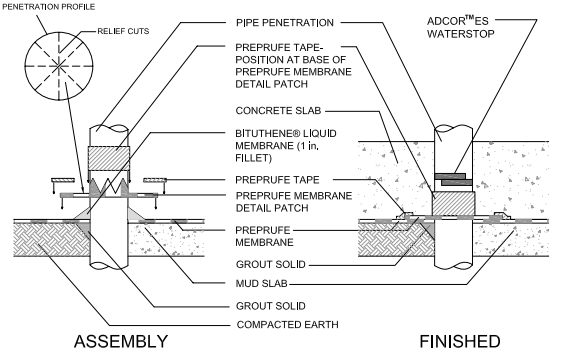
1. Precut a square section of Preprufe membrane (minimum 12 in. [300 mm] x 12 in. [300 mm]).
2. Fold membrane as indicated on detail drawing, with release liner on.
3. Crease the fold with nominal hand pressure to ensure a close fit to the substrate profile and avoid hollows.
4. With the white coating facing towards the concrete, ensure that the apex of the corner is covered and sealed with Preprufe Tape.
5. Remove release liner and roll tape firmly using steel or vinyl cylindrical or Vee roller.
6. Seal corner detail to Preprufe field membrane using Preprufe Tape and roll firmly.
7. Apply Hydroduct® according to Hydroduct Data Sheet.

Special Notes

Preprufe membranes should not be used in areas where they will be permanently exposed to sunlight, weather or traffic. Protect membrane from sunlight as quickly as possible after installation.

■ 34 Pipe Penetration

(For Wall or Slab)



*FOOTNOTES:
· ALL PENETRATIONS TO BE GROUTED.
· A MINIMUM OF 6 IN. (150 MM) IS REQUIRED BETWEEN PENTRATIONS TO ENSURE PROPER DETAILING.
· AVOID PLACEMENT OF MULTIPLE PENETRATIONS.
· A MINIMUM OF 6 IN. (150 MM) OF PIPE NEEDS TO BE EXPOSED AND FREE OF CONNECTIONS, OBSTRUCTIONS, HANGERS, ETC. TO ENSURE PROPER EXECTUTION OF THE DETAIL.

Prior to Membrane Installation, Review the Preprufe® Data Sheet

Surface Preparation

All surfaces must be sound and solid to eliminate movement during the concrete pour. Substrate must be regular and smooth with no gaps or voids greater than 0.5 in. (13 mm) The surface should also be free from loose aggregate and sharp protrusions as outlined in the Preprufe® Data Sheet section on Surface Preparation.

Detailing

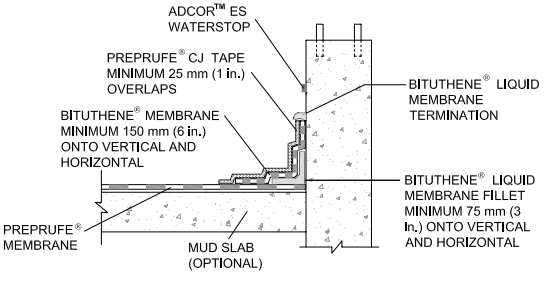
1. All penetrations must be firmly secured and stable. Grout around all penetrations that are not stable. For compacted earth, extend grout a minimum of 3 in. (75 mm) in all directions. Clean loose dust or dirt from the penetration surface using a clean, dry cloth or brush.
2. Cut the field membrane tight to the penetration and remove release liner. If membrane is not within 0.5 in. (12 mm) of penetration and not more than 2 in. (50 mm) from penetration, apply Preprufe Tape to cover the gap. Roll firmly into place and remove release liner. If the membrane is greater than 2 in. (50 mm) from penetration, install more Preprufe Membrane to cover the gap repeating these instructions until Preprufe Membrane/Tape is within 0.5 in. (12 mm).
3. Mix and apply Bituthene Liquid Membrane around the penetration. Liquid Membrane should be placed to form a minimum 1 in. (25 mm) continuous fillet between the Preprufe Membrane/Tape and the base of the penetration. Cut “star” within trace of penetration to allow for patch to slide over penetration.
4. Cut a patch of Preprufe Membrane that is a minimum of 12 in. (300 mm) larger than the diameter or width of the penetration so that the patch extends 6 in. (150 mm) beyond the penetration in all directions. Remove the release liner and center the patch over penetration and trace/draw the penetration profile onto the patch. Using sheers or utility knife, make relief cuts through the membrane. Refer to relief cut figures on right. Triangles formed by making a relief cut is not to exceed 2 in. (50 mm) in height when placed over penetration, i.e. penetration diameters or widths greater than 4 in. (100 mm) need to be trimmed. Remove and discard release liner.
5. Slide the patch over penetration and press into the partially cured Liquid Membrane. Ensure that the patch is pressed firmly into the Liquid Membrane and is positioned directly onto the Preprufe Field Membrane/Tape below. Using a trowel, smooth out any Liquid Membrane that has flowed out of the relief cut.
6. Apply Preprufe Tape centered over the edges of the patch and roll firmly to form a tight seal to the Preprufe Field Membrane. Remove release liner from tape and discard.
7. Wrap the penetration with Preprufe Tape, positioning the tape at the base of the patch. Remove enough release liner to overlap Tape on to itself and roll/press firmly into place. Remove remaining release liner and discard. Repair small fishmouths by pressing firmly against penetration and repair large fishmouths by patching with Preprufe Tape.

Special Notes

Preprufe membranes should not be used in areas where they will be permanently exposed to sunlight, weather or traffic. Protect membrane from sunlight as quickly as possible after installation.

Ensure Adcor™ ES is encapsulated with 76.2 mm (3 in.) of concrete cover minimum. Apply Adcor ES according to the installation instructions found on the data sheet.

■ 35 Straight Edge Penetration



*FOOTNOTE: ALL PENETRATION TO BE GROUTED.

Prior to Membrane Installation, Review the Preprufe® Data Sheet

Surface Preparation

All surfaces must be sound and solid to eliminate movement during the concrete pour. Substrate must be regular and smooth with no gaps or voids greater than 0.5 in. (13 mm). The surface should also be free from loose aggregate and sharp protrusions as outlined in the Preprufe® Data Sheet section on Surface Preparation.

Detailing

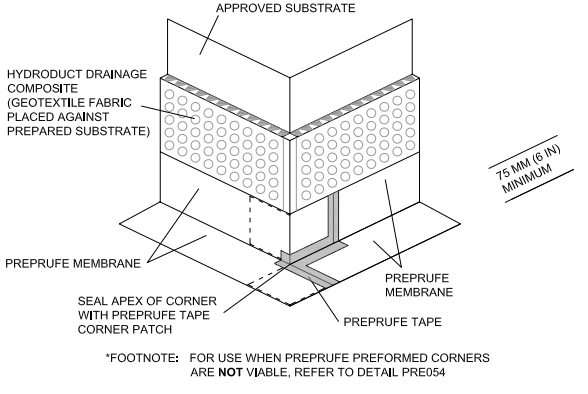
1. All penetrations must be firmly secured and stable. Grout around all penetrations that are not stable. Clean loose dust or dirt from the penetration and the surrounding substrate surface using a clean, dry cloth or brush.
2. Cut the Preprufe Field Membrane within 0.5 in. (13 mm) of the penetration and remove release liner.
3. Apply Liquid Membrane to form a minimum 1 in. (25 mm) continuous fillet between the Preprufe Membrane and the base of the penetration. Extend a 90 mil (2.2 mm) continuous coating of Liquid Membrane overlapping a minimum of 3 in. (75 mm) onto the surface of the Preprufe Membrane and 3 in. (75 mm) onto the penetration.
4. Install a minimum 12 in. (300 mm) strip of Bituthene Membrane centered over the Liquid Membrane fillet so that the Bituthene Membrane extends 6 in. (150 mm) onto the penetration and Preprufe Membrane. For concrete penetrations, apply Bituthene Primer as per standard Grace instructions prior to installation of Bituthene Membrane.
5. Apply a strip of Preprufe CJ Tape onto the Bituthene Membrane and overlap onto the Preprufe Field Membrane by a minimum of 2 in. (50 mm). Apply a second strip of Preprufe CJ Tape starting at the top leading edge of the Bituthene Membrane and overlap onto the firsts trip of Preprufe CJ Tape by a minimum of 2 in. (50 mm).
6. Terminate the top leading edge of Preprufe CJ Tape and Bituthene Membrane with a bead of Bituthene Liquid Membrane.
7. Seal apex of all outside corners with Preprufe Tape corner patch as necessary.

Special Notes

Preprufe membranes should not be used in areas where they will be permanently exposed to sunlight, weather or traffic. Protect membrane from sunlight as quickly as possible after installation

Ensure Adcor™ ES is encapsulated with 76.2 mm (3 in.) of concrete cover minimum. Apply Adcor ES according to the installation instructions found on the data sheet.

■ 36 Outside Corner - Custom Formed



*FOOTNOTE: FOR USE WHEN PREPRUFE PREFORMED CORNERS ARE **NOT** VIABLE, REFER TO DETAIL PRE054

INSTALLATION INSTRUCTIONS

Prior to Membrane Installation, Review the Preprufe® Data Sheet

Surface Preparation

All surfaces must be sound and solid to eliminate movement during the concrete pour. Substrate must be regular and smooth with no gaps or voids greater than 0.5 in. (13 mm). The surface should also be free from loose aggregate and sharp protrusions as outlined in the Preprufe® Data Sheet section on Surface Preparation.

Detailing

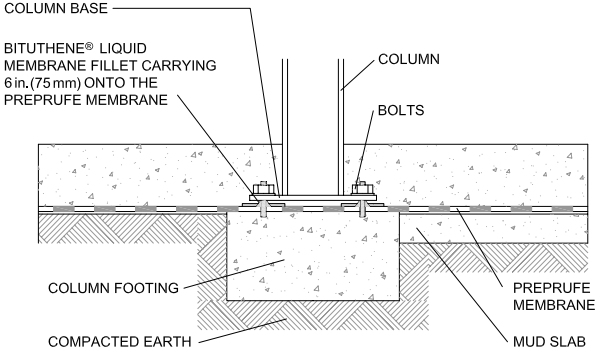
1. Fold the Preprufe membrane, ensuring a minimum 6 in. (75mm) return onto the horizontal, to allow tie-in to the Preprufe field membrane.
2. Crease the fold with nominal hand pressure to ensure a close fit to the substrate profile and avoid hollows or draping of the membrane.
3. Make relief cuts in the Preprufe Membrane in order to wrap around corner.
4. Seal the relief cuts with Preprufe Tape and ensure that the apex of the corner is covered and sealed with Preprufe Tape.
5. Remove release liner and roll tape to ensure good adhesion using steel or vinyl cylindrical or Vee roller.
6. Apply Hydroduct® according to Hydroduct Data Sheet.

Special Notes

Preprufe membranes should not be used in areas where they will be permanently exposed to sunlight, weather or traffic. Protect membrane from sunlight as quickly as possible after installation.

■ 37 Column

(Option 1)



INSTALLATION INSTRUCTIONS

Prior to Membrane Installation, Review the Preprufe® Data Sheet

Surface Preparation

All surfaces must be sound and solid to eliminate movement during the concrete pour. Substrate must be regular and smooth with no gaps or voids greater than 0.5 in. (13 mm). The surface should also be free from loose aggregate and sharp protrusions as outlined in the Preprufe® Data Sheet section on Surface Preparation.

Detailing

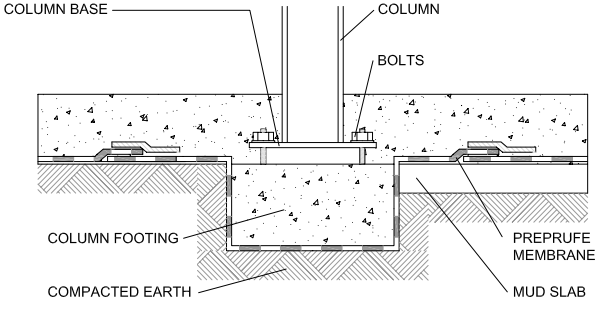
1. Place Preprufe membrane over the column footing and directly under the column.
2. Tie-in penetrations such as rebar and threaded rod that penetrate the membrane should be sealed with Bituthene Liquid Membrane.
3. Cut the membrane tight to the penetration and ensure the penetration is free from rust, dirt, dust, etc.
4. If membrane is not within 0.5 in. (13 mm) of penetration, apply Preprufe Tape to cover the gap.
5. Mix and apply Bituthene Liquid Membrane around the penetration.
6. Bituthene Liquid Membrane should be placed to form a minimum 1 in. (25 mm) continuous fillet around the penetration at the point of penetration.
7. Bituthene Liquid Membrane should be applied as a 90 mil (2.2 mm) continuous coating overlapping a minimum of 3 in. (75 mm) onto the surface of the Preprufe Membrane.
8. Apply Hydroduct® according to Hydroduct Data Sheet.

Special Notes

Preprufe membranes should not be used in areas where they will be permanently exposed to sunlight, weather or traffic. Protect membrane from sunlight as quickly as possible after installation.

■ 38 Column

(Option 2)



INSTALLATION INSTRUCTIONS

Prior to Membrane Installation, Review the Preprufe® Data Sheet

Surface Preparation

All surfaces must be sound and solid to eliminate movement during the concrete pour. Substrate must be regular and smooth with no gaps or voids greater than 0.5 in. (13 mm). The surface should also be free from loose aggregate and sharp protrusions as outlined in the Preprufe® Data Sheet section on Surface Preparation.

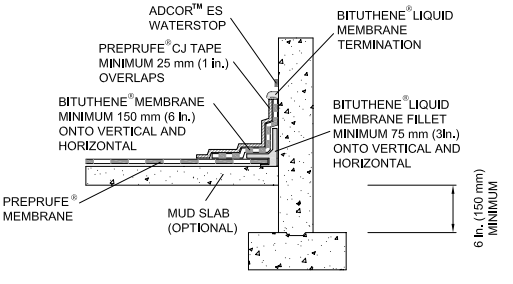
Detailing

1. Install the membrane following the vertical and horizontal application instructions on the Preprufe data sheet found at graceconstruction.com.
2. Place the Preprufe membrane below the column footing before it is poured.
3. When placing the membrane it is important to leave sufficient length (typically 18 in. [300 mm]) of Preprufe 300R beyond the footing to allow for tie-in to the Preprufe membrane that will be laid to waterproof the general slab area.
4. Leave release liner on this extra length and protect it from damage until the tie-in details are completed.
5. Apply Hydroduct® according to Hydroduct Data Sheet.

Special Notes

Preprufe membranes should not be used in areas where they will be permanently exposed to sunlight, weather or traffic. Protect membrane from sunlight as quickly as possible after installation.

■ 39 Wall Termination for Elevated Slab



*FOOTNOTES:
· IF A MUDSLAB IS NOT USED, THE SUBSTRATE TO ACCEPT BITUTHENE LIQUID MEMBRANE MUST BE GROUTED SOILD TO PROVIDE AN ACCEPTABLE SUBSTRATE FOR THE LIQUID MEMBRANE.
· NOT INTENDED FOR HYDROSTATIC CONDITIONS.

Prior to Membrane Installation, Review the Preprufe® Data Sheet

Surface Preparation

All surfaces must be sound and solid to eliminate movement during the concrete pour. Substrate must be regular and smooth with no gaps or voids greater than 0.5 in. (13 mm). The surface should also be free from loose aggregate and sharp protrusions as outlined in the Preprufe® Data Sheet section on Surface Preparation.

Detailing

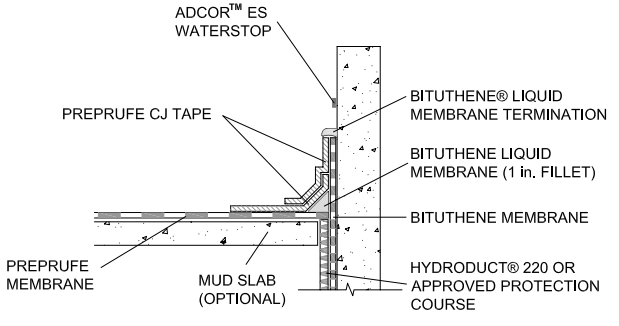
1. Install Preprufe 300R Membrane over mud slab.
2. For compacted earth, proper compaction is required. If the wall area is too small to allow proper compaction, the base of the wall should be grouted solid. Areas to receive Bituthene Liquid Membrane MUST be grouted solid.
3. Apply Bituthene Liquid Membrane on the mud slab from the base of the wall to a minimum of 0.5 in. (13 mm) under where the leading edge of the Preprufe Membrane will terminate.
4. Install Preprufe 300R Membrane within 0.5 in. (13 mm) of all vertical and horizontal intersections.
5. Apply Liquid Membrane to form a minimum 1 in. (25 mm) continuous fillet between the Preprufe Membrane and the wall. Extend a 90 mil (2.2 mm) continuous coating of Liquid Membrane overlapping a minimum of 3 in. (75 mm) onto the surface of the Preprufe Membrane and 3 in. (75 mm) onto the wall.
6. Install a minimum 12 in. (300 mm) strip of Bituthene Membrane centered over the Liquid Membrane fillet so that the Bituthene Membrane extends 6 in. (150 mm) onto the wall and 6 in. (150 mm) onto the Preprufe Membrane. Apply Bituthene Primer as per standard Grace instructions prior to installation of Bituthene Membrane.
7. Apply a strip of Preprufe CJ Tape onto the Bituthene Membrane and overlap onto the Preprufe Field Membrane by a minimum of 2 in. (50 mm). Apply a second strip of Preprufe CJ Tape starting at the top leading edge of the Bituthene Membrane and overlap onto the firsts trip of Preprufe CJ Tape by a minimum of 2 in. (50 mm).
8. Terminate the top leading edge of Preprufe CJ Tape and Bituthene Membrane with a bead of Bituthene Liquid Membrane.

Special Notes

Preprufe membranes should not be used in areas where they will be permanently exposed to sunlight, weather or traffic. Protect membrane from sunlight as quickly as possible after installation.

Ensure Adcor™ ES is encapsulated with 76.2 mm (3 in.) of concrete cover minimum. Apply Adcor ES according to the installation instructions found on the data sheet.

■ 40 Wall Termination to Bituthene Membrane



Prior to Membrane Installation, Review the Preprufe® Data Sheet

Surface Preparation

All surfaces must be sound and solid to eliminate movement during the concrete pour. Substrate must be regular and smooth with no gaps or voids greater than .05 in. (12 mm). The surface should also be free from loose aggregate and sharp protrusions as outlined in the Preprufe® Data Sheet section on Surface Preparation. Ensure the surface of the Bituthene Membrane is protected during Preprufe installation.

Detailing

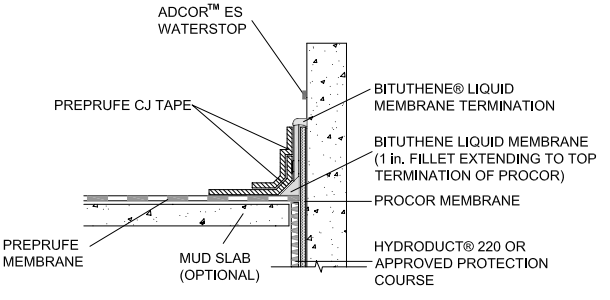
1. Install Preprufe 300R Membrane over the prepared substrate as outlined in the Preprufe Data Sheet found at graceconstruction.com.
2. For compacted earth, proper compaction is required. If the wall area is too small to allow proper compaction, the base of the wall should be grouted solid.
3. Install Preprufe 300R Membrane tight to all vertical and horizontal intersections.
4. Apply Bituthene Liquid Membrane to form a minimum 1 in. (25 mm) continuous fillet between the Preprufe membrane and the Bituthene membrane.
5. Starting a minimum of 4 in. (100 mm) from the edge of the Liquid Membrane fillet, apply Preprufe CJ Tape and extend it over the Liquid Membrane fillet and onto the Bituthene Membrane.
6. Apply a second strip of Preprufe CJ Tape starting at the top leading edge of the Bituthene Membrane and overlap onto the first strip of Preprufe CJ Tape by a minimum of 2 in. (50 mm).
7. Terminate the top leading edge of Preprufe CJ Tape and Bituthene Membrane with a bead of Bituthene Liquid Membrane.
8. Roll tape to ensure good adhesion using steel or vinyl cylindrical or Vee roller.

Special Notes

Preprufe membranes should not be used in areas where they will be permanently exposed to sunlight, weather or traffic. Protect membrane from sunlight as quickly as possible after installation.

Ensure Adcor™ ES is encapsulated with 76.2 mm (3 in.) of concrete cover minimum. Apply Adcor ES according to the installation instructions found on the data sheet.

■ 41 Wall Termination to Procor Membrane



Prior to Membrane Installation, Review the Preprufe® Data Sheet

Surface Preparation

All surfaces must be sound and solid to eliminate movement during the concrete pour. Substrate must be regular and smooth with no gaps or voids greater than .05 in. (12 mm). The surface should also be free from loose aggregate and sharp protrusions as outlined in the Preprufe® Data Sheet section on Surface Preparation. Ensure the surface of the Bituthene Membrane is protected during Preprufe installation.

Detailing

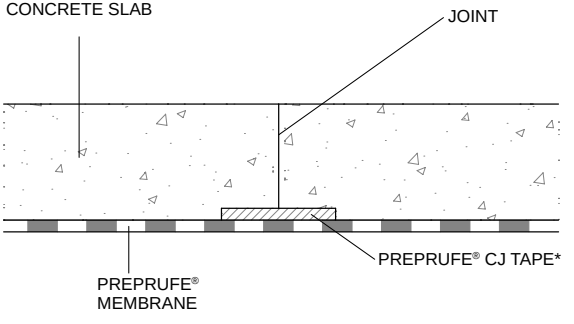
1. Install Preprufe 300R Membrane over the prepared substrate as outlined in the Preprufe Data Sheet found at graceconstruction.com.
2. For compacted earth, proper compaction is required. If the wall area is too small to allow proper compaction, the base of the wall should be grouted solid.
3. Install Preprufe 300R Membrane tight to all vertical and horizontal intersections.
4. Apply Bituthene® Liquid Membrane to form a minimum 1 in. (25 mm) continuous fillet in the corner where the Preprufe and Procor meet. Extend the Bituthene Liquid Membrane vertically to the top leading edge of the Procor Membrane.
5. Starting a minimum of 4 in. (100 mm) from the edge of the Liquid Membrane fillet, apply Preprufe CJ Tape and extend it over the Liquid Membrane fillet and onto the Procor Membrane.
6. Apply a second strip of Preprufe CJ Tape starting at the top leading edge of the Procor Membrane and overlap onto the first strip of Preprufe CJ Tape by a minimum of 2 in. (50 mm).
7. Terminate the top leading edge of Preprufe CJ Tape and Procor Membrane with a bead of Bituthene Liquid Membrane.
8. Roll tape to ensure good adhesion using steel or vinyl cylindrical or Vee roller.

Special Notes

Preprufe membranes should not be used in areas where they will be permanently exposed to sunlight, weather or traffic. Protect membrane from sunlight as quickly as possible after installation.

Ensure Adcor™ ES is encapsulated with 76.2 mm (3 in.) of concrete cover minimum. Apply Adcor ES according to the installation instructions found on the data sheet.

■ 42 Joint Contraction (Control) and Construction Joints



*NOTE: FOR JOINTS WITH EXPECTED MOVEMENT NOT TO EXCEED 0.5 IN. (13MM).

INSTALLATION INSTRUCTIONS

Prior to Membrane Installation, Review the Preprufe® Data Sheet

Surface Preparation

All surfaces must be sound and solid to eliminate movement during the concrete pour. Substrate must be regular and smooth with no gaps or voids greater than ½ inch. The surface should also be free from loose aggregate and sharp protrusions as outlined in the Preprufe® Data Sheet section on Surface Preparation.

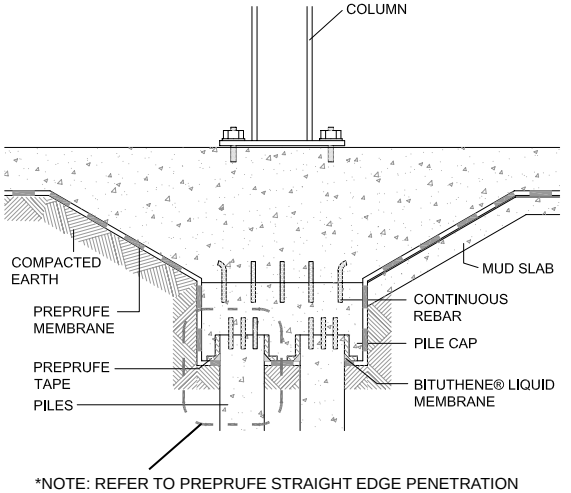
Detailing

1. Install Preprufe membrane according to standard horizontal and vertical application instructions on the Preprufe data sheet found at graceconstruction.com.
2. Preprufe CJ Tape should be applied to the surface of the Preprufe membrane and centered along the line of all contraction (control) and construction joints.
3. Remove release liner and roll tape to ensure good adhesion using steel or vinyl cylindrical Vee roller.
4. Ensure and damaged tape or membrane is repaired after removal of formwork or bulkhead.

Special Notes

Preprufe membranes should not be used in areas where they will be permanently exposed to sunlight, weather or traffic. Protect membrane from sunlight as quickly as possible after installation.

■ 43 Grade Beam Pile Cap (Option 1)



*NOTE: REFER TO PREPRUFE STRAIGHT EDGE PENETRATION DETAIL PRE 035 OR PREPRUFE PIPE PENETRATION DETAIL PRE 034 DEPENDING ON SHAPE OF PILE

INSTALLATION INSTRUCTIONS

Prior to Membrane Installation, Review the Preprufe® Data Sheet

Surface Preparation

All surfaces must be sound and solid to eliminate movement during the concrete pour. Substrate must be regular and smooth with no gaps or voids greater than 0.5 in. (13 mm). The surface should also be free from loose aggregate and sharp protrusions as outlined in the Preprufe® Data Sheet section on Surface Preparation.

Detailing

1. Install Preprufe Membrane over the prepared substrate in accord with standard installation instructions.
2. Preprufe Membrane is placed in the area formed for the pile cap before the concrete is poured.
3. When placing the membrane it is important to leave sufficient length (typically 12 in. [300 mm]) of Preprufe beyond the pile cap area to allow for tie-in to the Preprufe Membrane that will be laid to waterproof the general slab area.
4. Cut membrane within 0.5 in. (13 mm) of each pile and complete detail around each pile in accordance with Detail PRE 035 or Detail PRE 034 depending on shape of pile.

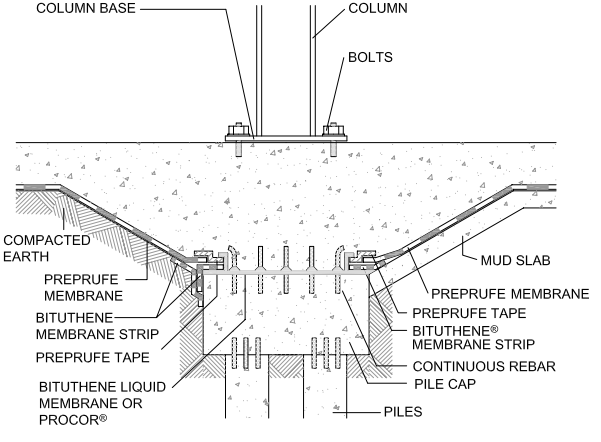
Special Notes

Preprufe membranes should not be used in areas where they will be permanently exposed to sunlight, weather or traffic. Protect membrane from sunlight as quickly as possible after installation.

Piles must extend a minimum of 6 in. (150 mm) above the substrate to ensure proper execution of the detail.

■ 44 Grade Beam Pile Cap

(Option 2)



INSTALLATION INSTRUCTIONS

Prior to Membrane Installation, Review the Preprufe® Data Sheet

Surface Preparation

All surfaces must be sound and solid to eliminate movement during the concrete pour. Substrate must be regular and smooth with no gaps or voids greater than 0.5 in. (13 mm). The surface should also be free from loose aggregate and sharp protrusions as outlined in the Preprufe® Data Sheet section on Surface Preparation.

Detailing

1. To allow for proper tie-in between Preprufe Field Membrane and pile cap, a 6 in. (150 mm) ledge/shelf along the pile cap's perimeter is required.

For Mud Slabs

1. Clean loose dust or dirt from the pile cap and mud slab surface using a clean, dry cloth or brush.
2. Apply a continuous 90 mil (2.2 mm) coating of Bituthene Liquid Membrane or Procor over the top of the pile cap.
3. Place a 1 in. (25 mm) bead of Liquid Membrane or Procor around all penetrations at the point of penetration through the pile cap.
4. Prime along the edge of the mud slab a minimum of 6 in. (150 mm) from the edge of pile cap with a Bituthene Primer and allow to dry.
5. Align a 9 in. (225 mm) strip of Bituthene Membrane centered over the edge of the pile cap. Remove release liner and roll firmly onto the Liquid Membrane and primed mud slab.
6. Install Preprufe Membrane over the prepared substrate and terminate it 2 in. (50 mm) onto the pile cap.
7. Apply Preprufe Tape centered over the Preprufe Membrane termination. Remove the release liner and roll firmly.
8. Seal Bituthene Membrane and Preprufe Tape edge with a termination bead of Liquid Membrane.

(Continued on next page)

For Compacted Earth

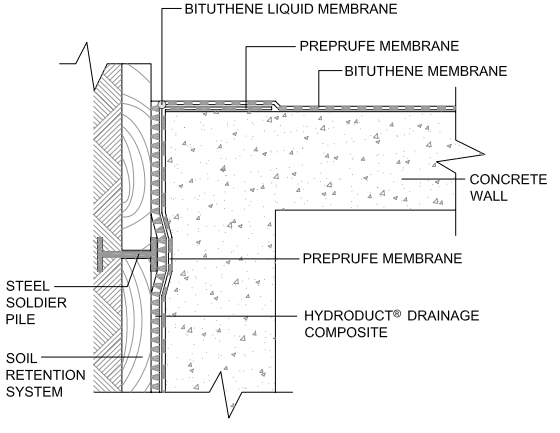
1. Apply a continuous 90 mil (2.2 mm) coating of Bituthene Liquid Membrane or Procor over the top of the pile cap.
2. Place a 1 in. (25 mm) bead of Liquid Membrane or Procor around all penetrations at the point of penetration through the pile cap.
3. Remove compacted earth away from sides of pile cap and remove formwork. Clean loose dust or dirt from the pile cap surface using a clean, dry cloth or brush.
4. Prime the sides of the pile cap a minimum of 6 in. (150 mm) from the top of pile cap with a Bituthene Primer and allow to dry.
5. Align a 9 in. (225 mm) strip of Bituthene Membrane centered over the outside edge (outside corner) of the pile cap. Remove release liner and roll firmly onto the Liquid Membrane and primed sides of pile cap.
6. Align a 12 in. (300 mm) strip of Bituthene Membrane centered over the outside edge (outside corner) of the pile cap.
7. Remove half of release liner by removing the RIPCORD® Split Release on Demand or by scoring release liner along the center of the strip.
8. Roll firmly onto the sides of pile cap with the 9 in. (225 mm) strip of Bituthene Membrane and the remaining primed pile cap.
9. Leave the other half of the 12 in. (300 mm) strip with the release liner still in tact in order to receive the Preprufe Membrane.
10. Replace earth/fill and compact per standard back-filling instructions being careful not to damage the Bituthene strip including the non-bonded portion.
11. Invert the Bituthene strip, and remove the remaining release liner to expose the adhesive portion of the Bituthene.
12. Install Preprufe Membrane over the prepared substrate and terminate it 2 in. (50 mm) onto the pile cap.
13. Roll firmly onto the inverted Bituthene strip.
14. Apply Preprufe Tape centered over the Preprufe Membrane termination. Remove the release liner and roll firmly.
15. Seal Bituthene Membrane and Preprufe Tape edge with a termination bead of Liquid Membrane.
16. Apply Hydroduct® according to Hydroduct Data Sheet.

Special Notes

Preprufe membranes should not be used in areas where they will be permanently exposed to sunlight, weather or traffic. Protect membrane from sunlight as quickly as possible after installation.

■ 45 Tie Into Bituthene® Wall Waterproofing

Plan View



*NOTE: HYDRODUCT OR APPROVED PROTECTION COURSE NOT SHOWN FOR CLARITY OVER BITUTHENE.

INSTALLATION INSTRUCTIONS

Prior to Membrane Installation, Review the Preprufe® Data Sheet

Surface Preparation

All surfaces must be sound and solid to eliminate movement during the concrete pour. Substrate must be regular and smooth with no gaps or voids greater than 0.5 in. (13 mm). The surface should also be free from loose aggregate and sharp protrusions as outlined in the Preprufe® Data Sheet section on Surface Preparation.

Detailing

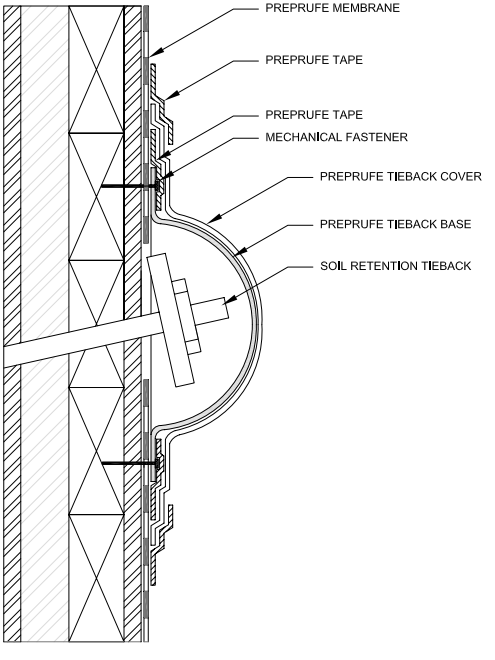
1. Install Preprufe 160R over the prepared vertical surface.
2. Extend the Preprufe 160R Membrane 6 in. (150 mm) beyond the end of the blind-side wall.
3. As the foundation wall formwork is installed, fold the 12 in. (300 mm) piece of Preprufe 160R Membrane to form a sharp corner.
4. Secure it to the inside face of the exterior form panel using Hydroduct Tape or small head fasteners located close to the outer edge of the membrane.
5. Once the wall is poured and cured for seven days, remove the formwork and install the post applied waterproofing according to the manufacturers standard installation procedures.
6. Apply Hydroduct® according to Hydroduct Data Sheet.

Special Notes

Preprufe membranes should not be used in areas where they will be permanently exposed to sunlight, weather or traffic. Protect membrane from sunlight as quickly as possible after installation.

Provide temporary protection for Preprufe at the tie-in location until the Bituthene tie-in is installed. The tie-in should be completed and backfilled as soon as possible.

■ 46 Preprufe Tie-Back Cover



INSTALLATION INSTRUCTIONS

Prior to Membrane Installation, Review the Preprufe® Data Sheet

Surface Preparation

All surfaces must be sound and solid to eliminate movement during the concrete pour. Substrate must be regular and smooth with no gaps or voids greater than 0.5 in. (13 mm). The surface should also be free from loose aggregate and sharp protrusions as outlined in the Preprufe® Data Sheet section on Surface Preparation.

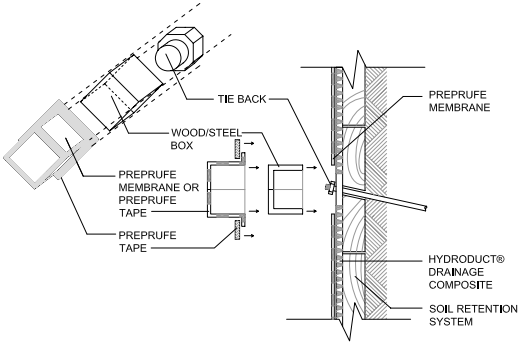
Detailing

1. Install Preprufe Membrane within 2 in. (50 mm) of tieback as per standard installation instructions.
2. Center the base over tieback head and secure base to soil retention system using appropriate fasteners. Fasteners should have a low profile head.
3. Apply Preprufe Tape centered over the edge of the base flange and roll firmly to form a tight seal. Remove release liner and discard.
4. Position the membrane cover over the base taking care to ensure the cover flange sits flat onto the Preprufe Membrane.
5. Apply Preprufe Tape centered over the edge of the cover flange and roll firmly to form a tight seal. Remove release liner and discard.
6. All Preprufe Tape should overlap onto surfaces of tape, membrane, base, cover, etc. a minimum of 2 in. (50 mm).
7. Apply Hydroduct® according to Hydroduct Data Sheet.

Special Notes

Preprufe membranes should not be used in areas where they will be permanently exposed to sunlight, weather or traffic. Protect membrane from sunlight as quickly as possible after installation.

■ 47 Soil Retention Tie-Back Cover – Custom Box Cover



*NOTE: FOR USE WHEN PREPRUFE TIE-BACK COVER IS NOT VIABLE.

INSTALLATION INSTRUCTIONS

Prior to Membrane Installation, Review the Preprufe® Data Sheet

Surface Preparation

All surfaces must be sound and solid to eliminate movement during the concrete pour. Substrate must be regular and smooth with no gaps or voids greater than 0.5 in. (13 mm). The surface should also be free from loose aggregate and sharp protrusions as outlined in the Preprufe® Data Sheet section on Surface Preparation.

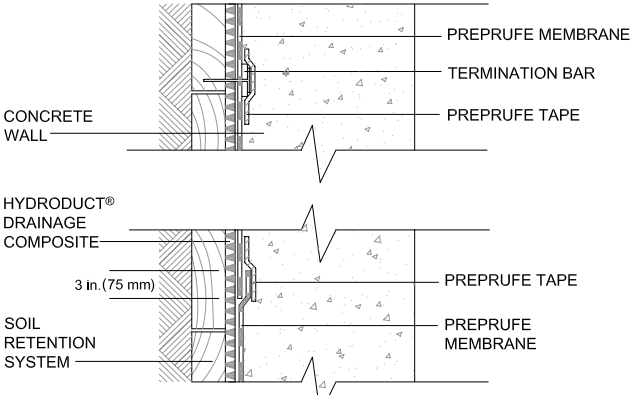
Detailing

1. Install Preprufe Membrane within 2 in. (50 mm) of tieback as per standard installation instructions.
2. Cover the tieback head with a box constructed of wood, steel or other material that will provide a sound, stable and smooth substrate for the Preprufe.
3. Position the custom cover to allow concrete to shed during placement and to improve consolidation.
4. Firmly secure the cover to the soil retention system.
5. Apply Preprufe CJ Tape and/or Preprufe Tape over the box providing a continuous layer of tape that overlaps onto the field membrane by a minimum of 3 in. (75 mm). Remove the release liners and apply Preprufe Tape centered over all outside edges and corners of box to provide double layer at edges and corners.
6. Roll firmly and remove release liner.
7. Apply Hydroduct® according to Hydroduct Data Sheet.

Special Notes

Preprufe membranes should not be used in areas where they will be permanently exposed to sunlight, weather or traffic. Protect membrane from sunlight as quickly as possible after installation.

■ 48 Top Termination and End Lap



INSTALLATION INSTRUCTIONS

Prior to Membrane Installation, Review the Preprufe® Data Sheet

Surface Preparation

All surfaces must be sound and solid to eliminate movement during the concrete pour. Substrate must be regular and smooth with no gaps or voids greater than 0.5 in. (13 mm). The surface should also be free from loose aggregate and sharp protrusions as outlined in the Preprufe® Data Sheet section on Surface Preparation.

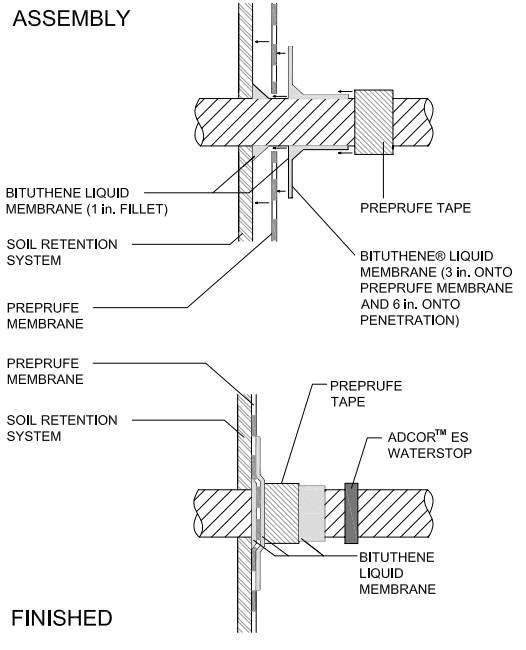
Detailing

1. Apply Preprufe field membrane according to standard installation procedures.
2. Apply termination bar to Preprufe membrane.
3. Center Preprufe CJ Tape to cover termination bar and roll firmly.
4. Protect top of termination of membrane from exposure.
5. For end lap, overlap successive membrane rolls by 3 in. (75 mm).
6. Apply Preprufe Tape, centered over the lap. (Refer to PRE 031 and PRE 032)
7. Apply Hydroduct® according to Hydroduct Data Sheet.

Special Notes

Preprufe membranes should not be used in areas where they will be permanently exposed to sunlight, weather or traffic. Protect membrane from sunlight as quickly as possible after installation.

■ 49 Rebar, Dowel, and All-Thread Penetration



Prior to Membrane Installation, Review the Preprufe® Data Sheet

Surface Preparation

All surfaces must be sound and solid to eliminate movement during the concrete pour. Substrate must be regular and smooth with no gaps or voids greater than 0.5 in. (13 mm). The surface should also be free from loose aggregate and sharp protrusions as outlined in the Preprufe® Data Sheet section on Surface Preparation.

Detailing

1. All penetrations must be firmly secured and stable. Grout around all penetrations that are not stable. Clean loose dust or dirt from the penetration and the surrounding substrate surface using a clean, dry cloth or brush.
2. Mix and apply Bituthene Liquid Membrane around the penetration. Liquid Membrane should be placed to form a minimum 1 in. (25 mm) continuous fillet between the substrate and the base of the penetration.
3. Cut the field membrane tight to the penetration and remove release liner. If membrane is not within 0.5 in. (12 mm) of penetration and not more than 2 in. (50 mm) from penetration, apply Preprufe Tape to cover the gap. Roll firmly into place and remove release. If the membrane is greater than 2 in. (50 mm) from penetration, install more Preprufe Membrane to cover the gap repeating these instructions until Preprufe Membrane/Tape is within 0.5 in. (12 mm).
4. Position the field membrane snug to the penetration so that it is a maximum of 0.5 in. (12 mm) from the base of the penetration and press firmly into the partially cured Liquid Membrane.
5. Apply Liquid Membrane to form a minimum 1 in. (25 mm) continuous fillet between the Preprufe Membrane and the base of the penetration. Extend a 90 mil (2.2 mm) continuous coating of Liquid Membrane overlapping a minimum of 3 in. (75 mm) onto the surface of the Preprufe Membrane and 6 in. (150 mm) onto the penetration.
6. Wrap the penetration with Preprufe Tape, positioning the tape at the base of the penetration. Remove enough release liner to overlap tape on to itself and roll/press firmly into place. Remove remaining release liner and discard.

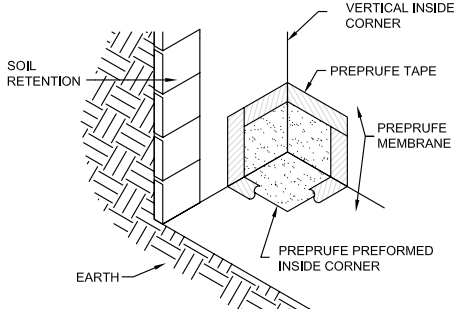
Special Notes

Preprufe membranes should not be used in areas where they will be permanently exposed to sunlight, weather or traffic. Protect membrane from sunlight as quickly as possible after installation.

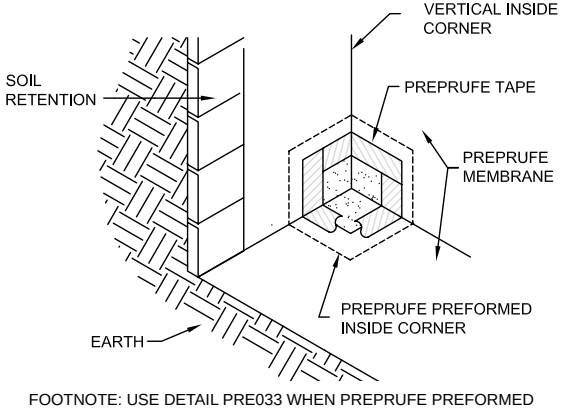
Ensure Adcor™ ES is encapsulated with 76.2 mm (3 in.) of concrete cover minimum. Apply Adcor ES according to the installation instructions found on the data sheet.

■ 53 Preprufe® Preformed Corner Inside Corner (Options A and B)

Installation After Membrane – Option A



Installation Before Membrane – Option B



FOOTNOTE: USE DETAIL PRE033 WHEN PREPRUFE PREFORMED INSIDE CORNER IS NOT VIABLE

Prior to Membrane Installation, Review the Preprufe® Preformed Corners Data Sheet

Surface Preparation

All surfaces must be sound and solid to eliminate movement during the concrete pour. Substrate must be regular and smooth with no gaps or voids greater than ½ inch. The surface should also be free from loose aggregate and sharp protrusions as outlined in the Preprufe® Data Sheet section on Surface Preparation.

Detailing

Installation After Membrane – Option A

1. Install Preprufe membrane in accordance with the Preprufe data sheet section on installation.
2. Remove release liner from both sides of Preprufe Inside Corner and install tight against Preprufe membrane.
3. Ensure the Preprufe Preformed Inside Corner covers the Preprufe membrane by a minimum of 3 in. (75 mm) on all sides
4. Apply Preprufe Tape centered over all edges of the Preprufe Preformed Inside Corner, roll firmly in place, remove release liner and discard.

Installation Before Membrane – Option B

1. Install Preprufe Preformed Inside Corner tight against substrate, remove release liner and discard.
2. Apply Preprufe membrane over Preprufe Preformed Inside Corner ensuring a 3-5 in. (75-125 mm) overlap onto corner.
3. Apply Preprufe Tape centered over all edges of the Preprufe membrane, roll firmly in place, remove release liner and discard.

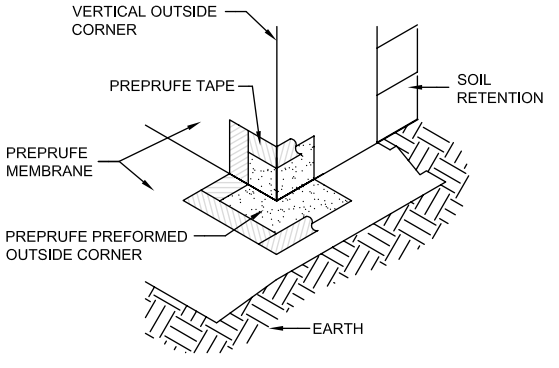
Special Notes

Preprufe membranes should not be used in areas where they will be permanently exposed to sunlight, weather or traffic. Protect membrane from sunlight as quickly as possible after installation.

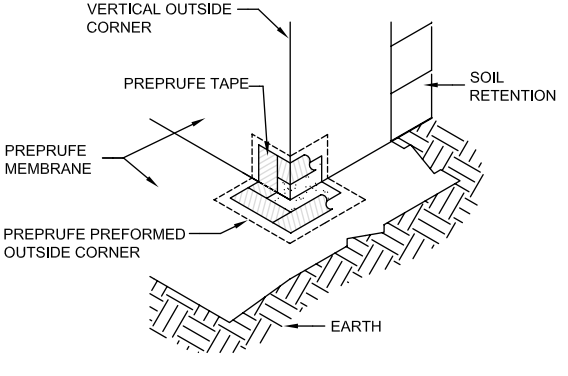
Preprufe Tape should overlap onto surfaces of tape, membrane, corner, etc. a minimum of 2 in. (50 mm).

■ 54 Preprufe® Preformed Corner Outside Corner (Options A and B)

Installation After Membrane – Option A



Installation Before Membrane – Option B



FOOTNOTE: USE DETAIL PRE036 WHEN PREPRUFE PREFORMED OUTSIDE CORNER IS NOT VIABLE

Prior to Membrane Installation, Review the Preprufe® Preformed Corners Data Sheet

Surface Preparation

All surfaces must be sound and solid to eliminate movement during the concrete pour. Substrate must be regular and smooth with no gaps or voids greater than ½ inch. The surface should also be free from loose aggregate and sharp protrusions as outlined in the Preprufe® Data Sheet section on Surface Preparation.

Detailing

Installation After Membrane – Option A

1. Install Preprufe membrane in accordance with the Preprufe data sheet section on installation.
2. Remove release liner from both sides of Preprufe Outside Corner and install tight against Preprufe membrane.
3. Ensure the Preprufe Preformed Outside Corner covers the Preprufe membrane by a minimum of 3 in. (75 mm) on all sides
4. Apply Preprufe Tape centered over all edges of the Preprufe Preformed Outside Corner, roll firmly in place, remove release liner and discard.

Installation Before Membrane – Option B

1. Install Preprufe Preformed Outside Corner tight against substrate, remove release liner and discard.
2. Apply Preprufe membrane over Preprufe Preformed Outside Corner ensuring a 3-5 in. (75-125 mm) overlap onto corner.
3. Apply Preprufe Tape centered over all edges of the Preprufe membrane, roll firmly in place, remove release liner and discard.

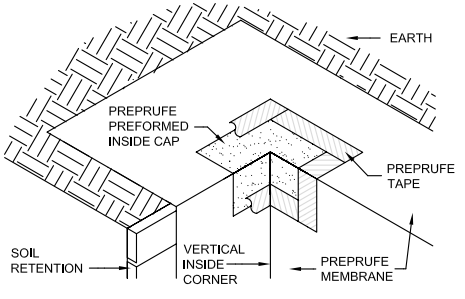
Special Notes

Preprufe membranes should not be used in areas where they will be permanently exposed to sunlight, weather or traffic. Protect membrane from sunlight as quickly as possible after installation.

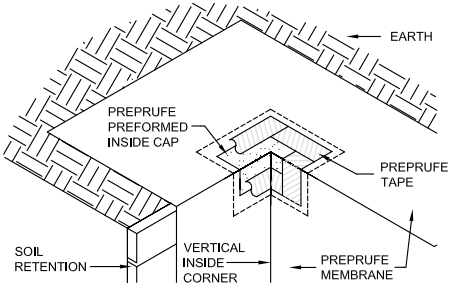
Preprufe Tape should overlap onto surfaces of tape, membrane, corner, etc. a minimum of 2 in. (50 mm).

■ 55 Preprufe® Preformed Corner Inside Cap (Options A and B)

Installation After Membrane – Option A



Installation Before Membrane – Option B



Prior to Membrane Installation, Review the Preprufe® Preformed Corners Data Sheet

Surface Preparation

All surfaces must be sound and solid to eliminate movement during the concrete pour. Substrate must be regular and smooth with no gaps or voids greater than ½ inch. The surface should also be free from loose aggregate and sharp protrusions as outlined in the Preprufe® Data Sheet section on Surface Preparation.

Detailing

Installation After Membrane – Option A

1. Install Preprufe membrane in accordance with the Preprufe data sheet section on installation.
2. Remove release liner from both sides of Preprufe Inside Cap and install tight against Preprufe membrane.
3. Ensure the Preprufe Preformed Inside Cap covers the Preprufe membrane by a minimum of 3 in. (75 mm) on all sides
4. Apply Preprufe Tape centered over all edges of the Preprufe Preformed Inside Cap, roll firmly in place, remove release liner and discard.

Installation Before Membrane – Option B

1. Install Preprufe Preformed Inside Cap tight against substrate, remove release liner and discard.
2. Apply Preprufe membrane over Preprufe Preformed Inside Cap ensuring a 3-5 in. (75-125 mm) overlap onto cap.
3. Apply Preprufe Tape centered over all edges of the Preprufe membrane, roll firmly in place, remove release liner and discard.

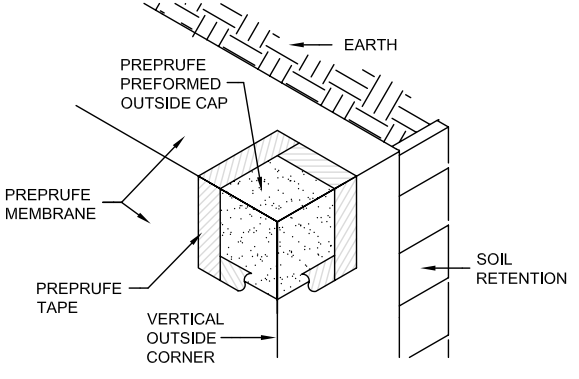
Special Notes

Preprufe membranes should not be used in areas where they will be permanently exposed to sunlight, weather or traffic. Protect membrane from sunlight as quickly as possible after installation.

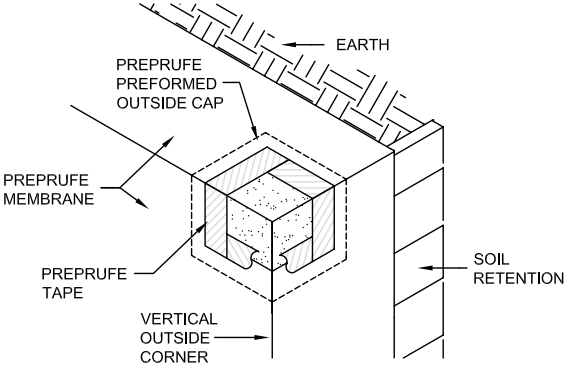
Preprufe Tape should overlap onto surfaces of tape, membrane, cap, etc. a minimum of 2 in. (50 mm).

■ 56 Preprufe® Preformed Corner Outside Cap (Options A and B)

Installation After Membrane – Option A



Installation Before Membrane – Option B



Prior to Membrane Installation, Review the Preprufe® Preformed Corners Data Sheet

Surface Preparation

All surfaces must be sound and solid to eliminate movement during the concrete pour. Substrate must be regular and smooth with no gaps or voids greater than ½ inch. The surface should also be free from loose aggregate and sharp protrusions as outlined in the Preprufe® Data Sheet section on Surface Preparation.

Detailing

Installation After Membrane – Option A

1. Install Preprufe membrane in accordance with the Preprufe data sheet section on installation.
2. Remove release liner from both sides of Preprufe Outside Cap and install tight against Preprufe membrane.
3. Ensure the Preprufe Preformed Outside Cap covers the Preprufe membrane by a minimum of 3 in. (75 mm) on all sides
4. Apply Preprufe Tape centered over all edges of the Preprufe Preformed Outside Cap, roll firmly in place, remove release liner and discard.

Installation Before Membrane – Option B

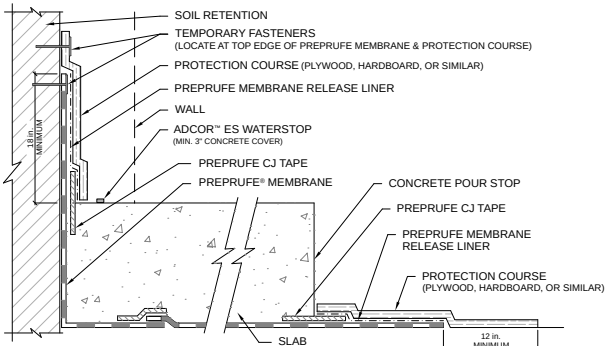
1. Install Preprufe Preformed Outside Cap tight against substrate, remove release liner and discard.
2. Apply Preprufe membrane over Preprufe Preformed Outside Cap ensuring a 3-5 in. (75-125 mm) overlap onto corner.
3. Apply Preprufe Tape centered over all edges of the Preprufe membrane, roll firmly in place, remove release liner and discard.

Special Notes

Preprufe membranes should not be used in areas where they will be permanently exposed to sunlight, weather or traffic. Protect membrane from sunlight as quickly as possible after installation.

Preprufe Tape should overlap onto surfaces of tape, membrane, cap, etc. a minimum of 2 in. (50 mm).

■ 60 Temporary Protection During Construction Sequencing



INSTALLATION INSTRUCTIONS

Prior to Membrane Installation, Review the Preprufe® Data Sheet

Surface Preparation

All surfaces must be sound and solid to eliminate movement during the concrete pour. Substrate must be regular and smooth with no gaps or voids greater than ½ inch. The surface should also be free from loose aggregate and sharp protrusions as outlined in the Preprufe® Data Sheet section on Surface Preparation.

Detailing

1. Install Preprufe membrane in accordance with the Preprufe data sheet section on installation.
2. Extend the Preprufe a minimum of 12 in. (300 mm) past any steel extending from slab.
3. Cover exposed Preprufe membrane with release liner.
4. Apply protection course over Preprufe and release liner, extending a minimum of 12 in. (300 mm) past Preprufe membrane.
5. Remove protection course, release liner and repair the membrane if necessary prior to concrete pour.

Special Notes

Preprufe membranes should not be used in areas where they will be permanently exposed to sunlight, weather or traffic. Protect membrane from sunlight as quickly as possible after installation.

Do not penetrate or damage the Preprufe during concrete placement, formwork and bulkhead erection and between construction phases.

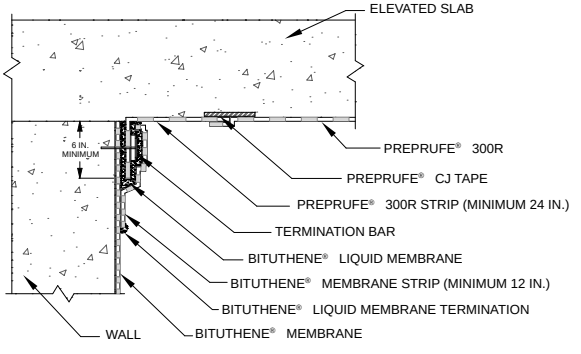
Extend the Preprufe a minimum of 12 in. (300 mm) past any steel extending from slab.

Remove protection course and temporary fasteners just prior to tie-in to new Preprufe Membrane.

Ensure any fastener holes in the membrane are sealed with Preprufe Tape.

Hydroduct not shown for clarity.

■ 61 Bituthene Tie-In with Elevated Slab



INSTALLATION INSTRUCTIONS

Prior to Membrane Installation, Review the Preprufe® Data Sheet

Surface Preparation

All surfaces must be sound and solid to eliminate movement during the concrete pour. Substrate must be regular and smooth with no gaps or voids greater than ½ inch. The surface should also be free from loose aggregate and sharp protrusions as outlined in the Preprufe® Data Sheet section on Surface Preparation.

Detailing

1. Install Preprufe membrane in accordance with the Preprufe data sheet section on installation.
2. Install Bituthene® Liquid Membrane from the top of the wall over the existing Bituthene® Membrane, extending down a minimum of 6 in. (150 mm).
3. While the Bituthene Liquid Membrane is still “wet” (uncured), embed 6 in. (150 mm) of a min. 24 in. (0.6 m) Preprufe 300R strip.
4. Install a termination bar through the Preprufe 300R securely into the vertical wall.
5. Re-flash over the edge of the Preprufe 300R with Bituthene Liquid Membrane and extend up over the termination bar ensuring the Preprufe 300R and the termination bar are fully encapsulated with Bituthene Liquid Membrane.
6. Install a 12 in. (300 mm) strip of Bituthene Membrane from the top of the wall extending down over the Bituthene Liquid Membrane/termination bar and onto the existing Bituthene Membrane.
7. Terminate the bottom edge, top edge and all seams of the Bituthene strip with Bituthene Liquid Membrane.
8. Protect the Preprufe 300R strip during backfill, placement and compaction
9. Fold the Preprufe 300R strip back onto the compacted earth/gravel for tie-in with Preprufe 300R underslab.
10. Ensure that the Bituthene and vertically installed Preprufe are protected with an approved protection course prior to backfill.

Special Notes

Preprufe membranes should not be used in areas where they will be permanently exposed to sunlight, weather or traffic. Protect membrane from sunlight as quickly as possible after installation.

Hydroduct or approved protection course not shown for clarity

Note: specs for below grade waterproofing also requires a 10 year manufacturer warranty. Recommend confirming this will be provided.

WATERPROOFING WARRANTY

Project: Sample

Owner: Sample

Contractor: Sample

Applicator: Sound Waterproofers, Inc
16300 Aurora Ave. N.
Shoreline, WA 98133
Phone: (206)542-5200

Product: Sample

Area/Square Footage: Area / sq. ft.

Completion Date: Sample

Sound Waterproofers, Inc. warrants the waterproofing/vapor barrier system applied by Sound Waterproofers on the above referenced project to be free of defects in materials and workmanship for a period of two (2) year/s from completion.

Sound Waterproofers will, at no cost to the owner, supply labor, materials, and equipment to repair leaks caused by defective workmanship or materials in the waterproofing/vapor barrier system installed by Sound Waterproofers.

Sound Waterproofers will complete repairs from the interior or exterior, by whatever means necessary, likely using the grout injection method, and will leave the area in the original condition.

Sound Waterproofers shall not be obligated to repair damage caused by events beyond its control, including but not limited to architectural or structural defects, cracks over 1/16th inch, fire, building alteration, below-grade or adjoining block walls, damage to the installation by others, or acts of God.

Sound Waterproofers, Inc. must be notified immediately of necessary repairs.

SOUND WATERPROOFERS, INC.

Randall Dana
President

VAPORBLOCK® PLUS™ VBP20

UNDER-SLAB VAPOR / GAS BARRIER

RAVEN

PRODUCT DESCRIPTION

VaporBlock® Plus™ 20 is a seven-layer co-extruded barrier made from state-of-the-art polyethylene and EVOH resins to provide unmatched impact strength as well as superior resistance to gas and moisture transmission. VaporBlock® Plus™ 20 is a highly resilient underslab / vertical wall barrier designed to restrict naturally occurring gases such as radon and/or methane from migrating through the ground and concrete slab. VaporBlock® Plus™ 20 is more than 100 times less permeable than typical high-performance polyethylene vapor retarders against Methane, Radon and other harmful VOCs.

VaporBlock® Plus™ 20 is one of the most effective underslab gas barriers in the building industry today far exceeding ASTM E-1745 (Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill Under Concrete Slabs) Class A, B and C requirements. Available in a 20 (Class A) mil thicknesses designed to meet the most stringent requirements. VaporBlock® Plus™ 20 is produced within the strict guidelines of our ISO 9001:2008 Certified Management System.

PRODUCT USE

VaporBlock® Plus™ 20 resists gas and moisture migration into the building envelop when properly installed to provide protection from toxic/harmful chemicals. It can be installed as part of a passive or active control system extending across the entire building including floors, walls and crawl spaces. When installed as a passive system it is recommended to also include a ventilated system with sump(s) that could be converted to an active control system with properly designed ventilation fans.

VaporBlock® Plus™ 20 works to protect your flooring and other moisture-sensitive furnishings in the building's interior from moisture and water vapor migration, greatly reducing condensation, mold and degradation.

SIZE & PACKAGING

VaporBlock® Plus™ 20 is available in 10' x 150' rolls to maximize coverage. All rolls are folded on heavy-duty cores for ease in handling and installation. Other custom sizes with factory welded seams are available based on minimum volume requirements. Installation instructions and ASTM E-1745 classifications accompany each roll.

Under-Slab Vapor/Gas Retarder

PRODUCT	PART #
VaporBlock® Plus™ 20	VBP20

APPLICATIONS

Radon Barrier

Under-Slab Vapor Retarder

Methane Barrier

Foundation Wall Vapor Retarder

VOC Barrier

MORRISON HERSHFIELD CORP.

REVIEW IS FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND GENERAL COMPLIANCE WITH THE INFORMATION GIVEN IN THE CONTRACT DOCUMENTS ONLY. ANY ACTION SHOWN IS SUBJECT TO THE REQUIREMENTS OF THE PLANS AND SPECIFICATIONS. CONTRACTOR IS RESPONSIBLE FOR: CONFIRMING AND CORRELATING ALL DIMENSIONS: COORDINATING WORK WITH THAT OF ALL OTHER TRADES: AND PERFORMING ITS WORK IN A SAFE AND SATISFACTORY MANNER.

☑ REVIEWED ☐ FURNISH AS NOTED

☐ NOT REVIEWED ☐ REVISE & RESUBMIT

☐ REJECTED

DATE: 09/17/2018 BY: alang

Vapor Block is listed among the acceptable specified underslab vapor barrier products. MH has no objections.
Per mark-up on following pages, recommend confirming/indicating which accessories are to be used on this project, and suggest providing a plan drawing to depict extent of underlab vapor barrier installation.

VAPORBLOCK® PLUS™ VBP20

UNDER-SLAB VAPOR / GAS BARRIER

PROPERTIES	TEST METHOD	VAPORBLOCK® PLUS™ 20 IMPERIAL	VAPORBLOCK® PLUS™ 20 METRIC
Appearance		White/Gold	
Thickness, Nominal		20 mil	0.51 mm
Weight		102 lbs/MSF	498 g/m^2
Classification	ASTM E 1745	CLASS A, B & C	
[3] Tensile Strength	ASTM E 154 Section 9 (D-882)	58 lbf	102 N
Impact Resistance	ASTM D 1709	2600 g	
Permeance (new material)	ASTM E 154 Section 7 ASTM E 96 Procedure B	0.0098 Perms grains/(ft^2·hr·in·Hg)	0.0064 Perms g/(24hr·m^2·mm Hg)
Permeance (after conditioning) (same measurement as above permeance)	ASTM E 154 Section 8, E96 Section 11, E96 Section 12, E96 Section 13, E96	0.0079 0.0079 0.0097 0.0113	0.0052 0.0052 0.0064 0.0074
WVTR	ASTM E 96 Procedure B	0.0040 grains/hr-ft^2	0.0028 gm/hr-m^2
Benzene Permeance	See Note [6]	1.57E-10 m/s	
Toluene Permeance	See Note [6]	2.18E-10 m/s	
Ethylbenzene Permeance	See Note [6]	1.71E-10 m/s	
M & P-Xylenes Permeance	See Note [6]	1.62E-10 m/s	
O-Xylene Permeance	See Note [6]	1.53E-10 m/s	
Radon Diffusion Coeffiecient	K124/02/95	< 1.1 x 10^{-13} m^2/s	
Methane Permeance	ASTM D 1434	3.68E^{-12} m/s Gas Transmission Rate (GTR): 0.32 mL/m^2•day•atm	
Maximum Static Use Temperature		180° F	82° C
Minimum Static Use Temperature		- 70° F	- 57° C

[3] Tests are an average of machine and transverse directions.

[6] Aqueous Phase Film Permeance.
Permeation of Volatile Organic Compounds through EVOH Thin Film Membranes and Coextruded LLDPE/EVOH/LLDPE Geomembranes, McWatters and Rowe, Journal of Geotechnical and Geoenvironmental Engineering© ASCE/September 2015. (Permeation is the Permeation Coefficient adjusted to actual film thickness)

VaporBlock® Plus™ Placement

All instructions on architectural or structural drawings should be reviewed and followed. Detailed installation instructions accompany each roll of VaporBlock® Plus™ and can also be located on our website.
ASTM E-1643 also provides general installation information for vapor retarders.

VaporBlock® Plus™
UNDERSLAB VAPOR RETARDER / GAS BARRIER

VaporBlock® Plus™ is a seven-layer co-extruded barrier made using high quality virgin-grade polyethylene and EVOH resins to provide unmatched impact strength as well as superior resistance to gas and moisture transmission.

Scan QR Code to download current technical data sheets via the Raven website.

RAVEN ENGINEERED FILMS
P.O. Box 5107 Sioux Falls, SD 57117-5107
Ph: +1 (605) 335-0174 • TF: +1 (800) 635-3456
efdsales@ravenind.com
www.ravenefd.com

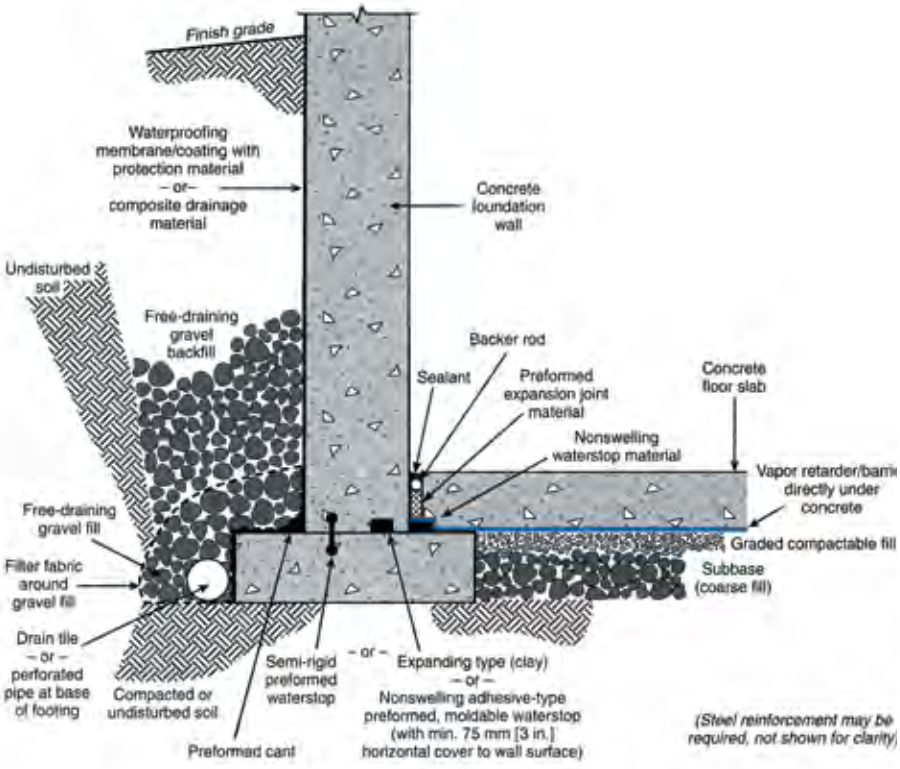
VaporBlock®
UNDERSLAB VAPOR RETARDER

INSTALLATION GUIDELINES

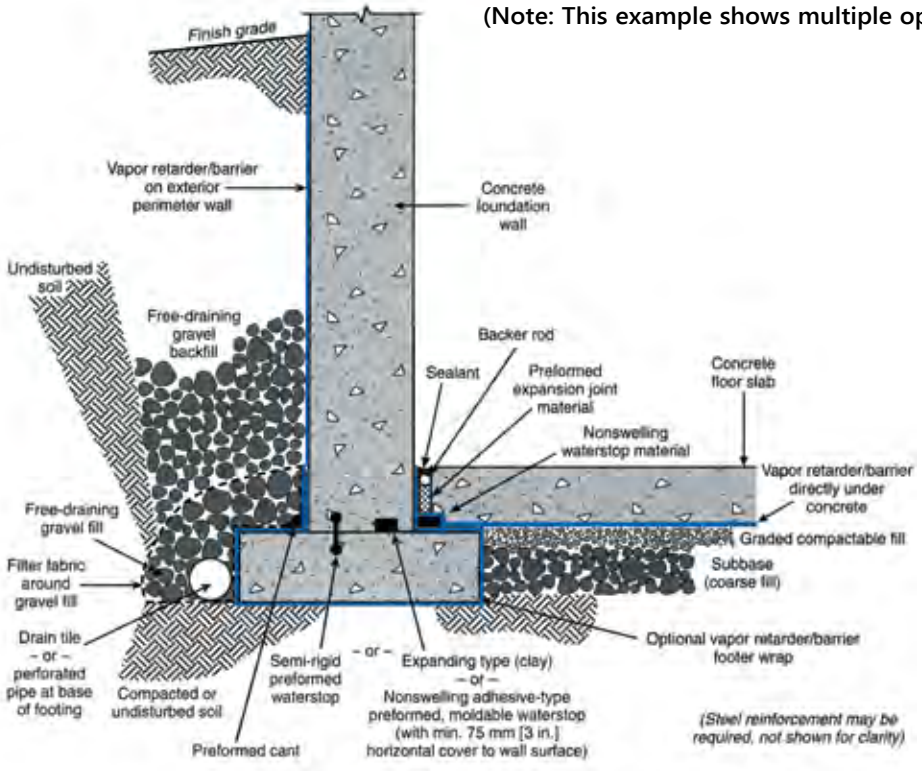
Please Note: Read these instructions thoroughly before installation to ensure proper use of VaporBlock®. ASTM E 1643 can also provide valuable information regarding the installation of vapor retarders. When installing this product, contractors shall conform to all applicable local, state and federal regulations and laws pertaining to residential and commercial building construction.

Materials List:

VaporBlock® Vapor Retarder (Barrier)
VaporBond 4" Seaming Tape
Butyl Seal 2-Sided Tape
VaporBoot Pipe Boot System 25/Tube plus Tape
VaporBoot Tape (optional)
POUR-N-SEAL™ (optional)
Mako® Screed Supports (optional)



Elements of a moisture-resistant floor system. General illustration only. (Note: This example shows multiple options for waterstop placement.)



Elements of a moisture-resistant floor system. General illustration only. (Note: This example shows multiple options for waterstop placement.)

OPTIONAL PERIMETER WALL & FOOTER METHODS

An optional perimeter wall class "A" vapor retarder can be installed with or without a bituminous coating applied to the concrete.

Raven VaporBlock® 10 or 15 mil (Class A) vapor retarders can be sealed to the perimeter wall with Raven Butyl Seal Tape. An optional footer wrap may also be applied.

Original diagrams on this page were reprinted with permission by the Portland Cement Association.
Reference: Kanare, Howard M., Concrete Floors and Moisture, EB119, Portland Cement Association, Skokie, Illinois, and National Ready Mixed Concrete Association, Silver Spring, Maryland, USA, 2008, 176 pages.

VAPORBLOCK® PLACEMENT

1.1. Level and tamp or roll granular base as specified by your architectural or structural drawings. If sharp crushed rock is used, a 1/2" layer of fine grade compactable fill is required between the base and the vapor retarder.

1.2. Unroll VaporBlock® running the longest dimension parallel with the direction of the pour and pull open all folds to full width. (Fig. 1)

1.3. Lap VaporBlock® over the footings and seal with Raven 2-sided Butyl Seal tape. Prime concrete surfaces, when necessary, and assure they are dry and clean prior to applying Raven Butyl Seal Tape. Apply even and firm pressure with a rubber roller. Overlap joints a minimum of 6" and seal overlap with Raven VaporBond Tape.

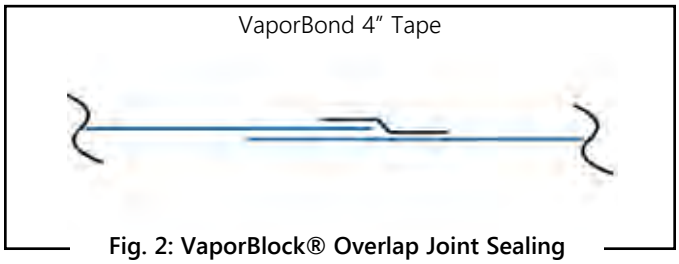


Fig. 2: VaporBlock® Overlap Joint Sealing

Fig. 1: VaporBlock® Overlaping Roll-out Method

SINGLE PENETRATION PIPE BOOT INSTALLATION

1.4. Seal around all plumbing, conduit, support columns or other penetrations that come through the VaporBlock® membrane. The Raven VaporBoot Pipe Boot System is the recommended sealing method. (Includes 25 pre-cut VaporBlock® pipe boots along with 1 roll of VaporBoot Tape). (Fig. 3 & 4)

Pipe boots may also be fabricated from excess VaporBlock® membrane (Fig. 3 & 4) and sealed with VaporBoot Tape or VaporBond Tape (sold separately).

Reminder Note: All holes or penetrations through the membrane will need a patch cut to a minimum of 6" from the opening in all directions.

To fabricate pipe boots from VaporBlock® excess material (see Fig. 3 & 4 for A-E):

A) Cut a square large enough to overlap 6" in all directions.

B) Mark where to cut opening on the center of the square and cut four to eight slices about 3/8" less than the diameter of the pipe.

C) Force the square over the pipe leaving the tightly stretched cut area around the bottom of the pipe with approximately a 1/2" of the boot material running vertically up the pipe (no more than a 1/2" of stretched boot material is recommended).

D) Use VaporBoot Tape or VaporBond Tape to secure the boot to the pipe.

VaporBoot Tape (option) – fold tape in half lengthwise, remove half of the release liner and wrap around the pipe allowing 1" extra for overlap sealing. Peel off the second half of the release liner and work the tape outward gradually forming a complete seal.

VaporBond Tape (option) - Tape completely around the pipe overlapping the to get a tight seal against the pipe.

E) Complete the process by taping over the boot perimeter edge with VaporBond Tape to create a monolithic membrane between the surface of the slab and moisture sources below and at the slab perimeter. (Fig. 3 & 4)

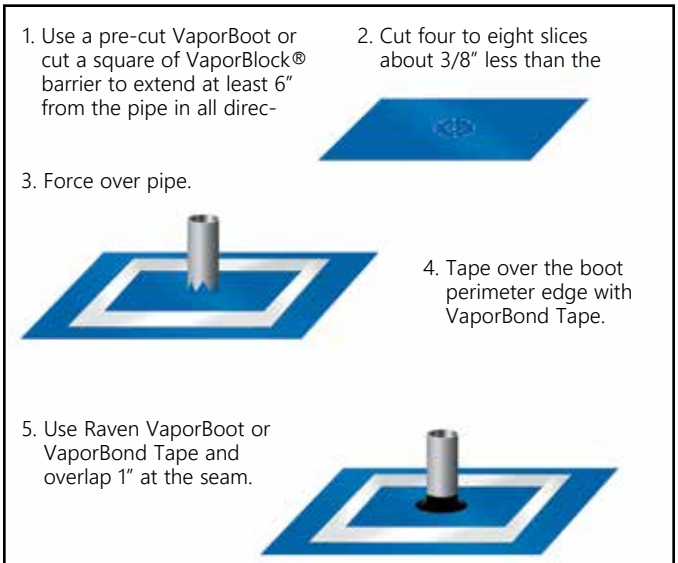


Fig. 3

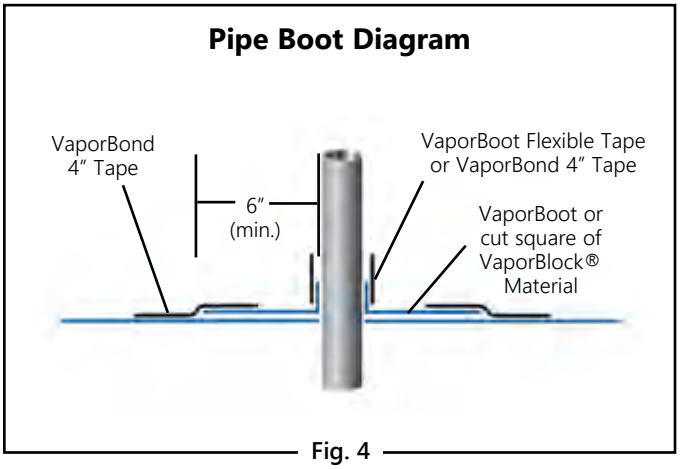


Fig. 4

MULTIPLE PENETRATION PIPE BOOT INSTALLATION

1.5. For side-by-side multiple penetrations (option 1);

A) Cut a patch large enough to overlap 6" in all directions (Fig. 5) of penetrations.

B) Mark where to cut openings and cut four to eight slices about 3/8" less than the diameter of the penetration for each.

C) Force the patch material over penetration to achieve a tight fit and form a lip (Fig. 6).

D) Tape around each of the penetrations and the patch with VaporBond 4" Tape. (Fig. 7) For additional protection apply an acceptable polyurethane elastomeric sealant around the penetrations. (Fig. 8)

1.6. Holes or openings through VaporBlock® are to be repaired by cutting a piece of VaporBlock® 6" larger in all directions from the opening. Seal the edges of the patch with VaporBond Tape.

Option 1

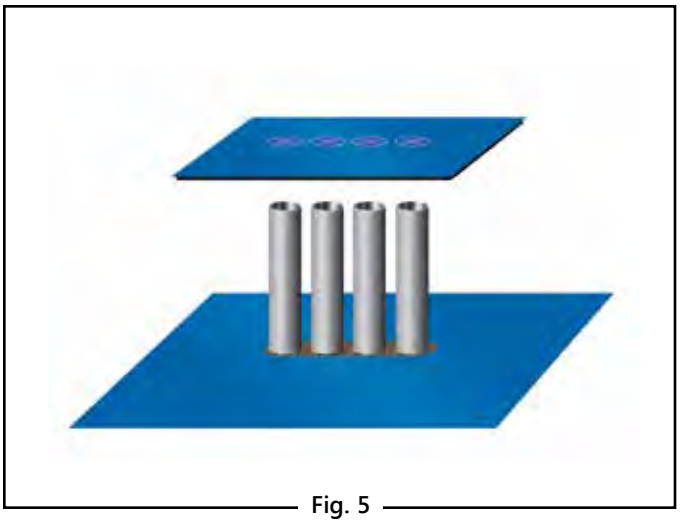


Fig. 5

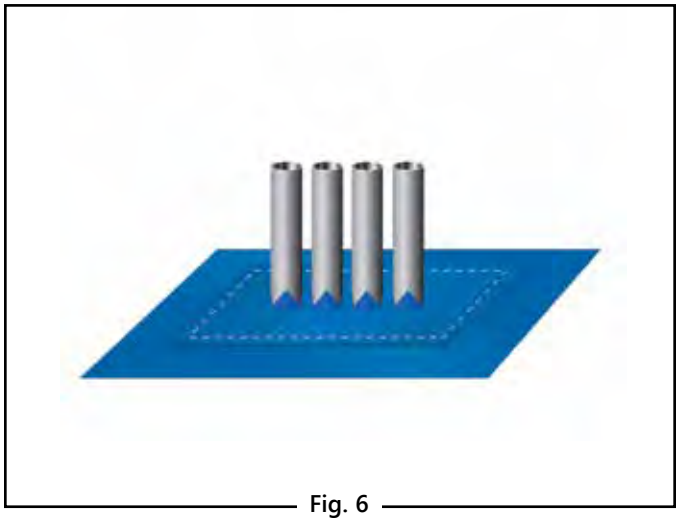


Fig. 6

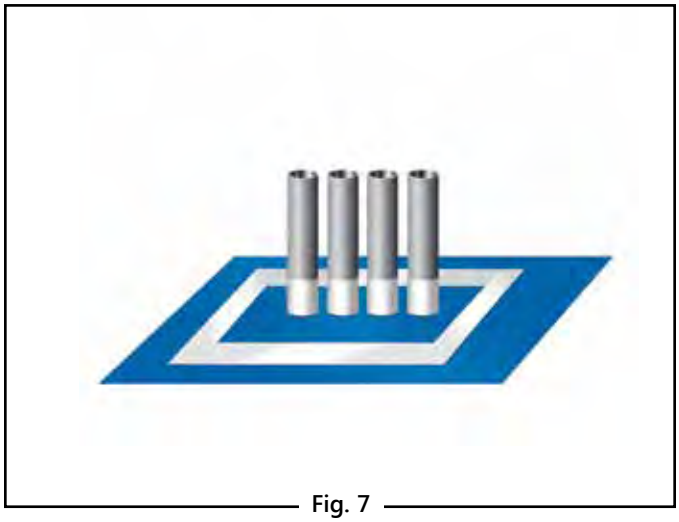


Fig. 7

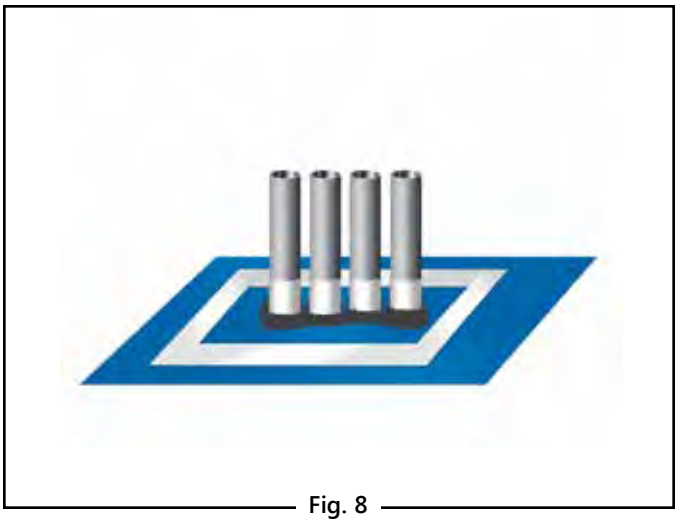


Fig. 8

Option 2

1.6. POUR-N-SEAL™ method of sealing side-by-side multiple penetrations (option 2):

A) Intall the vapor barrier as closely as possible to pipe penetrations to minimize the amount of POUR-N-SEAL™ necessary to seal around all penetrations.

B) Once barrier is in place, remove soil or other particles with a dry cloth or a fine broom to allow for improved adhesion to the POUR-N-SEAL™ liquid.

C) Create a dam around the penetration area approximately 2" away from the pipe or other vertical penetrations by removing the relase liner from the back of foam strip and adhere to the vapor barrier. Form a complete circle to contain the POUR-N-SEAL™ materials (Fig. 11).

D) Once mixedm pour contents around the pipe penetrations. If needed, a brush or plat wooden stick can be used to direct the sealany completely around penetrations creating a complete seal.

E) DO NOT leave excess POUR-N-SEAL™ in plastic container for longer than the time it takes to pour sealant.

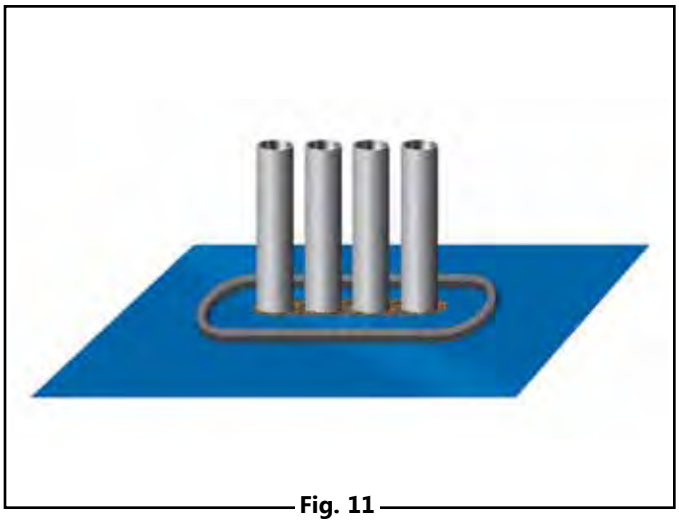


Fig. 11

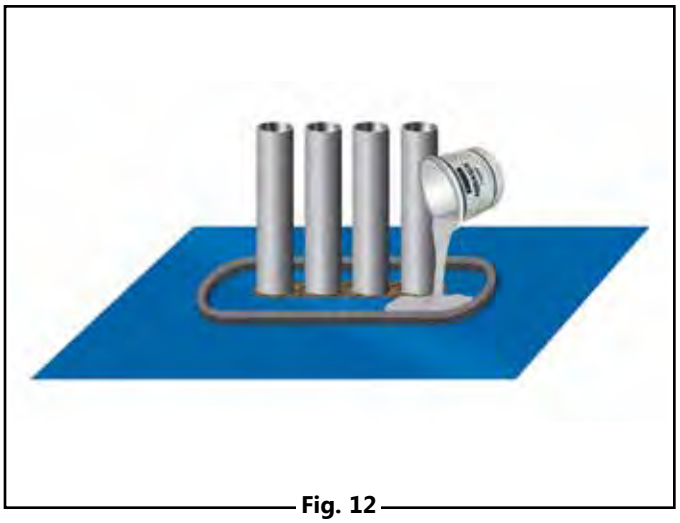


Fig. 12

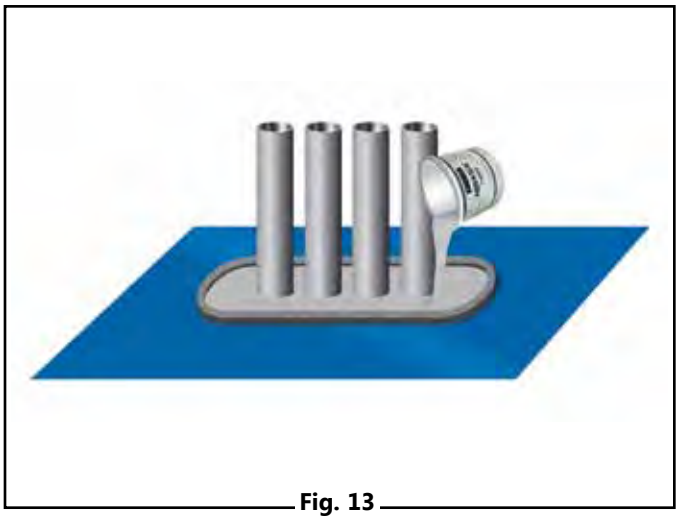


Fig. 13

VAPORBLOCK® REPAIR INSTRUCTIONS

1.7. Proper installation requires all holes and openings are repaired prior to placing concrete. When patching small holes, cut a piece of VaporBlock® large enough to overlap the hole 6" in all directions (smallest patch will be 12" x 12"). Place patch material over the center of the hole and tape over the patch perimeter with 4" wide VaporBond Tape (Fig. 14-16).

1.8. When installing VaporBlock® around pipe penetrations, vertical columns, electrical ducts and other obstructions, you will find it necessary to cut it to the nearest outside edge. This cut can be easily sealed by cutting a strip of VaporBlock® 12" wide and centering it over the cut. Once in place, tape around the perimeter with 4" wide VaporBond Tape.

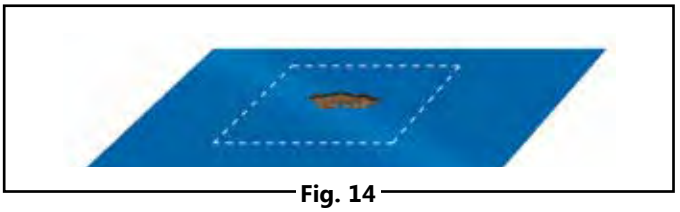


Fig. 14

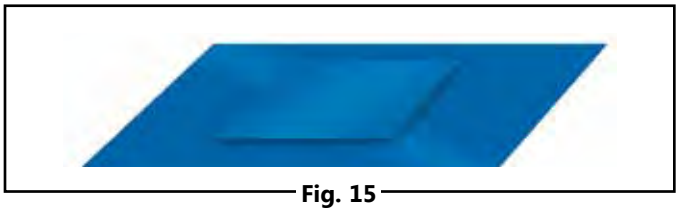


Fig. 15

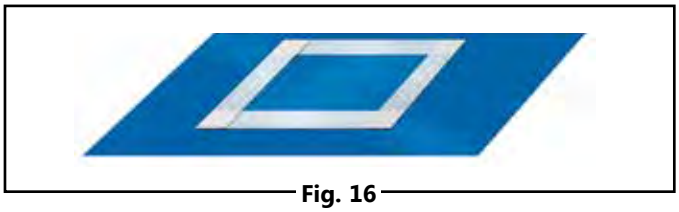


Fig. 16

2.1. When installing reinforcing steel and utilities, in addition to the placement of concrete, take precaution to protect VaporBlock®. Carelessness during installation can damage the most puncture–resistant membrane. Sheets of plywood cushioned with geotextile fabric temporarily placed on VaporBlock® provide for additional protection in high traffic areas including concrete buggies.

2.2. Use only brick-type or chair-type reinforcing bar supports to protect VaporBlock® from puncture.

2.3. Avoid driving stakes through VaporBlock®. If this cannot be avoided, each individual hole must be repaired.

2.4. To avoid penetrating VaporBlock® when installing screed supports, utilize non-penetrating supports such as the Mako® Screed Support-System (Fig. 18).

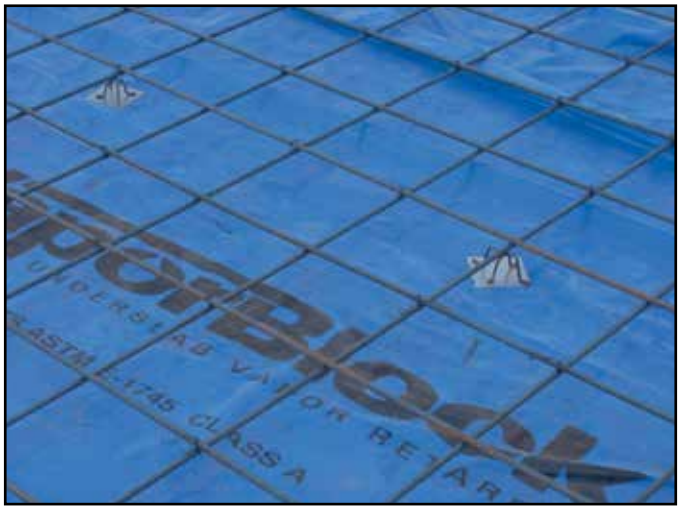
2.5. If a cushion or blotter layer is required in the design between VaporBlock® and the slab, additional care should be given if sharp crushed rock is used. Washed rock will provide less chance of damage during placement. Care must be taken to protect blotter layer from precipitation before concrete is placed.

2.6. VaporBlock® Vapor Barrier can be identified on site as blue in color printed in black ink with the following logo and classification listing (Fig. 19).

Fig. 18

VaporBlock®
UNDERSLAB VAPOR RETARDER

Fig. 19



Note: To the best of our knowledge, unless otherwise stated, these are typical property values and are intended as guides only, not as specification limits. Chemical resistance, odor transmission, longevity as well as other performance criteria is not implied or given and actual testing must be performed for applicability in specific applications and/or conditions. RAVEN INDUSTRIES MAKES NO WARRANTIES AS TO THE FITNESS FOR A SPECIFIC USE OR MERCHANTABILITY OF PRODUCTS REFERRED TO, no guarantee of satisfactory results from reliance upon contained information or recommendations and disclaims all liability for resulting loss or damage. Limited Warranty available at wwww.RavenEFD.com

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020316 EFD1156

ACCESSORIES

SEAMING TAPES & OTHER ACCESSORIES FOR PLASTIC SHEETING

From tie-down fasteners to field seaming tape, Raven Industries has the accessories you need to maximize your film's versatility and minimize installation time

Recommend confirming/indicating which accessories are to be used for this project.

ACCESSORY TAPES AND EPOXY

VaporBond Tape (TVB4)

This white single-sided tape combines a heavy-duty, weather-resistant polyethylene backing with an aggressive rubber adhesive. VaporBond Tape offers excellent seaming capabilities for our materials with an "Easy Tear" feature to reduce installation time. TVB4 has a WVTR of 0.18 perms per ASTM D3833. Typical applications include vapor retarders, covers and liners.
Available in 4" x 210' roll.

R25B Tape (R25B)

R25B Tape is a single sided aggressive synthetic elastomeric adhesive that bonds instantly to properly prepared polyethylene and polypropylene. The black polymer backing and adhesive is specially formulated to provide years of performance even in direct sunlight. A poly release liner provides for ease of installation.
Available in 4" x 100' roll.

VaporSeal™ Tape (TVSP4/TVSP12)

VaporSeal™ Tape is a patented single-sided 7-layer gas barrier tape with a release liner for ease of installation. The backing contains a layer of highly impermeable EVOH designed to block migration of radon, methane and VOC's. An aggressive acrylic adhesive provides outstanding adhesion to polyethylene over a wide temperature range. Typical uses include joining, repairing and sealing gas/moisture barriers.
Available in 4" x 160' and 12" x 50' rolls.

Butyl Seal Tape (TP2BR)

Butyl seal is a double-sided reinforced aggressive black butyl rubber tape used to join panels of polyethylene and polypropylene together by overlapping the edges and applying Butyl Seal in between. It is also used to adhere to concrete walls and footings when properly prepared. Butyl Seal is non-hardening and flexible.
Available in 2" x 50' roll.

VaporBoot Tape (TBOOT)

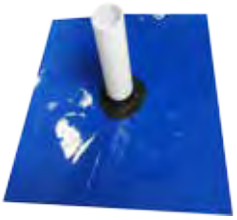
VaporBoot Tape is a single-sided elastomeric butyl tape used to complete pipe boot installations (sealing the boot to the pipe). The 100% stretchable Butyl adhesive features excellent adhesion values and 3-D stretching that can be easily molded to multiple surfaces without any creases and folds.
Available in 2" x 16.4' roll.

POUR-N-SEAL™ (PNS1G)

POUR-N-SEAL™ is a gray two part epoxy used to seal around multi-pipe penetrations in areas where pipe boots are not practical, when installing VaporBlock or Absolute Barrier. The POUR-N-SEAL system includes 25 lineal feet of a 1" adhesive-backed foam to form a dam around multi-pipe penetrations to contain POUR-N-SEAL™ during the setting process.

ADDITIONAL ACCESSORIES

VaporBoot\VaporBoot G System (VBOOT\VBOOTG)



The VaporBoot System is designed to assist in securing pipe and other penetrations that run vertically through the vapor retarder material. The VaporBoot System offers a quick solution and is delivered to the jobsite in a complete package. VaporBoots are produced from high performance VaporBlock® and VaporBlock® G™ material.

Package Contents:
25 - VaporBoots (18" x 18", w/precut center marker)
1 - roll of VaporBoot Tape

VaporBoot Plus Preformed Pipe Boots (VBPBT)

VaporBoot Plus Preformed Pipe Boots are produced from heavy 40 mil co-extruded polyethylene and barrier resins for excellent strength and durability. The preformed boots are stepped to fit 1" to 4" wide pipe penetrations. VaporBoot Plus Preformed Pipe Boots are available in quantities of 12 per box.

ACCESSORIES

SEAMING TAPES & OTHER ACCESSORIES FOR PLASTIC SHEETING

ADDITIONAL ACCESSORIES (CONTINUED)

Dura♦Skrim® Reinforced Sandbags

Dura♦Skrim reinforced sandbags are used to secure large covers and liners to prevent wind damage. Stock bags are produced with strong Dura♦Skrim 8 & 12 mil reinforced polyethylene. These 15" wide x 24" long bags are designed to hold 35 lbs. Sandbags are also available in other Raven reinforced materials with minimum order requirements. 11.8" Cable Ties are also available.

Dura-Clip™ (CLIP11)

These full size clips are 11" long and fit most commercial scaffolding. Dura-Clips will securely fasten your poly sheeting to scaffolding, reducing wind whip and increasing the life of your enclosure. Clips are normally placed about every 3' onto the enclosure.

Tie-Down Buttons (BUTI) & Tarp Grabbers (BUTEZ)

Tie-Down Buttons & Tarp Grabbers help keep plastic sheeting securely in place. Tie-Down Buttons are designed to eliminate traditional grommets in plastic sheeting up to 10 mil thick and are reusable plastic fittings that are easy to install in any position. Tarp Grabbers are up to 4 times stronger than a brass grommet and are typically used in heavier plastic sheeting from 10 mil to 30 mil thick. Great for equipment covers, large storage covers and truck tarps.

Raven Welding Rod

Raven Welding Rod is used for field seaming, repairs and detail work, such as installing pipe boots. Packaged in 25 lb spools, it is available in 4mm and 5mm sizes to fit most brands of extrusion guns. Raven Welding Rod is made from a thermally UV stabilized LLDPE resin and is available in both black and white to correspond with the color of geomembranes being utilized.

TAPE ACCESSORY PROPERTIES

PROPERTIES	VaporBond Tape (TVB4)	VaporSeal™ Tape (TVSP4)	VaporBoot Tape (TBOOT)	R25B Tape (R25B)	Butyl Seal Tape (TP2BR)
BACKING	6.7 mil Polyethylene	7 mil LDPE	30 mil EPDM	8 mil Multipolymer	NA
ADHESIVE	3.3 mil Rubber Based Pressure-Sensitive	2 mil Acrylic Adhesive Pressure-Sensitive	20 mil Butyl Rubber	17 mil Synthetic Elastomeric	40 mil Butyl Rubber
COLOR	White	Silver	Black	Black	Black
TYPE	Single Sided	Single Sided	Single Sided	Single Sided	Double Sided
SIZE	4" x 210'	4" x 160' / 12" x 50'	2" x 16.4'	4" x 100'	2" x 50'
ROLLS PER CASE	12	12 / 4	64	6	20
WEIGHT PER CASE	45 lbs	50 lbs / 18 lbs	45 lbs	33 lbs	55 lbs
ADHESION VALUES	35 oz. / in. (to steel)	80 oz. / in. (to steel)	145 oz. / in. (to steel)	144 oz. / in. (to steel)	88 oz. / in. (to steel)
PERMS	0.89 g/(24h*100 in^2)	0.014 g/(24h*100 in^2)	N/A	<0.005 g/(24h*100 in^2)	0.82 g/(24h*100 in^2)
SERVICE TEMP.	-40° F to +180° F	-40° F to +190° F	+14° F to +122° F	+20° F to +180° F	0° F to +170° F
MIN. APPLICATION TEMP.	50° F	50° F	14° F	35° F	35° F
IDEAL STORAGE TEMP./HUMIDITY	70° F w/ 40-50 %	60°-80° F w/ 40-60 %	70° F w/ 70 %	70° F w/ 40-50 %	70° F w/ 40-50 %

Scan QR Code to download current technical data sheets via the Raven website.

Note: To the best of our knowledge, unless otherwise stated, these are typical property values and are intended as guides only, not as specification limits. Chemical resistance, odor transmission, longevity as well as other performance criteria is not implied or given and actual testing must be performed for applicability in specific applications and/or conditions. RAVEN INDUSTRIES MAKES NO WARRANTIES AS TO THE FITNESS FOR A SPECIFIC USE OR MERCHANTABILITY OF PRODUCTS REFERRED TO, no guarantee of satisfactory results from reliance upon contained information or recommendations and disclaims all liability for resulting loss or damage. Limited Warranty available at wwww.RavenEFD.com

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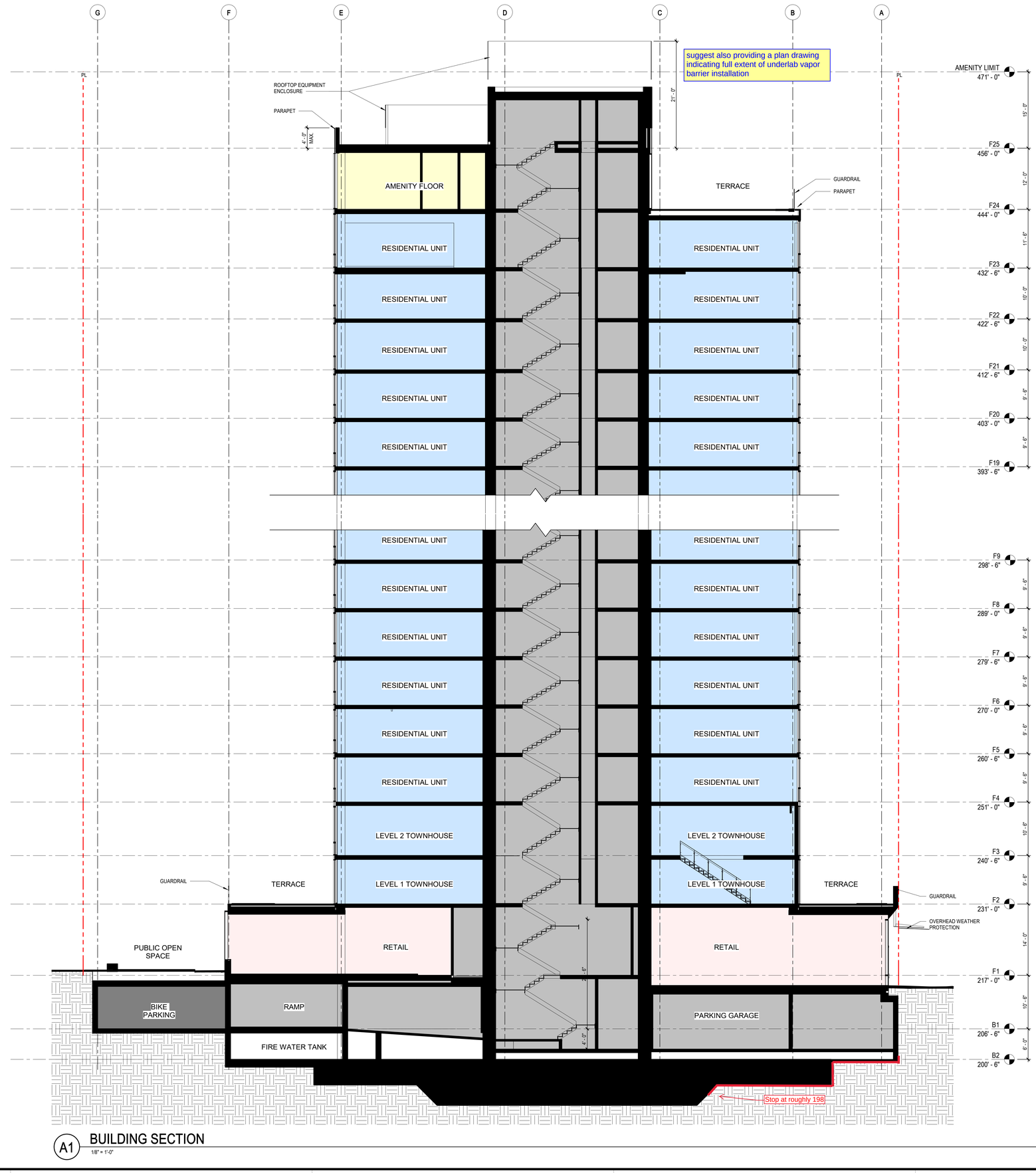

A1 **BUILDING SECTION**
1/8" = 1'-0"

KEYNOTES

SHEET NOTES

1. REFER TO GEOENGINEERS GEOTECHNICAL REPORT DATED DECEMBER 1, 2017 FOR SUBSURFACE DRAINAGE DESIGN RECOMMENDATIONS. INCLUDE IN PROJECT SCOPE UNDERSLAB AND VERTICAL WATERPROOFING AND DRAINAGE DESIGN AS RECOMMENDED.

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SEATTLE, WA 98101

MECHANCAL / PLUMBING:
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SEATTLE, WA 98106

ELECTRICAL:
RUSHING
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SEATTLE, WA 98109

STATESIDE POWER
10636 NE 123RD STREET
KIRKLAND, WA 98034

THE 'M'

4700 BROOKLYN AVE NE
SEATTLE, WA 98105

100% CONSTRUCTION DOCUMENTS

AGENCY APPROVAL STAMP

MUP PROJECT NUMBER: 3028621
CONSTRUCTION PROJECT NUMBER: 6604106
PHASE 1 STRUCTURAL PERMIT: 6638602
PHASE 2 ARCHITECTURAL PERMIT: 6638693

REVISIONS

MARK	DATE	DESCRIPTION
B	6/26/18	PHASE 1 CYCLE 1 CORR.
A	6/8/18	MUP CORRECTIONS

SCALE	1/8" = 1'-0"
PROJECT ARCHITECT	NBBJ
PROJECT NUMBER	102009.00
DATE	JULY 27TH, 2018

SHEET NAME
BUILDING SECTIONS

SHEET NUMBER
AE301

We Solve Great Challenges.

September 20, 2018

Adam Griffin
Senior Engineer
Aspect Consulting LLC
350 Madison Avenue N
Bainbridge Island, Washington 98110

Dear Sir,

I have reviewed the Geotech Report for the remediation/construction project located at 4700 Brooklyn Ave, Seattle, Washington and noted the contaminants specifically described on the following pages:

Table 1 – Groundwater Analytical Results for Off-Property Monitoring Wells and Comparison to Vapor Intrusion Screening Levels.

The identified contaminants at the levels reported will not have an adverse effect on the intended performance of VaporBlock Plus VBP20 as a vapor barrier, provided standard design and application procedures are followed. Standard installation instructions and details can be found on our website at www.ravenefd.com.

If you have any questions, please feel free to call me at the number below.

Sincerely

Dan Smith
Staff Design Engineer
Raven Engineered Films
800 635 3456
dan.smith@ravenind.com

RAVEN