

Subsurface Investigation Report

TOC Holdings Co. Site 01-103
42411 NE Yale Bridge Road Amboy, Washington

Prepared for:
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Acronyms

BTEX	benzene, toluene, ethylbenzene, and total xylenes
COC	Chemical of Concern
DRPH	diesel range petroleum hydrocarbons
Ecology	Washington Department of Ecology
GRPH	gasoline range petroleum hydrocarbons
HASP	Health and Safety Plan
HydroCon	HydroCon Environmental LLC
LDPE	low-density polyethylene
LSI	Limited Site Investigation
MRL	method reporting limit
MTCA	Model Toxics Control Act
NRCS	Natural Resource Conservation Service
ORPH	oil range petroleum hydrocarbons
OSHA	Occupational Safety and Health Administration
PAHs	polynuclear aromatic hydrocarbons
PID	photoionization detector
PVC	polyvinyl chloride
SI	Subsurface Investigation
TPH	total petroleum hydrocarbons
UST	underground storage tank
VOCs	volatile organic compounds
WAC	Washington Administrative Code

1.0 INTRODUCTION

HydroCon Environmental, LLC (HydroCon) has prepared this Subsurface Investigation Report (SI) on behalf of TOC Holdings Co. (formerly Time Oil Co.) for the former TOC Holdings Co. Facility No. 01-103 located at 42411 NE Yale Bridge Road Amboy, Washington (the Property; Figure 1).

1.1 *Purpose*

The purpose of the SI was to collect data necessary to adequately characterize the Site for the purposes of developing and evaluating cleanup action alternatives. This SI Report summarizes historical information regarding the former use of the Property and surrounding parcels and provides the scope and findings of a subsurface investigation conducted in November and December 2015.

2.0 SITE BACKGROUND

This section provides a description of the Site and features, historical and current uses of the Property and surrounding properties, the physical setting of the Site, and a summary of previous investigations conducted on the Site and surrounding properties.

2.1 *Description of Property*

The Site is located in the southeast quarter of Section 12 of Township 5 North, Range 3 East of the Willamette baseline and Meridian as displayed in Figure 1. The Property is a 4.36-acre square-shaped lot located at 42411 NE Yale Bridge Road, Amboy, Washington 98601. The Property is currently owned by Becky J. Graybill and consists of one tax lot (Clark County tax parcel No. 274365000).

Figure 2 illustrates the site features and historical sampling locations. A 6,000 square foot restaurant and general store is located in the central portion of the Site. An active fuel dispensing island is located to the southwest of the general store, and the associated tank pit is located to the southeast of the dispensing island. The remainder of the Property is comprised of a paved parking area to the west and south of the general store, and undeveloped land to the north and east.

2.2 *Site History and Land Use*

2.2.1 *Property*

HydroCon reviewed documentation prepared by the law firm of Sussman Shank, LLP (2014) that summarizes the history of the Site and past investigation activities. According to Sussman Shank, the Site was previously owned by a Mr. Joseph Stella from 1980 to 2003. Up until 1985, Mr. Stella conducted fuel sale and dispensing activities under contract with Time Oil Co. which owned the three gasoline underground storage tanks (USTs) at the station and the fuel sold at the site. In approximately 1985, Mr. Stella purchased the USTs from Time Oil Co. and operated the fuel sale and dispensing activities independently. Per Sussman Shank, the three USTs had been on the property since 1972. In 1993, the three USTs were excavated from the site and petroleum impacted soils were encountered during the excavation. W.F. Anderson Construction Company, Inc. submitted a UST Closure Assessment as a result of those activities. In 2004, 3 Kings Environmental, Inc. (3 Kings) prepared and submitted a Groundwater Investigation Report. In 2014, 3 Kings prepared and submitted a Subsurface Investigation Report. In 2013, the Washington Department of Ecology (Ecology 2013) issued an opinion that the nature and extent of contamination had not been sufficiently quantified. The reports noted above are included in Sussman Shank, 2014

The 1993 report (W.F. Anderson) also details a 6,000-gallon diesel tank located on the adjacent property to the south of the Site and under the same ownership (Joe Stella). This tank was removed in 1993. Three soil samples were collected and analyzed for diesel range petroleum hydrocarbons (DRPH). The results were below the practical quantitation limit of 25 mg/kg and the MTCA Method A

cleanup level for diesel (2,000 mg/kg) (Ecology 2013). This site is not considered in this SI. Ecology considers this site closed therefore, no further investigation is warranted (Ecology 2013).

2.3 Physical Setting

The following sections provide a summary of the geologic and hydrogeologic conditions beneath and in the vicinity of the Site.

2.3.1 Regional Geology and Hydrogeology

The Site lies in a thin extension of the Portland Basin, which demarcates the separation between the Cascade and Coast Ranges. The Site is situated close to the northeastern terminus of the Portland Basin adjacent to the foothills of the Cascades. Soils found in this area are comprised of Quaternary-Miocene deposits (Phillips, 1987).

The predominant geology and hydrogeology in the area of the Site is characterized by lava flows and glaciation. As a result, the near surface soils are classified as deposits of stratified sand and gravel (Qao) overlying glacial till (Russel, 2005).

The soils underlying the site are comprised of Cinnebar silt loam with slopes ranging from 3 to 8 percent (USDA, 1972). This soil is described as a deep, well-drained, gently sloping to very steep. The parent material is volcanic ash predominantly occurring in lower foothills. The Natural Resource Conservation Service (NRCS) Soil Survey classifies this soil as well-drained with moderate permeability.

2.3.2 Groundwater Use

The Site is served by a domestic supply well located in the northeastern portion of the site adjacent to the general store. An as-built well log is not available from the Department of Ecology, but surficial observations of the well head indicate that the well is comprised of a six-inch diameter steel casing. Other well logs in the area indicate final completion depths between 50 and 150 feet below ground surface (bgs).

At the request of the Clark County Public Health Department, samples were collected in September 2015 from the potable water supply well at the Property. A sample was collected on September 15 from a domestic tap within the kitchen area located at the north end of the building used for food preparation. The sample was analyzed for gasoline-range petroleum hydrocarbons (GRPH) and benzene, toluene, ethylbenzene, and xylenes (BTEX). A second sample was collected on September 28 from the spigot located immediately on top of the well head, upstream of the chlorine injection point and pressure tank. The sample was analyzed for (GRPH), DRPH; BTEX, methyl tertiary butyl ether (MTBE), ethylene dibromide (EDB), ethylene dichloride (EDC), naphthalene, and total lead. Results for GRPH, DRPH, BTEX, EDB, EDC, MTBE, and naphthalene were below laboratory reporting limits and

federal drinking water maximum contaminant levels (MCLs). Total lead was detected at a concentration below MCLs. Details of these sampling events are provided in HydroCon, 2015.

The samples were analyzed for GRPH, DRPH, BTEX, MTBE, EDB), EDC, and naphthalene and total lead.

2.3.3 Site Geology and Hydrogeology

Based on the results of the investigations summarized in later sections of this report, subsurface soil beneath the Property to a maximum depth of 25 feet consists primarily of surficial sandy silt underlain by gravelly sand. Depth to groundwater at the site ranges from 4 to 14 feet bgs and the groundwater flow direction is consistently to the southwest (3Kings, 2014).

2.4 Previous Investigations

The following sections summarize previous investigations, but do not include details of sampling and analysis. A Cleanup Action Plan (to be prepared in the future) will provide a complete data set for the Property, including previous investigations, this SI, and future investigations, if any, designed to define the full extent of the Site, as defined by the Washington State Model Toxics Control Act (MTCA). The locations of historical borings and monitoring wells are shown on Figure 2.

2.5 1993 UST Decommissioning and Sampling

Between May and June 1993 three USTs were removed from the subject property which included one 12,000-gallon and two 8,000-gallon gasoline USTs. The gasoline tanks are reported to have been in place for 18 years at the time of decommissioning (Ecology 2013, 3Kings 2014).

During UST removal activities, approximately 250 cubic yards of petroleum-impacted soil were removed from the gasoline UST excavation. A total of fourteen soil samples and two water samples were collected. Of those, seven soil samples were collected from the gasoline UST excavation (CP3G through CP11G); three from the diesel UST excavation (C1 through C3); and four from an excavation for the new USTs (CP12G through CP13G) along with two water samples (CP14W and CP15W). The soil samples were analyzed for GRPH and the water samples were analyzed for BTEX. With the exception of CP5G (which had a detection of 18 mg/kg GRPH), all remaining soil samples were below the laboratory detection limits. It should be noted that the depths of the samples were not provided in the report or chain-of-custody documentation. 3Kings (2014) stated that the concentration of BTEX in groundwater exceeded the MTCA Method A cleanup level, but the groundwater analytical results were not provided in the report.

2.6 Groundwater Monitoring

In June 1993, two monitoring wells were installed (MW-1 and MW-2) to the west and north of the former UST excavation. These wells were completed at a depth of approximately 12 feet bgs. Both wells were constructed with 4-inch diameter PVC with a 5-foot length of 0.020-inch machine-slotted well screen placed at the bottom of the well. Based on depth to groundwater measurements (3Kings,

2014), these wells were dry during the seasonal low period (Fall) of the year and a relatively large fluctuation in the water table elevation (up to 10 feet) is recorded at the site. These wells do not appear to have been sampled following installation and then, not until 1999.

According to 3Kings and Ecology, four additional wells (MW-3 through MW-6) were installed at the site between 1999 and 2003. It is unclear from the reports when these wells were installed. MW-3 and MW-4 are completed at a reported depth of 20' bgs (Ecology 2013). The wells were constructed with ¾-inch diameter PVC and 15 feet of pre-packed well screens at the bottom of each well. There is no information on the installation of monitoring wells MW-5 and MW-6. TOC has not been provided with boring logs of the site monitoring wells. Tabulated groundwater monitoring results provided in the 2014 report prepared by 3Kings show results for 12 monitoring events for monitoring wells MW-1 through MW-6 between October 1999 and June 2008, except wells MW-5 and MW-6 which have no sampling results after May 2007, suggesting that the wells were abandoned about that time. Depth to groundwater shown in the table ranged from 4 to 14 feet. TOC has not been provided with the well decommissioning records.

The monitoring results tabulated in the report show that sampling for GRPH and BTEX was not consistent. Twelve sampling events are documented but not all of the analytes were tested in the wells. The highest concentrations of GRPH and BTEX were observed at MW-2 and MW-3; occasional lower detections observed at MW-1 and MW-4; and few, very low detections at MW-5 and MW-6. Wells MW-2 and MW-3 are located west and southwest of the former UST cavity (Figure 2). Wells MW-1 and MW-4 are located north of the former UST cavity. Wells MW-5 and MW-6 are not shown in the 3Kings (2014) figures. The direction of groundwater flow is consistently shown to the southwest. The presence of groundwater impacts at MW-2 and MW-3 is consistent with groundwater flow from the former UST cavity.

In March 2007, 3Kings introduced Oxygen Release Compound (ORC[®]) to groundwater by placing ORC socks in MW-1 and MW-2 and a ORC slurry in MW-3 and MW-4. Four sampling events were conducted over the next year; however, not all wells were sampled due to low water levels. In general, the groundwater concentrations were reduced following the ORC treatments, but then rebounded at MW-3.

It appears that 3Kings completed a second ORC treatment event in 2009, but details are not provided. Following that event, 3Kings initiated compliance monitoring. Tabulated results of the monitoring (3Kings, 2014) show five quarterly events between September 2010 and September 2011. Wells MW-1 and MW-2 were not sampled for two and three of the events, respectively, because the wells were dry. GRPH and BTEX were not detected for the events for which samples were collected. MW-3 had no detections above the laboratory's method reporting limit after the first event. There is no documented detection of GRPH or BTEX in MW-4.

2.7 2014 Subsurface Investigation

3Kings conducted a SI in March 2014 consisting of seven temporary boring for the purpose of collecting soil and groundwater samples (Figure 2). Tabulated results indicate that samples were collected at four borings (DP-3, DP-4, DP-5 and DP-6). Analytical results indicated that impacted soil was present at one boring (DP-5) at a depth of 12 feet. This boring is located near the northwest corner of the former UST cavity. Groundwater samples were collected at four borings (DP-1, DP3, DP-4, and DP-5) and well MW-3. MTCA Method A cleanup levels were exceeded for GRPH at DP-4 and DP-5 and for BTEX at DP-5. DP-4 is located about 15 feet southwest and downgradient of MW-3.

Based on this SI, 3Kings concluded that impacted soil and groundwater is present near the northwest corner of the former UST cavity and that impacted groundwater is present downgradient (south and west) of the former UST cavity.

2.8 Data Gaps

After review of historical investigations, HydroCon concluded that data from investigations on and adjacent to the Property were insufficient to define the Site in accordance with WAC 173-340-350 based on the following:

- Hydrogeologic conditions at the Site had not been adequately characterized.
- The locations, quantities, extents, and concentrations of all potential source(s) or release(s) had not been fully defined.
- The lateral and vertical distributions of hazardous substances at the Site had not been fully established.
- Data needed to evaluate cleanup alternatives at the Site were incomplete.

The scope of this SI included site characterization efforts needed to address data gaps and better define the Site.

3.0 PRE-INVESTIGATION ACTIVITIES

The following sections describe pre-investigation activities.

3.1 Permits

Prior to commencing work, HydroCon obtained a general permit (Number 50170) from the Washington State Department of Transportation for the off-Site drilling in NE Yale Bridge Rd (State Route SR503).

3.2 Health and Safety Plan

HydroCon prepared a Site-specific health and safety plan (HASP) to govern health and safety protocols used during this investigation. Work was performed using Occupational Safety and Health Administration (OSHA) Level D work attire consisting of hard hats, safety glasses, protective gloves, and protective boots. HydroCon conducted daily tailgate health and safety meetings prior to the start of each day of field work.

3.3 Underground Utility Locates

Due to potential conflicts during drilling activities within the public right-of-way and the potential for these utilities to act as preferential pathways/barriers for contaminant migration, an underground utility survey was completed. HydroCon notified the Washington Utility Notification Center (Ticket Number 15343859) who notified the following utilities to identify locations of their utilities:

- Clark Public Utilities - Electric
- TDS Telecom-Lewis River Telephone

In addition, HydroCon retained a private locating company, All County Locating Services of Vancouver, Washington, to identify the location of onsite subsurface utilities and to clear specific boring locations located near potential utility conflicts. HydroCon instructed the surveyors (T&C Construction Staking, Inc. of Yacolt, Washington) to measure each offsite and onsite utility line identified by the above, along with other features, to create a scaled base map. The results of these efforts are shown on Figures 2-6 where the locations of communications and overhead power utilities are shown.

4.0 SUBSURFACE INVESTIGATION

The following sections of this report summarize the field and analytical methods used during the SI, the objectives and work completed for each phase of SI activities, and a discussion of the results.

4.1 *Field Methods*

Field methods utilized during the SI are summarized in the following sections.

4.1.1 **Well Abandonment**

All existing monitoring wells at the Site (MW-1, MW-2, MW-3, and MW-4) were abandoned on November 16, 2015. These activities included filling the well casings with bentonite chips, removing all the well monuments, and backfilling the monuments with cement. Well abandonments were performed by Pacific Soil and Water of Tigard, Oregon. Well abandonment logs are included in Appendix A.

4.1.2 **Soil Borings**

Pacific Soil and Water was subcontracted to perform the drilling services. The borings were advanced to a maximum depth of 25 feet bgs at the Site between November 11 and December 5, 2015 in an effort to evaluate the horizontal extent of impacted soil and groundwater identified during previous investigations. Boring locations are shown on Figure 3 and boring logs are provided in Appendix B. Borings were advanced at the following locations:

- MW01A was located immediately north of the Site building.
- HC08 and HC09 were located north of the USTs and west of the Site building.
- HC04 through HC07 and MW06 were located near the western property boundary, west of the Site building and west of the USTs
- HC10 through HC12 were located in the immediate vicinity of the USTs.
- HC01 through HC03 were located near the southern property boundary south of the USTs and pump island.
- HC13 through HC17 were located on the west side of Yale Bridge Road on a line 60 feet north and south of Healy Rd intersection.

Seventeen borings (HC01 through HC17) were completed by Direct Push drilling techniques by Pacific Soil and Water of Tigard, Oregon, three of which were completed as monitoring wells (MW02A, MW04A, MW05). These borings were advanced at 5-foot intervals to a completion depth of up to 25 feet. Continuous soil samples were collected using a five-foot long "macro" core tube sampler equipped with new, clear polyethylene liners. Three borings, MW01A, MW03A and MW06, were completed with a limited access hollow-stem auger by Cascade Drilling of Portland Oregon due to the presence of overhead power lines. These borings were completed as monitoring wells to a depth of the 25 feet bgs and not sampled for soil.

Each soil sample core was inspected for lithologic composition, presence of water, and field screened for the presence of petroleum hydrocarbons (i.e., odor and organic vapors). The total organic vapor concentration of each sample was measured using a photoionization detector (PID). A portion of each soil sample was placed in a sealable plastic baggie. The tip of the PID was inserted into the plastic bag in the airspace above the soil sample and the PID measurement was recorded. The PID was calibrated before use at the Site to a test gas standard consisting of 100 parts per million (ppm) isobutylene. Because several factors can affect PID readings (e.g. moisture, temperature, and background conditions), HydroCon determined that a value of 2 ppm or greater may indicate the presence of organic vapors originating from contaminants at the Site.

Boring logs detailing the lithology, field screening results, and sample depths are included in Appendix A. Selected soil samples (typically three per boring) were submitted to the laboratory based on sampling objectives (i.e., depth and soil type) and field screening results.

The selected soil samples were removed from the polyethylene tubing using a new pair of disposable gloves and placed directly into labeled laboratory-prepared jars and sealed with Teflon-lined lids. A portion of each sample was placed in a sealable plastic baggie for field screening purposes described in further detail below. Soil samples were placed into laboratory-supplied containers (utilizing EPA Method 5035A field preservation) and immediately placed in an ice-filled cooler along with chain-of-custody documentation for shipment to Friedman & Bruya Laboratory in Seattle, Washington. A total of 73 soil samples were collected for laboratory analysis.

After the completion of soil sampling, borings HC01 through HC17 were fitted with temporary wells constructed with a new 5-foot section of slotted polyvinyl chloride (PVC) well screen and blank PVC casing for the collection of groundwater samples. A minimum of 1 liter of water was purged from each temporary well prior to sample collection. The groundwater samples were collected from each temporary well using low flow sampling techniques. Each temporary well was sampled using a peristaltic pump and new, low-density polyethylene (LDPE) tubing. The samples were not filtered. Groundwater samples were placed in laboratory-supplied containers.

All drilling and sampling tools were decontaminated between boring locations using a hot water pressure washer. All soil and water generated during purging and decontamination procedures was placed in a labeled 55-gallon drum and stored on Site pending disposal to a licensed disposal facility.

4.1.3 Monitoring Well Installation

A total of six borings were completed as monitoring wells to a depth of 25 feet using 2-inch diameter blank PVC casing flush threaded to 20-foot length of 0.010-inch slotted well screen. The bottom of each monitoring well was fitted with a threaded PVC end cap, and the top of each well was fitted with a locking compression-fit well cap. The annulus of the monitoring wells was filled with clean 10/20 graded silica sand to a minimum height of 1 foot above the top of the screened interval. A bentonite seal with a minimum thickness of 1 foot was installed above the sand pack. The monitoring wells were completed

at the surface with a flush-mounted, traffic-rated well box set in concrete. Well construction details are provided on the boring logs in Appendix B.

4.1.4 Well Development

HydroCon developed the monitoring wells on December 11 and 15, 2015 by surging and pumping techniques. A clean stainless steel bailer attached to a new length of poly rope was used to surge and bail turbid water from the well. The well was then pumped using new LDPE tubing attached to a peristaltic pump. This process was repeated until no further improvement in water clarity was recorded. The stainless steel bailer was decontaminated prior to use in each monitoring well. Details of well development are included in the *Well Development Forms* found in Appendix C.

4.1.5 Surveying

Monitoring well locations, top-of-casing elevations, and well monument surface elevations were surveyed December 18, 2015 by T&C Construction Staking, Inc. of Yacolt, Washington. Elevations are referenced to the North American Vertical Datum of 1988. The vertical and horizontal coordinates of the wells were surveyed relative to established datums in the area. The horizontal coordinates are relative to the North American Datum, 1983 (NAD83) and the vertical coordinates are relative to the North American Vertical Datum, 1988 (NAVD88).

The reference elevation of each monitoring well (at the inscribed reference mark on top of the PVC casing) is recorded on Table 3 and is used to calculate the groundwater surface elevation at each respective well (Figure 5).

4.1.6 Monitoring Well Sampling

Prior to obtaining depth-to-water measurements, HydroCon personnel opened the monitoring wells and permitted fluid levels to equilibrate with atmospheric pressure. Groundwater and product levels were measured relative to the top of the well casing to an accuracy of 0.01 feet using an electronic water meter on December 23, 2015.

Groundwater samples were collected from the monitoring wells on December 23, 2015 in accordance with the EPA Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures (USEPA 1996). Purging and sampling of each monitoring wells was performed using a peristaltic pump and dedicated polyethylene tubing at flow rates less than 500 milliliters per minute. Water quality was monitored during purging using a YSI water quality system or equivalent equipped with a flow-through cell. A separate turbidimeter was utilized for turbidity readings. Water quality parameters monitored and recorded included temperature, pH, specific conductance, dissolved oxygen, turbidity, and oxidation-reduction potential.

Following purging, groundwater samples were collected in laboratory-prepared sample containers, labeled with a unique sample identification, placed on ice in a cooler, and transferred to Friedman &

Bruya Laboratory in Seattle under standard chain-of-custody protocols for laboratory analysis. *Groundwater Purge and Sample Collection Forms* are included as Appendix D.

4.2 Laboratory Analysis

Soil samples obtained from the soil borings were submitted for laboratory analysis of one or more of the following:

- GRPH by Northwest Total Petroleum Hydrocarbon (NWTPH) Method NWTPH-Gx
- DRPH and ORPH by Method NWTPH-Dx
- BTEX by EPA Methods 8021B and 8260C
- Selected VOCs including MTBE, EDB, EDC, and naphthalene by EPA Method 8260C
- Polynuclear Aromatic Hydrocarbons (SVOCs) by EPA Method 8270D SIM
- Lead by EPA Method 200.1

Groundwater samples obtained from the monitoring wells and boreholes were submitted for one or more of the following laboratory analysis:

- GRPH by Method NWTPH-Gx
- DRPH and ORPH by Method NWTPH-Dx
- BTEX by EPA Methods 8021B and 8260C
- Selected VOCs including MTBE, EDB, EDC, and naphthalene by EPA Method 8260C (monitoring wells)
- Polynuclear Aromatic Hydrocarbons (PAHs) by EPA Method 8270SIM or 8270OD
- Total lead by EPA Method 200.8 (monitoring wells)

Friedman & Bruya Laboratories completed all of the soil and groundwater analysis at their Seattle laboratory. Laboratory analytical reports are included as Appendix E.

5.0 INVESTIGATION RESULTS

5.1 *Subsurface Conditions*

Boring logs are provided in Appendix B. Portions of the Site that were paved had asphalt that is approximately 3 inches thick. The asphalt in borings completed west of Yale Bridge Road (HC13 through HC17) was underlain by 2 feet of crushed rock base course. Borings HC04, HC05, HC06, HC07, MW06 were drilled in areas of grass and topsoil surfaces. Beneath the asphalt and topsoil, the soil typically consisted of silty sand to a depth of about 8 to 15 feet followed by gravelly sand with cobbles which extended down to the maximum depth explored (25 feet bgs).

5.2 *Field Screening Results*

The field screening results are recorded on the attached boring logs and summarized in the table below. Elevated PID readings (i.e. above 2.0 ppm) and hydrocarbon odors were detected at 8 of the 20 soil and monitoring well borings:

Field Screening Results

Boring ID	Hydrocarbon Odor	PID Readings ppmv @ depth (feet)
HC01/MW04A	Mild@17' Strong@20'	800@12' 1508@20'
HC02	Strong@22'	860@22'
HC03	--	--
HC04	Slight@25'	308@20' 27@22' 31@24'
HC05/MW05	Strong@22-25'	--
HC06	Slight@19.5' Strong@23-25'	5@20' 9@24'
HC07	--	--
HC08	--	--
HC09	--	--
HC10/MW02A	Slight@15' Strong@20-25'	74@12' 811@18' 742@20'
HC11	Strong@10-25'	42-1423@13-25'
HC12	Slight@7' Strong@12.5-25'	5-1248@10-25'
HC13	--	--
HC14	--	--
HC15	--	--
HC16	--	--
HC17	--	--
MW01A	--	nm
MW03A	--	nm
MW06	Slight@19.5' Strong@23-25'	nm

Notes:

-- = PID reading of 2 ppmv or less and no hydrocarbon odor recorded

nm = not measured

5.3 Analytical Results

Summary analytical tables are provided in Tables 1-6. The laboratory analytical reports and chain-of-custody records are provided in Appendix E. The laboratory results are compared to the MTCA Method A cleanup levels (CUL). The following sections describe the results of the testing.

5.3.1 Soil Analytical Results

Soil analytical results for total petroleum hydrocarbons (TPH) and VOCs are reported as milligrams per kilogram (mg/kg) and are summarized in Tables 1 and 2 and Figure 3. In the following discussion, soil sample IDs are in the form of HCxx-zz where xx is the location and zz is the depth, in feet.

DRPH was detected in 3 of the 59 samples collected at concentrations above the laboratory method reporting limit (MRL), ranging from 100 mg/kg to 740 mg/kg (Table 1). None of the samples had concentrations above the CUL of 2,000 mg/kg. In addition, all detections of DRPH were qualified ("x") by the laboratory as chromatographic patterns not resembling the fuel standard used for quantitation. Detected chromatographic patterns that do not match with laboratory diesel fuel standards suggest that the mass resolving as DRPH in the DRPH analyses are not DRPH but unregulated organic compounds generated from the abiotic and biotic degradation of GRPH (polar metabolites).

ORPH was not detected above the laboratory MRL or the CUL of 2,000 mg/kg in any of the samples (Table 1).

GRPH was detected in 13 of the 59 samples collected at concentrations above the laboratory MRL (Table 1), ranging from 5.5 mg/kg to 1,700 mg/kg. Of the 13 samples with detected concentrations, 8 samples (HC05-20, HC05-25, HC10-13, HC10-25, HC11-14, HC11-20, HC12-11, and HC12-20) had concentrations above the CUL of 30 mg/kg (benzene present in groundwater, see Section 5.3.2.2) with a maximum concentration of 1,700 mg/kg at HC12-11. Three of these samples were qualified (J) as being positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

One or more BTEX constituents were detected in 6 of the samples collected at concentrations above the laboratory MRLs (Table 1). The total xylene concentrations detected in the samples HC11-14 and HC12-20 exceeded the CUL of 0.03 mg/kg with a maximum concentration of 29.2 mg/kg. None of the detected concentrations of benzene, toluene, or ethylbenzene exceeded MRLs or their respective CUL.

One sample, HC11-14, was analyzed for EDB, EDC, MTBE, and naphthalene. Only naphthalene was detected above the laboratory MRL and slightly above the CUL of 5 mg/kg at 5.1 mg/kg.

Two samples were analyzed for PAHs, HC11-14 and HC12-11 (Table 2). Fluoranthene, fluorene, naphthalene, phenanthrene, and pyrene were detected above the MRL in both samples, only naphthalene was detected above the CUL of 5 mg/kg in HC11-14 at 17 mg/kg.

5.3.2 Groundwater Analytical Results

Groundwater samples were collected from temporary well screens installed in soil borings that were not equipped with filter sand packs surrounding the well screens. Although a minimum of 1 liter of water was purged from each temporary well prior to sample collection and samples were collected from each temporary well using low flow sampling techniques, temporary wells were not subjected to a rigorous well development procedure prior to sampling and the samples were not filtered. It is possible to introduce contaminants to the borehole water from the overlying soils using the continuous direct-push soil sampling technique. As a result, the groundwater quality results for samples collected from temporary wells should not be considered representative of the actual aquifer groundwater quality. These temporary wells were used to assess the lateral extent of contamination and to aid in the placement of permanent monitoring wells.

In accordance with the scope of work for this SI, groundwater samples were also collected from permanent monitoring wells installed with filter sand packs matched to the well screen perforation size and then subjected to rigorous development prior to sampling. Groundwater quality results from wells constructed and developed in this manner and sampled by the low-flow sampling techniques employed by HydroCon are considered reliable and representative of the actual aquifer groundwater quality.

The results of the analytical testing are presented in Tables 3, 4, 5, and 6. TPH and BTEX results are also provided on Figure 4. Results of groundwater samples collected from temporary wells are summarized in Tables 3 and 4 and Figure 4. Results of samples collected from permanent wells are summarized in Tables 5 and 6 and Figure 5.

5.3.2.1 Borehole Groundwater

HydroCon collected groundwater samples from 17 temporary boreholes for laboratory analysis. DRPH was detected in the samples collected from borings HC01, HC02, HC04, HC05, HC10, HC11, and HC15 exceeding the CUL of 500 µg/L with concentrations ranging from 800 µg/L in HC04 to 240,000 µg/L in HC10. All DRPH detections were qualified ("x") by the laboratory as chromatographic patterns not resembling the fuel standard used for quantitation. As with the soil results, flagged DRPH results suggest that reported mass of DRPH is actually degraded GRPH. ORPH was not detected in any samples, however, the MRL was above the CUL of 500 µg/L in samples HC10 and HC11.

GRPH was detected above the CUL of 800 µg/L in the same samples where DRPH was detected (HC01, HC02, HC04, HC05, HC10, HC11, and HC15). Concentrations above the CUL ranged from 3,400 µg/L in HC01 to 240,000 µg/L in HC10.

Benzene and ethylbenzene were not detected above the CULs of 5 µg/L and 700 µg/L in borehole water samples; however, the MRL exceeded the CUL for benzene in boreholes HC10 and HC11. Ethylbenzene and/or total xylenes were detected above CULs of 700 and 1,000 µg/L in boreholes HC10, HC11, and HC12 at with a maximum ethylbenzene concentration of 1,300 µg/L and a maximum total xylene concentration of 3,080 µg/L.

Water from borehole HC10 was analyzed for PAHs (Table 4). Naphthalene was detected above the CUL of 160 µg/L at a concentration of 10,000 µg/L.

5.3.2.2 Permanent Monitoring Well Analytical Results

Analytical results for groundwater samples collected from the six permanent monitoring wells are summarized in Tables 5 and 6 and Figure 5. Groundwater samples from monitoring wells were analyzed for DRPH, ORPH, GRPH, BTEX, MTBE, EDB, EDC, naphthalene, and total lead. Of these analytes, only benzene was detected in above CULs of 5 µg/L in MW03A at a concentration of 16 µg/L. The groundwater samples from MW02A and MW04A were also analyzed for carcinogenic PAHs; none were detected above the MRL or CUL (Table 6).

5.4 Groundwater Flow Direction and Gradient

The elevation of the groundwater in the monitoring wells was calculated using the elevation of the top of the casing (at the scribed reference mark) and subtracting the depth to water measurement (Table 5). Static water levels in the six wells ranged from 5.20 to 6.60 feet below the top of the PVC well casing on December 23, 2015, which correlates to groundwater elevations ranging from 498.16 to 498.59 feet above mean sea level. HydroCon prepared a groundwater elevation contour from the data set to illustrate the direction of groundwater flow at the Site (Figure 6). The groundwater flow direction is to the south with a shallow gradient of 0.005 ft/ft between MW01A and MW03A. A small groundwater depression is present at MW05. Groundwater flow patterns appear to be locally influenced by the presence of the USTs.

6.0 DATA VALIDATION

Laboratory testing of soil and groundwater resulted in four laboratory reports including Friedman and Bruya Work Orders 511159, 511178, 511197, and 512428. The laboratory reports are included in Appendix E. Eureka Project Solutions, LLC of Portland, Oregon conducted a quality assurance/quality control (QA/QC) review of the analytical results, which included a review of accuracy and precision of the data supplied by the laboratory. Elements of the QA/QC review included the following:

- Holding Times & Sample Receipt
- Surrogate Compounds
- Associated Matrix Spike/Matrix Spike Duplicate (MS/MSD)
- Associated Laboratory Duplicate
- Laboratory Control Sample/ Laboratory Control Sample Duplicates (LCS/LCSD)
- Method Blank
- Field Duplicates
- Target Analyte List
- Reporting Limits (MDL and MRL)
- Reported Results

The full Data Validation Reports are included in Appendix F and are summarized in the following paragraphs.

Work Order 511159

Diesel Range Organics results for soil samples HC05-20, HC01, HC02, HC04-W, HC05-W, HC06-W were given the lab qualifier "x". The lab qualifier "x" is defined as "The sample chromatographic pattern does not resemble the fuel standard used for quantitation."

Work Order 511178

Due to dilution necessary for analysis, Benzene results for water samples HC10-W and HC11-W were non detect, and were given the validation qualifier "ec" meaning "Method reporting limit exceeds Clean Up Level shown".

Diesel results for soil samples HC11-14, HC12-11, HC09-W, HC10-W, HC11-W, and HC12-W were given the lab qualifier "x" meaning "The sample chromatographic pattern does not resemble the fuel standard used for quantitation."

NWTPH-Gx results for soil samples HC10-13, HC11-20, HC12-11, and results for EDC for HC11-14, are qualified with a validation qualifier "J" meaning "The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample" due to surrogate recoveries."

Work Order 511197

Diesel Range Organics results for water samples HC15-W and HC16-W were given the lab qualifier "x". The lab qualifier "x" is defined as "The sample chromatographic pattern does not resemble the fuel standard used for quantitation."

The 8260C results for water samples HC13-W, HC14-W, HC15-W, HC16-W, and HC17-W were given the lab qualifier "cf". The lab qualifier "cf" is defined as "The sample was centrifuged prior to analysis." The lab qualifier is lab process informational and is not reported in the data table. There is no known result biases effecting data quality that occurs when sample is centrifuged.

The 8260C results for water samples HC15-W and HC16-W were given the lab qualifier "hs". The lab qualifier "hs" is defined as "Headspace was present in the container used for analysis. "

Work Order 512428

Non detected EDB results were given the validation qualifier "ec" meaning "Method reporting limit exceeds Cleanup Level."

In addition, the relative percent difference (RPD) was calculated for the field duplicate MW99, which was collected by HydroCon from monitoring well MW02A respectively. The RPD for each analyte present above the laboratory reporting limit was within acceptable limits. The RPD cannot be calculated if the results are below the laboratory reporting limit.

7.0 DISCUSSION

7.1 *Soil Conditions*

Based on the results of laboratory analysis, concentrations of GRPH and xylenes were observed above CULs in the soil samples collected in the area of the former USTs. Concentrations are up to 17 times the CUL for GRPH and 3 times the CUL for total xylenes.

7.2 *Groundwater Conditions*

Groundwater results from the permanent wells indicate that the area above CULs is limited to the area southeast and downgradient of the former UST area (MW03A). Borehole water suggests a wider distribution, but should not be relied upon to delineate the boundary of groundwater for compliance with MTCA CULs.

Field screening and analytical results indicate that the release is old and the GRPH has degraded considerably. Factors contributing to this conclusion include:

- The relatively low concentration or lack of volatiles in all soil and water samples
- The very similar concentration values for DRPH and GRPH in borehole water indicating abiotic and biotic degradation of GRPH
- Strong odors in samples with relatively low or non-detect GRPH concentrations in soil and non-detect GRPH concentrations in all monitoring well samples (i.e., HC10-15 and HC10-25, HC06-20 and HC06 -25)

The above factors provide evidence of weathered GRPH remaining in the capillary fringe/saturated zone interface. This is likely an artifact of the turbidity resulting from the direct-push sampling technique and revealed in elevated GRPH and DRPH in borehole water samples, but absent in a nearby, properly constructed and developed monitoring well. A direct comparison can be seen at HC10/MW02A where the borehole water concentrations is 240,000 µg/L and the monitoring well concentration is <100 µg/L.

Direct comparisons at HC01/MW04A and HC05/MW05 have similar results; detections above the CUL in borehole water and no detection in monitoring wells. Based on these results, HydroCon recommends that due to the age and degradation of the gasoline release, that borehole water not be used for site characterization purposes or regulatory compliance at this site.

Based on the results of soil and groundwater testing, the nature and extent of remaining impacted soil and groundwater has been characterized.

8.0 RECOMMENDATIONS

Based on the results of this SI, HydroCon recommends the following:

- Quarterly groundwater monitoring should continue to monitor the ongoing groundwater quality at the Site.
- Prepare an Cleanup Action Plan in accordance with Washington Administrative Code (WAC) 173-340-380 that includes a review of all existing data, a summary of cleanup action alternatives, and recommending an applicable remediation technology(s) to clean up the Site.
- Implement the selected remedial action.

9.0 REFERENCES

3Kings Environmental, Inc, 2014. Subsurface Investigation Report for the Chelatchie General Store. Prepared for Mr. Joe Stella. April 16.

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USDA, 1972. Soil Survey of Clark County, Washington.

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Washington Department of Ecology, 2013. Letter to Joe Stella regarding Further Action Required, Chelatchie Prairie General Store. November 13.

10.0 QUALIFICATIONS

HydroCon's services were performed in a manner consistent with generally accepted practices of the profession undertaken in similar studies in the same geographical area during the same time period. HydroCon makes no warranties, either expressed or implied, regarding the findings, conclusions or recommendations. Please note that HydroCon does not warrant the work of laboratories, regulatory agencies, or other third parties supplying information used in the preparation of the report.

Findings and conclusions resulting from these services are based upon information derived from the on-Site activities and other services performed under this scope of work; such information is subject to change over time. Certain indicators of the presence of hazardous substances, petroleum products, or other constituents may have been latent, inaccessible, unobservable, non-detectable or not present during these services, and we cannot represent that the Site contains no hazardous substances, toxic materials, petroleum products, or other latent conditions beyond those identified during this monitoring. Subsurface conditions may vary from those encountered at specific sampling locations or during other surveys, tests, assessments, investigations, or exploratory services; the data, interpretations and findings are based solely upon data obtained at the time and within the scope of these services.

This report is intended for the sole use of **TOC Holding Co.** This report may not be used or relied upon by any other party without the written consent of HydroCon. The scope of services performed in execution of this evaluation may not be appropriate to satisfy the needs of other users, and use or re-use of this document or the findings, conclusions, or recommendations is at the risk of said user.

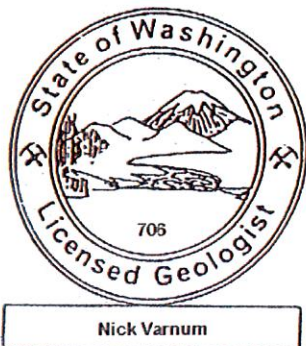
The conclusions presented in this report are, in part, based upon subsurface sampling performed at selected locations and depths. There may be conditions between borings or samples that differ significantly from those presented in this report and which cannot be predicted by this study.

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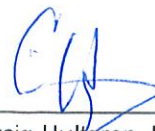
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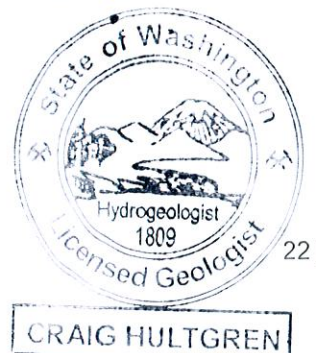
Nick Varnum, LHG



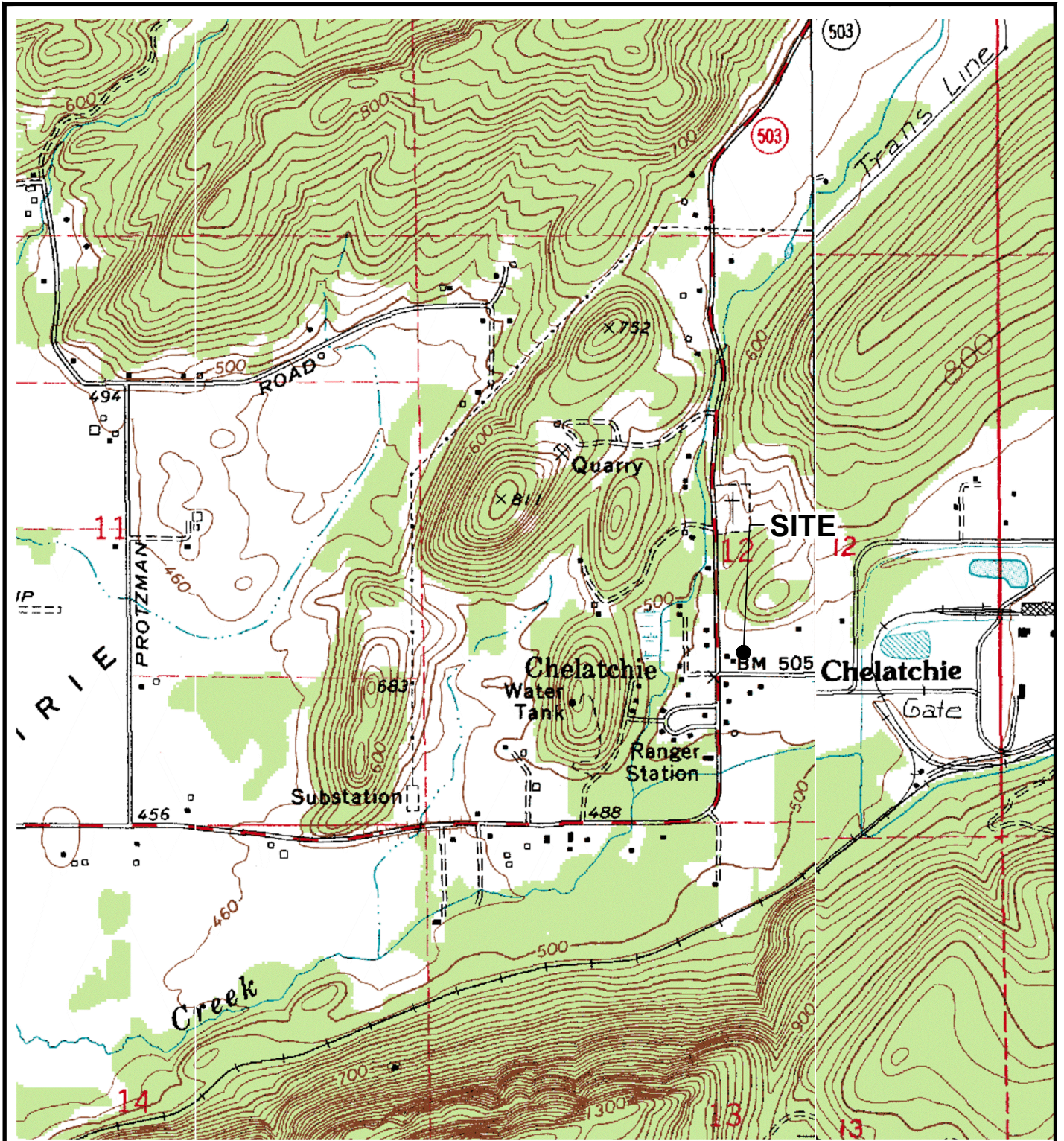
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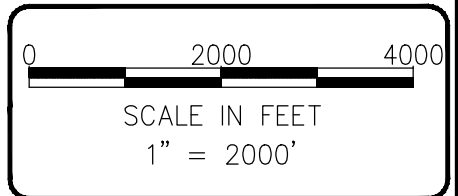
Craig Hultgren, LHG



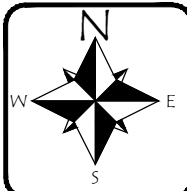
FIGURES



NOTE(S):
 USGS, AMBOY QUADRANGLE
 WASHINGTON
 7.5 MINUTE SERIES (TOPOGRAPHIC)



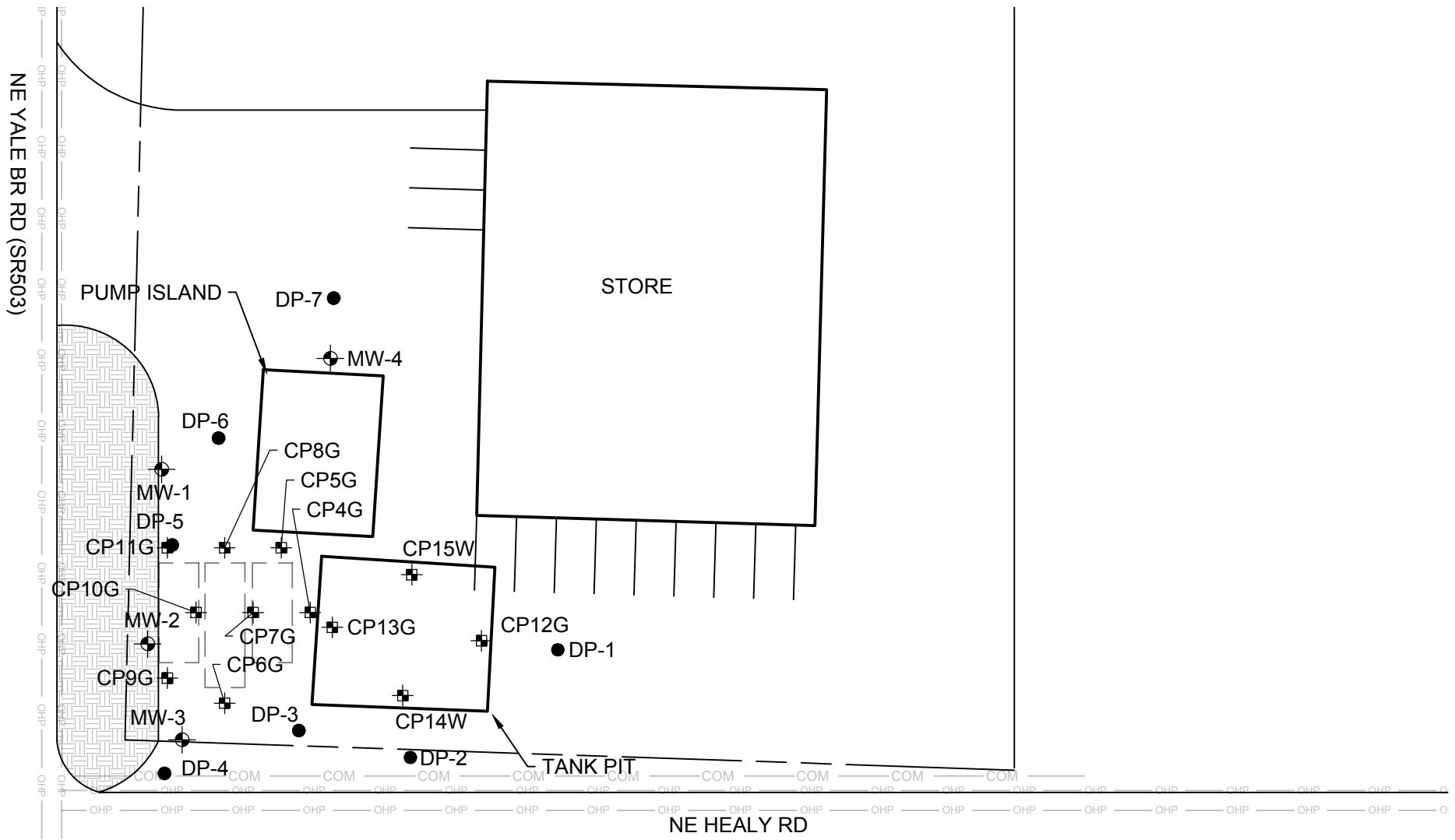
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DATE: 02-01-16
 DWN: MG
 CHK:
 APPROVED:
 PRJ. MGR: CH
 PROJECT NO:
 01-103

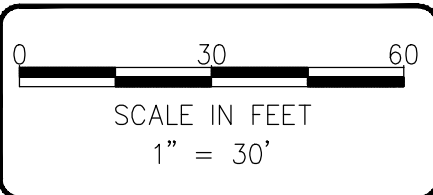
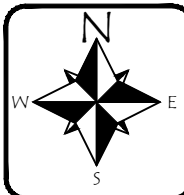
FIGURE 1
 SITE LOCATION MAP
 TOC FACILITY #01-103
 CHELATCHIE PRAIRIE GENERAL STORE
 42411 NE YALE BRIDGE RD
 AMBOY, WA.

C:\01-103 Ambboy_local.dwg 2.17.2014



LEGEND

-  BUILDING
-  PROPERTY LINE
-  COMMUNICATIONS UTILITY
-  OVERHEAD POWER UTILITY
-  LOCATION OF FORMER USTs
-  LANDSCAPE AREA
- DP-1 ● PREVIOUS EXPLORATION LOCATION
- CP3G ⊕ PREVIOUS EXPLORATION LOCATION
- MW05 ⊕ PREVIOUS MONITORING WELL



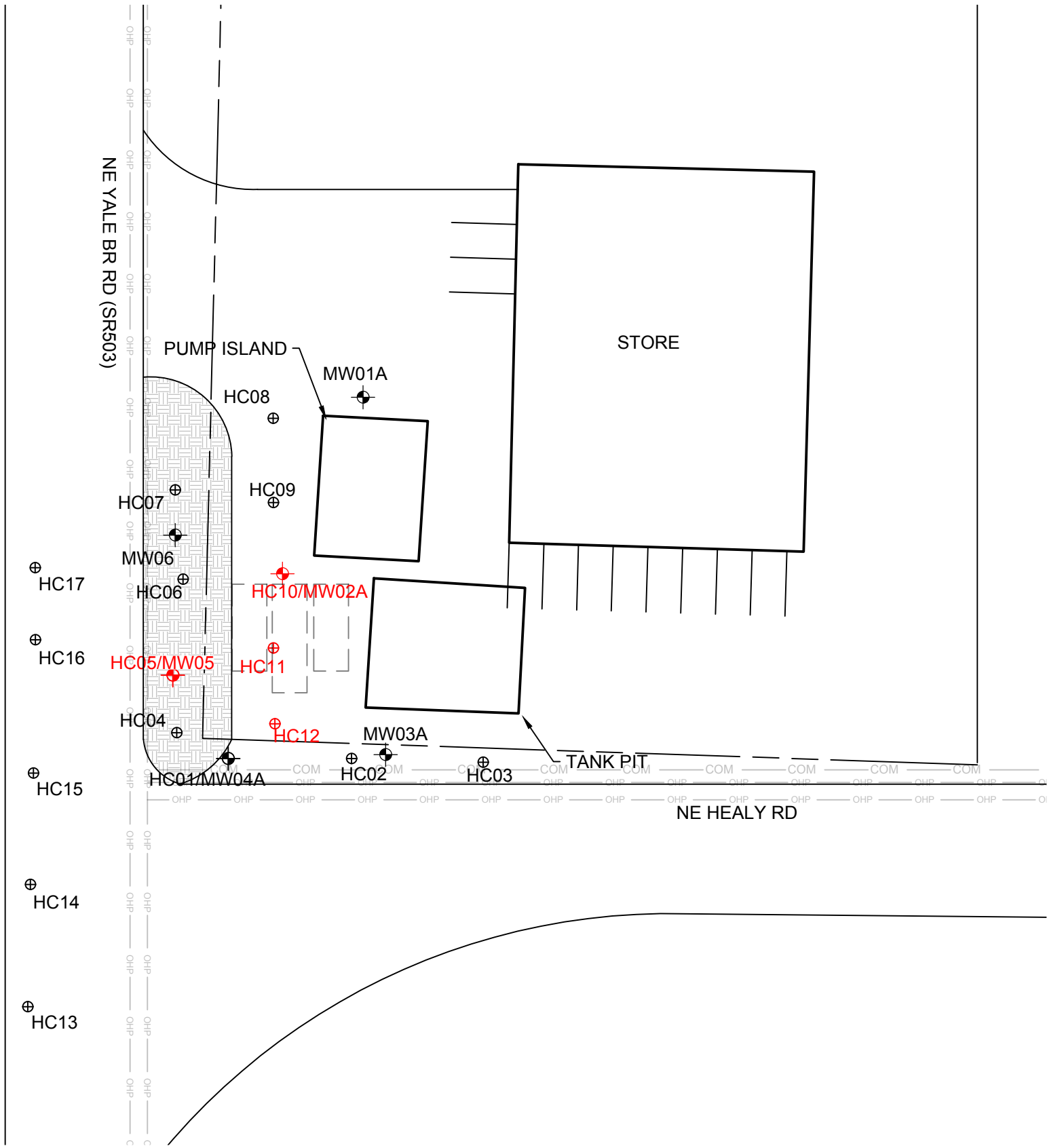
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DWN: MG
CHK:
APPROVED:
PRJ. MGR: CH
PROJECT NO:
01-103

FIGURE 2
SITE FEATURES AND HISTORICAL
SAMPLING LOCATIONS
TOC FACILITY #01-103
42411 NE YALE BRIDGE RD
AMBOY, WA.

	Fuels		Volatiles				
	DRPH	ORPH	GRPH	Benzene	Toluene	Ethylbenzene	Xylene Total
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
WA Method A Cleanup for Unrestricted Land Use	2,000	2,000		0.03	7	6	9
Benzene (Non Detect)			100				
Benzene (Detect)			30				

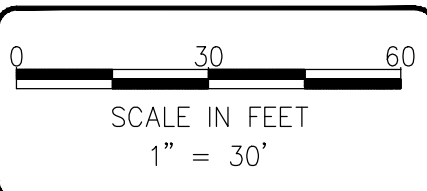
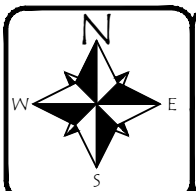
Field ID	Date	DRPH	ORPH	GRPH	Benzene	Toluene	Ethylbenzene	Xylene Total
HC05-20	11/11/2015	100 x	<250	150	<0.03	<0.05	0.096	0.19
HC10-13	11/12/2015	<50	<250	680 J	<0.03	<0.05	<0.05	<0.15
HC11-14	11/12/2015	640 x	<250	130	<0.03	<0.05	5.6	29.2
HC11-20	11/12/2015	<50	<250	1,300 J	<0.03	<0.05	0.064	0.16
HC12-11	11/12/2015	740 x	<250	1,700 J	<0.03	<0.05	<0.05	<0.15
HC12-20	11/12/2015	<50	<250	250	<0.03	<0.05	2.7	10.1

Notes
Red denotes concentration in excess of MTCA Method A Cleanup Levels
 Samples analyzed by Friedman & Bruya, Inc. of Seattle, Washington.
 DRPH and ORPH analyzed by Method NWTPH-Dx.
 GRPH analyzed by Method NWTPH-Gx.
 Volatiles analyzed by EPA 8260C.
 MTCA Method A Cleanup Levels, WAC 173-340-720 through 173-340-760, revised Nov., 2007



LEGEND

- BUILDING
- PROPERTY LINE
- COMMUNICATIONS UTILITY
- OVERHEAD POWER UTILITY
- LOCATION OF FORMER USTs
- LANDSCAPE AREA
- BORING LOCATIONS 2015
- MONITORING WELL 2015



DATE: 02-01-16
 DWN: MG
 CHK:
 APPROVED:
 PRJ. MGR: CH
 PROJECT NO:
 01-103

FIGURE 3
 SOIL ANALYTICAL RESULTS

 TOC FACILITY #01-103
 42411 NE YALE BRIDGE RD
 AMBOY, WA.

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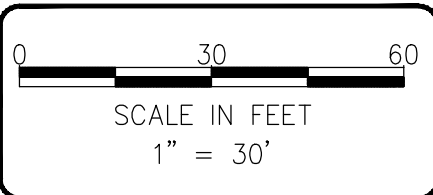
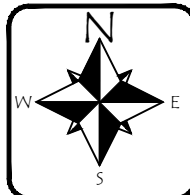
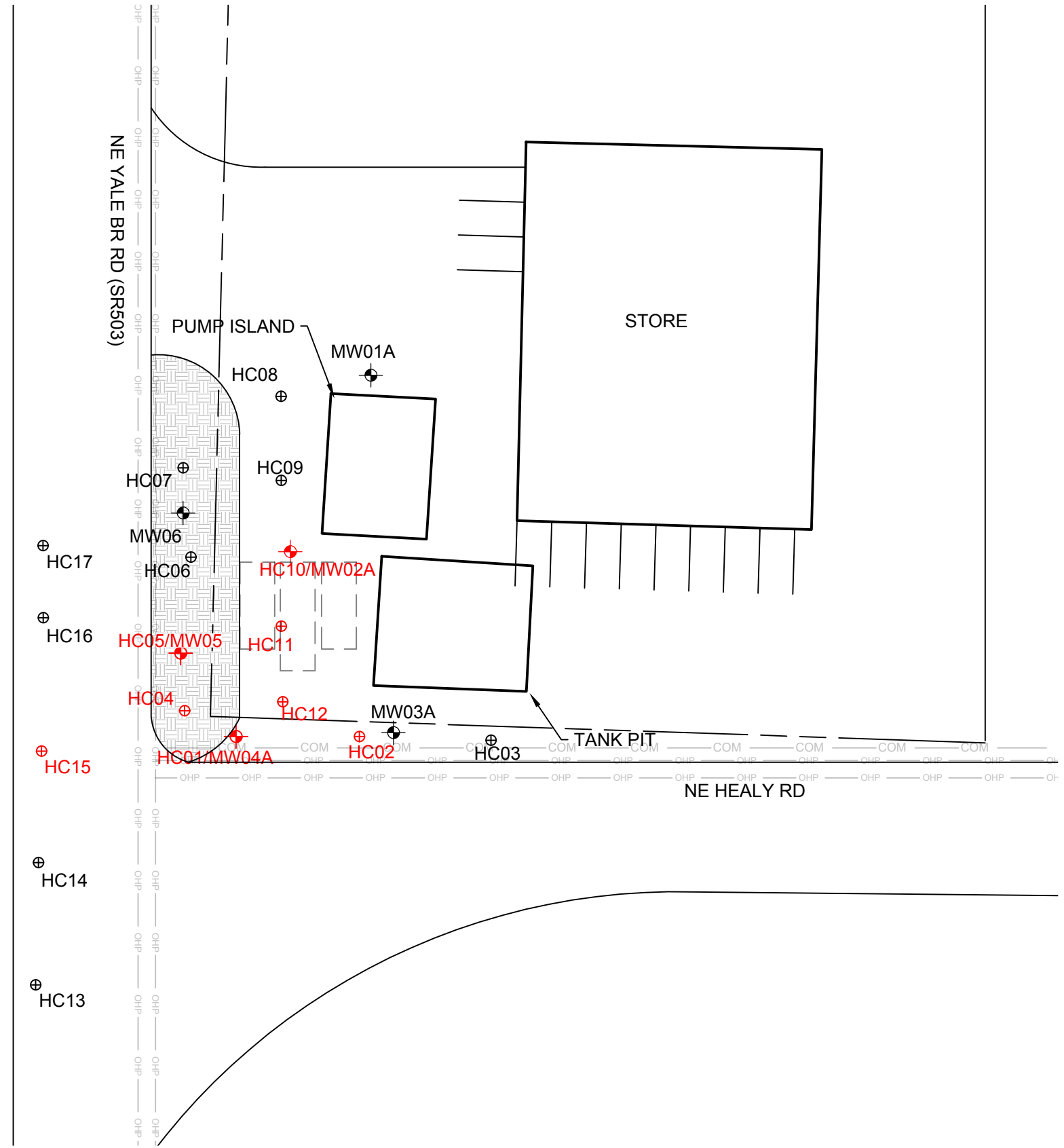
	Fuels		Volatiles				
	DRPH	ORPH	GRPH	Benzene	Toluene	Ethylbenzene	Xylene Total
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
WA Method A Cleanup for Groundwater	500	500		5	1,000	700	1,000
Benzene (Non Detect)			1,000				
Benzene (Detect)			800				

Field ID	Date	DRPH	ORPH	GRPH	Benzene	Toluene	Ethylbenzene	Xylene Total
HC01	11/11/2015	2,600 x	<250	3,400	0.52	6.1	120	296
HC02	11/11/2015	1,100 x	<250	5,400	<0.35	3.8	68	236
HC04-W	11/11/2015	1,000 x	<250	4,600	<0.35	1.9	72	100.7
HC05-W	11/11/2015	2,100 x	<250	6,700	<0.35	1.5	83	178
HC10-W	11/12/2015	240,000 x	<2,500	240,000	<17	<50	1,300	2,500
HC11-W	11/12/2015	60,000 x	<2,500	38,000	<17	<50	680	1,800
HC12-W	11/12/2015	8,300 x	<250	17,000	<3.5	82	740	3,080
HC15-W	11/13/2015	1,300 x	<400	1,600 hs	0.35 hs	2.3 hs	13 hs	17.2 hs

Notes
Red denotes concentration in excess of MTCA Method A Cleanup Level
 Samples analyzed by Friedman & Bruya, Inc. of Seattle, Washington.
 DRPH and ORPH analyzed by Method NWTPH-Dx.
 GRPH analyzed by Method NWTPH-Gx.
 Volatiles analyzed by EPA 8260C.
 MTCA Method A Cleanup Levels, WAC 173-340-720 through 173-340-760, revised Nov., 2007
 hs - Headspace was present in the container used for analysis.
 x - The sample chromatographic pattern does not resemble the fuel standard used for quantification.

LEGEND

- BUILDING
- PROPERTY LINE
- COMMUNICATIONS UTILITY
- OVERHEAD POWER UTILITY
- LOCATION OF FORMER USTs
- LANDSCAPE AREA
- HC08 ⊕ BORING LOCATIONS 2015
- MW05 ⊕ MONITORING WELL 2015



DATE: 02-01-16
 DWN: MG
 CHK: CH
 APPROVED:
 PRJ. MGR: CH
 PROJECT NO:
 01-103

FIGURE 4
 BOREHOLE WATER ANALYTICAL RESULTS
 TOC FACILITY #01-103
 42411 NE YALE BRIDGE RD
 AMBOY, WA.







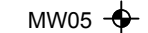
	Fuels		Volatiles				
	DRPH	ORPH	GRPH	Benzene	Toluene	Ethylbenzene	Xylene Total
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
WA Method A Cleanup for Groundwater	500	500		5	1,000	700	1,000
Benzene (Non Detect)			1,000				
Benzene (Detect)			800				

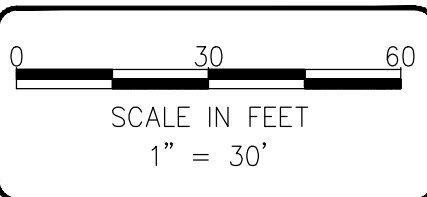
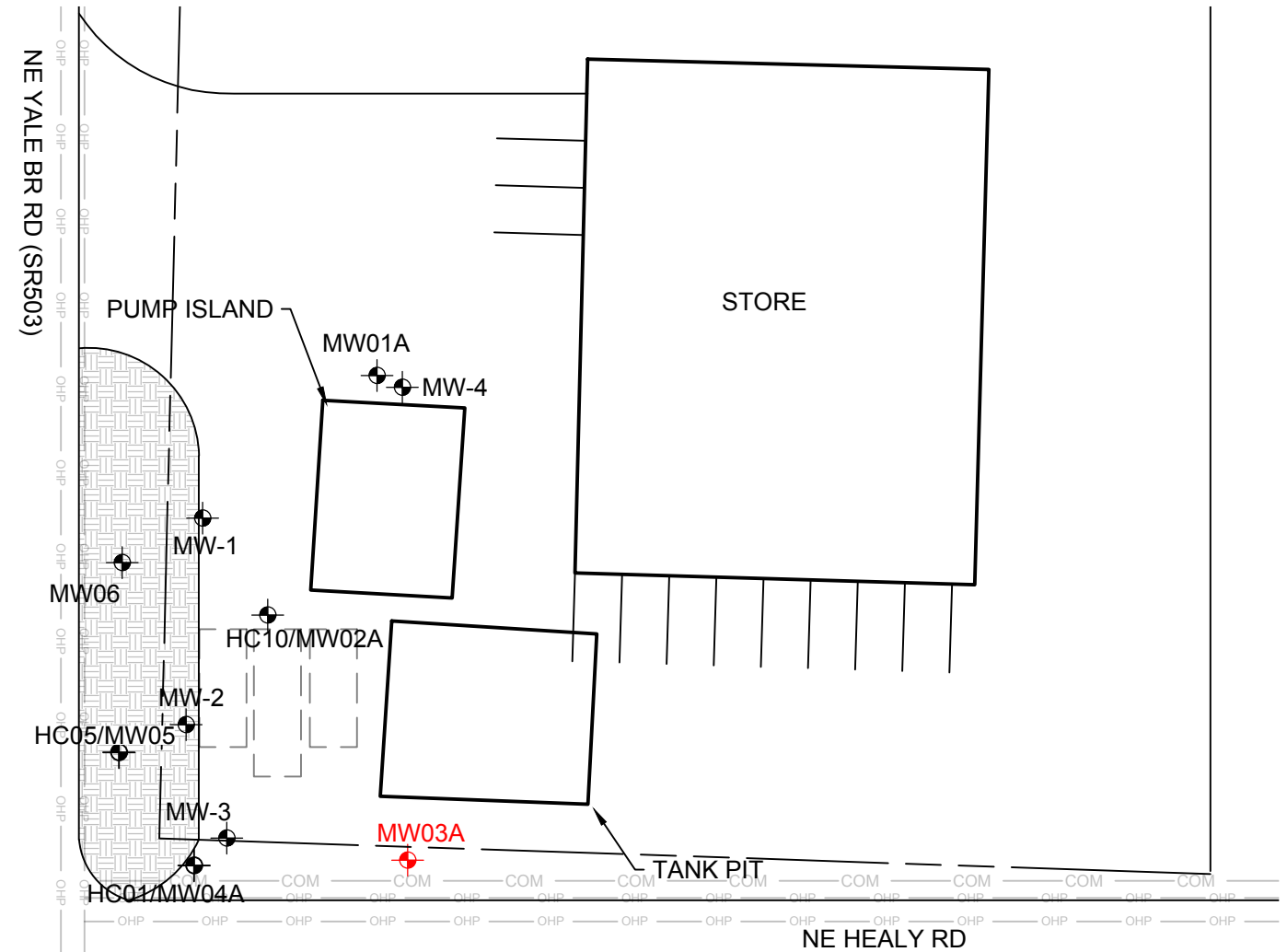
Field ID	Date	DRPH	ORPH	GRPH	Benzene	Toluene	Ethylbenzene	Xylene Total
MW01A	12/23/2015	<50	<250	<100	<0.35	<1	<1	<2
MW02A	12/23/2015	360 x	<250	530	<0.35	<1	<1	26.6
MW03A	12/23/2015	<50	<250	200	16	6.7	<1	1.6
MW04A	12/23/2015	95 x	<250	<100	<0.35	<1	<1	<2
MW05	12/23/2015	<50	<250	<100	<0.35	<1	<1	<2
MW06	12/23/2015	<50	<250	<100	<0.35	<1	<1	<2

Notes
Red denotes concentration in excess of MTCA Method A Cleanup Level
 Samples analyzed by Friedman & Bruya, Inc. of Seattle, Washington.
 DRPH and ORPH analyzed by Method NWTPH-Dx.
 GRPH analyzed by Method NWTPH-Gx.
 Volatiles analyzed by EPA 8260C.
 MTCA Method A Cleanup Levels, WAC 173-340-720 through 173-340-760, revised Nov., 2007

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

LEGEND

-  BUILDING
-  PROPERTY LINE
-  OVERHEAD POWER UTILITY
-  COMMUNICATIONS UTILITY
-  LOCATION OF FORMER USTs
-  LANDSCAPE AREA
-  MW05 MONITORING WELL 2015







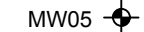
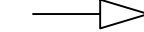




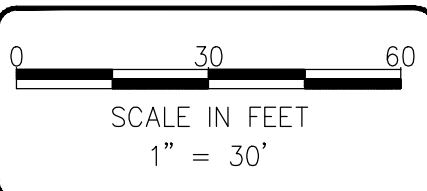
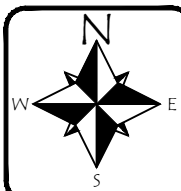
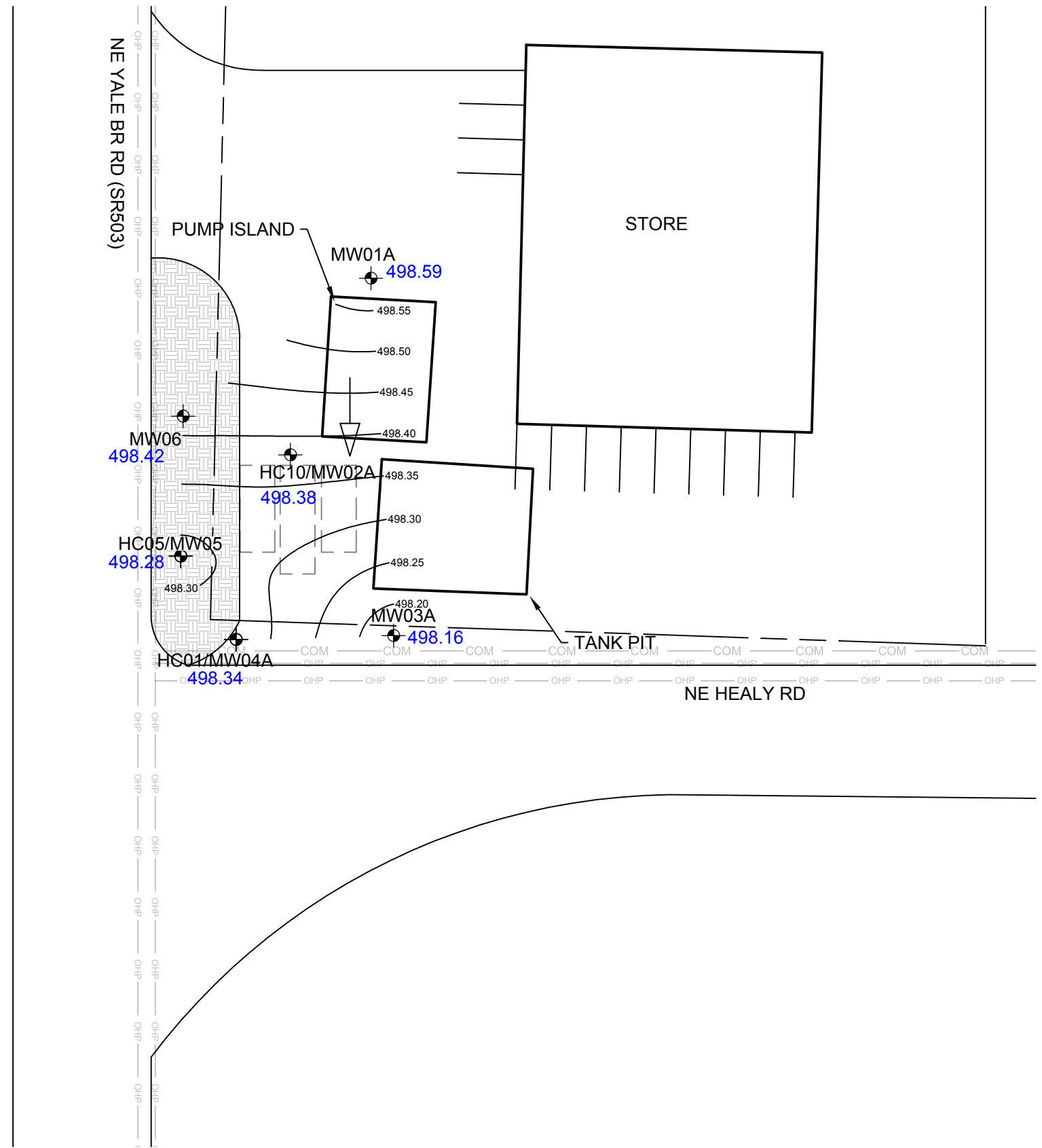
DATE: 02-01-16
 DWN: MG
 CHK: CH
 APPROVED:
 PRJ. MGR: CH
 PROJECT NO:
 01-103

FIGURE 5
 GROUNDWATER ANALYTICAL RESULTS
 FOR DECEMBER 2015
 TOC FACILITY #01-103
 42411 NE YALE BRIDGE RD
 AMBOY, WA.

C:\01-103_Amboy_local.dwg 2.17.2014

LEGEND

-  BUILDING
-  PROPERTY LINE
-  OVERHEAD POWER UTILITY
-  COMMUNICATIONS UTILITY
-  LOCATION OF FORMER USTs
-  LANDSCAPE AREA
-  MONITORING WELL 2015
-  GROUNDWATER FLOW DIRECTION
-  GROUNDWATER ELEVATION
-  GROUNDWATER ELEVATION CONTOUR



DATE: 02-01-16
 DWN: MG
 CHK:
 APPROVED:
 PRJ. MGR: CH
 PROJECT NO:
 01-103

FIGURE 6
 GROUNDWATER ELEVATION CONTOURS
 FOR DECEMBER 2015
 TOC FACILITY #01-103
 42411 NE YALE BRIDGE RD
 AMBOY, WA.

TABLES



Table 1
 Summary of Soil Analytical Data
 TOC Holdings Co. Facility No. 01-103
 42411 NE Yale Bridge Road
 Amboy, Washington

	Fuels		Volatiles									Metal
	DRPH	ORPH	GRPH	Benzene	Toluene	Ethylbenzene	Xylene Total	MTBE	EDB	EDC	Naphthalene	Lead, Total
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
WA Method A Cleanup for Unrestricted Land Use	2,000	2,000	30 100	0.03	7	6	9	0.1	0.005		5	250
Benzene (Non Detect)			100									
Benzene (Detect)			30									

Field ID	Date	DRPH	ORPH	GRPH	Benzene	Toluene	Ethylbenzene	Xylene Total	MTBE	EDB	EDC	Naphthalene	Lead, Total
HC01-04	11/11/2015	<50	<250	<2	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC01-09	11/11/2015	<50	<250	<2	<0.03	<0.05	<0.05	<0.15	-	-	-	-	3.1
HC01-15	11/11/2015	<50	<250	<2	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC01-19	11/11/2015	<50	<250	13	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC02-08	11/11/2015	<50	<250	<2	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC02-15	11/11/2015	<50	<250	<2	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC02-19	11/11/2015	<50	<250	<2	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC02-25	11/11/2015	<50	<250	29	<0.03	<0.05	<0.05	<0.15	-	-	-	-	2.5
HC03-8	11/11/2015	<50	<250	<2	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC03-15	11/11/2015	<50	<250	<2	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC03-25	11/11/2015	<50	<250	<2	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC04-8	11/11/2015	<50	<250	<2	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC04-15	11/11/2015	<50	<250	<2	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC04-20	11/11/2015	<50	<250	16	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC04-25	11/11/2015	<50	<250	<2	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC05-8	11/11/2015	<50	<250	<2	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC05-15	11/11/2015	<50	<250	<2	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC05-20	11/11/2015	100 x	<250	150	<0.03	<0.05	0.096	0.19	-	-	-	-	3.4
HC05-25	11/11/2015	<50	<250	36	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC06-8	11/11/2015	<50	<250	<2	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC06-15	11/11/2015	<50	<250	<2	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC06-20	11/11/2015	<50	<250	<2	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC06-25	11/11/2015	<50	<250	<2	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC07-8	11/12/2015	<50	<250	<2	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC07-12	11/12/2015	<50	<250	<2	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC07-15	11/12/2015	<50	<250	<2	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC08-8	11/12/2015	<50	<250	<2	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC08-15	11/12/2015	<50	<250	<2	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC08-25	11/12/2015	<50	<250	<2	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC09-8	11/12/2015	<50	<250	<2	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC09-15	11/12/2015	<50	<250	<2	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC09-25	11/12/2015	<50	<250	<2	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-



Table 1
 Summary of Soil Analytical Data
 TOC Holdings Co. Facility No. 01-103
 42411 NE Yale Bridge Road
 Amboy, Washington

	Fuels		Volatiles									Metal
	DRPH	ORPH	GRPH	Benzene	Toluene	Ethylbenzene	Xylene Total	MTBE	EDB	EDC	Naphthalene	Lead, Total
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
WA Method A Cleanup for Unrestricted Land Use	2,000	2,000	30 100	0.03	7	6	9	0.1	0.005		5	250
Benzene (Non Detect)			100									
Benzene (Detect)			30									

Field ID	Date	DRPH	ORPH	GRPH	Benzene	Toluene	Ethylbenzene	Xylene Total	MTBE	EDB	EDC	Naphthalene	Lead, Total
HC10-8	11/12/2015	<50	<250	<2	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC10-13	11/12/2015	<50	<250	680 J	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC10-15	11/12/2015	<50	<250	<2	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC10-25	11/12/2015	<50	<250	30	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC11-10	11/12/2015	<50	<250	<2	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC11-14	11/12/2015	640 x	<250	130	<0.03	<0.05	5.6	29.2	<0.05	<0.005 J	<0.05	5.1	13.4
HC11-20	11/12/2015	<50	<250	1,300 J	<0.03	<0.05	0.064	0.16	-	-	-	-	-
HC11-25	11/12/2015	<50	<250	17	<0.03	<0.05	0.27	0.832	-	-	-	-	-
HC12-10	11/12/2015	<50	<250	25	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC12-11	11/12/2015	740 x	<250	1,700 J	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC12-20	11/12/2015	<50	<250	250	<0.03	<0.05	2.7	10.1	-	-	-	-	-
HC12-25	11/12/2015	<50	<250	13	<0.03	<0.05	0.12	0.491	-	-	-	-	-
HC13-8	11/13/2015	<50	<250	<2	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC13-15	11/13/2015	<50	<250	<2	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC13-20	11/13/2015	<50	<250	<2	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC14-8	11/13/2015	<50	<250	<2	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC14-15	11/13/2015	<50	<250	<2	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC14-20	11/13/2015	<50	<250	<2	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC15-8	11/13/2015	<50	<250	<2	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC15-15	11/13/2015	<50	<250	<2	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC15-20	11/13/2015	<50	<250	5.5	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC16-8	11/13/2015	<50	<250	<2	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC16-15	11/13/2015	<50	<250	<2	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC16-20	11/13/2015	<50	<250	<2	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC17-8	11/13/2015	<50	<250	<2	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC17-15	11/13/2015	<50	<250	<2	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC17-20	11/13/2015	<50	<250	<2	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-



Table 1
 Summary of Soil Analytical Data
 TOC Holdings Co. Facility No. 01-103
 42411 NE Yale Bridge Road
 Amboy, Washington

	Fuels		Volatiles								Metal	
	DRPH	ORPH	GRPH	Benzene	Toluene	Ethylbenzene	Xylene Total	MTBE	EDB	EDC	Naphthalene	Lead, Total
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
WA Method A Cleanup for Unrestricted Land Use	2,000	2,000	30 100	0.03	7	6	9	0.1	0.005		5	250
Benzene (Non Detect)			100									
Benzene (Detect)			30									

Field ID Date

Notes

Red denotes concentrations exceeding the MTCA Method A cleanup level shown.
 Samples analyzed by Friedman & Bruya, Inc. of Seattle, Washington.
 DRPH and ORPH analyzed by Northwest Total Petroleum Hydrocarbon Method NWTPH-Dx.
 GRPH analyzed by Northwest Total Petroleum Hydrocarbon Method NWTPH-Gx.
 Volatiles analyzed by EPA 8260C.
 Metals analyzed by EPA Method 200.8.
 MTCA Method A Cleanup Levels, WAC 173-340-720 through 173-340-760, revised Nov., 2007

J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
 x - The sample chromatographic pattern does not resemble the fuel standard used for quantification.

< = not detected at a concentration exceeding the laboratory reporting limit
 mg/kg = milligrams per kilogram
 DRPH = Diesel Range Hydrocarbon
 EDB = 1,2-dibromoethane (ethylene dibromide)
 EDC = 1,2-dichloroethylene (ethylene dichloride)
 EPA = U.S. Environmental Protection Agency
 GRPH = gasoline-range petroleum hydrocarbons
 MTBE = methyl tertiary-butyl ether
 MTCA = Washington State Model Toxics Control Act
 ORPH = Oil Range Petroleum Hydrocarbon
 WAC = Washington Administrative Code



Table 2
 Summary of Soil PAH Analytical Data
 TOC Holdings Co. Facility No. 01-103
 42411 NE Yale Bridge Road
 Amboy, Washington

	Units	WA Method A Cleanup for Unrestricted Land Use	11/12/2015	11/12/2015
			HCl1-14	HCl2-11
Organics				
Acenaphthene	mg/kg		0.076	0.033
Acenaphthylene	mg/kg		<0.01	<0.01
Anthracene	mg/kg		0.032	0.029
Benz(a)anthracene	mg/kg		<0.01	0.011
Benzo(a) pyrene	mg/kg	0.1	<0.01	<0.01
Benzo(b)fluoranthene	mg/kg		<0.01	<0.01
Benzo(g,h,i)perylene	mg/kg		<0.01	<0.01
Benzo(k)fluoranthene	mg/kg		<0.01	<0.01
Chrysene	mg/kg		<0.01	0.01
Dibenz(a,h)anthracene	mg/kg		<0.01	<0.01
Fluoranthene	mg/kg		0.019	0.019
Fluorene	mg/kg		0.1	0.09
Indeno(1,2,3-c,d)pyrene	mg/kg		<0.01	<0.01
Naphthalene	mg/kg	5	17	0.63
Phenanthrene	mg/kg		0.14	0.092
Pyrene	mg/kg		0.032	0.036

Notes

Red denotes concentrations exceeding the MTCA Method A cleanup level shown.
 Samples analyzed by Friedman & Bruya, Inc. of Seattle, Washington.
 Organics analyzed by EPA Method 8270D SIM.
 MTCA Method A Cleanup Levels, WAC 173-340-720 through 173-340-760,
 revised Nov., 2007

< = not detected at a concentration exceeding the laboratory reporting limit
 mg/kg = milligrams per kilogram
 EPA = U.S. Environmental Protection Agency
 MTCA = Washington State Model Toxics Control Act
 WAC = Washington Administrative Code



Table 3
 Summary of Borehole Water Analytical Data
 TOC Holdings Co. Facility No. 01-103
 42411 NE Yale Bridge Road
 Amboy, Washington

	Fuels		Volatiles				
	DRPH	ORPH	GRPH	Benzene	Toluene	Ethylbenzene	Xylene Total
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
WA Method A Cleanup for Groundwater	500	500	800 1000	5	1,000	700	1,000
Benzene (Non Detect)			1,000				
Benzene (Detect)			800				

Field ID	Date	DRPH	ORPH	GRPH	Benzene	Toluene	Ethylbenzene	Xylene Total
HC01	11/11/2015	2,600 x	<250	3,400	0.52	6.1	120	296
HC02	11/11/2015	1,100 x	<250	5,400	<0.35	3.8	68	236
HC03-W	11/11/2015	<50	<250	120	2.8	<1	<1	<3
HC04-W	11/11/2015	1,000 x	<250	4,600	<0.35	1.9	72	100.7
HC05-W	11/11/2015	2,100 x	<250	6,700	<0.35	1.5	83	178
HC06-W	11/11/2015	220 x	<250	130	<0.35	1.1	<1	<3
HC07-W	11/12/2015	<50	<250	<100	<0.35	<1	<1	3
HC08-W	11/12/2015	<50	<250	<100	<0.35	<1	<1	3
HC09-W	11/12/2015	130 x	<330	<100	<0.35	1.3	<1	3
HC10-W	11/12/2015	240,000 x	<2,500	240,000	<17 ec	<50	1,300	2,500
HC11-W	11/12/2015	60,000 x	<2,500	38,000	<17 ec	<50	680	1,800
HC12-W	11/12/2015	8,300 x	<250	17,000	<3.5	82	740	3,080
HC13-W	11/13/2015	<50	<250	<100	<0.35	<1	<1	<3
HC14-W	11/13/2015	<50	<250	<100	<0.35	2.8	<1	<3
HC15-W	11/13/2015	1,300 x	<400	1,600 hs	0.35 hs	2.3 hs	13 hs	17.2 hs
HC16-W	11/13/2015	250 x	<300	100 hs	<0.35 hs	1.1 hs	<1 hs	<3 hs
HC17-W	11/13/2015	<50	<250	<100	<0.35	3.7	<1	<3

Notes

Red denotes concentrations exceeding the MTCA Method A cleanup level shown.
 Samples analyzed by Friedman & Bruya, Inc. of Seattle, Washington.
 DRPH and ORPH analyzed by Northwest Total Petroleum Hydrocarbon Method NWTPH-Dx.
 GRPH analyzed by Northwest Total Petroleum Hydrocarbon Method NWTPH-Gx.
 Volatiles analyzed by EPA 8260C.
 MTCA Method A Cleanup Levels, WAC 173-340-720 through 173-340-760, revised Nov., 2007.

ec - Method reporting limit exceeds Clean Up Level shown.
 hs - Headspace was present in the container used for analysis.
 x - The sample chromatographic pattern does not resemble the fuel standard used for quantification.

< = not detected at a concentration exceeding the laboratory reporting limit
 µg/L = micrograms per liter
 DRPH = Diesel Range Hydrocarbon
 EPA = U.S. Environmental Protection Agency
 GRPH = gasoline-range petroleum hydrocarbons
 MTCA = Washington State Model Toxics Control Act
 ORPH = Oil Range Petroleum Hydrocarbon
 WAC = Washington Administrative Code



Table 4
 Summary of Borehole Water PAH Analytical Data
 TOC Holdings Co. Facility No. 01-103
 42411 NE Yale Bridge Road
 Amboy, Washington

	Units	WA Method A Cleanup for Groundwater	11/12/2015
			HC10-W
Organics			
Acenaphthene	µg/L		63
Acenaphthylene	µg/L		<10
Anthracene	µg/L		42
Benz(a)anthracene	µg/L		12
Benzo(a) pyrene	µg/L	0.1	<10
Benzo(b)fluoranthene	µg/L		<10
Benzo(g,h,i)perylene	µg/L		<10
Benzo(k)fluoranthene	µg/L		<10
Chrysene	µg/L		<10
Dibenz(a,h)anthracene	µg/L		<10
Fluoranthene	µg/L		22
Fluorene	µg/L		140
Indeno(1,2,3-c,d)pyrene	µg/L		<10
Naphthalene	µg/L	160	10,000
Phenanthrene	µg/L		140
Pyrene	µg/L		34

Notes

Red denotes concentrations exceeding the MTCA Method A cleanup level shown.
 Samples analyzed by Friedman & Bruya, Inc. of Seattle, Washington.
 Organics analyzed by EPA Method 8270D SIM.
 MTCA Method A Cleanup Levels, WAC 173-340-720 through 173-340-760,
 revised Nov., 2007

< = not detected at a concentration exceeding the laboratory reporting limit
 µg/L = micrograms per liter
 EPA = U.S. Environmental Protection Agency
 MTCA = Washington State Model Toxics Control Act
 WAC = Washington Administrative Code



Table 5
 Groundwater Analytical Results
 TOC Holding Co. Facility No. 01-103
 42411 NE Yale Bridge Road
 Amboy, Washington

	Measurement			Fuels		Volatiles								Metal	
	Top of Casing feet	Depth to Groundwater feet	Groundwater Elevation feet	DRPH µg/L	ORPH µg/L	GRPH µg/L	Benzene µg/L	Toluene µg/L	Ethylbenzene µg/L	Xylene Total µg/L	MTBE µg/L	EDB µg/L	EDC µg/L	Naphthalene µg/L	Lead, Total µg/L
WA Method A Cleanup for Groundwater				500	500	800 1000	5	1,000	700	1,000	20	0.01	5	160	15
Benzene (Non Detect)						1,000									
Benzene (Detect)						800									

1

Field ID	Date	Top of Casing feet	Depth to Groundwater feet	Groundwater Elevation feet	DRPH µg/L	ORPH µg/L	GRPH µg/L	Benzene µg/L	Toluene µg/L	Ethylbenzene µg/L	Xylene Total µg/L	MTBE µg/L	EDB µg/L	EDC µg/L	Naphthalene µg/L	Lead, Total µg/L
MW01A	12/23/2015	505.19	6.60	498.59	<50	<250	<100	<0.35	<1	<1	<3	<1	<1 ec	<1	<1	<1
MW02A	12/23/2015	504.38	6.00	498.38	360 x	<250	530	<0.35	<1	1.2	26.6	<1	<1 ec	<1	3.1	<1
MW03A	12/23/2015	504.36	6.20	498.16	<50	<250	200	16	6.7	<1	3.6	<1	<1 ec	<1	<1	<1
MW04A	12/23/2015	503.74	5.40	498.34	95 x	<250	<100	<0.35	<1	<1	<3	<1	<1 ec	<1	<1	<1
MW05	12/23/2015	503.48	5.20	498.28	<50	<250	<100	<0.35	<1	<1	<3	<1	<1 ec	<1	<1	<1
MW06	12/23/2015	503.8	5.32	498.48	<50	<250	<100	<0.35	<1	<1	<3	<1	<1 ec	<1	<1	<1

Red denotes concentrations exceeding the MTCA Method A cleanup level shown.

Samples analyzed by Friedman & Bruya, Inc. of Seattle, Washington.

DRPH and ORPH analyzed by Northwest Total Petroleum Hydrocarbon Method NWTPH-Dx.

GRPH analyzed by Northwest Total Petroleum Hydrocarbon Method NWTPH-Gx.

Volatiles analyzed by EPA 8260C.

Metals analyzed by EPA Method 200.8.

MTCA Method A Cleanup Levels, WAC 173-340-720 through 173-340-760, revised Nov., 2007.

ec - Method reporting limit exceeds Clean Up Level shown.

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

< = not detected at a concentration exceeding the laboratory reporting limit

µg/L = micrograms per liter

DRPH = Diesel Range Hydrocarbon

EPA = U.S. Environmental Protection Agency

GRPH = gasoline-range petroleum hydrocarbons

MTCA = Washington State Model Toxics Control Act

ORPH = Oil Range Petroleum Hydrocarbon

WAC = Washington Administrative Code



Table 6
 Groundwater PAH Analytical Results
 TOC Holding Co. Facility No. 01-103
 42411 NE Yale Bridge Road
 Amboy, Washington

	units	WA Method A Cleanup for Groundwater	12/23/2015	12/23/2015
			MW02A	MW04A
Organic				
Benz(a)anthracene	µg/L		<0.06	<0.06
Benzo(a) pyrene	µg/L	0.1	<0.06	<0.06
Benzo(b)fluoranthene	µg/L		<0.06	<0.06
Benzo(k)fluoranthene	µg/L		<0.06	<0.06
Chrysene	µg/L		<0.06	<0.06
Dibenz(a,h)anthracene	µg/L		<0.06	<0.06
Indeno(1,2,3-c,d)pyrene	µg/L		<0.06	<0.06

Notes

Red denotes concentrations exceeding the MTCA Method A cleanup level shown.
 Samples analyzed by Friedman & Bruya, Inc. of Seattle, Washington.
 Organics analyzed by EPA Method 8270D SIM.
 MTCA Method A Cleanup Levels, WAC 173-340-720 through 173-340-760,
 revised Nov., 2007

< = not detected at a concentration exceeding the laboratory reporting limit

µg/L = micrograms per liter

EPA = U.S. Environmental Protection Agency

MTCA = Washington State Model Toxics Control Act

WAC = Washington Administrative Code

APPENDIX A
Well Abandonment Logs

Please print, sign and return to the Department of Ecology

RESOURCE PROTECTION WELL REPORT

CURRENT Notice of Intent No. AE34726

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

Construction/Decommission ("x" in box)

- Construction
- Decommission

Type of Well ("x" in box)

- Resource Protection
- Geotech Soil Boring

ORIGINAL INSTALLATION Notice of Intent Number:

RO64572

Property Owner Becky Graybill

Site Address 42411 NE Yale Bridge Rd

City Amboy County Clark

Location NW 1/4-1/4 SW 1/4 Sec 12 Twn 5 N R 3

EWM or WWM

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

Tax Parcel No. _____

Cased or Uncased Diameter .75 Static Level 18.3

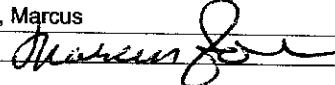
Work/Decommission Start Date 11/16/2015

Work/Decommission Completed Date 11/16/2015

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 Last, First Name) Johnson, Marcus

Driller/Engineer /Trainee Signature 

Driller or Trainee License No. 3040

If trainee, licensed driller's Signature and License Number:

Construction Design

Well Data

Formation Description

Backfill with granular bentonite to surface

Remove concrete and monument

Backfill void with gravel and patch surface

MW-3

3/4" Well

20' Total Depth

Flush monument

SCALE: 1"= _____ PAGE _____ OF _____

Please print, sign and return to the Department of Ecology

RESOURCE PROTECTION WELL REPORT

CURRENT Notice of Intent No. AE34726

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

Construction/Decommission ("x" in box)

- Construction
- Decommission

Type of Well ("x" in box)

- Resource Protection
- Geotech Soil Boring

ORIGINAL INSTALLATION Notice of Intent Number:

R064572

Consulting Firm _____

Unique Ecology Well IDTag No. AHS294

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 Last, First Name) Johnson, Marcus

Driller/Engineer /Trainee Signature *Marcus Johnson*

Driller or Trainee License No. 3040

If trainee, licensed driller's Signature and License Number:

Property Owner Becky Graybill

Site Address 42411 NE Yale Bridge Rd

City Amboy County Clark

Location NW 1/4-1/4 SW 1/4 Sec 12 Twn 5 N R 3

EWM or WWM

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

still REQUIRED) Long Deg _____ Min _____ Sec _____

Tax Parcel No. _____

Cased or Uncased Diameter .75 Static Level 18.2

Work/Decommission Start Date 11/16/2015

Work/Decommission Completed Date 11/16/2015

Construction Design

Well Data

Formation Description

Backfill with granular bentonite to surface

Remove concrete and monument

Backfill void with gravel and patch surface

MW-4

3/4" Well

20' Total Depth

Flush monument

SCALE: 1"= _____ PAGE _____ OF _____

Please print, sign and return to the Department of Ecology

RESOURCE PROTECTION WELL REPORT

CURRENT Notice of Intent No. AE34726

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

Construction/Decommission ("x" in box)

- Construction
- Decommission

Type of Well ("x" in box)

- Resource Protection
- Geotech Soil Boring

ORIGINAL INSTALLATION Notice of Intent Number:

210930

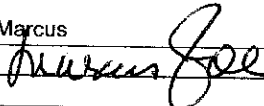
Consulting Firm _____

Unique Ecology Well IDTag No. No Tag

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 Last, First Name) Johnson, Marcus

Driller/Engineer /Trainee Signature 

Driller or Trainee License No. 3040

If trainee, licensed driller's Signature and License Number:

Property Owner Becky Graybill

Site Address 42411 NE Yale Bridge Rd

City Amboy County Clark

Location NW 1/4-1/4 SW 1/4 Sec 12 Twn 5 N R 3

EWM or WWM

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

Long Deg _____ Min _____ Sec _____

Tax Parcel No. _____

Cased or Uncased Diameter 4" Static Level Dry

Work/Decommission Start Date 11/16/2015

Work/Decommission Completed Date 11/16/2015

Construction Design

Well Data

Formation Description

<p>Backfill with bentonite grout to 5' + 3/4 bentonite chips to surface</p> <p>Remove concrete and monument</p> <p>Backfill void with gravel and patch surface</p>	<p>MW-1</p> <p>4" Well</p> <p>12' Total Depth</p> <p>Flush monument</p>	
--	---	--

SCALE: 1"= _____ PAGE _____ OF _____

Please print, sign and return to the Department of Ecology

RESOURCE PROTECTION WELL REPORT

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

CURRENT Notice of Intent No. AE34726

Construction/Decommission ("x" in box)

- Construction
- Decommission

Type of Well ("x" in box)

- Resource Protection
- Geotech Soil Boring

ORIGINAL INSTALLATION Notice of Intent Number:

210930

Consulting Firm _____

Unique Ecology Well ID Tag No. No Tag

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 Last, First Name) Johnson, Marcus

Driller/Engineer /Trainee Signature *Marcus Johnson*

Driller or Trainee License No. 3040

If trainee, licensed driller's Signature and License Number:

Property Owner Becky Graybill

Site Address 42411 NE Yale Bridge Rd

City Amboy County Clark

Location NW 1/4-1/4 SW 1/4 Sec 12 Twn 5 N R 3

EWM or WWM

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

Long Deg _____ Min _____ Sec _____

Tax Parcel No. _____

Cased or Uncased Diameter 4" Static Level Dry

Work/Decommission Start Date 11/16/2015

Work/Decommission Completed Date 11/16/2015

Construction Design

Well Data

Formation Description

Backfill with bentonite grout to 5' + 3/4 bentonite chips to surface

Remove concrete and monument

Backfill void with gravel and patch surface

MW-2

4" Well

12' Total Depth

Flush monument

SCALE: 1"= _____ PAGE _____ OF _____

APPENDIX B

Boring Logs

GUIDE TO BOREHOLE LOGS**

MAJOR DIVISIONS		SYMBOLS		TYPICAL NAMES
COARSE GRAINED SOILS <small>(more than 1/2 of soil > No. 200 sieve size)</small>	GRAVELS <small>more than 50% coarse fraction > no.4 sieve</small>	GW		Well-graded gravels or gravel-sand mixtures, little to no fines.
		GP		Poorly-graded gravels or gravel-sand mixtures, little to no fines.
		GM		Silty gravels, gravel-sand-silt mixtures.
		GC		Clayey gravels or gravel-sand-clay mixtures
	SANDS <small>less than 50% coarse fraction > no.4 sieve</small>	SW		Well-sorted sands or gravelly sands, little to no fines.
		SP		Poorly-sorted sands or gravelly sands, little to no fines.
		SM		Silty sands, sand-silt mixtures.
		SC		Clayey sands, sand-clay mixtures.
FINED GRAINED SOILS <small>(more than 1/2 of soil < No. 200 sieve size)</small>	SILTS & CLAYS <small>Liquid Limit* less than 50%</small>	ML		Inorganic silts and very fine sands, silty or clayey fine sands or clayey silts with slight plasticity.
		CL		Inorganic clays of low to medium plasticity, gravelly clays, sandy or silty clays, lean clays.
		OL		Organic silts and organic silty clays of low plasticity.
	SILTS & CLAYS <small>Liquid Limit* greater than 50%</small>	MH		Inorganic silts, micaceous or diatomaceous fine sand or silty soils, elastic silts.
		CH		Inorganic clays of high plasticity, fat clays.
		OH		Organic clays of medium to high plasticity, organic silty clay, organic silts.
HIGHLY ORGANIC SOILS		Pt		Peat or other highly organic soils.
		Conc		Concrete
		Fill		Fill
		Asph		Asphalt

* Liquid Limit represents the moisture content (in percent) of a soil at which point the soil no longer behaves like a plastic and starts to behave like a liquid.

BORING LOG SYMBOLS

- SAMPLE LOCATION
- SAMPLE INTERVAL
- SAMPLE RECOVERY
- GROUNDWATER, FIRST OBSERVED

SAMPLE TYPES:

- SS - Split Spoon
- G - Grab
- ST - Shelby Tube
- GS - Geoprobe Sampler

SHEEN TYPES:

- NS - No Sheen observed
- SS - Slight Sheen observed (Spotty coverage of sheen pan, no iridescence)
- MS - Moderate Sheen (full coverage of sheen pan, no iridescence) pan, iridescent)
- HS - Heavy Sheen (full coverage of sheen

PERCENTAGES:

- Trace - Particles are present but estimated to be less than 5%
- Few - 5 to 10%
- Little - 15 to 25%
- Some - 30 to 45%
- Mostly - 50 to 100%

SAMPLE PLASTICITY (FINE-GRAINED SOILS):

- Nonplastic - Cannot be rolled at any moisture content
- Low - Barely rolled, lump cannot be formed when drier than plastic limit
- Medium - Easily rolled, lump crumbles when drier than plastic limit
- High - Easily rolled yet takes considerable time to reach the plastic limit, molded shape can be formed without crumbling when drier than the plastic limit

PARTICLE SIZE RANGE (COARSE-GRAINED SOILS):

- Gravel - Fine, Coarse
- Sand - Fine, Medium, Coarse

SAMPLE MOISTURE:

- Dry - No moisture, dry to touch
- Moist - Damp but no visible moisture
- Wet - Visible free water

**Based on Unified Soil Classification System and ASTM Standard D2487 and D2488



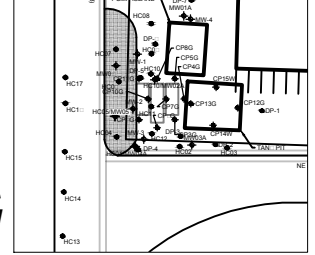
510 Allen Street
 Elso, WA 98122
 Phone: 360-703-0700

WELL/BORING NUMBER

HC01/
 MW04A

PROJECT NAME: TOC Amboy
 PROJECT NUMBER: 01-103
 PROJECT LOCATION: Amboy, WA
 LOGGED BY: J. Horowitz
 REVIEWED BY: C. Hultgren
 DATE: 11-12-15

LOCATION MAP



DESCRIPTION

(USCS Classification, Depth Interval, Color, Grain Size, Plasticity, Shapes, Mineral Composition, Density or Consistency, Moisture, Odor, Geological Interpretation)

DEPTH (FT.) SYMBOL WELL DETAILS SAMPLE ID PID FIRST WATER BLOW COUNTS

BOREHOLE/WELL CONSTRUCTION DETAILS

WELL CONSTRUCTION

Depths (feet bgs)

Borehole: 24.00
 Sump: 24.00 - 24.00
 Screen: 4.00 - 24.00
 Casing: 0.20 - 4.00
 Backfill:
 Sand Pack: 4 - 24.00
 Bentonite: 1 - 4
 Concrete: 0 - 1
 Stabilizers:

MATERIALS USED

Casing: 5.00" PVC
 Well Screen: 20.00.010"
 End Cap: Flat sump
 Sand Pack: 50lb bags 10-20
 Bentonite: 3 50lb bags
 Concrete: 3 80lb bags
 Monument: Flush
 Well Cap: Locking
 Other:

LEGEND:

- FILTER PAC
- BENTONITE
- CEMENT GROUT
- CUTTINGS/BACKFILL
- WATER LEVEL DURING DRILLING
- WATER LEVEL AFTER DRILLING

ASPHALT 3" thick at ground surface
 SILTY SAND (SM), brown, predominantly fine sand, low plastic silt, no hydrocarbon odor, damp.
 Becomes moist at 4 bgs.

GRAVELLY SAND (SP), brown to gray, 10% fine sand 10% medium sand, angular to sub-angular gravel up to 1", with low plastic silt, no hydrocarbon odor, moist.

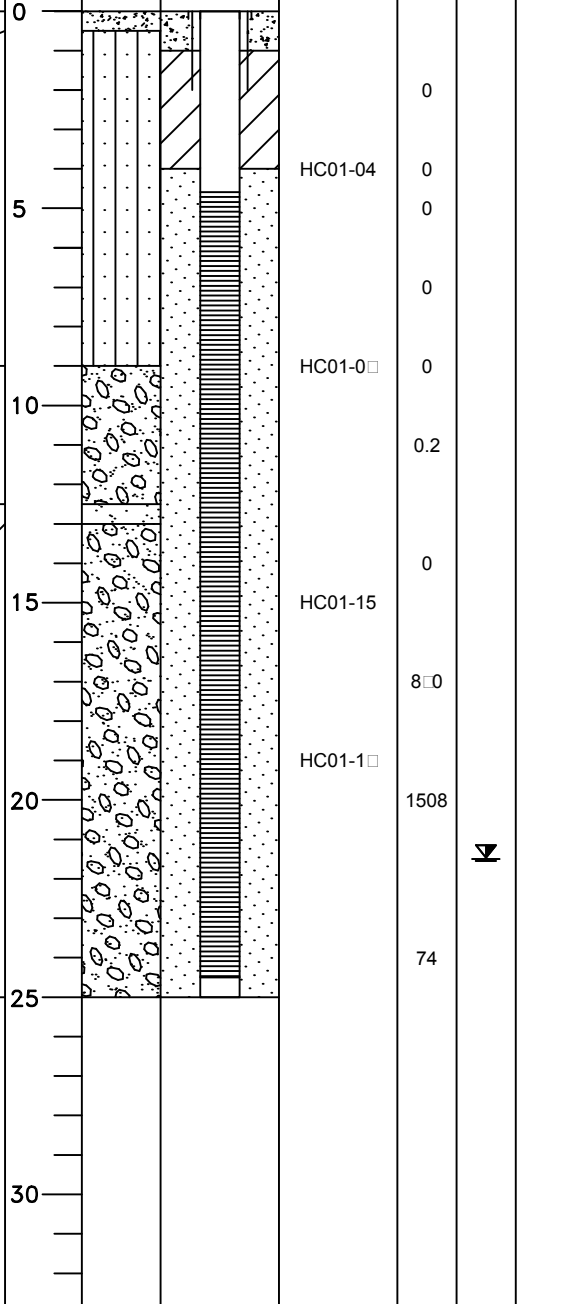
SAND (SP), brown, 85% fine sand 15% medium sand, trace low plastic silt, no hydrocarbon odor, wet.

GRAVELLY SAND (SP), brown to gray, 10% fine sand 10% medium sand, angular to sub-angular gravel up to 1", with low plastic silt, no hydrocarbon odor, moist.
 Mild hydrocarbon odor at 17 bgs.

Strong hydrocarbon odor at 20 bgs, decreasing with depth.

BOTTOM OF BORING AT 25 B.G.S.

Boring backfilled with hydrated bentonite upon completion.



1508

74

DRILLING CONTRACTOR: Pacific Soil & Water / Cascade Drilling L.P.
 DRILLING METHOD: Direct Push / HSA
 BOREHOLE DIAMETER: 2.25" / 8.25"
 SAMPLING METHOD: Continuous
 WELL TAG ID: BJR034

CASING ELEVATION: 503.74
 GROUND SURFACE ELEVATION: 504.03
 NORTHING: 222533.04
 EASTING: 1162178.70

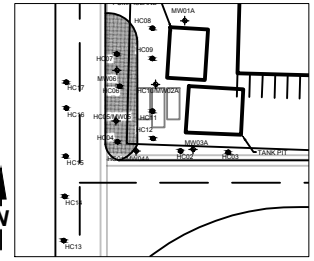


510 Allen Street
Kelso, WA 98626
Phone: 360-703-6079

WELL/BORING NUMBER **HC02**

PROJECT NAME: TOC Amboy
PROJECT NUMBER: 01-103
PROJECT LOCATION: Amboy, WA
LOGGED BY: J. Horowitz
REVIEWED BY: C. Hultgren
DATE: 11-11-15

LOCATION MAP



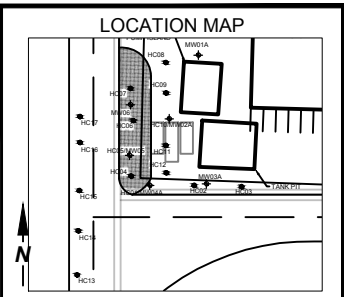
DESCRIPTION <small>(USCS Classification, Depth Interval, Color, Grain Size, Plasticity, Shapes, Mineral Composition, Density or Consistency, Moisture, Odor, Geological Interpretation)</small>	DEPTH (FT.)	SYMBOL	WELL DETAILS	SAMPLE ID	PID	FIRST WATER	BLOW COUNTS	BOREHOLE/WELL CONSTRUCTION DETAILS
<p>ASPHALT 3" thick at ground surface</p> <p>SILTY SAND (SM), brown, predominantly fine sand, low plastic silt, no hydrocarbon odor, damp.</p>	0				0			<p>WELL CONSTRUCTION Depths (feet bgs)</p> <p>Borehole: Sump: Screen: Casing: Backfill: Sand Pack: Bentonite: Concrete: Stabilizers:</p>
<p>GRAVELLY SAND (SP), brown to gray, 90% fine sand 10% medium sand, angular to sub-angular gravel up to 1", with low plastic silt, no hydrocarbon odor, damp.</p> <p>Wet at 19.5'</p> <p>Strong hydrocarbon odor at 22' to bottom of boring.</p>	10			HC02-08	0.1			<p>MATERIALS USED</p> <p>Casing: Well Screen: End Cap: Sand Pack: Bentonite: Concrete: Monument: Well Cap: Other:</p>
<p>BOTTOM OF BORING AT 25' B.G.S.</p> <p>Boring backfilled with hydrated bentonite upon completion.</p>	25			HC02-15	0.3	2	∇	<p>LEGEND:</p> <p> FILTER PACK</p> <p> BENTONITE</p> <p> CEMENT GROUT</p> <p> CUTTINGS/BACKFILL</p> <p> WATER LEVEL DURING DRILLING</p> <p> WATER LEVEL AFTER DRILLING</p>
<p>DRILLING CONTRACTOR: Pacific Soil & Water</p> <p>DRILLING METHOD: Direct Push</p> <p>BOREHOLE DIAMETER: 2.25"</p> <p>SAMPLING METHOD: Continuous</p> <p>START CARD NUMBER:</p>	<p>CASING ELEVATION: GROUND SURFACE ELEVATION: 504.53' NORTHING: 222533.01 EASTING: 1162207.01</p>							



510 Allen Street
Kelso, WA 98626
Phone: 360-703-6079

WELL/BORING NUMBER **HC03**

PROJECT NAME: TOC Amboy
PROJECT NUMBER: 01-103
PROJECT LOCATION: Amboy, WA
LOGGED BY: J. Horowitz
REVIEWED BY: C. Hultgren
DATE: 11-11-15



DESCRIPTION <small>(USCS Classification, Depth Interval, Color, Grain Size, Plasticity, Shapes, Mineral Composition, Density or Consistency, Moisture, Odor, Geological Interpretation)</small>	DEPTH (FT.)	SYMBOL	WELL DETAILS	SAMPLE ID	PID	FIRST WATER	BLOW COUNTS	BOREHOLE/WELL CONSTRUCTION DETAILS
ASPHALT 3" thick at ground surface	0	[Symbol]						
SILTY SAND (SM) , brown, predominantly fine sand, low plastic silt, no hydrocarbon odor, damp.	0 - 17.5	[Symbol]		HC03-08	0.1 0.1 0.1 0.1			
GRAVELLY SAND (SP) , brown to gray, 90% fine sand 10% medium sand, angular to sub-angular gravel up to 1.5", with moderately plastic silt, no hydrocarbon odor, moist.	17.5 - 25	[Symbol]		HC03-15	0 0.3 0.1			
Wet at 17.5'								
BOTTOM OF BORING AT 25' B.G.S.	25			HC03-25	0.1			
Boring backfilled with hydrated bentonite upon completion.	25 - 30	[Symbol]						

- LEGEND:**
- [Symbol] FILTER PACK
 - [Symbol] BENTONITE
 - [Symbol] CEMENT GROUT
 - [Symbol] CUTTINGS/BACKFILL
 - [Symbol] WATER LEVEL DURING DRILLING
 - [Symbol] WATER LEVEL AFTER DRILLING

DRILLING CONTRACTOR: Pacific Soil & Water
DRILLING METHOD: Direct Push
BOREHOLE DIAMETER: 2.25"
SAMPLING METHOD: Continuous
START CARD NUMBER:

CASING ELEVATION:
GROUND SURFACE ELEVATION: 504.71'
NORTHING: 222532.18
EASTING: 1162237.40

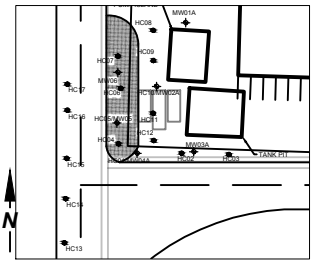


510 Allen Street
Kelso, WA 98626
Phone: 360-703-6079

WELL/BORING NUMBER **HC04**

PROJECT NAME: TOC Amboy
PROJECT NUMBER: 01-103
PROJECT LOCATION: Amboy, WA
LOGGED BY: J. Horowitz
REVIEWED BY: C. Hultgren
DATE: 11-11-15

LOCATION MAP



DESCRIPTION <small>(USCS Classification, Depth Interval, Color, Grain Size, Plasticity, Shapes, Mineral Composition, Density or Consistency, Moisture, Odor, Geological Interpretation)</small>	DEPTH (FT.)	SYMBOL	WELL DETAILS	SAMPLE ID	PID	FIRST WATER	BLOW COUNTS	BOREHOLE/WELL CONSTRUCTION DETAILS
GRASS / TOP SOIL	0							
SILTY SAND (SM) , brown, predominantly fine sand, low plastic silt, no hydrocarbon odor, damp.	5			HC04-08	0.1 0.1 0.1 0			
GRAVELLY SAND (SP) , brown to gray, 85% fine sand 15% medium sand, angular to sub-angular gravel up to 1.5", with moderately plastic silt, no hydrocarbon odor, moist. Wet at 20'. Slight hydrocarbon odor to bottom of boring.	10 15 20			HC04-20	0.1 0.1 0.1 0 308			
BOTTOM OF BORING AT 25' B.G.S. Boring backfilled with hydrated bentonite upon completion.	25 30				27 31			<p>LEGEND:</p> <ul style="list-style-type: none"> FILTER PACK BENTONITE CEMENT GROUT CUTTINGS/BACKFILL WATER LEVEL DURING DRILLING WATER LEVEL AFTER DRILLING

DRILLING CONTRACTOR: Pacific Soil & Water
DRILLING METHOD: Direct Push
BOREHOLE DIAMETER: 2.25"
SAMPLING METHOD: Continuous
START CARD NUMBER:

CASING ELEVATION:
GROUND SURFACE ELEVATION: 503.59'
NORTHING: 222538.97
EASTING: 1162166.85



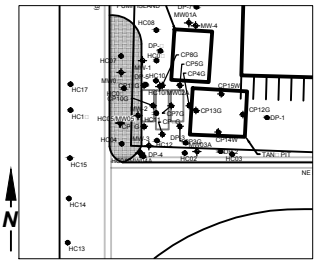
510 Allen Street
 Elso, WA 98202
 Phone: 360-703-0700

WELL/BORING NUMBER

HC05/
 MW05

PROJECT NAME: TOC Amboy
 PROJECT NUMBER: 01-103
 PROJECT LOCATION: Amboy, WA
 LOGGED BY: J. Horowitz
 REVIEWED BY: C. Hultgren
 DATE: 11-11-15 / 12-05-15

LOCATION MAP



DESCRIPTION

(USCS Classification, Depth Interval, Color, Grain Size, Plasticity, Shapes, Mineral Composition, Density or Consistency, Moisture, Odor, Geological Interpretation)

DEPTH (FT.)	SYMBOL	WELL DETAILS	SAMPLE ID	PID	FIRST WATER	BLOW COUNTS	BOREHOLE/WELL CONSTRUCTION DETAILS
0	[Symbol: Grass/Top Soil]						WELL CONSTRUCTION Depths (feet bgs) Borehole: 24.37 Sump: 24.07 - 24.37 Screen: 4.07 - 24.07 Casing: 0.22 - 4.07 Backfill: Sand Pack: 4 - 24.37 Bentonite: 1 - 4 Concrete: 0 - 1 Stabilizers:
0 - 4.07	[Symbol: Silty Sand (SM)]			0.2			
4.07 - 5.00	[Symbol: Silty Sand (SM)]		HC05-08	0.2			
5.00 - 10.00	[Symbol: Silty Sand (SM)]			0.2			
10.00 - 15.00	[Symbol: Silty Sand (SM)]			0.2			
15.00 - 20.00	[Symbol: Gravelly Sand (SP)]		HC05-15	0.2			MATERIALS USED Casing: 5" PVC Well Screen: 20" 0.010" End Cap: Flat sump Sand Pack: 50lb bags 10-20 Bentonite: 3 50lb bags Concrete: 3 80lb bags Monument: Flush Well Cap: Locking Other:
20.00 - 21.50	[Symbol: Gravelly Sand (SP)]		HC05-20	0.2	∇		
21.50 - 22.00	[Symbol: Gravelly Sand (SP)]			0.2			
22.00 - 25.00	[Symbol: Gravelly Sand (SP)]		HC05-25	0.2			
25.00 - 30.00	[Symbol: Bottom of Boring]						

- LEGEND:**
- [Symbol: Filter Pac] FILTER PAC
 - [Symbol: Bentonite] BENTONITE
 - [Symbol: Cement Grout] CEMENT GROUT
 - [Symbol: Cuttings/Bacfill] CUTTINGS/BACFILL
 - [Symbol: Water Level During Drilling] WATER LEVEL DURING DRILLING
 - [Symbol: Water Level After Drilling] WATER LEVEL AFTER DRILLING

DRILLING CONTRACTOR: Pacific Soil & Water / Cascade Drilling, LLP.
 DRILLING METHOD: Direct Push
 BOREHOLE DIAMETER: 2.25" / 8.25"
 SAMPLING METHOD: Continuous
 WELL TAG ID: BJR035

CASING ELEVATION: 504.30
 GROUND SURFACE ELEVATION: 503.70
 NORTHING: 222552.24
 EASTING: 112115.03

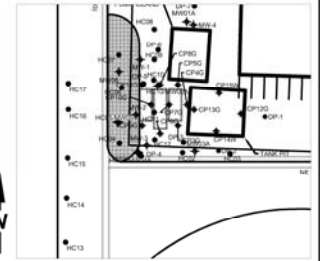


510 Allen Street
Kelso, WA 98626
Phone: 360-703-6079

WELL/BORING NUMBER **HC06**

PROJECT NAME: TOC Amboy
PROJECT NUMBER: 01-103
PROJECT LOCATION: Amboy, WA
LOGGED BY: J. Horowitz
REVIEWED BY: C. Hultgren
DATE: 11-11-15

LOCATION MAP



DESCRIPTION <small>(USCS Classification, Depth Interval, Color, Grain Size, Plasticity, Shapes, Mineral Composition, Density or Consistency, Moisture, Odor, Geological Interpretation)</small>	DEPTH (FT.)	SYMBOL	WELL DETAILS	SAMPLE ID	PID	FIRST WATER	BLOW COUNTS	BOREHOLE/WELL CONSTRUCTION DETAILS
GRASS / TOP SOIL	0							
SILTY SAND (SM) , brown, predominantly fine sand, low plastic silt, no hydrocarbon odor, damp.	0 - 5				0 0.1 0.1			
GRAVELLY SAND (SP) , brown to gray, 85% fine sand 15% medium sand, angular to sub-angular gravel up to 1.5", with low plastic silt, no hydrocarbon odor, damp.	5 - 10			HC06-08	0			
GRAVEL (GP) , gray, angular to sub-angular gravel up to 1.5", with low plastic silt, no hydrocarbon odor, damp.	10 - 15				0.1			
GRAVELLY SAND (SP) , brown to gray, 85% fine sand 15% medium sand, angular to sub-angular gravel up to 1.5", with low plastic silt, no hydrocarbon odor, damp.	15 - 20			HC06-15				
Slight hydrocarbon odor at 19.5'. Wet at 21.5'. Strong hydrocarbon odor 23' - 25'.	20 - 25			HC06-20	5			
BOTTOM OF BORING AT 25' B.G.S. Boring backfilled with hydrated bentonite upon completion.	25 - 30			HC06-25	9 0.8			

- LEGEND:**
- FILTER PACK
 - BENTONITE
 - CEMENT GROUT
 - CUTTINGS/BACKFILL
 - WATER LEVEL DURING DRILLING
 - WATER LEVEL AFTER DRILLING

DRILLING CONTRACTOR: Pacific Soil & Water DRILLING METHOD: Direct Push BOREHOLE DIAMETER: 2.25" SAMPLING METHOD: Continuous	CASING ELEVATION: GROUND SURFACE ELEVATION: 503.76 NORTHING: 222574.33 EASTING: 1162168.29
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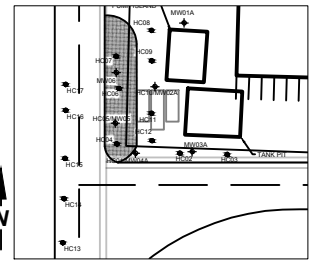


510 Allen Street
Kelso, WA 98626
Phone: 360-703-6079

WELL/BORING NUMBER **HC07**

PROJECT NAME: TOC Amboy
PROJECT NUMBER: 01-103
PROJECT LOCATION: Amboy, WA
LOGGED BY: J. Horowitz
REVIEWED BY: C. Hultgren
DATE: 11-12-15

LOCATION MAP



DESCRIPTION

(USCS Classification, Depth Interval, Color, Grain Size, Plasticity, Shapes, Mineral Composition, Density or Consistency, Moisture, Odor, Geological Interpretation)

DEPTH (FT.)	SYMBOL	WELL DETAILS	SAMPLE ID	PID	FIRST WATER	BLOW COUNTS	BOREHOLE/WELL CONSTRUCTION DETAILS
0							
0 - 3			HC07-08	0			
3 - 10			HC07-12	0.1			
10 - 15			HC07-15	0			
15 - 30							

LEGEND:

- FILTER PACK
- BENTONITE
- CEMENT GROUT
- CUTTINGS/BACKFILL
- WATER LEVEL DURING DRILLING
- WATER LEVEL AFTER DRILLING

DRILLING CONTRACTOR: Pacific Soil & Water
DRILLING METHOD: Direct Push
BOREHOLE DIAMETER: 2.25"
SAMPLING METHOD: Continuous
START CARD NUMBER:

CASING ELEVATION:
GROUND SURFACE ELEVATION: 503.75'
NORTHING: 222594.89
EASTING: 1162166.48

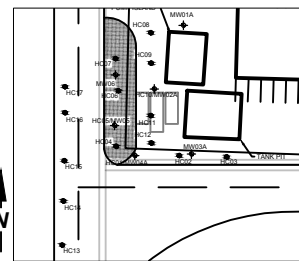


510 Allen Street
Kelso, WA 98626
Phone: 360-703-6079

WELL/BORING NUMBER **HC08**

PROJECT NAME: TOC Amboy
PROJECT NUMBER: 01-103
PROJECT LOCATION: Amboy, WA
LOGGED BY: J. Horowitz
REVIEWED BY: C. Hultgren
DATE: 11-12-15

LOCATION MAP



DESCRIPTION

(USCS Classification, Depth Interval, Color, Grain Size, Plasticity, Shapes, Mineral Composition, Density or Consistency, Moisture, Odor, Geological Interpretation)

DEPTH (FT.)

SYMBOL

WELL DETAILS

SAMPLE ID

PID

FIRST WATER

BLOW COUNTS

BOREHOLE/WELL CONSTRUCTION DETAILS

ASPHALT 3" thick at ground surface over 3" crushed rock base course.

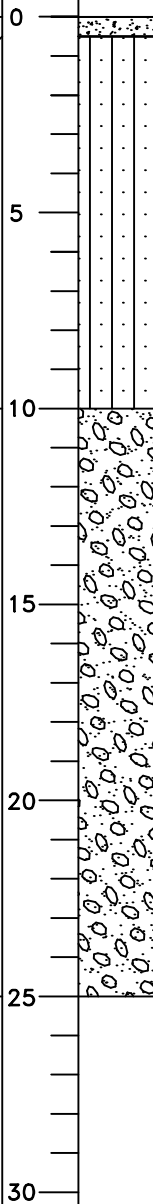
SILTY SAND (SM), brown, predominantly fine sand, low plastic silt, no hydrocarbon odor, damp.

GRAVELLY SAND WITH SILT (SP-SM), brown to gray, 80% fine sand 20% medium sand, angular to sub-angular gravel up to 1", low plastic silt, no hydrocarbon odor, moist. Wet seam at 10'.

Wet at 18'.

BOTTOM OF BORING AT 25' B.G.S.

Boring backfilled with hydrated bentonite upon completion.



HC08-08

HC08-15

HC08-25

0

0

0

0.1

0.1

0

0

0.1

0.1

0.1

0.1

0.1



LEGEND:

- FILTER PACK
- BENTONITE
- CEMENT GROUT
- CUTTINGS/BACKFILL
- WATER LEVEL DURING DRILLING
- WATER LEVEL AFTER DRILLING

DRILLING CONTRACTOR: Pacific Soil & Water
DRILLING METHOD: Direct Push
BOREHOLE DIAMETER: 2.25"
SAMPLING METHOD: Continuous
START CARD NUMBER:

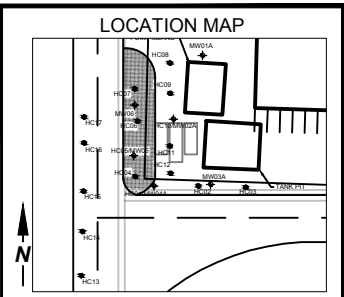
CASING ELEVATION:
GROUND SURFACE ELEVATION: 504.84'
NORTHING: 222611.34
EASTING: 1162189.06



510 Allen Street
Kelso, WA 98626
Phone: 360-703-6079

WELL/BORING NUMBER **HC09**

PROJECT NAME: TOC Amboy
PROJECT NUMBER: 01-103
PROJECT LOCATION: Amboy, WA
LOGGED BY: J. Horowitz
REVIEWED BY: C. Hultgren
DATE: 11-12-15



DESCRIPTION <small>(USCS Classification, Depth Interval, Color, Grain Size, Plasticity, Shapes, Mineral Composition, Density or Consistency, Moisture, Odor, Geological Interpretation)</small>	DEPTH (FT.)	SYMBOL	WELL DETAILS	SAMPLE ID	PID	FIRST WATER	BLOW COUNTS	BOREHOLE/WELL CONSTRUCTION DETAILS
ASPHALT 3" thick at ground surface over 3" crushed rock base course.	0							
SILTY SAND (SM), brown, predominantly fine sand, low plastic silt, no hydrocarbon odor, damp.	5			HC09-08	0			
GRAVELLY SAND (SP), brown to gray, 80% fine sand 20% medium sand, angular to sub-angular gravel up to 1", low plastic silt, no hydrocarbon odor, moist.	10			HC09-15	0.1			
BOTTOM OF BORING AT 25' B.G.S. Boring backfilled with hydrated bentonite upon completion.	25			HC09-25	2			<p>LEGEND:</p> <ul style="list-style-type: none"> FILTER PACK BENTONITE CEMENT GROUT CUTTINGS/BACKFILL WATER LEVEL DURING DRILLING WATER LEVEL AFTER DRILLING

DRILLING CONTRACTOR: Pacific Soil & Water
DRILLING METHOD: Direct Push
BOREHOLE DIAMETER: 2.25"
SAMPLING METHOD: Continuous
START CARD NUMBER:

CASING ELEVATION:
GROUND SURFACE ELEVATION: 504.76'
NORTHING: 222591.99
EASTING: 1162189.09



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WELL/BORING NUMBER

HC10/
MW02A

PROJECT NAME: TOC Amboy
PROJECT NUMBER: 01-103
PROJECT LOCATION: Amboy, WA
LOGGED BY: J. Horowitz
REVIEWED BY: C. Hultgren
DATE: 11-12-15

LOCATION MAP



DESCRIPTION

(USCS Classification, Depth Interval, Color, Grain Size, Plasticity, Shapes, Mineral Composition, Density or Consistency, Moisture, Odor, Geological Interpretation)

DEPTH (FT.)	SYMBOL	WELL DETAILS	SAMPLE ID	PID	FIRST WATER	BLOW COUNTS
0	ASPHALT 3" thick at ground surface over 3" crushed rock base course.					
0 - 4.48	SILTY GRAVEL (GM), gray, 65% gravel, 35% silt, fine grained angular gravel up to 1", low plastic silt, no hydrocarbon odor, damp.			0		
4.48 - 24.78	SILTY SAND (SM), brown, 65% sand, 40% silt, predominantly fine grain sand, low plastic silt, no hydrocarbon odor, damp.		HC10-08	0		
24.78 - 24.88				74		
24.88 - 25.0			HC10-13	4		
25.0 - 25.1			HC10-15			
25.1 - 25.2				811		
25.2 - 25.3				742		
25.3 - 25.4			HC10-25			
25.4 - 25.5						
25.5 - 25.6						
25.6 - 25.7						
25.7 - 25.8						
25.8 - 25.9						
25.9 - 26.0						
26.0 - 26.1						
26.1 - 26.2						
26.2 - 26.3						
26.3 - 26.4						
26.4 - 26.5						
26.5 - 26.6						
26.6 - 26.7						
26.7 - 26.8						
26.8 - 26.9						
26.9 - 27.0						
27.0 - 27.1						
27.1 - 27.2						
27.2 - 27.3						
27.3 - 27.4						
27.4 - 27.5						
27.5 - 27.6						
27.6 - 27.7						
27.7 - 27.8						
27.8 - 27.9						
27.9 - 28.0						
28.0 - 28.1						
28.1 - 28.2						
28.2 - 28.3						
28.3 - 28.4						
28.4 - 28.5						
28.5 - 28.6						
28.6 - 28.7						
28.7 - 28.8						
28.8 - 28.9						
28.9 - 29.0						
29.0 - 29.1						
29.1 - 29.2						
29.2 - 29.3						
29.3 - 29.4						
29.4 - 29.5						
29.5 - 29.6						
29.6 - 29.7						
29.7 - 29.8						
29.8 - 29.9						
29.9 - 30.0						

WELL CONSTRUCTION

Depths (feet bgs)
Borehole: 24.78
Sump: 24.48 - 24.78
Screen: 4.48 - 20.48
Casing: 0.38 - 4.48
Backfill:
Sand Pack: 4 - 24.78
Bentonite: 1 - 3
Concrete: 0 - 1
Stabilizers:

MATERIALS USED

Casing: 5' 2" PVC
Well Screen: 20' 0.010"
End Cap: Flat sump
Sand Pack: 9 50lb bags 10-20
Bentonite: 3 50lb bags
Concrete: 3 60lb bags
Monument: Flush
Well Cap: Locking
Other:

LEGEND:

- FILTER PACK
- BENTONITE
- CEMENT GROUT
- CUTTINGS/BACKFILL
- WATER LEVEL DURING DRILLING
- WATER LEVEL AFTER DRILLING

DRILLING CONTRACTOR: Pacific Soil & Water
DRILLING METHOD: Direct Push
BOREHOLE DIAMETER: 2.25"
SAMPLING METHOD: Continuous
WELL TAG ID: BJR032

CASING ELEVATION: 504.38'
GROUND SURFACE ELEVATION: 504.76'
NORTHING: 222575.63
EASTING: 1162191.13

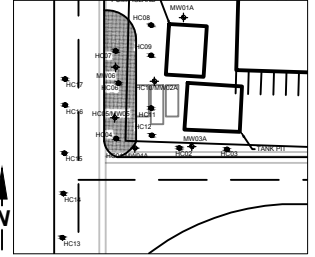


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WELL/BORING NUMBER **HC11**

PROJECT NAME: TOC Amboy
PROJECT NUMBER: 01-103
PROJECT LOCATION: Amboy, WA
LOGGED BY: J. Horowitz
REVIEWED BY: C. Hultgren
DATE: 11-12-15

LOCATION MAP



DESCRIPTION <small>(USCS Classification, Depth Interval, Color, Grain Size, Plasticity, Shapes, Mineral Composition, Density or Consistency, Moisture, Odor, Geological Interpretation)</small>	DEPTH (FT.)	SYMBOL	WELL DETAILS	SAMPLE ID	PID	FIRST WATER	BLOW COUNTS	BOREHOLE/WELL CONSTRUCTION DETAILS
ASPHALT 3" thick at ground surface over 1' crushed rock base course.	0							
SILTY SAND (SM), brown, predominantly fine grain sand, low plastic silt, no hydrocarbon odor, damp.	0 to 10				0			
	5				0.1			
	10				0			
GRAVELLY SAND (SP), brown to gray, 80% fine sand 20% medium sand, angular to sub-angular gravel up to 1", low plastic silt, strong hydrocarbon odor, damp.	10 to 25			HC11-10	0.7			
	15				965			
	20			HC11-14	1423			
	25				1224			
Wet at 17'.					49			
					254			
				HC11-20	1009			
					562			
					497			
BOTTOM OF BORING AT 25' B.G.S. Boring backfilled with hydrated bentonite upon completion.	25 to 30			HC11-25	42			
	30							

- LEGEND:**
- FILTER PACK
 - BENTONITE
 - CEMENT GROUT
 - CUTTINGS/BACKFILL
 - WATER LEVEL DURING DRILLING
 - WATER LEVEL AFTER DRILLING

DRILLING CONTRACTOR: Pacific Soil & Water
DRILLING METHOD: Direct Push
BOREHOLE DIAMETER: 2.25"
SAMPLING METHOD: Continuous
START CARD NUMBER:

CASING ELEVATION:
GROUND SURFACE ELEVATION: 504.33'
NORTHING: 222558.45
EASTING: 1162189.08

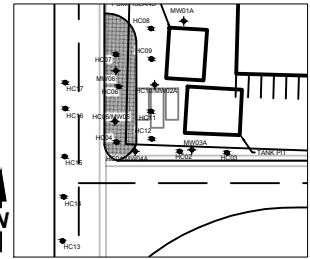


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WELL/BORING NUMBER **HC12**

PROJECT NAME: TOC Amboy
PROJECT NUMBER: 01-103
PROJECT LOCATION: Amboy, WA
LOGGED BY: J. Horowitz
REVIEWED BY: C. Hultgren
DATE: 11-12-15

LOCATION MAP



DESCRIPTION

(USCS Classification, Depth Interval, Color, Grain Size, Plasticity, Shapes, Mineral Composition, Density or Consistency, Moisture, Odor, Geological Interpretation)

DEPTH (FT.)	SYMBOL	WELL DETAILS	SAMPLE ID	PID	FIRST WATER	BLOW COUNTS	BOREHOLE/WELL CONSTRUCTION DETAILS
0							
0 - 3							
3 - 15			HC12-10 HC12-11	11 96 63			
15 - 25			HC12-20 HC12-25	37 9 26 1152 1248 5			
25 - 30							

- LEGEND:**
- FILTER PACK
 - BENTONITE
 - CEMENT GROUT
 - CUTTINGS/BACKFILL
 - WATER LEVEL DURING DRILLING
 - WATER LEVEL AFTER DRILLING

DRILLING CONTRACTOR: Pacific Soil & Water
DRILLING METHOD: Direct Push
BOREHOLE DIAMETER: 2.25"
SAMPLING METHOD: Continuous
START CARD NUMBER:

CASING ELEVATION:
GROUND SURFACE ELEVATION: 504.28'
NORTHING: 222541.05
EASTING: 1162189.42

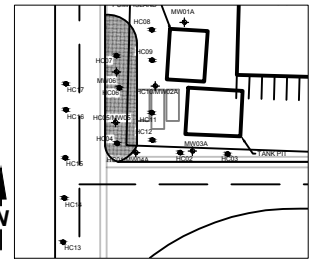


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WELL/BORING NUMBER **HC13**

PROJECT NAME: TOC Amboy
PROJECT NUMBER: 01-103
PROJECT LOCATION: Amboy, WA
LOGGED BY: J. Horowitz
REVIEWED BY: C. Hultgren
DATE: 11-13-15

LOCATION MAP



DESCRIPTION <small>(USCS Classification, Depth Interval, Color, Grain Size, Plasticity, Shapes, Mineral Composition, Density or Consistency, Moisture, Odor, Geological Interpretation)</small>	DEPTH (FT.)	SYMBOL	WELL DETAILS	SAMPLE ID	PID	FIRST WATER	BLOW COUNTS	BOREHOLE/WELL CONSTRUCTION DETAILS
ASPHALT 8" thick at ground surface over 2' crushed rock base course.	0							
SILTY SAND (SM), brown, predominantly fine grain sand, low plastic silt, no hydrocarbon odor, damp.	0 - 10			HC13-08	0			
Moist at 10'.	10							
GRAVELLY SAND WITH SILT (SP-SM), brown to gray, 80% fine sand 20% medium sand, angular to sub-angular gravel up to 1", low plastic silt, no hydrocarbon odor, damp.	10 - 20			HC13-15	0	∇		
Wet at 16'.	16							
BOTTOM OF BORING AT 20' B.G.S. Boring backfilled with hydrated bentonite upon completion.	20			HC13-20	0.1			
	25							
	30							

- LEGEND:**
- FILTER PACK
 - BENTONITE
 - CEMENT GROUT
 - CUTTINGS/BACKFILL
 - WATER LEVEL DURING DRILLING
 - WATER LEVEL AFTER DRILLING

DRILLING CONTRACTOR: Pacific Soil & Water
DRILLING METHOD: Direct Push
BOREHOLE DIAMETER: 2.25"
SAMPLING METHOD: Continuous
START CARD NUMBER:

CASING ELEVATION:
GROUND SURFACE ELEVATION: 503.36'
NORTHING: 222475.89
EASTING: 1162132.53

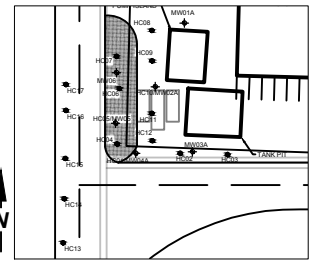


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WELL/BORING NUMBER **HC14**

PROJECT NAME: TOC Amboy
PROJECT NUMBER: 01-103
PROJECT LOCATION: Amboy, WA
LOGGED BY: J. Horowitz
REVIEWED BY: C. Hultgren
DATE: 11-13-15

LOCATION MAP



DESCRIPTION <small>(USCS Classification, Depth Interval, Color, Grain Size, Plasticity, Shapes, Mineral Composition, Density or Consistency, Moisture, Odor, Geological Interpretation)</small>	DEPTH (FT.)	SYMBOL	WELL DETAILS	SAMPLE ID	PID	FIRST WATER	BLOW COUNTS	BOREHOLE/WELL CONSTRUCTION DETAILS
ASPHALT 8" thick at ground surface over 2' crushed rock base course.	0				0			
SILTY SAND (SM), brown, predominantly fine grain sand, low plastic silt, no hydrocarbon odor, damp.	5			HC14-08	0 0 0 0			
GRAVELLY SAND WITH SILT (SP-SM), brown to gray, 90% fine sand 10% medium sand, angular to sub-angular gravel up to 1.5", low plastic silt, no hydrocarbon odor, damp. Wet at 15'.	10 15			HC14-15	0 0.1 0.1	▽		
BOTTOM OF BORING AT 20' B.G.S. Boring backfilled with hydrated bentonite upon completion.	20 25 30			HC14-20	0			<p>LEGEND:</p> <ul style="list-style-type: none"> FILTER PACK BENTONITE CEMENT GROUT CUTTINGS/BACKFILL WATER LEVEL DURING DRILLING WATER LEVEL AFTER DRILLING

DRILLING CONTRACTOR: Pacific Soil & Water
DRILLING METHOD: Direct Push
BOREHOLE DIAMETER: 2.25"
SAMPLING METHOD: Continuous
START CARD NUMBER:

CASING ELEVATION:
GROUND SURFACE ELEVATION: 503.70'
NORTHING: 222504.03
EASTING: 1162133.17

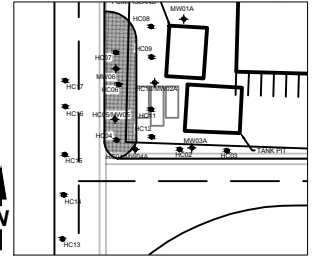


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Phone: 360-703-6079

WELL/BORING NUMBER **HC15**

PROJECT NAME: TOC Amboy
PROJECT NUMBER: 01-103
PROJECT LOCATION: Amboy, WA
LOGGED BY: J. Horowitz
REVIEWED BY: C. Hultgren
DATE: 11-13-15

LOCATION MAP



DESCRIPTION <small>(USCS Classification, Depth Interval, Color, Grain Size, Plasticity, Shapes, Mineral Composition, Density or Consistency, Moisture, Odor, Geological Interpretation)</small>	DEPTH (FT.)	SYMBOL	WELL DETAILS	SAMPLE ID	PID	FIRST WATER	BLOW COUNTS	BOREHOLE/WELL CONSTRUCTION DETAILS
ASPHALT 8" thick at ground surface over 2' crushed rock base course.	0				0			
SILTY SAND (SM), brown, predominantly fine grain sand, low plastic silt, no hydrocarbon odor, damp.	5			HC15-08	0 0 0.1			
GRAVELLY SAND WITH SILT (SP-SM), brown to gray, 90% fine sand 10% medium sand, angular to sub-angular gravel up to 1.5", low plastic silt, no hydrocarbon odor, damp. Moist at 12'. Wet at 15'.	10 15			HC15-15	0.1 0 0.1	▽		
BOTTOM OF BORING AT 20' B.G.S. Boring backfilled with hydrated bentonite upon completion.	20 25 30			HC15-20	4			<p>LEGEND:</p> <ul style="list-style-type: none"> FILTER PACK BENTONITE CEMENT GROUT CUTTINGS/BACKFILL WATER LEVEL DURING DRILLING WATER LEVEL AFTER DRILLING

DRILLING CONTRACTOR: Pacific Soil & Water
DRILLING METHOD: Direct Push
BOREHOLE DIAMETER: 2.25"
SAMPLING METHOD: Continuous
START CARD NUMBER:

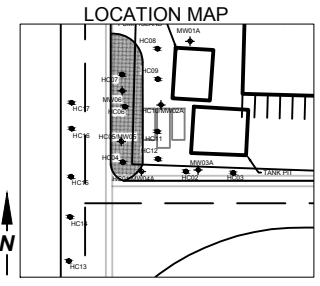
CASING ELEVATION:
GROUND SURFACE ELEVATION: 503.86'
NORTHING: 222529.68
EASTING: 1162133.87



510 Allen Street
Kelso, WA 98626
Phone: 360-703-6079

WELL/BORING NUMBER **HC17**

PROJECT NAME: TOC Amboy
PROJECT NUMBER: 01-103
PROJECT LOCATION: Amboy, WA
LOGGED BY: J. Horowitz
REVIEWED BY: C. Hultgren
DATE: 11-13-15



DESCRIPTION <small>(USCS Classification, Depth Interval, Color, Grain Size, Plasticity, Shapes, Mineral Composition, Density or Consistency, Moisture, Odor, Geological Interpretation)</small>	DEPTH (FT.)	SYMBOL	WELL DETAILS	SAMPLE ID	PID	FIRST WATER	BLOW COUNTS	BOREHOLE/WELL CONSTRUCTION DETAILS
ASPHALT 8" thick at ground surface over 2' crushed rock base course.	0							
SILTY SAND (SM), brown, predominantly fine grain sand, low plastic silt, no hydrocarbon odor, damp.	0 to 10			HC17-08	0.1			
GRAVELLY SAND WITH SILT (SP-SM), brown to gray, 90% fine sand 10% medium sand, angular to sub-angular gravel up to 1.5", low plastic silt, no hydrocarbon odor, damp.	10 to 20			HC17-15	0.1			
Wet at 16'.	16							
BOTTOM OF BORING AT 20' B.G.S. Boring backfilled with hydrated bentonite upon completion.	20 to 30			HC17-20	0.1			

- LEGEND:**
- FILTER PACK
 - BENTONITE
 - CEMENT GROUT
 - CUTTINGS/BACKFILL
 - WATER LEVEL DURING DRILLING
 - WATER LEVEL AFTER DRILLING

DRILLING CONTRACTOR: Pacific Soil & Water
DRILLING METHOD: Direct Push
BOREHOLE DIAMETER: 2.25"
SAMPLING METHOD: Continuous
START CARD NUMBER:

CASING ELEVATION:
GROUND SURFACE ELEVATION: 504.11'
NORTHING: 222576.96
EASTING: 1162134.26

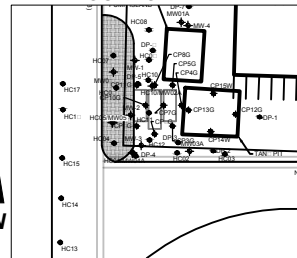


510 Allen Street
 Elso, WA 98222
 Phone: 360-703-0707

WELL/BORING NUMBER **MW01A**

PROJECT NAME: TOC Amboy
 PROJECT NUMBER: 01-103
 PROJECT LOCATION: Amboy, WA
 LOGGED BY: J. Horowitz
 REVIEWED BY: C. Hultgren
 DATE: 12-05-15

LOCATION MAP



DESCRIPTION

(USCS Classification, Depth Interval, Color, Grain Size, Plasticity, Shapes, Mineral Composition, Density or Consistency, Moisture, Odor, Geological Interpretation)

DEPTH (FT.)
 SYMBOL
 WELL DETAILS
 SAMPLE ID
 PID
 FIRST WATER
 BLOW COUNTS

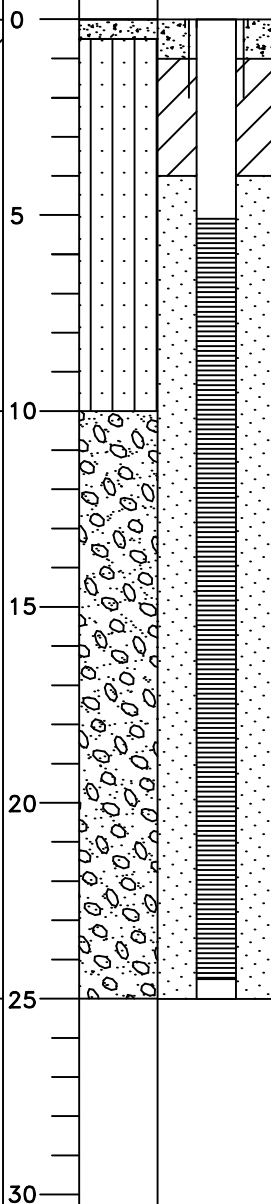
BOREHOLE/WELL CONSTRUCTION DETAILS

ASPHALT 3" thick at ground surface over 3" crushed rock base course.
 SILTY SAND (SM), brown, predominantly fine sand, low plastic silt, no hydrocarbon odor, damp.

GRAVELLY SAND WITH SILT (SP-SM), brown to gray, 80% fine sand 20% medium sand, angular to sub-angular gravel up to 1", low plastic silt, no hydrocarbon odor, moist. Wet seam at 10"

Wet at 18"

BOTTOM OF BORING AT 25 B.G.S.



WELL CONSTRUCTION

Depths (feet bgs)
 Borehole: 25.24
 Sump: 24.4 - 25.24
 Screen: 4.4 - 24.4
 Casing: 0.34 - 4.4
 Backfill:
 Sand Pack: 4 - 25.24
 Bentonite: 1 - 4
 Concrete: 0 - 1
 Stabilizers:

MATERIALS USED

Casing: 5.2" PVC
 Well Screen: 20x0.010"
 End Cap: Flat sump
 Sand Pack: 50lb bags 10-20
 Bentonite: 3 50lb bags
 Concrete: 3 80lb bags
 Monument: Flush
 Well Cap: Locking
 Other:

LEGEND:

- FILTER PAC
- BENTONITE
- CEMENT GROUT
- CUTTINGS/BACFILL
- WATER LEVEL DURING DRILLING
- WATER LEVEL AFTER DRILLING

DRILLING CONTRACTOR: Cascade Drilling L.P.
 DRILLING METHOD: Hollow Stem Auger
 BOREHOLE DIAMETER: 8.25"
 SAMPLING METHOD:
 WELL TAG ID: BJR031

CASING ELEVATION: 505.1
 GROUND SURFACE ELEVATION: 505.53
 NORTHING: 222111
 EASTING: 1162209.74

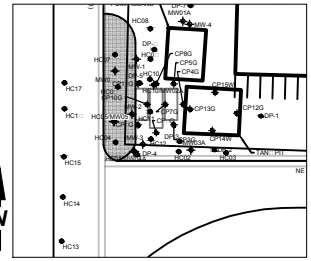


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WELL/BORING NUMBER MW03A

PROJECT NAME: TOC Amboy
 PROJECT NUMBER: 01-103
 PROJECT LOCATION: Amboy, WA
 LOGGED BY: C. Hultgren
 REVIEWED BY: R. Honsberger
 DATE: 12-05-15

LOCATION MAP



DESCRIPTION

(USCS Classification, Depth Interval, Color, Grain Size, Plasticity, Shapes, Mineral Composition, Density or Consistency, Moisture, Odor, Geological Interpretation)

DEPTH (F.T.) SYMBOL WELL DETAILS SAMPLE ID PID FIRST WATER BLOW COUNTS

BOREHOLE/WELL CONSTRUCTION DETAILS

ASPHALT 3" thick at ground surface
 SILTY SAND (SM), brown, predominantly fine sand, low plastic silt, no hydrocarbon odor, damp.

GRAVELLY SAND (SP), brown to gray, 0% fine sand 10% medium sand, angular to sub-angular gravel up to 1", with low plastic silt, no hydrocarbon odor, damp.

Wet at 1.5'

Strong hydrocarbon odor at 22' to bottom of boring.

BOTTOM OF BORING AT 25' B.G.S.

WELL CONSTRUCTION

Depths (feet bgs)
 Borehole: 24.1'
 Sump: 24.1' - 24.1'
 Screen: 4.1' - 24.1'
 Casing: 0.2' - 4.1'
 Backfill:
 Sand Pack: 4' - 24.1'
 Bentonite: 1' - 4'
 Concrete: 0' - 1'
 Stabilizers:

MATERIALS USED

Casing: 5.2" PVC
 Well Screen: 20x0.010"
 End Cap: Flat sump
 Sand Pack: 50lb bags 10-20
 Bentonite: 3 50lb bags
 Concrete: 3 80lb bags
 Monument: Flush
 Well Cap: Locking
 Other:

LEGEND:

- FILTER PAC
- BENTONITE
- CEMENT GROUT
- CUTTINGS/BACFILL
- WATER LEVEL DURING DRILLING
- WATER LEVEL AFTER DRILLING

DRILLING CONTRACTOR: Cascade Drilling L.P.
 DRILLING METHOD: Hollow Stem Auger
 BOREHOLE DIAMETER: 8.25"
 SAMPLING METHOD:
 START CARD NUMBER: BJR033

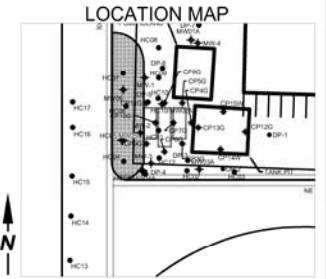
CASING ELEVATION: 504.3'
 GROUND SURFACE ELEVATION: 504.2'
 NORTHING: 222533.5
 EASTING: 11622214.95



510 Allen Street
Kelso, WA 98626
Phone: 360-703-6079

WELL/BORING NUMBER **MW06**

PROJECT NAME: TOC Amboy
PROJECT NUMBER: 01-103
PROJECT LOCATION: Amboy, WA
LOGGED BY: C. Hultgren
REVIEWED BY: R. Honsberger
DATE: 12-05-15



DESCRIPTION

(USCS Classification, Depth Interval, Color, Grain Size, Plasticity, Shapes, Mineral Composition, Density or Consistency, Moisture, Odor, Geological Interpretation)

DEPTH (FT.)
SYMBOL
WELL DETAILS
SAMPLE ID
PID
FIRST WATER
BLOW COUNTS

BOREHOLE/WELL CONSTRUCTION DETAILS

GRASS / TOP SOIL

SILTY SAND (SM), brown, predominantly fine sand, low plastic silt, no hydrocarbon odor, damp.

GRAVELLY SAND (SP), brown to gray, 85% fine sand 15% medium sand, angular to sub-angular gravel up to 1.5", with low plastic silt, no hydrocarbon odor, damp.

GRAVEL (GP), gray, angular to sub-angular gravel up to 1.5", with low plastic silt, no hydrocarbon odor, damp.

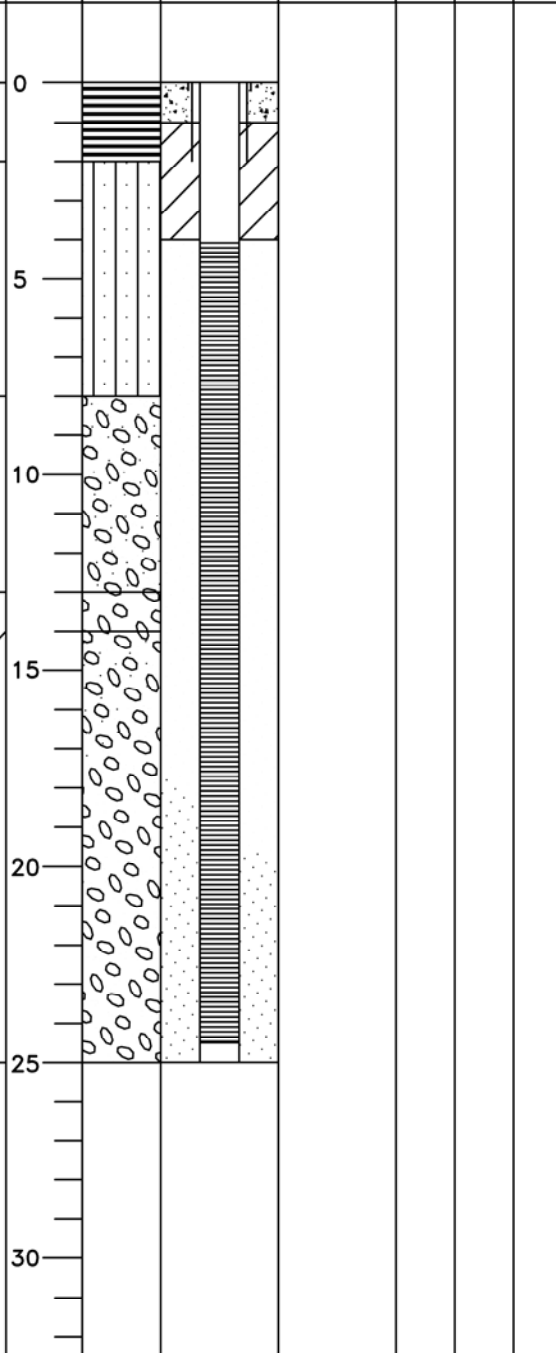
GRAVELLY SAND (SP), brown to gray, 85% fine sand 15% medium sand, angular to sub-angular gravel up to 1.5", with low plastic silt, no hydrocarbon odor, damp.

Slight hydrocarbon odor at 19.5'.

Wet at 21.5'.

Strong hydrocarbon odor 23' - 25'.

BOTTOM OF BORING AT 25' B.G.S.



WELL CONSTRUCTION

Depths (feet bgs)
Borehole: 24.34
Sump: 24.04 - 24.34
Screen: 4.04 - 24.04
Casing: 0.34 - 4.04
Backfill:
Sand Pack: 4 - 24.34
Bentonite: 1 - 4
Concrete: 0 - 1
Stabilizers:

MATERIALS USED

Casing: 5' 2" PVC
Well Screen: 20' 0.010"
End Cap: Flat sump
Sand Pack: 9 50lb bags 10-20
Bentonite: 3 50lb bags
Concrete: 3 60lb bags
Monument: Flush
Well Cap: Locking
Other:

LEGEND:

- FILTER PACK
- BENTONITE
- CEMENT GROUT
- CUTTINGS/BACKFILL
- WATER LEVEL DURING DRILLING
- WATER LEVEL AFTER DRILLING

DRILLING CONTRACTOR: Cascade Drilling L.P.
DRILLING METHOD: Hollow Stem Auger
BOREHOLE DIAMETER: 8.25"
SAMPLING METHOD:
WELL TAG ID: BJR036

CASING ELEVATION: 504.12'
GROUND SURFACE ELEVATION: 503.80'
NORTHING: 222584.48
EASTING: 1162166.51

APPENDIX C
Well Development Forms

Well ID #: MW01A Project name: TOC Amboy
 Date: 12/11/15 Project #: 301-103
 Time: _____ Engineer: M. Gummer

WELL INFORMATION

Monument condition Good Needs repair _____
 Well cap condition Good Locked Replaced Needs replacement
 Headspace reading Not measured _____ ppm
 Elevation mark Yes Added Other _____
 Well diameter 1.5-inch 2-inch 4-inch Other _____
 Odor _____ Comments _____

WELL MEASUREMENTS

Total well depth 24.9 ft Clean bottom Muddy bottom Not measured
 Depth to product — ft
 Depth to water 7.05 ft
 Casing volume 16 ft (H₂O) X 0.16 gpf = 2.56 gal
 Casing volumes 1"=0.04 gpf 1.5"=0.09 gpf 2"=0.16 gpf 4"=0.65 gpf 6"= 1.47 gpf

PURGING INFORMATION


Pump type Peristaltic Submersible Centrifugal Other _____
 Purge tubing New LDPE New HDPE New Teflon Other _____
 Bailer type Disposable Stainless PVC Other _____
 Bailer cord used Monofilament Other _____
 Purge start time 1005 Purge stop time 1130 Purge Rate (GPM) _____
Total Volume Purged (gallons) 30 gal

FIELD PARAMETERS

Meters used FlowThru Cell Hach Hanna Other _____
 Gallons pH Temp. Conductivity Turbidity Dissolved Oxygen ORP

NOTES/COMMENTS

Parameters not monitored during purging

Engineer's Signature  Date 12/15/15

Well ID #: MW02A
 Date: 12/15/15
 Time: 1000

Project name: TOC Amboy
 Project #: 01-103
 Engineer: M. Gummer

WELL INFORMATION

Monument condition Good Needs repair _____
 Well cap condition Good Locked Replaced Needs replacement
 Headspace reading Not measured _____ ppm
 Elevation mark Yes Added Other _____
 Well diameter 1.5-inch 2-inch 4-inch Other _____
 Odor _____ Comments _____

WELL MEASUREMENTS

Total well depth 24.4 ft Clean bottom Muddy bottom Not measured
 Depth to product — ft
 Depth to water 6.8 ft
 Casing volume 17.6 ft (H₂O) X 0.16 gpf = 2.94 gal
 Casing volumes 1"=0.04 gpf 1.5"=0.09 gpf 2"=0.16 gpf 4"=0.65 gpf 6"= 1.47 gpf

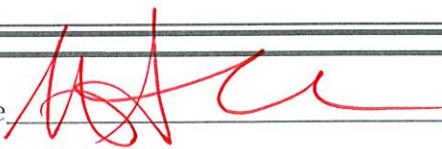
PURGING INFORMATION

Pump type Peristaltic Submersible Centrifugal Other _____
 Purge tubing New LDPE New HDPE New Teflon Other _____
 Bailer type Disposable Stainless PVC Other _____
 Bailer cord used Monofilament Other _____
 Purge start time 1000 Purge stop time 1130 Purge Rate (GPM) _____
Total Volume Purged (gallons) 35

FIELD PARAMETERS

Meters used FlowThru Cell Hach Hanna Other _____
 Gallons pH Temp. Conductivity Turbidity Dissolved Oxygen ORP

NOTES/COMMENTS

Engineer's Signature  Date 12/15/15



WELL DEVELOPMENT

Well ID #: MW03A
Date: 12/11/15
Time: 1300

Project name: JOC Amboy
Project #: 01-103
Engineer: M. Gummer

WELL INFORMATION

Monument condition [X] Good [] Needs repair
Well cap condition [X] Good [] Locked [] Replaced [] Needs replacement
Headspace reading [X] Not measured [] ppm
Elevation mark [X] Yes [] Added [] Other
Well diameter [] 1.5-inch [X] 2-inch [] 4-inch [] Other
[] Odor [] Comments

WELL MEASUREMENTS

Total well depth 24.65 ft [] Clean bottom [X] Muddy bottom [] Not measured
Depth to product - ft
Depth to water 5.56 ft
Casing volume 20 ft (H2O) X 0.16 gpf = 3.2 gal
Casing volumes 1"=0.04 gpf 1.5"=0.09 gpf 2"=0.16 gpf 4"=0.65 gpf 6"= 1.47 gpf

PURGING INFORMATION

Pump type [X] Peristaltic [X] Submersible [] Centrifugal [] Other
Purge tubing [X] New LDPE [] New HDPE [] New Teflon [] Other
Bailer type [] Disposable [X] Stainless [] PVC [] Other
Bailer cord used [X] Monofilament [] Other
Purge start time 1300 Purge stop time 1430 Purge Rate (GPM)
Total Volume Purged (gallons) 35 gal

FIELD PARAMETERS

Meters used [] FlowThru Cell [] Hach [] Hanna [] Other
Gallons pH Temp. Conductivity Turbidity Dissolved Oxygen ORP

NOTES/COMMENTS

[]
[]
[]

Engineer's Signature [Signature] Date 12/15/15

Well ID #: MW04A
 Date: 12/15/15
 Time: 0800

Project name: TOC Amboy
 Project #: 01-103
 Engineer: M. Gummer

WELL INFORMATION

Monument condition Good Needs repair _____
 Well cap condition Good Locked Replaced Needs replacement
 Headspace reading Not measured _____ ppm
 Elevation mark Yes Added Other _____
 Well diameter 1.5-inch 2-inch 4-inch Other _____
 Odor _____ Comments _____

WELL MEASUREMENTS

Total well depth 24.7 ft Clean bottom Muddy bottom Not measured
 Depth to product - ft
 Depth to water 6 ft
 Casing volume 20 ft (H₂O) X 0.16 gpf = 3.2 gal
 Casing volumes 1"=0.04 gpf 1.5"=0.09 gpf 2"=0.16 gpf 4"=0.65 gpf 6"= 1.47 gpf

PURGING INFORMATION

Pump type Peristaltic Submersible Centrifugal Other _____
 Purge tubing New LDPE New HDPE New Teflon Other _____
 Bailer type Disposable Stainless PVC Other _____
 Bailer cord used Monofilament Other _____
 Purge start time 0800 Purge stop time 0900 Purge Rate (GPM) _____
Total Volume Purged (gallons) 35 gal

FIELD PARAMETERS

Meters used FlowThru Cell Hach Hanna Other _____
 Gallons pH Temp. Conductivity Turbidity Dissolved Oxygen ORP

NOTES/COMMENTS

Engineer's Signature  Date 12/15/15

Well ID #: MW05
 Date: 12/11/15
 Time: 1430

Project name: IOC Amboy
 Project #: 01-103
 Engineer: M. Gummer

WELL INFORMATION

Monument condition Good Needs repair _____
 Well cap condition Good Locked Replaced Needs replacement
 Headspace reading Not measured _____ ppm
 Elevation mark Yes Added Other _____
 Well diameter 1.5-inch 2-inch 4-inch Other _____
 Odor _____ Comments _____

WELL MEASUREMENTS

Total well depth 24.15 ft Clean bottom Muddy bottom Not measured
 Depth to product - ft
 Depth to water 4.2' ft
 Casing volume 20 ft (H₂O) X 0.16 gpf = 3.2 gal
 Casing volumes 1"=0.04 gpf 1.5"=0.09 gpf 2"=0.16 gpf 4"=0.65 gpf 6"= 1.47 gpf

PURGING INFORMATION

Pump type Peristaltic Submersible Centrifugal Other _____
 Purge tubing New LDPE New HDPE New Teflon Other _____
 Bailer type Disposable Stainless PVC Other _____
 Bailer cord used Monofilament Other _____
 Purge start time 1430 Purge stop time 1530 Purge Rate (GPM) _____
Total Volume Purged (gallons) 35 gal

FIELD PARAMETERS

Meters used FlowThru Cell Hach Hanna Other _____
 pH Temp. Conductivity Turbidity Dissolved Oxygen ORP

NOTES/COMMENTS

Engineer's Signature  Date 12/15/15



WELL DEVELOPMENT

Well ID #: MW06
Date: 12/11/15
Time: 1300

Project name: TOC Amboy
Project #: 01-103
Engineer: M. Gummer

WELL INFORMATION

Monument condition Good Needs repair _____
Well cap condition Good Locked Replaced Needs replacement
Headspace reading Not measured _____ ppm
Elevation mark Yes Added Other _____
Well diameter 1.5-inch 2-inch 4-inch Other _____
 Odor _____ Comments _____

WELL MEASUREMENTS

Total well depth 24.02 ft Clean bottom Muddy bottom Not measured
Depth to product ✓ ft
Depth to water 5' ft
Casing volume 20 ft (H₂O) X 0.16 gpf = 3.2 gnl
Casing volumes 1"=0.04 gpf 1.5"=0.09 gpf 2"=0.16 gpf 4"=0.65 gpf 6"= 1.47 gpf

PURGING INFORMATION

Pump type Peristaltic Submersible Centrifugal Other _____
Purge tubing New LDPE New HDPE New Teflon Other _____
Bailer type Disposable Stainless PVC Other _____
Bailer cord used Monofilament Other _____
Purge start time 1300 Purge stop time 1400 Purge Rate (GPM) _____
Total Volume Purged (gallons) 39

FIELD PARAMETERS

Meters used FlowThru Cell Hach Hanna Other _____
Gallons pH Temp. Conductivity Turbidity Dissolved Oxygen ORP

NOTES/COMMENTS

Engineer's Signature Date 12/15/15

APPENDIX D
Groundwater Purge and Sample Collection Forms



GROUNDWATER PURGE AND SAMPLE COLLECTION

Well I.D. Number: MWOLA

Project Name (Number): TOC Amboy Sample I.D.: _____ Time: _____
 Hydrocon Project Number: 01-103 Field Duplicate I.D.: _____ Time: _____
 Date: 12/23/15 Personnel: MAG

WELL INFORMATION

Monument condition: Good Needs repair: _____ Water in Monument
 Well cap condition: Good Replaced Needs Replacement Surface Water Well Infiltration
 Headspace reading: Not measured PID Reading _____ ppm Odor: _____
 Well diameter: 2-inch 4-inch 6-inch Other: _____
 Comments _____

PURGING INFORMATION

Total well depth: 24.9' ft Bottom: Hard Soft Not measured Screen Interval(s): _____
 Depth to product: _____ ft
 Depth to water: 6.6' ft Intake Depth (BTOC): _____ Begin Purging Well: _____
 Casing volume: _____ ft (H₂O) X _____ gal/ft = _____ gal. X 3 = _____ gal.
 Volume Conversion Factors: 3/4"=0.02 gal/ft 1"=0.04 gal/ft 2"=0.16 gal/ft 4"=0.65 gal/ft 6"= 1.47 gal/ft

PURGING/DISPOSAL METHOD

Pump type Peristaltic Centrifugal Dedicated Bladder Non-Dedicated Bladder Other _____
 Bailer type: _____ Water Disposal: Drummed Remediation System Other _____

FIELD PARAMETERS

Odor and/or Sheen: _____

Time	Water Level (BTOC)	Purge Rate (L/min)	Temp. (°C)	Sp. Cond. (mS/cm) (±3%)	Dissolved Oxygen (±10% or ≤1.00 ±0.2)	pH (SU) (±0.1)	ORP (mV)	Turbidity (NTU) (± 10% or ≤10)
0832	6.6'							
0843	"		11.37	67 ✓	7.48 ✓	6.06 *	146.4	
0848	"		11.37	66 ✓	7.35 ✓	5.74 ✓	165.2	
0853	6.6'		11.51	66 ✓	7.40 ✓	5.66 ✓	171.7	
0858	"		11.40	65 ✓	7.44 ✓	5.63 ✓	174.1	
0903	6.6'		11.36	65 ✓	7.56 ✓	5.66 ✓	174.6	
Sample @ 0905								

Stabilization achieved if three successive measurements for pH, Conductivity and Turbidity and/or Dissolved Oxygen are recorded within their respective stabilization criteria. A minimum of six measurements should be recorded.

Purging Comments: _____

SAMPLE INFORMATION

Container Type	Bottle Count	Preservative	Field Filtered?	Analysis
500 mL Amber	1	N/A	No 0.45 0.10	Dx
"	1	N/A	No 0.45 0.10	P+H
40mL VOA's	5	HCL	No 0.45 0.10	Gx + BTEX
500mL Poly	1	HNO3	No 0.45 0.10	Total Lead
			No 0.45 0.10	

Sampling Comments: _____



GROUNDWATER PURGE AND SAMPLE COLLECTION

Well I.D. Number: MW02A

Project Name (Number): Tox Ambroy Sample I.D.: _____ Time: _____
 Hydrocon Project Number: 06-103 Field Duplicate I.D.: _____ Time: _____
 Date: 12/23/15 Personnel: MACT

WELL INFORMATION

Monument condition: Good Needs repair: _____ Water in Monument
 Well cap condition: Good Replaced Needs Replacement Surface Water Well Infiltration
 Headspace reading: Not measured PID Reading _____ ppm Odor: _____
 Well diameter: 2-inch 4-inch 6-inch Other: _____
 Comments _____

PURGING INFORMATION

Total well depth: 24.4 ft Bottom: Hard Soft Not measured Screen Interval(s): _____
 Depth to product: _____ ft
 Depth to water: 6.00 ft Intake Depth (BTOC): _____ Begin Purging Well: _____
 Casing volume: _____ ft (H₂O) X _____ gal/ft = _____ gal. X 3 = _____ gal.
 Volume Conversion Factors: 3/4"=0.02 gal/ft 1"=0.04 gal/ft 2"=0.16 gal/ft 4"=0.65 gal/ft 6"= 1.47 gal/ft

PURGING/DISPOSAL METHOD

Pump type Peristaltic Centrifugal Dedicated Bladder Non-Dedicated Bladder Other _____
 Bailer type: _____ Water Disposal: Drummed Remediation System Other _____

FIELD PARAMETERS

Odor and/or Sheen: _____

Time	Water Level (BTOC)	Purge Rate (L/min)	Temp. (°C)	Sp. Cond. (mS/cm) (±3%)	Dissolved Oxygen (±10% or ≤1.00 ±0.2)	pH (SU) (±0.1)	ORP (mV)	Turbidity (NTU) (± 10% or ≤10)
1321	6.00							
1331	6.05		11.61	90	4.99 x	5.43 ✓	174.9	
1336	6.05		11.53	96 x	4.43 ✓	5.35 ✓	176.0	
1345	"		11.80	97 ✓	4.37 ✓	5.32 ✓	176.4	
1350	"		11.94	98 ✓	4.42 ✓	5.32 ✓	175.8	
1600/1355	"		12.09	99	4.44	5.32	175.8	
Sample @ 1400								

Stabilization achieved if three successive measurements for pH, Conductivity and Turbidity and/or Dissolved Oxygen are recorded within their respective stabilization criteria. A minimum of six measurements should be recorded.

Purging Comments: _____

SAMPLE INFORMATION

Container Type	Bottle Count	Preservative	Field Filtered?	Analysis
500mL Amber	1	—	No 0.45 0.10	Dx
" Poly	1	—	No 0.45 0.10	PAT
40mL VOA's	5	HCL	No 0.45 0.10	Total lead
			No 0.45 0.10	Gx+BTEX

Sampling Comments: _____



GROUNDWATER PURGE AND SAMPLE COLLECTION

BJR032

Well I.D. Number: MW03A

Project Name (Number): DOC Ambrey Sample I.D.: _____ Time: _____
 Hydrocon Project Number: 01-103 Field Duplicate I.D.: _____ Time: _____
 Date: 12/23/15 Personnel: MAG

WELL INFORMATION

Monument condition: Good Needs repair: _____ Water in Monument
 Well cap condition: Good Replaced Needs Replacement Surface Water Well Infiltration
 Headspace reading: Not measured PID Reading _____ ppm Odor: _____
 Well diameter: 2-inch 4-inch 6-inch Other: _____
 Comments _____

PURGING INFORMATION

Total well depth: 24.65 ft Bottom: Hard Soft Not measured Screen Interval(s): _____
 Depth to product: _____ ft
 Depth to water: 6.20 ft Intake Depth (BTOC): _____ Begin Purging Well: _____
 Casing volume: _____ ft (H₂O) X _____ gal/ft = _____ gal. X 3 = _____ gal.
 Volume Conversion Factors: 3/4"=0.02 gal/ft 1"=0.04 gal/ft 2"=0.16 gal/ft 4"=0.65 gal/ft 6"= 1.47 gal/ft

PURGING/DISPOSAL METHOD

Pump type Peristaltic Centrifugal Dedicated Bladder Non-Dedicated Bladder Other _____
 Bailer type: _____ Water Disposal: Drummed Remediation System Other _____

FIELD PARAMETERS

Odor and/or Sheen: _____

Time	Water Level (BTOC)	Purge Rate (L/min)	Temp. (°C)	Sp. Cond. (mS/cm) (±3%)	Dissolved Oxygen (±10% or ≤1.00 ±0.2)	pH (SU) (±0.1)	ORP (mV)	Turbidity (NTU) (± 10% or ≤10)
1033	6.20							
1040	6.20		11.72	127 ✓	3.43 x	5.84 ✓	164.9	
1045	6.20		11.75	129 ✓	2.82 ✓	5.88 ✓	157.5	
1050	6.20		11.74	131 ✓	2.57 ✓	5.88 ✓	154.2	
1055	"		11.74	132 ✓	2.43 ✓	5.91 ✓	149.6	
1100	"		11.91	133	2.34	5.92	145.1	
Sample @ 1105								

Stabilization achieved if three successive measurements for pH, Conductivity and Turbidity and/or Dissolved Oxygen are recorded within their respective stabilization criteria. A minimum of six measurements should be recorded.

Purging Comments: _____

SAMPLE INFORMATION

Container Type	Bottle Count	Preservative	Field Filtered?	Analysis
500mL Amber	1	—	No 0.45 0.10	Dx
" "	1	—	No 0.45 0.10	PAHs
" Poly	1	HNO3	No 0.45 0.10	Total lead
40mL VOA5	5	HCL	No 0.45 0.10	Gx + BTEX
			No 0.45 0.10	

Sampling Comments: _____



GROUNDWATER PURGE AND SAMPLE COLLECTION

Well I.D. Number: MW04A

Project Name (Number): DOC Amboy Sample I.D.: _____ Time: _____
 Hydrocon Project Number: 01-103 Field Duplicate I.D.: _____ Time: _____
 Date: 12/23/15 Personnel: MAG

WELL INFORMATION

Monument condition: Good Needs repair: _____ Water in Monument
 Well cap condition: Good Replaced Needs Replacement Surface Water Well Infiltration
 Headspace reading: Not measured PID Reading _____ ppm Odor: _____
 Well diameter: 2-inch 4-inch 6-inch Other: _____
 Comments _____

PURGING INFORMATION

Total well depth: 24.7 ft Bottom: Hard Soft Not measured Screen Interval(s): _____
 Depth to product: _____ ft
 Depth to water: 5.44 ft Intake Depth (BTOC): _____ Begin Purging Well: _____
 Casing volume: _____ ft (H₂O) X _____ gal/ft = _____ gal. X 3 = _____ gal.
 Volume Conversion Factors: 3/4"=0.02 gal/ft 1"=0.04 gal/ft 2"=0.16 gal/ft 4"=0.65 gal/ft 6"= 1.47 gal/ft

PURGING/DISPOSAL METHOD

Pump type Peristaltic Centrifugal Dedicated Bladder Non-Dedicated Bladder Other _____
 Bailer type: _____ Water Disposal: Drummed Remediation System Other _____

FIELD PARAMETERS

Odor and/or Sheen: _____

Time	Water Level (BTOC)	Purge Rate (L/min)	Temp. (°C)	Sp. Cond. (mS/cm) (±3%)	Dissolved Oxygen (±10% or ≤1.00 ±0.2)	pH (SU) (±0.1)	ORP (mV)	Turbidity (NTU) (± 10% or ≤10)
1233	5.44							
1240	5.50		9.86	20	6.83	5.67	180.5	
1245	5.51		10.02	33	6.05	5.34	188.3	
1250	5.55		10.19	33	5.91	5.29	187.3	
1255	"		10.42	33	5.86	5.28	182.2	
1300	5.55		10.48	33	5.81	5.24	181.1	
Sample @ 1305								

Stabilization achieved if three successive measurements for pH, Conductivity and Turbidity and/or Dissolved Oxygen are recorded within their respective stabilization criteria. A minimum of six measurements should be recorded.

Purging Comments: _____

SAMPLE INFORMATION

Container Type	Bottle Count	Preservative	Field Filtered?	Analysis
500mL Amber	1	-	No 0.45 0.10	Dr PAH's Total Lead Gx + BTEX
" "	1	-	No 0.45 0.10	
" Poly	1	HNO3	No 0.45 0.10	
40mL VOA's	5	HCL	No 0.45 0.10	
			No 0.45 0.10	

Sampling Comments: _____



GROUNDWATER PURGE AND SAMPLE COLLECTION

Well I.D. Number: MW05A

Project Name (Number): TOC Amboy Sample I.D.: _____ Time: _____
 Hydrocon Project Number: 01-103 Field Duplicate I.D.: _____ Time: _____
 Date: 12/23/15 Personnel: MAG

WELL INFORMATION

Monument condition: Good Needs repair: _____ Water in Monument
 Well cap condition: Good Replaced Needs Replacement Surface Water Well Infiltration
 Headspace reading: Not measured PID Reading _____ ppm Odor: _____
 Well diameter: 2-inch 4-inch 6-inch Other: _____
 Comments: _____

PURGING INFORMATION

Total well depth: 24.15 ft Bottom: Hard Soft Not measured Screen Interval(s): 4.15 - 24.15
 Depth to product: 9.20 ft
 Depth to water: _____ ft Intake Depth (BTOC): _____ Begin Purging Well: _____
 Casing volume: _____ ft (H₂O) X _____ gal/ft = _____ gal. X 3 = _____ gal.
 Volume Conversion Factors: 3/4"=0.02 gal/ft 1"=0.04 gal/ft 2"=0.16 gal/ft 4"=0.65 gal/ft 6"= 1.47 gal/ft

PURGING/DISPOSAL METHOD

Pump type Peristaltic Centrifugal Dedicated Bladder Non-Dedicated Bladder Other _____
 Bailer type: _____ Water Disposal: Drummed Remediation System Other _____

FIELD PARAMETERS

Odor and/or Sheen: _____

Time	Water Level (BTOC)	Purge Rate (L/min)	Temp. (°C)	Sp. Cond. (mS/cm) (±3%)	Dissolved Oxygen (±10% or ≤1.00 ±0.2)	pH (SU) (±0.1)	ORP (mV)	Turbidity (NTU) (± 10% or ≤10)
1120	6.20							
1125	3.20		6.69	20	8.83 ✓	7.03 x	109.8	
1130	"		6.74	18 x	8.76 ✓	6.37 x	136.3	
1135	5.21		6.77	17 x	8.79 ✓	5.98 x	152.4	
1140	"		6.76	17 ✓	8.88 ✓	5.80 ✓	160.5	
1145	"		6.82	17 ✓	8.86 ✓	5.73 ✓	164.2	
1150	"		6.86	17 ✓	8.85 ✓	5.69 ✓	166.3	
1155	"		6.84	17 ✓	8.92 ✓	5.64 ✓	168.6	
Sample @ 1155								

Stabilization achieved if three successive measurements for pH, Conductivity and Turbidity and/or Dissolved Oxygen are recorded within their respective stabilization criteria. A minimum of six measurements should be recorded.

Purging Comments: _____

SAMPLE INFORMATION

Container Type	Bottle Count	Preservative	Field Filtered?	Analysis
500 mL Amber	1	—	No 0.45 0.10	Dx DAX's Total Lead EX-BTEX
" "	1	—	No 0.45 0.10	
" Poly	1	HNO ₃	No 0.45 0.10	
40 mL VOA's	5	HCL	No 0.45 0.10	
			No 0.45 0.10	

Sampling Comments: _____



GROUNDWATER PURGE AND SAMPLE COLLECTION

BSR036

Well I.D. Number: MW06

Project Name (Number): ROC Ambay
Hydrocon Project Number: 01-103
Date: 12/23/15

Sample I.D.: _____ Time: _____
Field Duplicate I.D.: _____ Time: _____
Personnel: MAG

WELL INFORMATION

Monument condition: Good Needs repair: _____ Water in Monument
Well cap condition: Good Replaced Needs Replacement Surface Water Well Infiltration
Headspace reading: Not measured PID Reading _____ ppm Odor: _____
Well diameter: 2-inch 4-inch 6-inch Other: _____
Comments _____

PURGING INFORMATION

Total well depth: 24.02 ft Bottom: Hard Soft Not measured Screen Interval(s): _____
Depth to product: _____ ft
Depth to water: 9.38 ft Intake Depth (BTOC): _____ Begin Purging Well: _____
Casing volume: _____ ft (H₂O) X _____ gal/ft = _____ gal. X 3 = _____ gal.
Volume Conversion Factors: 3/4"=0.02 gal/ft 1"=0.04 gal/ft 2"=0.16 gal/ft 4"=0.65 gal/ft 6"= 1.47 gal/ft

PURGING/DISPOSAL METHOD

Pump type Peristaltic Centrifugal Dedicated Bladder Non-Dedicated Bladder Other _____
Bailer type: _____ Water Disposal: Drummed Remediation System Other _____

FIELD PARAMETERS

Odor and/or Sheen: _____

Time	Water Level (BTOC)	Purge Rate (L/min)	Temp. (°C)	Sp. Cond. (mS/cm) (±3%)	Dissolved Oxygen (±10% or ≤1.00 ±0.2)	pH (SU) (±0.1)	ORP (mV)	Turbidity (NTU) (± 10% or ≤10)
0933	5.38							
0942	5.41		8.29	14	9.16	9.88	161.5	
0947	"		8.33	13	9.30	5.72	175.7	
0952	5.41		8.27	12	9.40	5.00	184.7	
0957	5.41		8.08	12	9.35	5.50	189.4	
1002	5.41		8.00	12	9.39	5.52	189.7	
1007	5.42		7.94	12	9.40	5.47	192.4	
Sample @ 1010								

Stabilization achieved if three successive measurements for pH, Conductivity and Turbidity and/or Dissolved Oxygen are recorded within their respective stabilization criteria. A minimum of six measurements should be recorded.

Purging Comments: _____

SAMPLE INFORMATION

Container Type	Bottle Count	Preservative	Field Filtered?	Analysis
500mL Amber	1	-	No 0.45 0.10	Dx DATH's Total Lead Gx+BTEX
" "	1	-	No 0.45 0.10	
" Poly	1	MW03	No 0.45 0.10	
40mL VOAS	5	HCL	No 0.45 0.10	
			No 0.45 0.10	

Sampling Comments: _____

APPENDIX E
Laboratory Report and Chain-of-Custody Documentation

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
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November 13, 2015

Craig Hultgren, Project Manager
HydroCon
510 Allen St, Suite B
Kelso, WA 98626

Dear Mr. Hultgren:

Included are the results from the testing of material submitted on November 12, 2015 from the TOC_01-103, WORFDB8 F&BI 511159 project. There are 54 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 should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures

c: Rob Honsberger, Jonathan Horowitz, Allison Greiner
HDC1113R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on November 12, 2015 by Friedman & Bruya, Inc. from the TOC_01-103, WORFDB8 F&BI 511159 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	<u>HydroCon</u>
511159 -01	HC01-04
511159 -02	HC01-09
511159 -03	HC01-15
511159 -04	HC01-19
511159 -05	HC02-08
511159 -06	HC02-15
511159 -07	HC02-19
511159 -08	HC03-8
511159 -09	HC03-15
511159 -10	HC03-25
511159 -11	HC04-8
511159 -12	HC04-15
511159 -13	HC04-20
511159 -14	HC05-8
511159 -15	HC05-15
511159 -16	HC05-20
511159 -17	HC05-25
511159 -18	HC06-8
511159 -19	HC06-15
511159 -20	HC06-20
511159 -21	HC06-25
511159 -22	HC02-25
511159 -23	HC01
511159 -24	HC02
511159 -25	HC03-W
511159 -26	HC04-W
511159 -27	HC05-W
511159 -28	HC06-W
511159 -29	HC04-25

All quality control requirements were acceptable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/13/15
Date Received: 11/12/15
Project: TOC_01-103, WORFDB8 F&BI 511159
Date Extracted: 11/12/15
Date Analyzed: 11/12/15

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES
FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE
USING METHOD NWTPH-Gx**
Results Reported as ug/L (ppb)

<u>Sample ID</u> Laboratory ID	<u>Gasoline Range</u>	Surrogate (% Recovery) (Limit 51-134)
HC01 511159-23	3,400	110
HC02 511159-24	5,400	104
HC03-W 511159-25	120	94
HC04-W 511159-26	4,600	101
HC05-W 511159-27	6,700	109
HC06-W 511159-28	130	97
Method Blank 05-2265 MB	<100	93

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/13/15
Date Received: 11/12/15
Project: TOC_01-103, WORFDB8 F&BI 511159
Date Extracted: 11/12/15
Date Analyzed: 11/12/15 and 11/13/15

**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)

<u>Sample ID</u> Laboratory ID	<u>Gasoline Range</u>	<u>Surrogate</u> <u>(% Recovery)</u> (Limit 50-150)
HC01-04 511159-01	<2	98
HC01-09 511159-02	<2	98
HC01-15 511159-03	<2	98
HC01-19 511159-04 1/5	13	99
HC02-08 511159-05	<2	95
HC02-15 511159-06	<2	96
HC02-19 511159-07	<2	98
HC03-8 511159-08	<2	98
HC03-15 511159-09	<2	97
HC03-25 511159-10	<2	97

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/13/15
Date Received: 11/12/15
Project: TOC_01-103, WORFDB8 F&BI 511159
Date Extracted: 11/12/15
Date Analyzed: 11/12/15 and 11/13/15

**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)

<u>Sample ID</u> Laboratory ID	<u>Gasoline Range</u>	<u>Surrogate</u> <u>(% Recovery)</u> (Limit 50-150)
HC04-8 511159-11	<2	97
HC04-15 511159-12	<2	97
HC04-20 511159-13 1/5	16	101
HC05-8 511159-14	<2	92
HC05-15 511159-15	<2	96
HC05-20 511159-16 1/5	150	119
HC05-25 511159-17 1/5	36	97
HC06-8 511159-18	<2	97
HC06-15 511159-19	<2	98
HC06-20 511159-20	<2	97

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/13/15
Date Received: 11/12/15
Project: TOC_01-103, WORFDB8 F&BI 511159
Date Extracted: 11/12/15
Date Analyzed: 11/12/15 and 11/13/15

**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)

<u>Sample ID</u> Laboratory ID	<u>Gasoline Range</u>	<u>Surrogate</u> <u>(% Recovery)</u> (Limit 50-150)
HC06-25 511159-21	<2	97
HC02-25 511159-22 1/5	29	104
HC04-25 511159-29	<2	97
Method Blank 05-2266 MB	<2	97
Method Blank 05-2317 MB	<2	83

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/13/15
Date Received: 11/12/15
Project: TOC_01-103, WORFDB8 F&BI 511159
Date Extracted: 11/12/15
Date Analyzed: 11/12/15 and 11/13/15

**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)

<u>Sample ID</u> Laboratory ID	<u>Diesel Range</u> (C ₁₀ -C ₂₅)	<u>Motor Oil Range</u> (C ₂₅ -C ₃₆)	<u>Surrogate</u> (% Recovery) (Limit 56-165)
HC01-04 511159-01	<50	<250	83
HC01-09 511159-02	<50	<250	86
HC01-15 511159-03	<50	<250	94
HC01-19 511159-04	<50	<250	85
HC02-08 511159-05	<50	<250	94
HC02-15 511159-06	<50	<250	93
HC02-19 511159-07	<50	<250	96
HC03-8 511159-08	<50	<250	94
HC03-15 511159-09	<50	<250	91
HC03-25 511159-10	<50	<250	89

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/13/15
 Date Received: 11/12/15
 Project: TOC_01-103, WORFDB8 F&BI 511159
 Date Extracted: 11/12/15
 Date Analyzed: 11/12/15 and 11/13/15

**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)

<u>Sample ID</u> Laboratory ID	<u>Diesel Range</u> (C ₁₀ -C ₂₅)	<u>Motor Oil Range</u> (C ₂₅ -C ₃₆)	<u>Surrogate</u> <u>(% Recovery)</u> (Limit 56-165)
HC04-8 511159-11	<50	<250	87
HC04-15 511159-12	<50	<250	93
HC04-20 511159-13	<50	<250	95
HC05-8 511159-14	<50	<250	97
HC05-15 511159-15	<50	<250	89
HC05-20 511159-16	100 x	<250	88
HC05-25 511159-17	<50	<250	87
HC06-8 511159-18	<50	<250	89
HC06-15 511159-19	<50	<250	87
HC06-20 511159-20	<50	<250	92

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/13/15
Date Received: 11/12/15
Project: TOC_01-103, WORFDB8 F&BI 511159
Date Extracted: 11/12/15
Date Analyzed: 11/12/15 and 11/13/15

**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)

<u>Sample ID</u> Laboratory ID	<u>Diesel Range</u> (C ₁₀ -C ₂₅)	<u>Motor Oil Range</u> (C ₂₅ -C ₃₆)	<u>Surrogate</u> (% Recovery) (Limit 56-165)
HC06-25 511159-21	<50	<250	86
HC02-25 511159-22	<50	<250	86
HC04-25 511159-29	<50	<250	95
Method Blank 05-2337 MB	<50	<250	97
Method Blank 05-2329 MB2	<50	<250	88

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/13/15
 Date Received: 11/12/15
 Project: TOC_01-103, WORFDB8 F&BI 511159
 Date Extracted: 11/12/15
 Date Analyzed: 11/12/15

**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)

<u>Sample ID</u> Laboratory ID	<u>Diesel Range</u> (C ₁₀ -C ₂₅)	<u>Motor Oil Range</u> (C ₂₅ -C ₃₆)	<u>Surrogate</u> (% Recovery) (Limit 47-140)
HC01 511159-23	2,600 x	<250	82
HC02 511159-24	1,100 x	<250	85
HC03-W 511159-25	<50	<250	90
HC04-W 511159-26	1,000 x	<250	88
HC05-W 511159-27	2,100 x	<250	90
HC06-W 511159-28	220 x	<250	92
Method Blank 05-2316 MB2	<50	<250	90

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC01-04	Client:	HydroCon
Date Received:	11/12/15	Project:	TOC_01-103, WORFDB8 F&BI 511159
Date Extracted:	11/12/15	Lab ID:	511159-01
Date Analyzed:	11/12/15	Data File:	111227.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	62	142
Toluene-d8	104	55	145
4-Bromofluorobenzene	100	65	139

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC01-09	Client:	HydroCon
Date Received:	11/12/15	Project:	TOC_01-103, WORFDB8 F&BI 511159
Date Extracted:	11/12/15	Lab ID:	511159-02
Date Analyzed:	11/12/15	Data File:	111228.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	104	55	145
4-Bromofluorobenzene	101	65	139

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC01-15	Client:	HydroCon
Date Received:	11/12/15	Project:	TOC_01-103, WORFDB8 F&BI 511159
Date Extracted:	11/12/15	Lab ID:	511159-03
Date Analyzed:	11/12/15	Data File:	111229.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	62	142
Toluene-d8	103	55	145
4-Bromofluorobenzene	102	65	139

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC01-19	Client:	HydroCon
Date Received:	11/12/15	Project:	TOC_01-103, WORFDB8 F&BI 511159
Date Extracted:	11/12/15	Lab ID:	511159-04
Date Analyzed:	11/13/15	Data File:	111248.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	62	142
Toluene-d8	101	55	145
4-Bromofluorobenzene	99	65	139

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC02-08	Client:	HydroCon
Date Received:	11/12/15	Project:	TOC_01-103, WORFDB8 F&BI 511159
Date Extracted:	11/12/15	Lab ID:	511159-05
Date Analyzed:	11/12/15	Data File:	111230.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	62	142
Toluene-d8	103	55	145
4-Bromofluorobenzene	98	65	139

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC02-15	Client:	HydroCon
Date Received:	11/12/15	Project:	TOC_01-103, WORFDB8 F&BI 511159
Date Extracted:	11/12/15	Lab ID:	511159-06
Date Analyzed:	11/12/15	Data File:	111231.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	62	142
Toluene-d8	103	55	145
4-Bromofluorobenzene	100	65	139

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC02-19	Client:	HydroCon
Date Received:	11/12/15	Project:	TOC_01-103, WORFDB8 F&BI 511159
Date Extracted:	11/12/15	Lab ID:	511159-07
Date Analyzed:	11/12/15	Data File:	111232.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	103	62	142
Toluene-d8	104	55	145
4-Bromofluorobenzene	100	65	139

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC03-8	Client:	HydroCon
Date Received:	11/12/15	Project:	TOC_01-103, WORFDB8 F&BI 511159
Date Extracted:	11/12/15	Lab ID:	511159-08
Date Analyzed:	11/12/15	Data File:	111233.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	103	62	142
Toluene-d8	104	55	145
4-Bromofluorobenzene	99	65	139

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC03-15	Client:	HydroCon
Date Received:	11/12/15	Project:	TOC_01-103, WORFDB8 F&BI 511159
Date Extracted:	11/12/15	Lab ID:	511159-09
Date Analyzed:	11/12/15	Data File:	111234.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	104	55	145
4-Bromofluorobenzene	101	65	139

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC03-25	Client:	HydroCon
Date Received:	11/12/15	Project:	TOC_01-103, WORFDB8 F&BI 511159
Date Extracted:	11/12/15	Lab ID:	511159-10
Date Analyzed:	11/12/15	Data File:	111235.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	103	55	145
4-Bromofluorobenzene	99	65	139

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC04-8	Client:	HydroCon
Date Received:	11/12/15	Project:	TOC_01-103, WORFDB8 F&BI 511159
Date Extracted:	11/12/15	Lab ID:	511159-11
Date Analyzed:	11/12/15	Data File:	111236.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	105	55	145
4-Bromofluorobenzene	101	65	139

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC04-15	Client:	HydroCon
Date Received:	11/12/15	Project:	TOC_01-103, WORFDB8 F&BI 511159
Date Extracted:	11/12/15	Lab ID:	511159-12
Date Analyzed:	11/12/15	Data File:	111237.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	62	142
Toluene-d8	103	55	145
4-Bromofluorobenzene	98	65	139

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC04-20	Client:	HydroCon
Date Received:	11/12/15	Project:	TOC_01-103, WORFDB8 F&BI 511159
Date Extracted:	11/12/15	Lab ID:	511159-13
Date Analyzed:	11/13/15	Data File:	111247.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	104	62	142
Toluene-d8	103	55	145
4-Bromofluorobenzene	99	65	139

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC05-8	Client:	HydroCon
Date Received:	11/12/15	Project:	TOC_01-103, WORFDB8 F&BI 511159
Date Extracted:	11/12/15	Lab ID:	511159-14
Date Analyzed:	11/12/15	Data File:	111238.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	62	142
Toluene-d8	103	55	145
4-Bromofluorobenzene	100	65	139

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC05-15	Client:	HydroCon
Date Received:	11/12/15	Project:	TOC_01-103, WORFDB8 F&BI 511159
Date Extracted:	11/12/15	Lab ID:	511159-15
Date Analyzed:	11/12/15	Data File:	111239.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	103	62	142
Toluene-d8	104	55	145
4-Bromofluorobenzene	99	65	139

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC05-20	Client:	HydroCon
Date Received:	11/12/15	Project:	TOC_01-103, WORFDB8 F&BI 511159
Date Extracted:	11/12/15	Lab ID:	511159-16
Date Analyzed:	11/13/15	Data File:	111249.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	104	62	142
Toluene-d8	104	55	145
4-Bromofluorobenzene	100	65	139

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	0.096
m,p-Xylene	0.14
o-Xylene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC05-25	Client:	HydroCon
Date Received:	11/12/15	Project:	TOC_01-103, WORFDB8 F&BI 511159
Date Extracted:	11/12/15	Lab ID:	511159-17
Date Analyzed:	11/13/15	Data File:	111246.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	62	142
Toluene-d8	104	55	145
4-Bromofluorobenzene	100	65	139

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC06-8	Client:	HydroCon
Date Received:	11/12/15	Project:	TOC_01-103, WORFDB8 F&BI 511159
Date Extracted:	11/12/15	Lab ID:	511159-18
Date Analyzed:	11/13/15	Data File:	111240.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	62	142
Toluene-d8	104	55	145
4-Bromofluorobenzene	101	65	139

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC06-15	Client:	HydroCon
Date Received:	11/12/15	Project:	TOC_01-103, WORFDB8 F&BI 511159
Date Extracted:	11/12/15	Lab ID:	511159-19
Date Analyzed:	11/13/15	Data File:	111241.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	104	55	145
4-Bromofluorobenzene	100	65	139

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC06-20	Client:	HydroCon
Date Received:	11/12/15	Project:	TOC_01-103, WORFDB8 F&BI 511159
Date Extracted:	11/12/15	Lab ID:	511159-20
Date Analyzed:	11/13/15	Data File:	111242.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	103	62	142
Toluene-d8	103	55	145
4-Bromofluorobenzene	99	65	139

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC06-25	Client:	HydroCon
Date Received:	11/12/15	Project:	TOC_01-103, WORFDB8 F&BI 511159
Date Extracted:	11/12/15	Lab ID:	511159-21
Date Analyzed:	11/13/15	Data File:	111243.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	103	55	145
4-Bromofluorobenzene	100	65	139

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC02-25	Client:	HydroCon
Date Received:	11/12/15	Project:	TOC_01-103, WORFDB8 F&BI 511159
Date Extracted:	11/12/15	Lab ID:	511159-22
Date Analyzed:	11/13/15	Data File:	111245.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	100	65	139

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC04-25	Client:	HydroCon
Date Received:	11/12/15	Project:	TOC_01-103, WORFDB8 F&BI 511159
Date Extracted:	11/12/15	Lab ID:	511159-29
Date Analyzed:	11/13/15	Data File:	111244.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	104	55	145
4-Bromofluorobenzene	100	65	139

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	Method Blank	Client:	HydroCon
Date Received:	Not Applicable	Project:	TOC_01-103, WORFDB8 F&BI 511159
Date Extracted:	11/12/15	Lab ID:	05-2299 mb
Date Analyzed:	11/12/15	Data File:	111211.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	103	55	145
4-Bromofluorobenzene	100	65	139

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	Method Blank	Client:	HydroCon
Date Received:	Not Applicable	Project:	TOC_01-103, WORFDB8 F&BI 511159
Date Extracted:	11/12/15	Lab ID:	05-2298 mb
Date Analyzed:	11/12/15	Data File:	111210.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	103	55	145
4-Bromofluorobenzene	99	65	139

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC01 cf	Client:	HydroCon
Date Received:	11/12/15	Project:	TOC_01-103, WORFDB8 F&BI 511159
Date Extracted:	11/12/15	Lab ID:	511159-23
Date Analyzed:	11/12/15	Data File:	111212.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	106	63	127
4-Bromofluorobenzene	105	60	133

Compounds:	Concentration ug/L (ppb)
Benzene	0.52
Toluene	6.1
Ethylbenzene	120
m,p-Xylene	260
o-Xylene	36

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC02 cf	Client:	HydroCon
Date Received:	11/12/15	Project:	TOC_01-103, WORFDB8 F&BI 511159
Date Extracted:	11/12/15	Lab ID:	511159-24
Date Analyzed:	11/12/15	Data File:	111213.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	103	63	127
4-Bromofluorobenzene	102	60	133

Compounds:	Concentration ug/L (ppb)
Benzene	<0.35
Toluene	3.8
Ethylbenzene	68
m,p-Xylene	200
o-Xylene	36

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC03-W cf	Client:	HydroCon
Date Received:	11/12/15	Project:	TOC_01-103, WORFDB8 F&BI 511159
Date Extracted:	11/12/15	Lab ID:	511159-25
Date Analyzed:	11/12/15	Data File:	111214.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	104	63	127
4-Bromofluorobenzene	100	60	133

Compounds:	Concentration ug/L (ppb)
Benzene	2.8
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:	HC04-W cf	Client:	HydroCon
Date Received:	11/12/15	Project:	TOC_01-103, WORFDB8 F&BI 511159
Date Extracted:	11/12/15	Lab ID:	511159-26
Date Analyzed:	11/12/15	Data File:	111215.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	103	63	127
4-Bromofluorobenzene	101	60	133

Compounds:	Concentration ug/L (ppb)
Benzene	<0.35
Toluene	1.9
Ethylbenzene	72
m,p-Xylene	92
o-Xylene	8.7

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC05-W cf	Client:	HydroCon
Date Received:	11/12/15	Project:	TOC_01-103, WORFDB8 F&BI 511159
Date Extracted:	11/12/15	Lab ID:	511159-27
Date Analyzed:	11/12/15	Data File:	111216.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	106	63	127
4-Bromofluorobenzene	106	60	133

Compounds:	Concentration ug/L (ppb)
Benzene	<0.35
Toluene	1.5
Ethylbenzene	83
m,p-Xylene	160
o-Xylene	18

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC06-W cf	Client:	HydroCon
Date Received:	11/12/15	Project:	TOC_01-103, WORFDB8 F&BI 511159
Date Extracted:	11/12/15	Lab ID:	511159-28
Date Analyzed:	11/12/15	Data File:	111218.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	103	63	127
4-Bromofluorobenzene	99	60	133

Compounds:	Concentration ug/L (ppb)
Benzene	<0.35
Toluene	1.1
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:	HydroCon
Date Received:	11/12/15	Project:	TOC_01-103, WORFDB8 F&BI 511159
Date Extracted:	11/12/15	Lab ID:	05-2297 mb
Date Analyzed:	11/12/15	Data File:	111209.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	97	60	133

Compounds:	Concentration ug/L (ppb)
Benzene	<0.35
Toluene	<1
Ethylbenzene	<1
m,p-Xylene	<2
o-Xylene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/13/15

Date Received: 11/12/15

Project: TOC_01-103, WORFDB8 F&BI 511159

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER
SAMPLES FOR TPH AS GASOLINE
USING METHOD NWTPH-Gx**

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Gasoline	ug/L (ppb)	1,000	97	96	69-134	1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/13/15

Date Received: 11/12/15

Project: TOC_01-103, WORFDB8 F&BI 511159

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES
FOR TPH AS GASOLINE
USING METHOD NWTPH-Gx**

Laboratory Code: 511159-01 (Duplicate)

Analyte	Reporting Units	Sample Result (Wet Wt)	Duplicate Result (Wet Wt)	RPD (Limit 20)
Gasoline	mg/kg (ppm)	<2	<2	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Gasoline	mg/kg (ppm)	20	110	71-131

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/13/15

Date Received: 11/12/15

Project: TOC_01-103, WORFDB8 F&BI 511159

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES
FOR TPH AS GASOLINE
USING METHOD NWTPH-Gx**

Laboratory Code: 511159-21 (Duplicate)

Analyte	Reporting Units	Sample Result (Wet Wt)	Duplicate Result (Wet Wt)	RPD (Limit 20)
Gasoline	mg/kg (ppm)	<2	<2	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Gasoline	mg/kg (ppm)	20	105	71-131

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/13/15

Date Received: 11/12/15

Project: TOC_01-103, WORFDB8 F&BI 511159

**QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES
FOR TOTAL PETROLEUM HYDROCARBONS AS
DIESEL EXTENDED USING METHOD NWTPH-Dx**

Laboratory Code: 511159-01 (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	98	63-146	3

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Diesel Extended	mg/kg (ppm)	5,000	87	79-144

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/13/15

Date Received: 11/12/15

Project: TOC_01-103, WORFDB8 F&BI 511159

**QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES
FOR TOTAL PETROLEUM HYDROCARBONS AS
DIESEL EXTENDED USING METHOD NWTPH-Dx**

Laboratory Code: 511138-01 (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	97	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	99	79-144

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/13/15

Date Received: 11/12/15

Project: TOC_01-103, WORFDB8 F&BI 511159

**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	85	93	63-142	9

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/13/15

Date Received: 11/12/15

Project: TOC_01-103, WORFDB8 F&BI 511159

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES
FOR VOLATILES BY EPA METHOD 8260C**

Laboratory Code: 511159-29 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Benzene	mg/kg (ppm)	2.5	<0.03	74	74	29-129	0
Toluene	mg/kg (ppm)	2.5	<0.05	73	73	35-130	0
Ethylbenzene	mg/kg (ppm)	2.5	<0.05	76	75	32-137	1
m,p-Xylene	mg/kg (ppm)	5	<0.1	76	76	34-136	0
o-Xylene	mg/kg (ppm)	2.5	<0.05	78	78	33-134	0

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/13/15

Date Received: 11/12/15

Project: TOC_01-103, WORFDB8 F&BI 511159

**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
Benzene	mg/kg (ppm)	2.5	95	68-114
Toluene	mg/kg (ppm)	2.5	92	66-126
Ethylbenzene	mg/kg (ppm)	2.5	93	64-123
m,p-Xylene	mg/kg (ppm)	5	94	78-122
o-Xylene	mg/kg (ppm)	2.5	96	77-124

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/13/15

Date Received: 11/12/15

Project: TOC_01-103, WORFDB8 F&BI 511159

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES
FOR VOLATILES BY EPA METHOD 8260C**

Laboratory Code: 511159-03 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Benzene	mg/kg (ppm)	2.5	<0.03	81	76	29-129	6
Toluene	mg/kg (ppm)	2.5	<0.05	79	74	35-130	7
Ethylbenzene	mg/kg (ppm)	2.5	<0.05	81	76	32-137	6
m,p-Xylene	mg/kg (ppm)	5	<0.1	82	76	34-136	8
o-Xylene	mg/kg (ppm)	2.5	<0.05	82	77	33-134	6

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/13/15

Date Received: 11/12/15

Project: TOC_01-103, WORFDB8 F&BI 511159

**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
Benzene	mg/kg (ppm)	2.5	95	68-114
Toluene	mg/kg (ppm)	2.5	91	66-126
Ethylbenzene	mg/kg (ppm)	2.5	93	64-123
m,p-Xylene	mg/kg (ppm)	5	94	78-122
o-Xylene	mg/kg (ppm)	2.5	96	77-124

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/13/15

Date Received: 11/12/15

Project: TOC_01-103, WORFDB8 F&BI 511159

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER
SAMPLES FOR VOLATILES BY EPA METHOD 8260C**

Laboratory Code: 511159-28 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Acceptance Criteria
Benzene	ug/L (ppb)	50	<0.35	95	76-125
Toluene	ug/L (ppb)	50	1.1	90	76-122
Ethylbenzene	ug/L (ppb)	50	<1	94	69-135
m,p-Xylene	ug/L (ppb)	100	<2	94	69-135
o-Xylene	ug/L (ppb)	50	<1	96	60-140

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/13/15

Date Received: 11/12/15

Project: TOC_01-103, WORFDB8 F&BI 511159

**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)
Benzene	ug/L (ppb)	50	96	94	69-134	2
Toluene	ug/L (ppb)	50	91	90	72-122	1
Ethylbenzene	ug/L (ppb)	50	92	91	77-124	1
m,p-Xylene	ug/L (ppb)	100	94	92	83-125	2
o-Xylene	ug/L (ppb)	50	95	94	81-121	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.

511159

SAMPLE CHAIN OF CUSTODY

ME 11-12-15

Page # 1 of 4

103 / 103

Send Report To J. Herowitz

Company Hydro Gen

Address 510 Allen St Ste B

City, State, ZIP Kelso, WA

Phone # _____ Fax # _____

SAMPLERS (signature)

PROJECT NAME/NO.

PO#

01-103

REMARKS

TURNAROUND TIME

Standard (2 Weeks)

RUSH

Kush charges authorized by _____

SAMPLE DISPOSAL

Dispose after 30 days

Return samples

Will call with instructions

ANALYSES REQUESTED

- TPH-Diesel
- TPH-Gasoline
- BTEX by 8021B
- VOCs by 8260
- SVOCs by 8270
- HFS
- BTEX 8260

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260	SVOCs by 8270	HFS	Notes
HC01-04	01F	11/11/15	0842	Soil	6	X	X					
HC01-09	02		0845									
HC01-15	03		0853									
HC01-19	04		0857									
HC02-08	05		0950									
HC02-15	06		0957									
HC02-19	07		1003									
HC03-8	08		1107									
HC03-15	09		1111									
HC03-25	10		1125									

Samples received at 4:00

Friedman & Bryna, Inc.

3012 16th Avenue West

Seattle, WA 98119-2029

Ph. (206) 285-8282

Fax (206) 283-5044

FORMS\COC\COC.DOC

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
<u>[Signature]</u>	Max A. Gummer	Hydro Gen	11/11/15	10:00
<u>[Signature]</u>	Dhani Pham	F&BI	11/12/15	10:05
Received by:				
Relinquished by:				
Received by:				

511159

SAMPLE CHAIN OF CUSTODY ME 11-12-15

Page # 2 of 2

US4/034/02

Send Report To Smethkin Howard

Company Hydro Gen

Address 510 Allen St Ste B

City, State, ZIP Colorado WA

Phone # _____ Fax # _____

SAMPLERS (signature)

PROJECT NAME/NO. 01-103

TURNAROUND TIME
 Standard (2 Weeks)
 RUSH
Rush charges authorized by _____

REMARKS

SAMPLE DISPOSAL
 Dispose after 30 days
 Return samples
 Will call with instructions

ANALYSES REQUESTED

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	ANALYSES REQUESTED							Notes	
						TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260	SVOCs by 8270	HFS	BTEX 8260		
HCO4-8'	11F	11/11/15	1300	Soil	6	X	X							
HCO4-15'	12		1305											
HCO4-20	13		1311											
HCO4-25	X 140		1310											
HCO5-8'	X 141		1351											
HCO5-15	X 142		1356											
HCO5-20	X 143		1404											
HCO5-25	X 144		1415											
HCO6-8'	X 145		1508											
HCO6-15	X 146		1517											

copy 11-12-15
DO not retained

Samples received at 4:00

Friedman & Bryna, Inc.

3012 16th Avenue West

Seattle, WA 98119-2029

Ph. (206) 285-8282

Fax (206) 283-5044

FORMS/COC/COC.DOC

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
	Max A. Gummer	HydroGen	11/11/15	1610
	Nhan Pham	HydroGen	11/12/15	10:05
Received by:				
Relinquished by:				

51159

SAMPLE CHAIN OF CUSTODY

ME 11-12-15

154/803

Send Report To J. Horowitz

Company HydroCon

Address _____

City, State, ZIP _____

Phone # _____

Fax # _____

SAMPLERS (signature)

PROJECT NAME/NO. 01-103

PO#

REMARKS

Page # 3 of 4

TURNAROUND TIME
 Standard (2 Weeks)
 RUSH

Rush charges authorized by _____

SAMPLE DISPOSAL

- Dispose after 30 days
- Return samples
- Will call with instructions

ANALYSES REQUESTED

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	ANALYSES REQUESTED							Notes			
						TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260	SVOCs by 8270	HFS					
HC06-20		11/11/15	1526	Spill	6	X	X									
HC06-25		11/11/15	1537		1	X	X									
HC02-25		11/11/15	1017	Soil	4											*Added at lab AP 11/21/15

Samples received at _____

4

Friedman & Bryna, Inc.

3012 16th Avenue West

Seattle, WA 98119-2029

Ph. (206) 285-8282

Fax (206) 283-5044

FORMS\COC\CPC.DOC

SIGNATURE

PRINT NAME

COMPANY

DATE

TIME

Relinquished by:

Received by:

Relinquished by:

Received by:

Alex A. Gummer

Nhan Phan

HydroCon

FEBI

11/15

1000

11/21/15

1005

51159

SAMPLE CHAIN OF CUSTODY

ME11-12-15

603/159/12
4 of 4

Send Report To _____
 Company Hydro Care
 Address 510 Allen St SEB
 City, State, ZIP Redmond, WA
 Phone # _____ Fax # _____

SAMPLERS (signature) _____
 PROJECT NAME/NO. 01-103
 PO# _____
 REMARKS _____

TURNAROUND TIME
 Standard (2 Weeks)
 RUSH
 Rush charges authorized by _____
 SAMPLE DISPOSAL
 Dispose after 30 days
 Return samples
 Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	ANALYSES REQUESTED						Notes		
						TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260	SVOCs by 8270	HFS			
HC01	23E	11/11/15	0945	Water	5	X	X							
HC02	24		1045											
HC03-W	25		1140											
HC04-W	26		1330											
HC05-W	27		1435											
HC06-W	28		1530											
HC04-25	29	11/11/15	1318	Soil	6									

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

Relinquished by: <u>[Signature]</u>	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Received by: <u>Max A. Gummer</u>			<u>Hydro Care</u>	<u>11/15/15</u>	<u>1005</u>
Relinquished by: <u>[Signature]</u>					
Received by: <u>Nhan Phan</u>					
Received by: _____					

Samples received at 4:00

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

November 24, 2015

Craig Hultgren, Project Manager
HydroCon
510 Allen St, Suite B
Kelso, WA 98626

Dear Mr. Hultgren:

Included are the additional results from the testing of material submitted on November 12, 2015 from the TOC_01-103, WORFDB8 F&BI 511159 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 should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures

c: Rob Honsberger, Allison Greiner
HDC1124R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on November 12, 2015 by Friedman & Bruya, Inc. from the HydroCon TOC_01-103, WORFDB8 F&BI 511159 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	<u>HydroCon</u>
511159 -01	HC01-04
511159 -02	HC01-09
511159 -03	HC01-15
511159 -04	HC01-19
511159 -05	HC02-08
511159 -06	HC02-15
511159 -07	HC02-19
511159 -08	HC03-8
511159 -09	HC03-15
511159 -10	HC03-25
511159 -11	HC04-8
511159 -12	HC04-15
511159 -13	HC04-20
511159 -14	HC05-8
511159 -15	HC05-15
511159 -16	HC05-20
511159 -17	HC05-25
511159 -18	HC06-8
511159 -19	HC06-15
511159 -20	HC06-20
511159 -21	HC06-25
511159 -22	HC02-25
511159 -23	HC01
511159 -24	HC02
511159 -25	HC03-W
511159 -26	HC04-W
511159 -27	HC05-W
511159 -28	HC06-W
511159 -29	HC04-25

All quality control requirements were acceptable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	HC01-09	Client:	HydroCon
Date Received:	11/12/15	Project:	TOC_01-103, WORFDB8 F&BI 511159
Date Extracted:	11/19/15	Lab ID:	511159-02
Date Analyzed:	11/19/15	Data File:	511159-02.067
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	114	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	3.10

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	HC05-20	Client:	HydroCon
Date Received:	11/12/15	Project:	TOC_01-103, WORFDB8 F&BI 511159
Date Extracted:	11/19/15	Lab ID:	511159-16
Date Analyzed:	11/19/15	Data File:	511159-16.068
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	112	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	3.40

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	HC02-25	Client:	HydroCon
Date Received:	11/12/15	Project:	TOC_01-103, WORFDB8 F&BI 511159
Date Extracted:	11/19/15	Lab ID:	511159-22
Date Analyzed:	11/19/15	Data File:	511159-22.069
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	108	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	2.50

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	Method Blank	Client:	HydroCon
Date Received:	Not Applicable	Project:	TOC_01-103, WORFDB8 F&BI 511159
Date Extracted:	11/19/15	Lab ID:	I5-664 mb
Date Analyzed:	11/19/15	Data File:	I5-664 mb.040
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	102	60	125

Analyte:	Concentration mg/kg (ppm)
----------	------------------------------

Lead	<1
------	----

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/24/15

Date Received: 11/12/15

Project: TOC_01-103, WORFDB8 F&BI 511159

**QUALITY ASSURANCE RESULTS
FOR THE ANALYSIS OF SOIL SAMPLES
FOR TOTAL METALS USING EPA METHOD 200.8**

Laboratory Code: 510447-13 (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	2.56	105	98	70-130	7

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Lead	mg/kg (ppm)	50	98	85-115

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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.

511159

SAMPLE CHAIN OF CUSTODY

ME 11-12-15

Send Report To J. Herowitz

Company Hydro Gen

Address 510 Allen St Ste 3

City, State, ZIP Keelso, WA

Phone # _____ Fax # _____

SAMPLERS (signature)

PROJECT NAME/NO.

01-103

PO#

REMARKS

Page # 1 of 4

TURNAROUND TIME

Standard (2 Weeks)

RUSH

Kush charges authorized by

SAMPLE DISPOSAL

Dispose after 30 days

Return samples

Will call with instructions

ANALYSES REQUESTED

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260	SVOCs by 8270	HFS	BTEX 8260	Lead	Notes
HC01-04	01F	11/11/15	0842	Soil	6	X	X							* -per AC
HC01-01	02	11/11/15	0845											11/8/15
HC01-15	03		0853											M.S.
HC01-19	04		0857											
HC02-08	05		0950											
HC02-15	06		0957											
HC02-19	07		1003											
HC03-8	08		1107											
HC03-15	09		1111											
HC03-25	10		1125											

Samples preserved at 4°C

SIGNATURE

PRINT NAME

COMPANY

DATE

TIME

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029

Ph. (206) 285-8282

Fax (206) 283-5044

Relinquished by: [Signature]

Relinquished by: Max A. Gummer

Relinquished by: Hydro Gen

Relinquished by: 11/11/15

Relinquished by: 1010

Received by: [Signature]

Received by: Mhami Pham

Received by: F&B I

Received by: 11/12/15

Received by: 1005

511159

SAMPLE CHAIN OF CUSTODY ME 11-12-15

Page # 2 of 4

TURNAROUND TIME
 Standard (2 Weeks)
 RUSH

Rush charges authorized by _____

SAMPLE DISPOSAL
 Dispose after 30 days
 Return samples
 Will call with instructions

Send Report To Jonathan Horowitz
Company Hydro Gen
Address 510 Allen St Ste B
City, State, ZIP Colts Neck NJ
Phone # _____ Fax # _____

SAMPLERS (signature)		PO#
PROJECT NAME/NO. <u>01-103</u>		
REMARKS		

ANALYSES REQUESTED

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260	SVOCs by 8270	HFS	BTEX 8260	Lead	Notes
H204-8'	11E	11/11/15	1300	Soil	6	X	X					X		
H204-15'	21		1305											
H204-20	13L		1311											
H204-25	X (60)		1310											
H205-8'	X (4A)		1351											
H205-15	X (5)		1356											
H205-20	X (6)		1404											
H205-25	X (7)		1415											
H206-8'	X (1)		1508											
H206-15	X (4)		1517											

OP 11-12-15
DO not receive

Samples received at 4

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

Relinquished by: <u>[Signature]</u>	PRINT NAME	COMPANY	DATE	TIME
Received by: <u>[Signature]</u>	Max A. Gummer	HydroGen	11/11/15	1610
Relinquished by: <u>[Signature]</u>	Shawn Pham	FE BI	11/12/15	10:05
Received by: _____				

US4/034/06

91159

SAMPLE CHAIN OF CUSTODY ME 11-12-15

154/823

Page # 3 of 4

TURNAROUND TIME
 Standard (2 Weeks)
 RUSH

Rush charges authorized by _____

SAMPLE DISPOSAL
 Dispose after 30 days
 Return samples
 Will call with instructions

Send Report To J. Horowitz

Company HydroCar

Address _____

City, State, ZIP _____

Phone # _____ Fax # _____

SAMPLERS (signature) _____

PROJECT NAME/NO. 01-103

PO#

REMARKS

ANALYSES REQUESTED

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	ANALYSES REQUESTED							Notes		
						TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260	SVOCs by 8270	HFS	Lead			
HC06-20	AD 11/11/15	1516	Spill	6	X	X									
HC06-25	AD 11/11/15	1537	Spill	6	X	X									
HC02-25	AD 11/11/15	1017	Soil	6	X	X					X	*			Added at 11/12/15

Samples received at _____

Friedman & Bryna, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029

Ph. (206) 285-8282
Fax (206) 283-5044

FORMSIC00C0C.DOC

SIGNATURE		PRINT NAME		COMPANY		DATE	TIME
		Max A. Gunner		HydroCar		11/15	1600
		Nhan Phan		FBI		11/15	1005
Received by:							

51159

SAMPLE CHAIN OF CUSTODY

ME 11-12-15

803/454/4/11/15

Send Report To _____
 Company Hydro Care
 Address 516 Allen St SE B
 City, State, ZIP Redondo, WA
 Phone # _____ Fax # _____

SAMPLERS (signature) _____
 PROJECT NAME/NO. 01-103 PO# _____
 REMARKS _____

Page # 4 of 4
 TURNAROUND TIME
 Standard (2 Weeks)
 RUSH
 Ruin charges authorized by _____
 SAMPLE DISPOSAL
 Dispose after 30 days
 Return samples
 Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	ANALYSES REQUESTED						Notes			
						TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260	SVOCs by 8270	HFS				
HC01	23E	11/15	0945	Water	25	X	X								
HC02	24		1045												
HC03-W	25		1140												
HC04-W	26		1330												
HC05-W	27		1435												
HC06-W	28		1530												
HC04-25	29	11/15	1318	Soil	4										

Reinforced by: _____ SIGNATURE
 Received by: mfh/15 PRINT NAME
 Relinquished by: _____ COMPANY
 Received by: _____ DATE TIME
 Samples received at: 4 1005

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

November 16, 2015

Craig Hultgren, Project Manager
HydroCon
510 Allen St, Suite B
Kelso, WA 98626

Dear Mr. Hultgren:

Included are the results from the testing of material submitted on November 13, 2015 from the TOC_01-103, WORFDB8 F&BI 511178 project. There are 48 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 should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures

c: Rob Honsberger, Allison Greiner
HDC1116R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on November 13, 2015 by Friedman & Bruya, Inc. from the HydroCon TOC_01-103, WORFDB8 F&BI 511178 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	<u>HydroCon</u>
511178 -01	HC07-8
511178 -02	HC07-12
511178 -03	HC07-15
511178 -04	HC08-8
511178 -05	HC08-15
511178 -06	HC08-25
511178 -07	HC09-8
511178 -08	HC09-15
511178 -09	HC09-25
511178 -10	HC10-8
511178 -11	HC10-13
511178 -12	HC10-15
511178 -13	HC10-25
511178 -14	HC11-10
511178 -15	HC11-14
511178 -16	HC11-20
511178 -17	HC11-25
511178 -18	HC12-10
511178 -19	HC12-11
511178 -20	HC12-20
511178 -21	HC12-25
511178 -22	HC07-W
511178 -23	HC08-W
511178 -24	HC09-W
511178 -25	HC10-W
511178 -26	HC11-W
511178 -27	HC12-W

The 8260C water samples HC10-W, HC11-W, and HC12-W were diluted due to the high level of TPH present in the samples. The reporting limits were raised accordingly.

All quality control requirements were acceptable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/16/15
Date Received: 11/13/15
Project: TOC_01-103, WORFDB8 F&BI 511178
Date Extracted: 11/13/15
Date Analyzed: 11/13/15 and 11/16/15

**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)

<u>Sample ID</u> Laboratory ID	<u>Gasoline Range</u>	<u>Surrogate</u> <u>(% Recovery)</u> (Limit 50-150)
HC07-8 511178-01	<2	96
HC07-12 511178-02	<2	97
HC07-15 511178-03	<2	95
HC08-8 511178-04	<2	96
HC08-15 511178-05	<2	97
HC08-25 511178-06	<2	97
HC09-8 511178-07	<2	97
HC09-15 511178-08	<2	96
HC09-25 511178-09	<2	95
HC10-8 511178-10	<2	97
HC10-13 511178-11 1/10	680	ip

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/16/15
Date Received: 11/13/15
Project: TOC_01-103, WORFDB8 F&BI 511178
Date Extracted: 11/13/15
Date Analyzed: 11/13/15 and 11/16/15

**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)

<u>Sample ID</u> Laboratory ID	<u>Gasoline Range</u>	Surrogate (% Recovery) (Limit 50-150)
HC10-15 511178-12	<2	97
HC10-25 511178-13	30	121
HC11-10 511178-14	<2	97
HC11-14 511178-15 1/5	130	112
HC11-20 511178-16 1/5	1,300	ip
HC11-25 511178-17	17	107
HC12-10 511178-18	25	108
HC12-11 511178-19 1/5	1,700	ip
HC12-20 511178-20 1/5	250	147

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/16/15
Date Received: 11/13/15
Project: TOC_01-103, WORFDB8 F&BI 511178
Date Extracted: 11/13/15
Date Analyzed: 11/13/15 and 11/16/15

**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)

<u>Sample ID</u> Laboratory ID	<u>Gasoline Range</u>	Surrogate (% Recovery) (Limit 50-150)
HC12-25 511178-21	13	105
Method Blank 05-2317 MB2	<2	93
Method Blank 05-2319 MB	<2	97

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/16/15
Date Received: 11/13/15
Project: TOC_01-103, WORFDB8 F&BI 511178
Date Extracted: 11/13/15
Date Analyzed: 11/13/15

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES
FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE
USING METHOD NWTPH-Gx**
Results Reported as ug/L (ppb)

<u>Sample ID</u> Laboratory ID	<u>Gasoline Range</u>	<u>Surrogate</u> <u>(% Recovery)</u> (Limit 51-134)
HC07-W 511178-22	<100	90
HC08-W 511178-23	<100	90
HC09-W 511178-24	<100	90
HC10-W cf 511178-25 1/40	240,000	115
HC11-W cf 511178-26 1/40	38,000	107
HC12-W cf 511178-27 1/10	17,000	107
Method Blank 05-2318 MB	<100	94

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/16/15
 Date Received: 11/13/15
 Project: TOC_01-103, WORFDB8 F&BI 511178
 Date Extracted: 11/13/15
 Date Analyzed: 11/16/15

**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)

<u>Sample ID</u> Laboratory ID	<u>Diesel Range</u> (C ₁₀ -C ₂₅)	<u>Motor Oil Range</u> (C ₂₅ -C ₃₆)	<u>Surrogate</u> (% Recovery) (Limit 41-152)
HC07-W 511178-22	<50	<250	86
HC08-W 511178-23	<50	<250	78
HC09-W 511178-24 1/1.3	130 x	<330	75
HC10-W 511178-25 1/10	240,000 x	<2,500	93
HC11-W 511178-26 1/10	60,000 x	<2,500	81
HC12-W 511178-27	8,300 x	<250	89
Method Blank 05-2338 MB	<50	<250	78

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/16/15
Date Received: 11/13/15
Project: TOC_01-103, WORFDB8 F&BI 511178
Date Extracted: 11/13/15
Date Analyzed: 11/13/15 and 11/16/15

**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)

<u>Sample ID</u> Laboratory ID	<u>Diesel Range</u> (C ₁₀ -C ₂₅)	<u>Motor Oil Range</u> (C ₂₅ -C ₃₆)	<u>Surrogate</u> <u>(% Recovery)</u> (Limit 56-165)
HC07-8 511178-01	<50	<250	81
HC07-12 511178-02	<50	<250	76
HC07-15 511178-03	<50	<250	78
HC08-8 511178-04	<50	<250	75
HC08-15 511178-05	<50	<250	87
HC08-25 511178-06	<50	<250	76
HC09-8 511178-07	<50	<250	84
HC09-15 511178-08	<50	<250	85
HC09-25 511178-09	<50	<250	76
HC10-8 511178-10	<50	<250	84
HC10-13 511178-11	<50	<250	81
HC10-15 511178-12	<50	<250	83

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/16/15
 Date Received: 11/13/15
 Project: TOC_01-103, WORFDB8 F&BI 511178
 Date Extracted: 11/13/15
 Date Analyzed: 11/13/15 and 11/16/15

**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)

<u>Sample ID</u> Laboratory ID	<u>Diesel Range</u> (C ₁₀ -C ₂₅)	<u>Motor Oil Range</u> (C ₂₅ -C ₃₆)	<u>Surrogate</u> <u>(% Recovery)</u> (Limit 56-165)
HC10-25 511178-13	<50	<250	82
HC11-10 511178-14	<50	<250	96
HC11-14 511178-15	640 x	<250	86
HC11-20 511178-16	<50	<250	92
HC11-25 511178-17	<50	<250	95
HC12-10 511178-18	<50	<250	86
HC12-11 511178-19	740 x	<250	90
HC12-20 511178-20	<50	<250	89
HC12-25 511178-21	<50	<250	94
Method Blank 05-2340 MB	<50	<250	93
Method Blank 05-2342 MB	<50	<250	88

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC07-8	Client:	HydroCon
Date Received:	11/13/15	Project:	TOC_01-103, WORFDB8 F&BI 511178
Date Extracted:	11/13/15	Lab ID:	511178-01
Date Analyzed:	11/13/15	Data File:	111312.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	104	62	142
Toluene-d8	103	55	145
4-Bromofluorobenzene	98	65	139

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC07-12	Client:	HydroCon
Date Received:	11/13/15	Project:	TOC_01-103, WORFDB8 F&BI 511178
Date Extracted:	11/13/15	Lab ID:	511178-02
Date Analyzed:	11/13/15	Data File:	111313.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	62	142
Toluene-d8	105	55	145
4-Bromofluorobenzene	100	65	139

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC07-15	Client:	HydroCon
Date Received:	11/13/15	Project:	TOC_01-103, WORFDB8 F&BI 511178
Date Extracted:	11/13/15	Lab ID:	511178-03
Date Analyzed:	11/13/15	Data File:	111314.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	62	142
Toluene-d8	103	55	145
4-Bromofluorobenzene	101	65	139

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC08-8	Client:	HydroCon
Date Received:	11/13/15	Project:	TOC_01-103, WORFDB8 F&BI 511178
Date Extracted:	11/13/15	Lab ID:	511178-04
Date Analyzed:	11/13/15	Data File:	111315.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	103	62	142
Toluene-d8	103	55	145
4-Bromofluorobenzene	99	65	139

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC08-15	Client:	HydroCon
Date Received:	11/13/15	Project:	TOC_01-103, WORFDB8 F&BI 511178
Date Extracted:	11/13/15	Lab ID:	511178-05
Date Analyzed:	11/13/15	Data File:	111316.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	102	55	145
4-Bromofluorobenzene	96	65	139

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC08-25	Client:	HydroCon
Date Received:	11/13/15	Project:	TOC_01-103, WORFDB8 F&BI 511178
Date Extracted:	11/13/15	Lab ID:	511178-06
Date Analyzed:	11/13/15	Data File:	111317.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	62	142
Toluene-d8	102	55	145
4-Bromofluorobenzene	99	65	139

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC09-8	Client:	HydroCon
Date Received:	11/13/15	Project:	TOC_01-103, WORFDB8 F&BI 511178
Date Extracted:	11/13/15	Lab ID:	511178-07
Date Analyzed:	11/13/15	Data File:	111318.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	62	142
Toluene-d8	102	55	145
4-Bromofluorobenzene	99	65	139

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC09-15	Client:	HydroCon
Date Received:	11/13/15	Project:	TOC_01-103, WORFDB8 F&BI 511178
Date Extracted:	11/13/15	Lab ID:	511178-08
Date Analyzed:	11/13/15	Data File:	111319.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	101	55	145
4-Bromofluorobenzene	100	65	139

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC09-25	Client:	HydroCon
Date Received:	11/13/15	Project:	TOC_01-103, WORFDB8 F&BI 511178
Date Extracted:	11/13/15	Lab ID:	511178-09
Date Analyzed:	11/13/15	Data File:	111320.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	103	55	145
4-Bromofluorobenzene	99	65	139

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC10-8	Client:	HydroCon
Date Received:	11/13/15	Project:	TOC_01-103, WORFDB8 F&BI 511178
Date Extracted:	11/13/15	Lab ID:	511178-10
Date Analyzed:	11/13/15	Data File:	111321.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	104	55	145
4-Bromofluorobenzene	97	65	139

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC10-13	Client:	HydroCon
Date Received:	11/13/15	Project:	TOC_01-103, WORFDB8 F&BI 511178
Date Extracted:	11/13/15	Lab ID:	511178-11
Date Analyzed:	11/13/15	Data File:	111322.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	103	55	145
4-Bromofluorobenzene	99	65	139

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC10-15	Client:	HydroCon
Date Received:	11/13/15	Project:	TOC_01-103, WORFDB8 F&BI 511178
Date Extracted:	11/13/15	Lab ID:	511178-12
Date Analyzed:	11/13/15	Data File:	111323.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	62	142
Toluene-d8	104	55	145
4-Bromofluorobenzene	100	65	139

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC10-25	Client:	HydroCon
Date Received:	11/13/15	Project:	TOC_01-103, WORFDB8 F&BI 511178
Date Extracted:	11/13/15	Lab ID:	511178-13
Date Analyzed:	11/13/15	Data File:	111324.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	62	142
Toluene-d8	105	55	145
4-Bromofluorobenzene	100	65	139

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC11-10	Client:	HydroCon
Date Received:	11/13/15	Project:	TOC_01-103, WORFDB8 F&BI 511178
Date Extracted:	11/13/15	Lab ID:	511178-14
Date Analyzed:	11/13/15	Data File:	111308.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	62	142
Toluene-d8	103	55	145
4-Bromofluorobenzene	101	65	139

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC11-14	Client:	HydroCon
Date Received:	11/13/15	Project:	TOC_01-103, WORFDB8 F&BI 511178
Date Extracted:	11/13/15	Lab ID:	511178-15
Date Analyzed:	11/13/15	Data File:	111330.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	103	62	142
Toluene-d8	104	55	145
4-Bromofluorobenzene	102	65	139

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	5.6
m,p-Xylene	26
o-Xylene	3.2

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC11-20	Client:	HydroCon
Date Received:	11/13/15	Project:	TOC_01-103, WORFDB8 F&BI 511178
Date Extracted:	11/13/15	Lab ID:	511178-16
Date Analyzed:	11/13/15	Data File:	111328.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	62	142
Toluene-d8	103	55	145
4-Bromofluorobenzene	99	65	139

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	0.064
m,p-Xylene	0.11
o-Xylene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC11-25	Client:	HydroCon
Date Received:	11/13/15	Project:	TOC_01-103, WORFDB8 F&BI 511178
Date Extracted:	11/13/15	Lab ID:	511178-17
Date Analyzed:	11/13/15	Data File:	111326.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	62	142
Toluene-d8	103	55	145
4-Bromofluorobenzene	98	65	139

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	0.27
m,p-Xylene	0.75
o-Xylene	0.082

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC12-10	Client:	HydroCon
Date Received:	11/13/15	Project:	TOC_01-103, WORFDB8 F&BI 511178
Date Extracted:	11/13/15	Lab ID:	511178-18
Date Analyzed:	11/13/15	Data File:	111325.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	104	55	145
4-Bromofluorobenzene	100	65	139

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC12-11	Client:	HydroCon
Date Received:	11/13/15	Project:	TOC_01-103, WORFDB8 F&BI 511178
Date Extracted:	11/13/15	Lab ID:	511178-19
Date Analyzed:	11/13/15	Data File:	111329.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	62	142
Toluene-d8	103	55	145
4-Bromofluorobenzene	100	65	139

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC12-20	Client:	HydroCon
Date Received:	11/13/15	Project:	TOC_01-103, WORFDB8 F&BI 511178
Date Extracted:	11/13/15	Lab ID:	511178-20
Date Analyzed:	11/13/15	Data File:	111331.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	104	62	142
Toluene-d8	104	55	145
4-Bromofluorobenzene	104	65	139

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	2.7
m,p-Xylene	9.6
o-Xylene	0.50

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC12-25	Client:	HydroCon
Date Received:	11/13/15	Project:	TOC_01-103, WORFDB8 F&BI 511178
Date Extracted:	11/13/15	Lab ID:	511178-21
Date Analyzed:	11/13/15	Data File:	111327.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	62	142
Toluene-d8	103	55	145
4-Bromofluorobenzene	99	65	139

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	0.12
m,p-Xylene	0.43
o-Xylene	0.061

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	Method Blank	Client:	HydroCon
Date Received:	Not Applicable	Project:	TOC_01-103, WORFDB8 F&BI 511178
Date Extracted:	11/13/15	Lab ID:	05-2298 mb2
Date Analyzed:	11/13/15	Data File:	111307.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	62	142
Toluene-d8	101	55	145
4-Bromofluorobenzene	98	65	139

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	Method Blank	Client:	HydroCon
Date Received:	Not Applicable	Project:	TOC_01-103, WORFDB8 F&BI 511178
Date Extracted:	11/13/15	Lab ID:	05-2302 mb
Date Analyzed:	11/13/15	Data File:	111306.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	62	142
Toluene-d8	104	55	145
4-Bromofluorobenzene	99	65	139

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC07-W	Client:	HydroCon
Date Received:	11/13/15	Project:	TOC_01-103, WORFDB8 F&BI 511178
Date Extracted:	11/13/15	Lab ID:	511178-22
Date Analyzed:	11/13/15	Data File:	111310.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	97	85	117
Toluene-d8	99	91	108
4-Bromofluorobenzene	100	76	126

Compounds:	Concentration ug/L (ppb)
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:	HC08-W	Client:	HydroCon
Date Received:	11/13/15	Project:	TOC_01-103, WORFDB8 F&BI 511178
Date Extracted:	11/13/15	Lab ID:	511178-23
Date Analyzed:	11/13/15	Data File:	111311.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	85	117
Toluene-d8	98	91	108
4-Bromofluorobenzene	101	76	126

Compounds:	Concentration ug/L (ppb)
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:	HC09-W	Client:	HydroCon
Date Received:	11/13/15	Project:	TOC_01-103, WORFDB8 F&BI 511178
Date Extracted:	11/13/15	Lab ID:	511178-24
Date Analyzed:	11/13/15	Data File:	111312.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	85	117
Toluene-d8	100	91	108
4-Bromofluorobenzene	101	76	126

Compounds:	Concentration ug/L (ppb)
Benzene	<0.35
Toluene	1.3
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:	HC10-W	Client:	HydroCon
Date Received:	11/13/15	Project:	TOC_01-103, WORFDB8 F&BI 511178
Date Extracted:	11/13/15	Lab ID:	511178-25 1/50
Date Analyzed:	11/13/15	Data File:	111327.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	98	85	117
Toluene-d8	100	91	108
4-Bromofluorobenzene	99	76	126

Compounds:	Concentration ug/L (ppb)
Benzene	<17
Toluene	<50
Ethylbenzene	1,300
m,p-Xylene	2,300
o-Xylene	200

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC11-W	Client:	HydroCon
Date Received:	11/13/15	Project:	TOC_01-103, WORFDB8 F&BI 511178
Date Extracted:	11/13/15	Lab ID:	511178-26 1/50
Date Analyzed:	11/13/15	Data File:	111326.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	85	117
Toluene-d8	102	91	108
4-Bromofluorobenzene	100	76	126

Compounds:	Concentration ug/L (ppb)
Benzene	<17
Toluene	<50
Ethylbenzene	680
m,p-Xylene	1,600
o-Xylene	200

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC12-W	Client:	HydroCon
Date Received:	11/13/15	Project:	TOC_01-103, WORFDB8 F&BI 511178
Date Extracted:	11/13/15	Lab ID:	511178-27 1/10
Date Analyzed:	11/13/15	Data File:	111325.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	85	117
Toluene-d8	102	91	108
4-Bromofluorobenzene	99	76	126

Compounds:	Concentration ug/L (ppb)
Benzene	<3.5
Toluene	82
Ethylbenzene	740
m,p-Xylene	2,700
o-Xylene	380

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	Method Blank	Client:	HydroCon
Date Received:	Not Applicable	Project:	TOC_01-103, WORFDB8 F&BI 511178
Date Extracted:	11/13/15	Lab ID:	05-2301 mb
Date Analyzed:	11/13/15	Data File:	111307.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	97	85	117
Toluene-d8	99	91	108
4-Bromofluorobenzene	100	76	126

Compounds:	Concentration ug/L (ppb)
Benzene	<0.35
Toluene	<1
Ethylbenzene	<1
m,p-Xylene	<2
o-Xylene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/16/15

Date Received: 11/13/15

Project: TOC_01-103, WORFDB8 F&BI 511178

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES
FOR TPH AS GASOLINE
USING METHOD NWTPH-Gx**

Laboratory Code: 511159-21 (Duplicate)

Analyte	Reporting Units	Sample Result (Wet Wt)	Duplicate Result (Wet Wt)	RPD (Limit 20)
Gasoline	mg/kg (ppm)	<2	<2	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Gasoline	mg/kg (ppm)	20	105	71-131

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/16/15

Date Received: 11/13/15

Project: TOC_01-103, WORFDB8 F&BI 511178

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES
FOR TPH AS GASOLINE
USING METHOD NWTPH-Gx**

Laboratory Code: 511178-14 (Duplicate)

Analyte	Reporting Units	Sample Result (Wet Wt)	Duplicate Result (Wet Wt)	RPD (Limit 20)
Gasoline	mg/kg (ppm)	<2	3	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Gasoline	mg/kg (ppm)	20	100	71-131

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/16/15

Date Received: 11/13/15

Project: TOC_01-103, WORFDB8 F&BI 511178

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER
SAMPLES FOR TPH AS GASOLINE
USING METHOD NWTPH-Gx**

Laboratory Code: 511168-01 (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	95	69-134

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/16/15

Date Received: 11/13/15

Project: TOC_01-103, WORFDB8 F&BI 511178

**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	87	96	63-142	10

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/16/15

Date Received: 11/13/15

Project: TOC_01-103, WORFDB8 F&BI 511178

**QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL
SAMPLES
FOR TOTAL PETROLEUM HYDROCARBONS AS
DIESEL EXTENDED USING METHOD NWTPH-Dx**

Laboratory Code: 511170-03 (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	97	107	73-135	10

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Diesel Extended	mg/kg (ppm)	5,000	106	74-139

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/16/15

Date Received: 11/13/15

Project: TOC_01-103, WORFDB8 F&BI 511178

**QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL
SAMPLES
FOR TOTAL PETROLEUM HYDROCARBONS AS
DIESEL EXTENDED USING METHOD NWTPH-Dx**

Laboratory Code: 511178-01 (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	101	98	63-146	3

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Diesel Extended	mg/kg (ppm)	5,000	102	79-144

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/16/15

Date Received: 11/13/15

Project: TOC_01-103, WORFDB8 F&BI 511178

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES
FOR VOLATILES BY EPA METHOD 8260C**

Laboratory Code: 511159-29 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Benzene	mg/kg (ppm)	2.5	<0.03	74	74	29-129	0
Toluene	mg/kg (ppm)	2.5	<0.05	73	73	35-130	0
Ethylbenzene	mg/kg (ppm)	2.5	<0.05	76	75	32-137	1
m,p-Xylene	mg/kg (ppm)	5	<0.1	76	76	34-136	0
o-Xylene	mg/kg (ppm)	2.5	<0.05	78	78	33-134	0

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/kg (ppm)	2.5	95	68-114
Toluene	mg/kg (ppm)	2.5	92	66-126
Ethylbenzene	mg/kg (ppm)	2.5	93	64-123
m,p-Xylene	mg/kg (ppm)	5	94	78-122
o-Xylene	mg/kg (ppm)	2.5	96	77-124

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/16/15

Date Received: 11/13/15

Project: TOC_01-103, WORFDB8 F&BI 511178

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES
FOR VOLATILES BY EPA METHOD 8260C**

Laboratory Code: 511178-14 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Benzene	mg/kg (ppm)	2.5	<0.03	55	59	29-129	7
Toluene	mg/kg (ppm)	2.5	<0.05	55	59	35-130	7
Ethylbenzene	mg/kg (ppm)	2.5	<0.05	57	61	32-137	7
m,p-Xylene	mg/kg (ppm)	5	<0.1	57	62	34-136	8
o-Xylene	mg/kg (ppm)	2.5	<0.05	60	64	33-134	6

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/kg (ppm)	2.5	97	68-114
Toluene	mg/kg (ppm)	2.5	93	66-126
Ethylbenzene	mg/kg (ppm)	2.5	95	64-123
m,p-Xylene	mg/kg (ppm)	5	96	78-122
o-Xylene	mg/kg (ppm)	2.5	96	77-124

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/16/15

Date Received: 11/13/15

Project: TOC_01-103, WORFDB8 F&BI 511178

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER
SAMPLES FOR VOLATILES BY EPA METHOD 8260C**

Laboratory Code: 511179-02 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent	Acceptance Criteria
				Recovery MS	
Benzene	ug/L (ppb)	50	<0.35	94	78-108
Toluene	ug/L (ppb)	50	<1	95	73-117
Ethylbenzene	ug/L (ppb)	50	<1	99	71-120
m,p-Xylene	ug/L (ppb)	100	<2	100	63-128
o-Xylene	ug/L (ppb)	50	<1	101	64-129

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent	Percent	Acceptance Criteria	RPD (Limit 20)
			Recovery LCS	Recovery LCSD		
Benzene	ug/L (ppb)	50	92	95	81-108	3
Toluene	ug/L (ppb)	50	94	96	83-108	2
Ethylbenzene	ug/L (ppb)	50	97	101	83-111	4
m,p-Xylene	ug/L (ppb)	100	98	102	84-112	4
o-Xylene	ug/L (ppb)	50	99	103	81-117	4

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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.

511178

SAMPLE CHAIN OF CUSTODY

ME 11-13-15

VS3 1/13/15 of 304

Send Report To Craig Hultgren

Company Hydracem

Address _____

City, State, ZIP _____

Phone # _____ Fax # _____

SAMPLER'S (signature) [Signature]
PROJECT/ANALYST NO. _____ PO# _____

REMARKS
01-103

Page # _____ of _____
TURNAROUND TIME
 Standard (2 Weeks)
 RUSH
Rush charges authorized by _____
SAMPLE DISPOSAL
 Dispose after 30 days
 Return samples
 Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	ANALYSES REQUESTED						Notes	
						TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260	SVOCs by 8270	HFS		
HC07-8	02	11/11/15	08:30	Soil	6	X	X					X	
HC07-12	03		08:30										
HC07-15	03		08:30										
HC08-8	04		09:01										
HC08-15	05		09:06										
HC08-25	06		09:22										
HC09-8	07		10:11										
HC09-15	08		10:18										
HC09-25	09		10:30										
HC10-8	10		11:18										

Samples received at _____

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
<u>[Signature]</u>	Max A. Gummer	Hydracem	11/12/15	1500
<u>[Signature]</u>	Hydracem Pleum	FBI	11/13/15	1000
Received by:				

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

5/11/78

SAMPLE CHAIN OF CUSTODY

ME 11-13-15

Page # 2 of 3

Send Report To Craig Hultgren

Company Hydrogen

Address _____

City, State, ZIP _____

Phone # _____

Fax # _____

SAMPLERS (signature) _____
PROJECT NAME/NO. 01-103

PO# _____

REMARKS

TURNAROUND TIME
 Standard (2 Weeks)
 RUSH
 Rush charges authorized by _____

SAMPLE DISPOSAL
 Dispose after 30 days
 Return samples
 Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	ANALYSES REQUESTED							Notes		
						TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260	SVOCs by 8270	HFS				
HC10-13	11	11/11/15	1125	Soil	6	X	X								
HC10-15	12		1128												
HC10-25	13		1142												
HC11-10	14		1308												
HC11-14	15		1316												
HC11-20	16		1322												
HC11-25	17		1328												
HC12-10	18		1357												
HC12-11	19		1404												
HC12-20	20		1412												

Samples received at 11:00

Friedman & Bruya, Inc.

3012 16th Avenue West

Seattle, WA 98119-2029

Ph. (206) 285-8282

Fax (206) 283-5044

FORMS/COC/COC.DOC

SIGNATURE		PRINT NAME		COMPANY		DATE	TIME
Relinquished by: <u>[Signature]</u>	<u>A. GUMMER</u>	<u>[Signature]</u>	<u>Phan</u>	<u>Hydrogen</u>	<u>11/13/15</u>	<u>1500</u>	
Received by: <u>[Signature]</u>	<u>[Signature]</u>	<u>Phan</u>	<u>Phan</u>	<u>FBI</u>	<u>11/13/15</u>	<u>1000</u>	

511178

SAMPLE CHAIN OF CUSTODY

ME 11-13-15

US3/13/04

Send Report To Craig Hultgren

Company Hydro Gen

Address

City, State, ZIP

Phone #

Fax #

SAMPLERS (signature) *[Signature]*

PROJECT NAME/NO. 01-103

PO#

REMARKS

Page # 3 of 3

TURNAROUND TIME

Standard (2 Weeks)

RUSH

Rush charges authorized by

SAMPLE DISPOSAL

Dispose after 30 days

Return samples

Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	ANALYSES REQUESTED							Notes		
						TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260	SVOCs by 8270	HFS				
HC12-25	21E	11/12/15	1427	Soil	6	XX									
HC07-W	22E		0835	Water	5										
HC08-W	23		0935												
HC09-W	24		1035												
HC10-W	25		1145												
HC11-W	26		1355												
HC12-W	27		1435												

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

Relinquished by:	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Received by:	<i>[Signature]</i>	Max A. Gummer	Hydro Gen	11/13/15	10:00
Relinquished by:	<i>[Signature]</i>	Phan	Phan		
Received by:					

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
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December 2, 2015

Craig Hultgren, Project Manager
HydroCon
510 Allen St, Suite B
Kelso, WA 98626

Dear Mr. Hultgren:

Included are the additional results from the testing of material submitted on November 13, 2015 from the TOC_01-103, WORFDB8 F&BI 511178 project. There are 20 pages included in this report.

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

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures

c: Rob Honsberger, Allison Greiner
HDC1202R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on November 13, 2015 by Friedman & Bruya, Inc. from the HydroCon TOC_01-103, WORFDB8 F&BI 511178 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	<u>HydroCon</u>
511178 -01	HC07-8
511178 -02	HC07-12
511178 -03	HC07-15
511178 -04	HC08-8
511178 -05	HC08-15
511178 -06	HC08-25
511178 -07	HC09-8
511178 -08	HC09-15
511178 -09	HC09-25
511178 -10	HC10-8
511178 -11	HC10-13
511178 -12	HC10-15
511178 -13	HC10-25
511178 -14	HC11-10
511178 -15	HC11-14
511178 -16	HC11-20
511178 -17	HC11-25
511178 -18	HC12-10
511178 -19	HC12-11
511178 -20	HC12-20
511178 -21	HC12-25
511178 -22	HC07-W
511178 -23	HC08-W
511178 -24	HC09-W
511178 -25	HC10-W
511178 -26	HC11-W
511178 -27	HC12-W

Several compounds in the 8270D water matrix spike and matrix spike duplicate exceeded the acceptance criteria. The laboratory control sample and laboratory control sample duplicate passed the acceptance criteria, therefore the results were likely due to matrix effect.

All other quality control requirements were acceptable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C Direct Sparge

Client Sample ID:	HC11-14	Client:	HydroCon
Date Received:	11/13/15	Project:	TOC_01-103, WORFDB8 F&BI 511178
Date Extracted:	11/19/15	Lab ID:	511178-15
Date Analyzed:	11/19/15	Data File:	111918.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	104	50	150
Toluene-d8	119	50	150
4-Bromofluorobenzene	156 ip J	50	150

Compounds:	Concentration mg/kg (ppm)
1,2-Dibromoethane (EDB)	<0.005

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C Direct Sparge

Client Sample ID:	Method Blank	Client:	HydroCon
Date Received:	Not Applicable	Project:	TOC_01-103, WORFDB8 F&BI 511178
Date Extracted:	11/19/15	Lab ID:	05-2312 mb
Date Analyzed:	11/19/15	Data File:	111916.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	50	150
Toluene-d8	100	50	150
4-Bromofluorobenzene	100	50	150

Compounds:	Concentration mg/kg (ppm)
1,2-Dibromoethane (EDB)	<0.005

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	HC11-14	Client:	HydroCon
Date Received:	11/13/15	Project:	TOC_01-103, WORFDB8 F&BI 511178
Date Extracted:	11/19/15	Lab ID:	511178-15
Date Analyzed:	11/19/15	Data File:	511178-15.070
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	105	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	13.4

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	Method Blank	Client:	HydroCon
Date Received:	Not Applicable	Project:	TOC_01-103, WORFDB8 F&BI 511178
Date Extracted:	11/19/15	Lab ID:	I5-664 mb
Date Analyzed:	11/19/15	Data File:	I5-664 mb.040
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	102	60	125

Analyte:	Concentration mg/kg (ppm)
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Lead	<1
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FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC11-14	Client:	HydroCon
Date Received:	11/13/15	Project:	TOC_01-103, WORFDB8 F&BI 511178
Date Extracted:	11/13/15	Lab ID:	511178-15
Date Analyzed:	11/13/15	Data File:	111330.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	103	62	142
Toluene-d8	104	55	145
4-Bromofluorobenzene	102	65	139

Compounds:	Concentration mg/kg (ppm)
Methyl t-butyl ether (MTBE)	<0.05
1,2-Dichloroethane (EDC)	<0.05
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	5.6
m,p-Xylene	26
o-Xylene	3.2
Naphthalene	5.1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	Method Blank	Client:	HydroCon
Date Received:	Not Applicable	Project:	TOC_01-103, WORFDB8 F&BI 511178
Date Extracted:	11/13/15	Lab ID:	05-2298 mb2
Date Analyzed:	11/13/15	Data File:	111307.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	62	142
Toluene-d8	101	55	145
4-Bromofluorobenzene	98	65	139

Compounds:	Concentration mg/kg (ppm)
Methyl t-butyl ether (MTBE)	<0.05
1,2-Dichloroethane (EDC)	<0.05
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05
Naphthalene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270D SIM

Client Sample ID:	HC10-W	Client:	HydroCon
Date Received:	11/13/15	Project:	TOC_01-103, WORFDB8 F&BI 511178
Date Extracted:	11/19/15	Lab ID:	511178-25 1/250
Date Analyzed:	11/23/15	Data File:	112313.D
Matrix:	Water	Instrument:	GCMS6
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Anthracene-d10	72 d	31	160
Benzo(a)anthracene-d12	126 d	25	165

Compounds:	Concentration ug/L (ppb)
Naphthalene	8,800 ve
Acenaphthylene	<10
Acenaphthene	63
Fluorene	140
Phenanthrene	140
Anthracene	42
Fluoranthene	22
Pyrene	34
Benz(a)anthracene	12
Chrysene	<10
Benzo(a)pyrene	<10
Benzo(b)fluoranthene	<10
Benzo(k)fluoranthene	<10
Indeno(1,2,3-cd)pyrene	<10
Dibenz(a,h)anthracene	<10
Benzo(g,h,i)perylene	<10

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270D SIM

Client Sample ID:	HC10-W	Client:	HydroCon
Date Received:	11/13/15	Project:	TOC_01-103, WORFDB8 F&BI 511178
Date Extracted:	11/19/15	Lab ID:	511178-25 1/2500
Date Analyzed:	11/24/15	Data File:	112413.D
Matrix:	Water	Instrument:	GCMS6
Units:	ug/L (ppb)	Operator:	ya

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Anthracene-d10	0 d	31	160
Benzo(a)anthracene-d12	90 d	25	165

Compounds:	Concentration ug/L (ppb)
Naphthalene	10,000
Acenaphthylene	<100
Acenaphthene	<100
Fluorene	170
Phenanthrene	160
Anthracene	<100
Fluoranthene	<100
Pyrene	<100
Benz(a)anthracene	<100
Chrysene	<100
Benzo(a)pyrene	<100
Benzo(b)fluoranthene	<100
Benzo(k)fluoranthene	<100
Indeno(1,2,3-cd)pyrene	<100
Dibenz(a,h)anthracene	<100
Benzo(g,h,i)perylene	<100

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270D SIM

Client Sample ID:	Method Blank	Client:	HydroCon
Date Received:	Not Applicable	Project:	TOC_01-103, WORFDB8 F&BI 511178
Date Extracted:	11/19/15	Lab ID:	05-2372 mb 1/0.25
Date Analyzed:	11/20/15	Data File:	112005.D
Matrix:	Water	Instrument:	GCMS6
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Anthracene-d10	95	31	160
Benzo(a)anthracene-d12	87	25	165

Compounds:	Concentration ug/L (ppb)
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 Semivolatile Compounds By EPA Method 8270D SIM

Client Sample ID: HC11-14	Client: HydroCon
Date Received: 11/13/15	Project: TOC_01-103, WORFDB8 F&BI 511178
Date Extracted: 11/19/15	Lab ID: 511178-15 1/5
Date Analyzed: 11/19/15	Data File: 111911.D
Matrix: Soil	Instrument: GCMS6
Units: mg/kg (ppm) Dry Weight	Operator: ya

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Anthracene-d10	95	31	163
Benzo(a)anthracene-d12	96	24	168

Compounds:	Concentration mg/kg (ppm)
Naphthalene	14 ve
Acenaphthylene	<0.01
Acenaphthene	0.076
Fluorene	0.10
Phenanthrene	0.14
Anthracene	0.032
Fluoranthene	0.019
Pyrene	0.032
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 Semivolatile Compounds By EPA Method 8270D SIM

Client Sample ID:	HC11-14	Client:	HydroCon
Date Received:	11/13/15	Project:	TOC_01-103, WORFDB8 F&BI 511178
Date Extracted:	11/19/15	Lab ID:	511178-15 1/100
Date Analyzed:	11/23/15	Data File:	112312.D
Matrix:	Soil	Instrument:	GCMS6
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Anthracene-d10	90 d	31	163
Benzo(a)anthracene-d12	104 d	24	168

Compounds:	Concentration mg/kg (ppm)
Naphthalene	17
Acenaphthylene	<0.2
Acenaphthene	<0.2
Fluorene	<0.2
Phenanthrene	<0.2
Anthracene	<0.2
Fluoranthene	<0.2
Pyrene	<0.2
Benz(a)anthracene	<0.2
Chrysene	<0.2
Benzo(a)pyrene	<0.2
Benzo(b)fluoranthene	<0.2
Benzo(k)fluoranthene	<0.2
Indeno(1,2,3-cd)pyrene	<0.2
Dibenz(a,h)anthracene	<0.2
Benzo(g,h,i)perylene	<0.2

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270D SIM

Client Sample ID:	HC12-11	Client:	HydroCon
Date Received:	11/13/15	Project:	TOC_01-103, WORFDB8 F&BI 511178
Date Extracted:	11/19/15	Lab ID:	511178-19 1/5
Date Analyzed:	11/19/15	Data File:	111906.D
Matrix:	Soil	Instrument:	GCMS6
Units:	mg/kg (ppm) Dry Weight	Operator:	ya

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Anthracene-d10	85	31	163
Benzo(a)anthracene-d12	87	24	168

Compounds:	Concentration mg/kg (ppm)
Naphthalene	0.63
Acenaphthylene	<0.01
Acenaphthene	0.033
Fluorene	0.090
Phenanthrene	0.092
Anthracene	0.029
Fluoranthene	0.019
Pyrene	0.036
Benz(a)anthracene	0.011
Chrysene	0.010
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 Semivolatile Compounds By EPA Method 8270D SIM

Client Sample ID:	Method Blank	Client:	HydroCon
Date Received:	Not Applicable	Project:	TOC_01-103, WORFDB8 F&BI 511178
Date Extracted:	11/19/15	Lab ID:	05-2374 mb 1/5
Date Analyzed:	11/19/15	Data File:	111905.D
Matrix:	Soil	Instrument:	GCMS6
Units:	mg/kg (ppm) Dry Weight	Operator:	ya

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Anthracene-d10	86	31	163
Benzo(a)anthracene-d12	88	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

Date of Report: 12/02/15

Date Received: 11/13/15

Project: TOC_01-103, WORFDB8 F&BI 511178

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES
FOR VOLATILES BY EPA METHOD 8260C DIRECT SPARGE**

Laboratory Code: 511178-15 (Duplicate)

Analyte	Reporting Units	Sample Result (Wet wt)	Duplicate Result (Wet wt)	RPD (Limit 20)
1,2-Dibromoethane (EDB)	mg/kg (ppm)	<0.005	<0.005	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
1,2-Dibromoethane (EDB)	mg/kg (ppm)	0.05	95	98	70-130	3

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 12/02/15

Date Received: 11/13/15

Project: TOC_01-103, WORFDB8 F&BI 511178

**QUALITY ASSURANCE RESULTS
FOR THE ANALYSIS OF SOIL SAMPLES
FOR TOTAL METALS USING EPA METHOD 200.8**

Laboratory Code: 510447-13 (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	2.56	105	98	70-130	7

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Lead	mg/kg (ppm)	50	98	85-115

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 12/02/15

Date Received: 11/13/15

Project: TOC_01-103, WORFDB8 F&BI 511178

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES
FOR VOLATILES BY EPA METHOD 8260C**

Laboratory Code: 511159-29 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Methyl t-butyl ether (MTBE)	mg/kg (ppm)	2.5	<0.05	82	82	21-145	0
1,2-Dichloroethane (EDC)	mg/kg (ppm)	2.5	<0.05	76	76	12-160	0
Benzene	mg/kg (ppm)	2.5	<0.03	74	74	29-129	0
Toluene	mg/kg (ppm)	2.5	<0.05	73	73	35-130	0
1,2-Dibromoethane (EDB)	mg/kg (ppm)	2.5	<0.05	77	76	28-142	1
Ethylbenzene	mg/kg (ppm)	2.5	<0.05	76	75	32-137	1
m,p-Xylene	mg/kg (ppm)	5	<0.1	76	76	34-136	0
o-Xylene	mg/kg (ppm)	2.5	<0.05	78	78	33-134	0
Naphthalene	mg/kg (ppm)	2.5	<0.05	57	58	14-157	2

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Methyl t-butyl ether (MTBE)	mg/kg (ppm)	2.5	103	60-123
1,2-Dichloroethane (EDC)	mg/kg (ppm)	2.5	96	56-135
Benzene	mg/kg (ppm)	2.5	95	68-114
Toluene	mg/kg (ppm)	2.5	92	66-126
1,2-Dibromoethane (EDB)	mg/kg (ppm)	2.5	96	74-132
Ethylbenzene	mg/kg (ppm)	2.5	93	64-123
m,p-Xylene	mg/kg (ppm)	5	94	78-122
o-Xylene	mg/kg (ppm)	2.5	96	77-124
Naphthalene	mg/kg (ppm)	2.5	67	63-140

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 12/02/15

Date Received: 11/13/15

Project: TOC_01-103, WORFDB8 F&BI 511178

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER
SAMPLES FOR PNA'S BY EPA METHOD 8270D SIM**

Laboratory Code: 511246-16 1/6 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Naphthalene	ug/L (ppb)	12.5	0.014	91	94	10-172	3
Acenaphthylene	ug/L (ppb)	12.5	<0.01	89	91	38-137	2
Acenaphthene	ug/L (ppb)	12.5	0.017	93	95	20-150	2
Fluorene	ug/L (ppb)	12.5	0.011	89	93	10-181	4
Phenanthrene	ug/L (ppb)	12.5	<0.01	98	98	58-109	0
Anthracene	ug/L (ppb)	12.5	<0.01	88	90	47-114	2
Fluoranthene	ug/L (ppb)	12.5	<0.01	88	90	10-171	2
Pyrene	ug/L (ppb)	12.5	<0.01	104	104	63-107	0
Benz(a)anthracene	ug/L (ppb)	12.5	<0.01	97 vo	96 vo	60-93	1
Chrysene	ug/L (ppb)	12.5	<0.01	98	98	60-102	0
Benzo(b)fluoranthene	ug/L (ppb)	12.5	<0.01	98 vo	86	62-91	13
Benzo(k)fluoranthene	ug/L (ppb)	12.5	<0.01	92	90	51-98	2
Benzo(a)pyrene	ug/L (ppb)	12.5	<0.01	90 vo	86	60-86	4
Indeno(1,2,3-cd)pyrene	ug/L (ppb)	12.5	<0.01	89	78	10-98	13
Dibenz(a,h)anthracene	ug/L (ppb)	12.5	<0.01	93	80	10-97	15
Benzo(g,h,i)perylene	ug/L (ppb)	12.5	<0.01	91	79	10-102	14

Laboratory Code: Laboratory Control Sample 1/0.25

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Naphthalene	ug/L (ppb)	0.25	92	85	67-116	8
Acenaphthylene	ug/L (ppb)	0.25	90	83	65-119	8
Acenaphthene	ug/L (ppb)	0.25	91	85	66-118	7
Fluorene	ug/L (ppb)	0.25	90	83	64-125	8
Phenanthrene	ug/L (ppb)	0.25	93	87	67-120	7
Anthracene	ug/L (ppb)	0.25	88	82	65-122	7
Fluoranthene	ug/L (ppb)	0.25	87	84	65-127	4
Pyrene	ug/L (ppb)	0.25	98	81	62-130	19
Benz(a)anthracene	ug/L (ppb)	0.25	93	84	60-118	10
Chrysene	ug/L (ppb)	0.25	95	87	66-125	9
Benzo(b)fluoranthene	ug/L (ppb)	0.25	105	95	55-135	10
Benzo(k)fluoranthene	ug/L (ppb)	0.25	97	90	62-125	7
Benzo(a)pyrene	ug/L (ppb)	0.25	95	90	58-127	5
Indeno(1,2,3-cd)pyrene	ug/L (ppb)	0.25	99	92	36-142	7
Dibenz(a,h)anthracene	ug/L (ppb)	0.25	99	91	37-133	8
Benzo(g,h,i)perylene	ug/L (ppb)	0.25	100	92	34-135	8

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 12/02/15

Date Received: 11/13/15

Project: TOC_01-103, WORFDB8 F&BI 511178

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL
SAMPLES FOR PNA'S BY EPA METHOD 8270D SIM**

Laboratory Code: 511178-19 1/5 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Acceptance Criteria
Naphthalene	mg/kg (ppm)	0.17	0.45	25 b	44-129
Acenaphthylene	mg/kg (ppm)	0.17	<0.01	91	52-121
Acenaphthene	mg/kg (ppm)	0.17	0.023	88	51-123
Fluorene	mg/kg (ppm)	0.17	0.064	73 b	37-137
Phenanthrene	mg/kg (ppm)	0.17	0.065	82 b	34-141
Anthracene	mg/kg (ppm)	0.17	0.021	82	32-124
Fluoranthene	mg/kg (ppm)	0.17	0.014	82	16-160
Pyrene	mg/kg (ppm)	0.17	0.026	92	10-180
Benz(a)anthracene	mg/kg (ppm)	0.17	0.0077	96	23-144
Chrysene	mg/kg (ppm)	0.17	0.0072	89	32-149
Benzo(b)fluoranthene	mg/kg (ppm)	0.17	<0.01	108	23-176
Benzo(k)fluoranthene	mg/kg (ppm)	0.17	<0.01	101	42-139
Benzo(a)pyrene	mg/kg (ppm)	0.17	<0.01	93	21-163
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.17	<0.01	84	23-170
Dibenz(a,h)anthracene	mg/kg (ppm)	0.17	<0.01	84	31-146
Benzo(g,h,i)perylene	mg/kg (ppm)	0.17	<0.01	87	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	94	95	58-121	1
Acenaphthylene	mg/kg (ppm)	0.17	93	93	54-121	0
Acenaphthene	mg/kg (ppm)	0.17	95	95	54-123	0
Fluorene	mg/kg (ppm)	0.17	90	92	56-127	2
Phenanthrene	mg/kg (ppm)	0.17	98	98	55-122	0
Anthracene	mg/kg (ppm)	0.17	88	88	50-120	0
Fluoranthene	mg/kg (ppm)	0.17	91	91	54-129	0
Pyrene	mg/kg (ppm)	0.17	96	94	53-127	2
Benz(a)anthracene	mg/kg (ppm)	0.17	96	96	51-115	0
Chrysene	mg/kg (ppm)	0.17	95	97	55-129	2
Benzo(b)fluoranthene	mg/kg (ppm)	0.17	112	109	56-123	3
Benzo(k)fluoranthene	mg/kg (ppm)	0.17	104	106	54-131	2
Benzo(a)pyrene	mg/kg (ppm)	0.17	95	95	51-118	0
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.17	105	105	49-148	0
Dibenz(a,h)anthracene	mg/kg (ppm)	0.17	106	110	50-141	4
Benzo(g,h,i)perylene	mg/kg (ppm)	0.17	101	103	52-131	2

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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.

51178

SAMPLE CHAIN OF CUSTODY

NE 11-13-15

VS3 VS3 / 304

Send Report To Craig Hultgren

Company Hydram

Address _____

City, State, ZIP _____

Phone # _____ Fax # _____

SAMPLES (signature) [Signature]
PROJECT ANDRANO PO# _____

01-103

REMARKS

Page # _____ of _____
 TURNAROUND TIME
 Standard (2 Weeks)
 RUSH
 Rush charges authorized by _____
 SAMPLE DISPOSAL
 Dispose after 30 days
 Return samples
 Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	ANALYSES REQUESTED							Notes		
						TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260	SVOCs by 8270	HFS	BTEX by 8021B		PAHs	Led
HC07-8	02	11/11/15	0830	Soil	6	X	X				X				
HC07-12	03		0830												
HC07-15	03		0830												
HC08-8	04		0901												
HC08-15	05		0906												
HC08-25	06		0922												
HC09-8	07		1011												
HC09-15	08		1018												
HC09-25	09		1030												
HC10-8	10		1118												

Samples received at _____

Friedman & Bruya, Inc.

3012 16th Avenue West

Seattle, WA 98119-2029

Ph. (206) 285-8282

Fax (206) 283-5044

FORMS\COC\COC.DOC

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
<u>[Signature]</u>	<u>Max A. Gummer</u>	<u>Hydram</u>	<u>11/11/15</u>	<u>1500</u>
<u>[Signature]</u>	<u>Hydram</u>	<u>FE BI</u>	<u>11/13/15</u>	<u>1800</u>
Received by: _____				

51178

SAMPLE CHAIN OF CUSTODY

ME 11-13-15

Page # 2 of 3

Send Report To Craig Hultgren

Company Hydrex

Address _____

City, State, ZIP _____

Phone # _____ Fax # _____

SAMPLERS (signature) <u>[Signature]</u>	
PROJECT NAME/NO. <u>01-103</u>	PO#
REMARKS	

TURNAROUND TIME <input type="checkbox"/> Standard (2 Weeks) <input checked="" type="checkbox"/> RUSH	SAMPLE DISPOSAL <input type="checkbox"/> Dispose after 30 days <input type="checkbox"/> Return samples <input type="checkbox"/> Will call with instructions
Rush charges authorized by _____	

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	ANALYSES REQUESTED							Notes	
						TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260	SVOCs by 8270	HFS BTEX by 8260	PAHs		Lead
HC10-13	11	11/11/15	1045	Soil	6	X	X				X			* per Ag 11/18/15 ms
HC10-15	12		1128											
HC10-25	13		1142											
HC11-10	14		1308											
HC11-14	15		1316								*	*	*	
HC11-20	16		1322											
HC11-25	17		1325											
HC12-10	18		1357											
HC12-11	19		1404								*			
HC12-20	20		1412											Samples spotted at 1:00

SIGNATURE		PRINT NAME		COMPANY		DATE		TIME	
Relinquished by: <u>[Signature]</u>	<u>A. Ganner</u>	<u>[Signature]</u>	<u>Phan Phan</u>	<u>Hydrex</u>	<u>Hydrex</u>	<u>11/18/15</u>	<u>1500</u>		
Received by: <u>[Signature]</u>	<u>[Signature]</u>	<u>Phan Phan</u>	<u>Phan Phan</u>	<u>Hydrex</u>	<u>Hydrex</u>	<u>11/13/15</u>	<u>1000</u>		

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3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044
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511178

SAMPLE CHAIN OF CUSTODY

ME 11-13-15

VS3/13/CS4

Send Report To Craig Hultgren

Company HydroCem

Address _____

City, State, ZIP _____

Phone # _____ Fax # _____

SAMPLERS (signature) [Signature]
 PROJECT NAME/NO. 01-103
 PO# _____

REMARKS

Page # 3 of 3
 TURNAROUND TIME
 Standard (2 Weeks)
 RUSH
 Rush charges authorized by _____
 SAMPLE DISPOSAL
 Dispose after 30 days
 Return samples
 Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	ANALYSES REQUESTED							Notes				
						TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260	SVOCs by 8270	HFS	BTEX by 8260		PAHs	Lead	COB, EX, N, MTBE	
HC12-25	21E	11/12/15	1427	Soil	6	X	X					X					
HC07-W	22E		0835	Water	5												
HC08-W	23		0835														
HC09-W	24		1035														
HC10-W	25		1145										*				
HC11-W	26		1355														
HC12-W	27		1435														

Samples reported at 1 °C

Relinquished by: <u>[Signature]</u>	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Received by: <u>[Signature]</u>		Max A. Gummer	HydroCem	11/12/15	1500
Relinquished by: <u>[Signature]</u>		Max Phan	F&BI	11/13/15	10:00
Received by: _____					

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

November 17, 2015

Craig Hultgren, Project Manager
HydroCon
510 Allen St, Suite B
Kelso, WA 98626

Dear Mr. Hultgren:

Included are the results from the testing of material submitted on November 14, 2015 from the TOC_01-103, WORFDB8 F&BI 511197 project. There are 36 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 should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures

c: Rob Honsberger, Allison Greiner
HDC1117R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on November 14, 2015 by Friedman & Bruya, Inc. from the HydroCon TOC_01-103, WORFDB8 F&BI 511197 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	<u>HydroCon</u>
511197 -01	HC13-8
511197 -02	HC13-15
511197 -03	HC13-20
511197 -04	HC14-8
511197 -05	HC14-15
511197 -06	HC14-20
511197 -07	HC15-8
511197 -08	HC15-15
511197 -09	HC15-20
511197 -10	HC16-8
511197 -11	HC16-15
511197 -12	HC16-20
511197 -13	HC17-8
511197 -14	HC17-15
511197 -15	HC17-20
511197 -16	HC13-W
511197 -17	HC14-W
511197 -18	HC15-W
511197 -19	HC16-W
511197 -20	HC17-W

The VOA vials for samples HC15-W and HC16-W were received with headspace present in the samples. The data were flagged accordingly.

All other quality control requirements were acceptable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/17/15
Date Received: 11/14/15
Project: TOC_01-103, WORFDB8 F&BI 511197
Date Extracted: 11/16/15
Date Analyzed: 11/16/15

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES
FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE
USING METHOD NWTPH-Gx**
Results Reported as ug/L (ppb)

<u>Sample ID</u> Laboratory ID	<u>Gasoline Range</u>	<u>Surrogate</u> <u>(% Recovery)</u> (Limit 51-134)
HC13-W 511197-16	<100	85
HC14-W 511197-17	<100	95
HC15-W hs 511197-18 1/10	1,600	93
HC16-W hs 511197-19	100	95
HC17-W cf 511197-20	<100	91
Method Blank 05-2320 MB	<100	98

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/17/15
Date Received: 11/14/15
Project: TOC_01-103, WORFDB8 F&BI 511197
Date Extracted: 11/16/15
Date Analyzed: 11/16/15

**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)

<u>Sample ID</u> Laboratory ID	<u>Gasoline Range</u>	<u>Surrogate</u> <u>(% Recovery)</u> (Limit 50-150)
HC13-8 511197-01	<2	95
HC13-15 511197-02	<2	95
HC13-20 511197-03	<2	94
HC14-8 511197-04	<2	96
HC14-15 511197-05	<2	95
HC14-20 511197-06	<2	95
HC15-8 511197-07	<2	95
HC15-15 511197-08	<2	97
HC15-20 511197-09	5.5	98
HC16-8 511197-10	<2	94

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/17/15
Date Received: 11/14/15
Project: TOC_01-103, WORFDB8 F&BI 511197
Date Extracted: 11/16/15
Date Analyzed: 11/16/15

**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)

<u>Sample ID</u> Laboratory ID	<u>Gasoline Range</u>	<u>Surrogate</u> <u>(% Recovery)</u> (Limit 50-150)
HC16-15 511197-11	<2	95
HC16-20 511197-12	<2	95
HC17-8 511197-13	<2	95
HC17-15 511197-14	<2	94
HC17-20 511197-15	<2	94
Method Blank 05-2321 MB	<2	99

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/17/15
Date Received: 11/14/15
Project: TOC_01-103, WORFDB8 F&BI 511197
Date Extracted: 11/16/15
Date Analyzed: 11/16/15

**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)

<u>Sample ID</u> Laboratory ID	<u>Diesel Range</u> (C ₁₀ -C ₂₅)	<u>Motor Oil Range</u> (C ₂₅ -C ₃₆)	<u>Surrogate</u> <u>(% Recovery)</u> (Limit 41-152)
HC13-W 511197-16	<50	<250	77
HC14-W 511197-17	<50	<250	77
HC15-W 511197-18 1/1.6	1,300 x	<400	87
HC16-W 511197-19 1/1.2	250 x	<300	76
HC17-W 511197-20	<50	<250	74
Method Blank 05-2346 MB	<50	<250	82

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/17/15
 Date Received: 11/14/15
 Project: TOC_01-103, WORFDB8 F&BI 511197
 Date Extracted: 11/16/15
 Date Analyzed: 11/16/15

**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)

<u>Sample ID</u> Laboratory ID	<u>Diesel Range</u> (C ₁₀ -C ₂₅)	<u>Motor Oil Range</u> (C ₂₅ -C ₃₆)	<u>Surrogate</u> <u>(% Recovery)</u> (Limit 48-168)
HC13-8 511197-01	<50	<250	89
HC13-15 511197-02	<50	<250	81
HC13-20 511197-03	<50	<250	83
HC14-8 511197-04	<50	<250	93
HC14-15 511197-05	<50	<250	92
HC14-20 511197-06	<50	<250	84
HC15-8 511197-07	<50	<250	85
HC15-15 511197-08	<50	<250	92
HC15-20 511197-09	<50	<250	85
HC16-8 511197-10	<50	<250	84

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/17/15
Date Received: 11/14/15
Project: TOC_01-103, WORFDB8 F&BI 511197
Date Extracted: 11/16/15
Date Analyzed: 11/16/15

**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)

<u>Sample ID</u> Laboratory ID	<u>Diesel Range</u> (C ₁₀ -C ₂₅)	<u>Motor Oil Range</u> (C ₂₅ -C ₃₆)	<u>Surrogate</u> <u>(% Recovery)</u> (Limit 48-168)
HC16-15 511197-11	<50	<250	81
HC16-20 511197-12	<50	<250	83
HC17-8 511197-13	<50	<250	94
HC17-15 511197-14	<50	<250	85
HC17-20 511197-15	<50	<250	89
Method Blank 05-2345 MB	<50	<250	91

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC13-8	Client:	HydroCon
Date Received:	11/14/15	Project:	TOC_01-103, WORFDB8 F&BI 511197
Date Extracted:	11/16/15	Lab ID:	511197-01
Date Analyzed:	11/16/15	Data File:	111611.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	89	113
Toluene-d8	99	64	137
4-Bromofluorobenzene	102	81	119

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC13-15	Client:	HydroCon
Date Received:	11/14/15	Project:	TOC_01-103, WORFDB8 F&BI 511197
Date Extracted:	11/16/15	Lab ID:	511197-02
Date Analyzed:	11/16/15	Data File:	111612.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	98	64	137
4-Bromofluorobenzene	100	81	119

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC13-20	Client:	HydroCon
Date Received:	11/14/15	Project:	TOC_01-103, WORFDB8 F&BI 511197
Date Extracted:	11/16/15	Lab ID:	511197-03
Date Analyzed:	11/16/15	Data File:	111613.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	89	113
Toluene-d8	98	64	137
4-Bromofluorobenzene	103	81	119

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC14-8	Client:	HydroCon
Date Received:	11/14/15	Project:	TOC_01-103, WORFDB8 F&BI 511197
Date Extracted:	11/16/15	Lab ID:	511197-04
Date Analyzed:	11/16/15	Data File:	111614.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	89	113
Toluene-d8	96	64	137
4-Bromofluorobenzene	100	81	119

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC14-15	Client:	HydroCon
Date Received:	11/14/15	Project:	TOC_01-103, WORFDB8 F&BI 511197
Date Extracted:	11/16/15	Lab ID:	511197-05
Date Analyzed:	11/16/15	Data File:	111615.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	89	113
Toluene-d8	99	64	137
4-Bromofluorobenzene	100	81	119

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC14-20	Client:	HydroCon
Date Received:	11/14/15	Project:	TOC_01-103, WORFDB8 F&BI 511197
Date Extracted:	11/16/15	Lab ID:	511197-06
Date Analyzed:	11/16/15	Data File:	111616.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	89	113
Toluene-d8	98	64	137
4-Bromofluorobenzene	99	81	119

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC15-8	Client:	HydroCon
Date Received:	11/14/15	Project:	TOC_01-103, WORFDB8 F&BI 511197
Date Extracted:	11/16/15	Lab ID:	511197-07
Date Analyzed:	11/16/15	Data File:	111617.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	98	89	113
Toluene-d8	98	64	137
4-Bromofluorobenzene	101	81	119

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC15-15	Client:	HydroCon
Date Received:	11/14/15	Project:	TOC_01-103, WORFDB8 F&BI 511197
Date Extracted:	11/16/15	Lab ID:	511197-08
Date Analyzed:	11/16/15	Data File:	111618.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	89	113
Toluene-d8	99	64	137
4-Bromofluorobenzene	99	81	119

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC15-20	Client:	HydroCon
Date Received:	11/14/15	Project:	TOC_01-103, WORFDB8 F&BI 511197
Date Extracted:	11/16/15	Lab ID:	511197-09
Date Analyzed:	11/16/15	Data File:	111625.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	98	64	137
4-Bromofluorobenzene	101	81	119

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC16-8	Client:	HydroCon
Date Received:	11/14/15	Project:	TOC_01-103, WORFDB8 F&BI 511197
Date Extracted:	11/16/15	Lab ID:	511197-10
Date Analyzed:	11/16/15	Data File:	111619.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	101	81	119

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC16-15	Client:	HydroCon
Date Received:	11/14/15	Project:	TOC_01-103, WORFDB8 F&BI 511197
Date Extracted:	11/16/15	Lab ID:	511197-11
Date Analyzed:	11/16/15	Data File:	111620.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	89	113
Toluene-d8	100	64	137
4-Bromofluorobenzene	102	81	119

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC16-20	Client:	HydroCon
Date Received:	11/14/15	Project:	TOC_01-103, WORFDB8 F&BI 511197
Date Extracted:	11/16/15	Lab ID:	511197-12
Date Analyzed:	11/16/15	Data File:	111621.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	89	113
Toluene-d8	100	64	137
4-Bromofluorobenzene	101	81	119

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC17-8	Client:	HydroCon
Date Received:	11/14/15	Project:	TOC_01-103, WORFDB8 F&BI 511197
Date Extracted:	11/16/15	Lab ID:	511197-13
Date Analyzed:	11/16/15	Data File:	111622.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	103	81	119

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC17-15	Client:	HydroCon
Date Received:	11/14/15	Project:	TOC_01-103, WORFDB8 F&BI 511197
Date Extracted:	11/16/15	Lab ID:	511197-14
Date Analyzed:	11/16/15	Data File:	111623.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	89	113
Toluene-d8	99	64	137
4-Bromofluorobenzene	100	81	119

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC17-20	Client:	HydroCon
Date Received:	11/14/15	Project:	TOC_01-103, WORFDB8 F&BI 511197
Date Extracted:	11/16/15	Lab ID:	511197-15
Date Analyzed:	11/16/15	Data File:	111624.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	89	113
Toluene-d8	98	64	137
4-Bromofluorobenzene	100	81	119

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	Method Blank	Client:	HydroCon
Date Received:	Not Applicable	Project:	TOC_01-103, WORFDB8 F&BI 511197
Date Extracted:	11/16/15	Lab ID:	05-2304 mb
Date Analyzed:	11/16/15	Data File:	111610.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	89	113
Toluene-d8	99	64	137
4-Bromofluorobenzene	101	81	119

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC13-W cf	Client:	HydroCon
Date Received:	11/14/15	Project:	TOC_01-103, WORFDB8 F&BI 511197
Date Extracted:	11/16/15	Lab ID:	511197-16
Date Analyzed:	11/16/15	Data File:	111610.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	100	63	127
4-Bromofluorobenzene	100	60	133

Compounds:	Concentration ug/L (ppb)
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:	HC14-W cf	Client:	HydroCon
Date Received:	11/14/15	Project:	TOC_01-103, WORFDB8 F&BI 511197
Date Extracted:	11/16/15	Lab ID:	511197-17
Date Analyzed:	11/16/15	Data File:	111611.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	98	60	133

Compounds:	Concentration ug/L (ppb)
Benzene	<0.35
Toluene	2.8
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:	HC15-W cf hs	Client:	HydroCon
Date Received:	11/14/15	Project:	TOC_01-103, WORFDB8 F&BI 511197
Date Extracted:	11/16/15	Lab ID:	511197-18
Date Analyzed:	11/16/15	Data File:	111613.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	101	60	133

Compounds:	Concentration ug/L (ppb)
Benzene	0.35
Toluene	2.3
Ethylbenzene	13
m,p-Xylene	14
o-Xylene	3.2

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC16-W cf hs	Client:	HydroCon
Date Received:	11/14/15	Project:	TOC_01-103, WORFDB8 F&BI 511197
Date Extracted:	11/16/15	Lab ID:	511197-19
Date Analyzed:	11/16/15	Data File:	111612.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	104	57	121
Toluene-d8	99	63	127
4-Bromofluorobenzene	97	60	133

Compounds:	Concentration ug/L (ppb)
Benzene	<0.35
Toluene	1.1
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:	HC17-W cf	Client:	HydroCon
Date Received:	11/14/15	Project:	TOC_01-103, WORFDB8 F&BI 511197
Date Extracted:	11/16/15	Lab ID:	511197-20
Date Analyzed:	11/16/15	Data File:	111609.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	101	63	127
4-Bromofluorobenzene	99	60	133

Compounds:	Concentration ug/L (ppb)
Benzene	<0.35
Toluene	3.7
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:	HydroCon
Date Received:	Not Applicable	Project:	TOC_01-103, WORFDB8 F&BI 511197
Date Extracted:	11/16/15	Lab ID:	05-2305 mb
Date Analyzed:	11/16/15	Data File:	111608.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	100	60	133

Compounds:	Concentration ug/L (ppb)
Benzene	<0.35
Toluene	<1
Ethylbenzene	<1
m,p-Xylene	<2
o-Xylene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/17/15

Date Received: 11/14/15

Project: TOC_01-103, WORFDB8 F&BI 511197

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER
SAMPLES FOR TPH AS GASOLINE
USING METHOD NWTPH-Gx**

Laboratory Code: 511189-01 (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	98	69-134

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/17/15

Date Received: 11/14/15

Project: TOC_01-103, WORFDB8 F&BI 511197

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES
FOR TPH AS GASOLINE
USING METHOD NWTPH-Gx**

Laboratory Code: 511197-01 (Duplicate)

Analyte	Reporting Units	Sample Result (Wet Wt)	Duplicate Result (Wet Wt)	RPD (Limit 20)
Gasoline	mg/kg (ppm)	<2	<2	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Gasoline	mg/kg (ppm)	20	105	71-131

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/17/15

Date Received: 11/14/15

Project: TOC_01-103, WORFDB8 F&BI 511197

**QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL
SAMPLES
FOR TOTAL PETROLEUM HYDROCARBONS AS
DIESEL EXTENDED USING METHOD NWTPH-Dx**

Laboratory Code: 511197-01 (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	97	97	73-135	0

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Diesel Extended	mg/kg (ppm)	5,000	102	74-139

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/17/15

Date Received: 11/14/15

Project: TOC_01-103, WORFDB8 F&BI 511197

**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	93	94	63-142	1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/17/15

Date Received: 11/14/15

Project: TOC_01-103, WORFDB8 F&BI 511197

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES
FOR VOLATILES BY EPA METHOD 8260C**

Laboratory Code: 511197-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Benzene	mg/kg (ppm)	2.5	<0.03	59	58	26-114	2
Toluene	mg/kg (ppm)	2.5	<0.05	64	61	34-112	5
Ethylbenzene	mg/kg (ppm)	2.5	<0.05	68	66	34-115	3
m,p-Xylene	mg/kg (ppm)	5	<0.1	67	66	25-125	2
o-Xylene	mg/kg (ppm)	2.5	<0.05	69	69	27-126	0

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/kg (ppm)	2.5	95	72-106
Toluene	mg/kg (ppm)	2.5	96	74-111
Ethylbenzene	mg/kg (ppm)	2.5	102	75-112
m,p-Xylene	mg/kg (ppm)	5	101	77-115
o-Xylene	mg/kg (ppm)	2.5	104	76-115

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/17/15

Date Received: 11/14/15

Project: TOC_01-103, WORFDB8 F&BI 511197

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER
SAMPLES FOR VOLATILES BY EPA METHOD 8260C**

Laboratory Code: 511197-17 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent	Acceptance
				Recovery MS	Criteria
Benzene	ug/L (ppb)	50	<0.35	91	76-125
Toluene	ug/L (ppb)	50	2.8	97	76-122
Ethylbenzene	ug/L (ppb)	50	<1	93	69-135
m,p-Xylene	ug/L (ppb)	100	<2	94	69-135
o-Xylene	ug/L (ppb)	50	<1	96	60-140

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent	Percent	Acceptance Criteria	RPD (Limit 20)
			Recovery LCS	Recovery LCSD		
Benzene	ug/L (ppb)	50	85	87	69-134	2
Toluene	ug/L (ppb)	50	85	87	72-122	2
Ethylbenzene	ug/L (ppb)	50	86	89	77-124	3
m,p-Xylene	ug/L (ppb)	100	86	90	83-125	5
o-Xylene	ug/L (ppb)	50	87	91	81-121	4

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

ME 11-14-15

204/053/03

Send Report To Steve Holtgren
 Company HydroGen
 Address _____
 City, State, ZIP _____
 Phone # _____ Fax # _____

SAMPLERS (signature) [Signature]
 PROJECT NAME/NO. 01-103
 PO# _____

TURNAROUND TIME
 Standard (2 Weeks)
 RUSH
 Rush charges authorized by _____

REMARKS

SAMPLE DISPOSAL
 Dispose after 30 days
 Return samples
 Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	ANALYSES REQUESTED						Notes
						TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260	SVOCs by 8270	HFS	
HC13-8	08	01/13/15	0924	Soil	6	X	X					X 0928/5 0929/5
HC13-15	03		0937									
HC13-20	04		1025									
HC14-8	05		1030									
HC14-15	06		1036									
HC14-20	07		1126									
HC15-8	08		1130									
HC15-15	09		1136									
HC15-20	10		1254									
HC16-8												

Friedman & Bryna, Inc.
 3012 16th Avenue West
 Seattle, WA 98119-2029
 Ph. (206) 285-8282
 Fax (206) 283-5044
 FORMS\COC\CCOC.DOC

Relinquished by: <u>[Signature]</u>	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Received by: <u>[Signature]</u>		MAX A. Gummer	HydroGen	11/13/15	1600
Relinquished by: _____		Sham Pham	FEBI	11/15/15	1000
Received by: _____					

Samples received at 3 °C

5/11/97

SAMPLE CHAIN OF CUSTODY ME 11-14-15

CO4/US3/13

Send Report To Craig Hultgren

Company HydroCon

Address _____

City, State, ZIP _____

Phone # _____ Fax # _____

SAMPLERS (signature) _____
 PROJECT NAME/NO. 01-103
 PO# _____

REMARKS

Page # 2 of 8

TURNAROUND TIME
 Standard (2 Weeks)
 RUSH
 Rush charges authorized by _____

SAMPLE DISPOSAL
 Dispose after 30 days
 Return samples
 Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	ANALYSES REQUESTED						Notes
						TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260	SVOCs by 8270	HFS	
HC16-15	11A	11/13/15	1300	Soil	6	X	X				X	
HC16-20	12		1304									
HC17-8	13		1343									
HC17-15	14		1347									
HC17-20	15		1352									
HC13-W	16		0955	Water	5							
HC14-W	17		1041									
HC15-W	18		1142									
HC16-W	19		1345									
HC17-W	20		1400									

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

Relinquished by: <u>[Signature]</u>	AGNATURE	PRINT NAME	COMPANY	DATE	TIME
Received by: <u>[Signature]</u>		Max A. Gummer	HydroCon	11/13/15	1600
Relinquished by: <u>[Signature]</u>		Max A. Gummer	HydroCon	11/14/15	1000
Received by: _____					

...mples received at 3 %

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
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January 4, 2016

Craig Hultgren, Project Manager
HydroCon
510 Allen St, Suite B
Kelso, WA 98626

Dear Mr. Hultgren:

Included are the results from the testing of material submitted on December 24, 2015 from the TOC_01-103, WORFDB8 F&BI 512428 project. There are 29 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 should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures

c: Rob Honsberger, Allison Greiner
HDC0104R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on December 24, 2015 by Friedman & Bruya, Inc. from the HydroCon TOC_01-103, WORFDB8 F&BI 512428 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	<u>HydroCon</u>
512428 -01	MW01A
512428 -02	MW02A
512428 -03	MW03A
512428 -04	MW04A
512428 -05	MW05
512428 -06	MW06
512428 -07	MW99

All quality control requirements were acceptable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 01/04/16

Date Received: 12/24/15

Project: TOC_01-103, WORFDB8 F&BI 512428

Date Extracted: 12/28/15

Date Analyzed: 12/28/15

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES
FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE
USING METHOD NWTPH-Gx**

Results Reported as ug/L (ppb)

<u>Sample ID</u> Laboratory ID	<u>Gasoline Range</u>	Surrogate (% Recovery) (Limit 51-134)
MW01A 512428-01	<100	92
MW02A 512428-02	530	95
MW03A 512428-03	200	90
MW04A 512428-04	<100	92
MW05 512428-05	<100	86
MW06 512428-06	<100	90
MW99 512428-07	550	93
Method Blank 05-2597 MB	<100	90

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 01/04/16
Date Received: 12/24/15
Project: TOC_01-103, WORFDB8 F&BI 512428
Date Extracted: 12/29/15
Date Analyzed: 12/29/15

**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)

<u>Sample ID</u> Laboratory ID	<u>Diesel Range</u> (C ₁₀ -C ₂₅)	<u>Motor Oil Range</u> (C ₂₅ -C ₃₆)	<u>Surrogate</u> <u>(% Recovery)</u> (Limit 47-140)
MW01A 512428-01	<50	<250	87
MW02A 512428-02	360 x	<250	95
MW03A 512428-03	<50	<250	89
MW04A 512428-04	95 x	<250	88
MW05 512428-05	<50	<250	85
MW06 512428-06	<50	<250	86
MW99 512428-07	320 x	<250	86
Method Blank 05-2619 MB	<50	<250	84

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	MW01A	Client:	HydroCon
Date Received:	12/24/15	Project:	TOC_01-103, WORFDB8 F&BI 512428
Date Extracted:	12/29/15	Lab ID:	512428-01
Date Analyzed:	12/29/15	Data File:	512428-01.047
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	SP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	107	60	125

Analyte:	Concentration ug/L (ppb)
Lead	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	MW02A	Client:	HydroCon
Date Received:	12/24/15	Project:	TOC_01-103, WORFDB8 F&BI 512428
Date Extracted:	12/29/15	Lab ID:	512428-02
Date Analyzed:	12/29/15	Data File:	512428-02.048
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	SP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	108	60	125

Analyte:	Concentration ug/L (ppb)
Lead	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	MW03A	Client:	HydroCon
Date Received:	12/24/15	Project:	TOC_01-103, WORFDB8 F&BI 512428
Date Extracted:	12/29/15	Lab ID:	512428-03
Date Analyzed:	12/29/15	Data File:	512428-03.049
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	SP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	107	60	125

Analyte:	Concentration ug/L (ppb)
Lead	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	MW04A	Client:	HydroCon
Date Received:	12/24/15	Project:	TOC_01-103, WORFDB8 F&BI 512428
Date Extracted:	12/29/15	Lab ID:	512428-04
Date Analyzed:	12/29/15	Data File:	512428-04.050
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	SP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	109	60	125

Analyte:	Concentration ug/L (ppb)
Lead	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	MW05	Client:	HydroCon
Date Received:	12/24/15	Project:	TOC_01-103, WORFDB8 F&BI 512428
Date Extracted:	12/29/15	Lab ID:	512428-05
Date Analyzed:	12/29/15	Data File:	512428-05.051
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	SP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	105	60	125

Analyte:	Concentration ug/L (ppb)
Lead	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	MW06	Client:	HydroCon
Date Received:	12/24/15	Project:	TOC_01-103, WORFDB8 F&BI 512428
Date Extracted:	12/29/15	Lab ID:	512428-06
Date Analyzed:	12/29/15	Data File:	512428-06.052
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	SP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	106	60	125

Analyte:	Concentration ug/L (ppb)
Lead	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	MW99	Client:	HydroCon
Date Received:	12/24/15	Project:	TOC_01-103, WORFDB8 F&BI 512428
Date Extracted:	12/29/15	Lab ID:	512428-07
Date Analyzed:	12/29/15	Data File:	512428-07.053
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	SP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	107	60	125

Analyte:	Concentration ug/L (ppb)
Lead	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	Method Blank	Client:	HydroCon
Date Received:	NA	Project:	TOC_01-103, WORFDB8 F&BI 512428
Date Extracted:	12/29/15	Lab ID:	I5-751 mb
Date Analyzed:	12/29/15	Data File:	I5-751 mb.020
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	SP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	102	60	125

Analyte:	Concentration ug/L (ppb)
Lead	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW01A	Client:	HydroCon
Date Received:	12/24/15	Project:	TOC_01-103, WORFDB8 F&BI 512428
Date Extracted:	12/24/15	Lab ID:	512428-01
Date Analyzed:	12/24/15	Data File:	122411.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	85	117
Toluene-d8	98	91	108
4-Bromofluorobenzene	101	76	126

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
Naphthalene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW02A	Client:	HydroCon
Date Received:	12/24/15	Project:	TOC_01-103, WORFDB8 F&BI 512428
Date Extracted:	12/24/15	Lab ID:	512428-02
Date Analyzed:	12/24/15	Data File:	122412.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	103	85	117
Toluene-d8	99	91	108
4-Bromofluorobenzene	101	76	126

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	1.2
m,p-Xylene	24
o-Xylene	2.6
Naphthalene	3.1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW03A	Client:	HydroCon
Date Received:	12/24/15	Project:	TOC_01-103, WORFDB8 F&BI 512428
Date Extracted:	12/24/15	Lab ID:	512428-03
Date Analyzed:	12/24/15	Data File:	122413.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	85	117
Toluene-d8	97	91	108
4-Bromofluorobenzene	102	76	126

Compounds:	Concentration ug/L (ppb)
Methyl t-butyl ether (MTBE)	<1
1,2-Dichloroethane (EDC)	<1
Benzene	16
Toluene	6.7
1,2-Dibromoethane (EDB)	<1
Ethylbenzene	<1
m,p-Xylene	<2
o-Xylene	1.6
Naphthalene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW04A	Client:	HydroCon
Date Received:	12/24/15	Project:	TOC_01-103, WORFDB8 F&BI 512428
Date Extracted:	12/24/15	Lab ID:	512428-04
Date Analyzed:	12/24/15	Data File:	122414.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	103	85	117
Toluene-d8	98	91	108
4-Bromofluorobenzene	103	76	126

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
Naphthalene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW05	Client:	HydroCon
Date Received:	12/24/15	Project:	TOC_01-103, WORFDB8 F&BI 512428
Date Extracted:	12/24/15	Lab ID:	512428-05
Date Analyzed:	12/24/15	Data File:	122415.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	85	117
Toluene-d8	97	91	108
4-Bromofluorobenzene	102	76	126

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
Naphthalene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW06	Client:	HydroCon
Date Received:	12/24/15	Project:	TOC_01-103, WORFDB8 F&BI 512428
Date Extracted:	12/24/15	Lab ID:	512428-06
Date Analyzed:	12/24/15	Data File:	122416.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	85	117
Toluene-d8	97	91	108
4-Bromofluorobenzene	100	76	126

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
Naphthalene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW99	Client:	HydroCon
Date Received:	12/24/15	Project:	TOC_01-103, WORFDB8 F&BI 512428
Date Extracted:	12/24/15	Lab ID:	512428-07
Date Analyzed:	12/24/15	Data File:	122417.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	85	117
Toluene-d8	99	91	108
4-Bromofluorobenzene	99	76	126

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	1.7
m,p-Xylene	30
o-Xylene	2.9
Naphthalene	3.8

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	Method Blank	Client:	HydroCon
Date Received:	Not Applicable	Project:	TOC_01-103, WORFDB8 F&BI 512428
Date Extracted:	12/24/15	Lab ID:	05-2523 mb
Date Analyzed:	12/24/15	Data File:	122410.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

	% Recovery:	Lower Limit:	Upper Limit:
Surrogates:			
1,2-Dichloroethane-d4	101	85	117
Toluene-d8	98	91	108
4-Bromofluorobenzene	100	76	126

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
Naphthalene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270D SIM

Client Sample ID:	MW02A	Client:	HydroCon
Date Received:	12/24/15	Project:	TOC_01-103, WORFDB8 F&BI 512428
Date Extracted:	12/30/15	Lab ID:	512428-02 1/2
Date Analyzed:	12/30/15	Data File:	123012.D
Matrix:	Water	Instrument:	GCMS6
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Anthracene-d10	108	31	160
Benzo(a)anthracene-d12	126	25	165

Compounds:	Concentration ug/L (ppb)
Benz(a)anthracene	<0.06
Chrysene	<0.06
Benzo(a)pyrene	<0.06
Benzo(b)fluoranthene	<0.06
Benzo(k)fluoranthene	<0.06
Indeno(1,2,3-cd)pyrene	<0.06
Dibenz(a,h)anthracene	<0.06

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270D SIM

Client Sample ID:	MW04A	Client:	HydroCon
Date Received:	12/24/15	Project:	TOC_01-103, WORFDB8 F&BI 512428
Date Extracted:	12/30/15	Lab ID:	512428-04 1/2
Date Analyzed:	12/30/15	Data File:	123013.D
Matrix:	Water	Instrument:	GCMS6
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Anthracene-d10	111	31	160
Benzo(a)anthracene-d12	133	25	165

Compounds:	Concentration ug/L (ppb)
Benz(a)anthracene	<0.06
Chrysene	<0.06
Benzo(a)pyrene	<0.06
Benzo(b)fluoranthene	<0.06
Benzo(k)fluoranthene	<0.06
Indeno(1,2,3-cd)pyrene	<0.06
Dibenz(a,h)anthracene	<0.06

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270D SIM

Client Sample ID:	MW99	Client:	HydroCon
Date Received:	12/24/15	Project:	TOC_01-103, WORFDB8 F&BI 512428
Date Extracted:	12/30/15	Lab ID:	512428-07 1/2
Date Analyzed:	12/30/15	Data File:	123014.D
Matrix:	Water	Instrument:	GCMS6
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Anthracene-d10	105	31	160
Benzo(a)anthracene-d12	121	25	165

Compounds:	Concentration ug/L (ppb)
Benz(a)anthracene	<0.06
Chrysene	<0.06
Benzo(a)pyrene	<0.06
Benzo(b)fluoranthene	<0.06
Benzo(k)fluoranthene	<0.06
Indeno(1,2,3-cd)pyrene	<0.06
Dibenz(a,h)anthracene	<0.06

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270D SIM

Client Sample ID:	Method Blank	Client:	HydroCon
Date Received:	Not Applicable	Project:	TOC_01-103, WORFDB8 F&BI 512428
Date Extracted:	12/30/15	Lab ID:	05-2624 mb
Date Analyzed:	12/30/15	Data File:	123011.D
Matrix:	Water	Instrument:	GCMS6
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Anthracene-d10	114	31	160
Benzo(a)anthracene-d12	126	25	165

Compounds:	Concentration ug/L (ppb)
Benz(a)anthracene	<0.03
Chrysene	<0.03
Benzo(a)pyrene	<0.03
Benzo(b)fluoranthene	<0.03
Benzo(k)fluoranthene	<0.03
Indeno(1,2,3-cd)pyrene	<0.03
Dibenz(a,h)anthracene	<0.03

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 01/04/16

Date Received: 12/24/15

Project: TOC_01-103, WORFDB8 F&BI 512428

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER
SAMPLES FOR TPH AS GASOLINE
USING METHOD NWTPH-Gx**

Laboratory Code: 512428-04 (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	90	69-134

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 01/04/16

Date Received: 12/24/15

Project: TOC_01-103, WORFDB8 F&BI 512428

**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	101	112	61-133	10

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 01/04/16

Date Received: 12/24/15

Project: TOC_01-103, WORFDB8 F&BI 512428

**QUALITY ASSURANCE RESULTS
FOR THE ANALYSIS OF WATER SAMPLES
FOR TOTAL METALS USING EPA METHOD 200.8**

Laboratory Code: 512430-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Lead	ug/L (ppb)	10	<1	105	104	70-130	1

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Lead	ug/L (ppb)	10	110	85-115

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 01/04/16

Date Received: 12/24/15

Project: TOC_01-103, WORFDB8 F&BI 512428

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER
SAMPLES FOR VOLATILES BY EPA METHOD 8260C**

Laboratory Code: 512428-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Acceptance Criteria
Methyl t-butyl ether (MTBE)	ug/L (ppb)	50	<1	91	68-125
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	<1	83	70-119
Benzene	ug/L (ppb)	50	<0.35	95	78-108
Toluene	ug/L (ppb)	50	<1	102	73-117
1,2-Dibromoethane (EDB)	ug/L (ppb)	50	<1	113	79-120
Ethylbenzene	ug/L (ppb)	50	<1	104	71-120
m,p-Xylene	ug/L (ppb)	100	<2	106	63-128
o-Xylene	ug/L (ppb)	50	<1	105	64-129
Naphthalene	ug/L (ppb)	50	<1	111	62-140

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	90	92	70-122	2
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	81	83	79-109	2
Benzene	ug/L (ppb)	50	93	94	81-108	1
Toluene	ug/L (ppb)	50	101	103	83-108	2
1,2-Dibromoethane (EDB)	ug/L (ppb)	50	113	115	82-118	2
Ethylbenzene	ug/L (ppb)	50	103	105	83-111	2
m,p-Xylene	ug/L (ppb)	100	104	107	84-112	3
o-Xylene	ug/L (ppb)	50	104	108	81-117	4
Naphthalene	ug/L (ppb)	50	108	114	72-131	5

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 01/04/16

Date Received: 12/24/15

Project: TOC_01-103, WORFDB8 F&BI 512428

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER
SAMPLES FOR PNA'S BY EPA METHOD 8270D SIM**

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Benz(a)anthracene	ug/L (ppb)	1	100	100	60-118	0
Chrysene	ug/L (ppb)	1	99	99	66-125	0
Benzo(b)fluoranthene	ug/L (ppb)	1	117	118	55-135	1
Benzo(k)fluoranthene	ug/L (ppb)	1	109	111	62-125	2
Benzo(a)pyrene	ug/L (ppb)	1	119	121	58-127	2
Indeno(1,2,3-cd)pyrene	ug/L (ppb)	1	111	116	36-142	4
Dibenz(a,h)anthracene	ug/L (ppb)	1	90	96	37-133	6

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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.

APPENDIX F
Data Validation Reports

TO: Craig Hultgren, HydroCon
FROM: Emily Swanson, Eureka Project Solutions, LLC.
DATE: December 1, 2015
SUBJECT: Laboratory Validation Report

HydroCon TOC Site No. 01-103

Sampling Event Type: Miscellaneous Sampling

Number of Samples: 29

Laboratory Work Order: 511159 & 511159 Additional Total Lead

Final Report Date: 11-13-15
11-24-15

Analysis & Method

- Gasoline Range Hydrocarbon (NWTPH-Gx)
- Diesel Range Hydrocarbon without Silica Gel (NWTPH-Dx)
- Diesel Range Organics with Silica Gel (NWTPH-DxSG)
- Volatile Organic Compounds (EPA 8260C)
- BETX (8021B)
- Lead (200.8) - Total
- Sulfate (300.0)
- Other

Data Package Completeness:

The laboratory submitted all required deliverables, and no anomalies were discussed in the case narrative.

EDD to Hardcopy Verification:

The EDD results were compared with the laboratory analytical report hard copy results. No anomalies found.

Technical Data Validation:

- Holding Times & Sample Receipt
- Surrogate Compounds
- Associated Matrix Spike/Matrix Spike Duplicate (MS/MSD)
- Associated Laboratory Duplicate
- Laboratory Control Sample/ Laboratory Control Sample Duplicates (LCS/LCSD)
- Method Blank
- Field Duplicates
- Target Analyte List
- Reporting Limits (MDL and MRL)
- Reported Results

Holding Times & Sample Receipt:

All holding times and sample receipt were acceptable.

Surrogate Compounds:

The percent R (%R) value(s) for all analyte methods were within laboratory limits. No anomalies found.

Associated Matrix Spike/Matrix Spike Duplicate (MS/MSD):

MS/MSD were within acceptance criteria.

The matrix spike duplicate was associate with methods 8260C and NWTPH-Dx.

Associated Laboratory Duplicate:

The associated lab duplicate was within acceptance criteria.

The lab duplicate was associate with methods NWTPH-Gx.

Laboratory Control Sample/Laboratory Control Sample Duplicates:

LCS/LCSD were evaluated per target analytes. No anomalies were found.

Method Blank:

Method blanks analyzed at the appropriate frequency. No target analytes reported in the method blank control.

Field Duplicate(s):

The measurement quality objective (MQO) for field duplicate RPD is 35% for water samples where concentrations are greater than five times (5x) the reporting limit (RL). For concentrations less than 5x the RL, the difference between the sample result and the replicate result must be less than the RL.

Not applicable

Target Analyte List:

All requested analytes were present.

Reporting Limits (MDL and MRL):

Reporting limits were within acceptance criteria.

Reported Results:

Reported results for the analyte methods were not all within acceptance criteria. Explanation below.

Diesel Range Organics results for HC05-20, HC01, HC02, HC04-W, HC05-W, HC06-W were given the lab qualifier "x". The lab qualifier "x" is defined as "The sample chromatographic pattern does not resemble the fuel standard used for quantitation."

The 8260C results for HC01, HC02, HC03-W, HC04-W, HC05-W and HC06-W were given the lab qualifier "cf". The lab qualifier "cf" is defined as "The sample was centrifuged prior to analysis." The lab qualifier is lab process informational and is not reported in the data table, no known result biases effecting data quality.

Lab Validation Assessment

All quality control criteria are acceptable for the samples; therefore, no action is required and analytical results are usable to meet the project objectives.

Field Note Assessment

Not applicable.

A hand written COC was used for this field event.

Data Quality Review Statement for Report

Explanation below.

A QA/QC review of the analytical results, which included a review of accuracy and precision of the data supplied by the laboratory.

Diesel Range Organics results for HC05-20, HC01, HC02, HC04-W, HC05-W, HC06-W were given the lab qualifier "x". The lab qualifier "x" is defined as "The sample chromatographic pattern does not resemble the fuel standard used for quantitation."

All other quality control criteria are acceptable for the samples; therefore, no action is required and analytical results are usable to meet the project objectives.

Appendix A. Data Validation Qualifiers and Definitions

The following lists the data validation qualifier codes and their definitions that were assigned to analytical results in this data validation review process.

Data Validation Qualifiers and Definitions:

- (R) The sample result is reject due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.
 - (DNR) Do not report. A more appropriate result is reported from another analysis or dilution.
 - (ec) Method reporting limit exceeds Clean Up Level.
 - (J) The analyte was positively identified; the associated numerical value is approximate concentration of the analyte in the sample.
-

Appendix B. Data Validation Qualified Summary Table

Not applicable.

TO: Craig Hultgren, HydroCon
FROM: Emily Swanson, Eureka Project Solutions, LLC.
DATE: December 3, 2015
SUBJECT: Laboratory Validation Report

HydroCon TOC Site No. 01-103

Sampling Event Type: Miscellaneous Sampling

Number of Samples: 27

Laboratory Work Order: 511178 and 511178 additional analysis

Final Report Date: 11-16-15
12-2-15

Analysis & Method

- Gasoline Range Hydrocarbon (NWTPH-Gx)
- Diesel Range Hydrocarbon without Silica Gel (NWTPH-Dx)
- Diesel Range Organics with Silica Gel (NWTPH-DxSG)
- Volatile Organic Compounds (EPA 8260C)
- BETX (8021B)
- Lead (200.8) - Total
- Sulfate (300.0)
- Other 8270D SIM

Data Package Completeness:

Anomalies were discussed in the case narrative regarding corrective action processes. Explanation below.

The 8260C water samples HC10-W, HC11-W, and HC12-W were diluted due to the high level of TPH present in the samples. The reporting limits were raised accordingly.

Several compounds in the 8270D water matrix spike and matrix spike duplicate exceeded the acceptance criteria. The laboratory control sample and laboratory control sample duplicate passed the acceptance criteria, therefore the results were likely due to matrix effect.

EDD to Hardcopy Verification:

The EDD results were compared with the laboratory analytical report hard copy results. No anomalies found.

Technical Data Validation:

- Holding Times & Sample Receipt
- Surrogate Compounds
- Associated Matrix Spike/Matrix Spike Duplicate (MS/MSD)
- Associated Laboratory Duplicate
- Laboratory Control Sample/ Laboratory Control Sample Duplicates (LCS/LCSD)
- Method Blank
- Field Duplicates
- Target Analyte List
- Reporting Limits (MDL and MRL)
- Reported Results

Holding Times & Sample Receipt:

All holding times and sample receipt were acceptable.

Surrogate Compounds:

The percent R (%R) value(s) was not within laboratory limits for all analyte methods. Explanation below.

The surrogate percent recovery for the NWTPH-Gx results on samples HC10-13, HC11-20 and HC12-11 were given the lab qualifier "ip" meaning "Recovery fell outside of control limits. Compounds in the sample matrix interfered with the quantitation of the analyte." The percent recovery for the surrogate 4-Bromofluorobenzene, associated with the 8260C Direct Sparge, for HC11-14 contains lab qualifiers "ip" and "J". The lab defines "J" as "The internal standard associated with the analyte is out of control limits. The reported concentration should be considered an estimate." Surrogate recoveries qualified with the lab qualifier(s) "ip" and "J" have a validation qualifier on the sample concentration, "J", meaning "The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample."

The surrogate recoveries for 8260D SIM on samples HC10-W (1/250), HC10-W(1/2500), and HC11-14 (1/100) were given the lab qualifier "d", meaning "The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful."

Associated Matrix Spike/Matrix Spike Duplicate (MS/MSD):

MS/MSD were not within acceptance criteria. Explanation below.

The matrix spike duplicate was associated with methods NWTPH-Dx, 8270D and 8260C. The percent recovery for the compounds Naphthalene, Fluorene and Phenanthrene for method 8270D SIM were given a lab qualifier "b", meaning "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."

Associated Laboratory Duplicate:

The associated lab duplicate was within acceptance criteria.

The laboratory duplicate was associated with methods NWTPH-Gx and 8260C Direct Sparge.

Laboratory Control Sample/Laboratory Control Sample Duplicates:

LCS/LCSD were evaluated per target analytes. No anomalies were found.

Method Blank:

Method blanks analyzed at the appropriate frequency. No target analytes reported in the method blank control.

Field Duplicate(s):

The measurement quality objective (MQO) for field duplicate RPD is 35% for water samples where concentrations are greater than five times (5x) the reporting limit (RL). For concentrations less than 5x the RL, the difference between the sample result and the replicate result must be less than the RL.

Not applicable

Target Analyte List:

All requested analytes were present.

Reporting Limits (MDL and MRL):

Reporting limits were not within acceptance criteria. Explanation below.

The reporting limit for Benzene is above the cleanup level of 5 ug/L for samples HC10-W and HC11-W, due to dilution required for analysis.

Reported Results:

Reported results for the analyte methods were not all within acceptance criteria. Explanation below.

Due to dilution necessary for analysis, Benzene results for samples HC10-W and HC11-W were non detect, and were given the validation qualifier "ec" meaning "Method reporting limit exceeds Clean Up Level shown".

NWTPH-Gx results for HC10-13, HC11-20, HC12-11, and 1,2-Dibromoethane (EDB) results for HC11-14, are qualified with a validation qualifier "J", meaning "The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample" due to surrogate recoveries.

NWTPH-Gx and 8260C results for samples HC-10W, HC11-W, and HC12-W were given the lab qualifier "cf" meaning "The sample was centrifuged prior to analysis." The lab qualifier is lab process informational and is not reported in the data table, no known result biases effecting data quality.

Diesel results for samples HC11-14, HC12-11, HC09-W, HC10-W, HC11-W, and HC12-W were given the lab qualifier "x" meaning "The sample chromatographic pattern does not resemble the fuel standard used for quantitation."

For samples HC10-W and HC11-14, 8270D SIM reported results for Naphthalene exceeded their calibration range and were given the lab qualifier "ve". The lab defines "ve" as "The analyte response exceeded the valid instrument calibration range. The value reported is an estimate." These samples were run at a higher dilution for 8270D, the results evaluated, and lowest dilution within calibrated range results were reported in the quarterly summary table. Results not reported are listed in Appendix B. Data Validation Qualified Summary Table.

On 12-2-15, an investigation was launched to determine the accuracy of NWTPH-Dx and NWTPH-Gx results that had identical numerical values for sample HC10-W. The laboratory verified these results were reported correctly.

Lab Validation Assessment

Due to dilution necessary for analysis, Benzene results for samples HC10-W and HC11-W were non detect, and were given the validation qualifier "ec" meaning "Method reporting limit exceeds Clean Up Level shown".

Diesel results for samples HC11-14, HC12-11, HC09-W, HC10-W, HC11-W, and HC12-W were given the lab qualifier "x" meaning "The sample chromatographic pattern does not resemble the fuel standard used for quantitation."

The surrogate percent recovery for the NWTPH-Gx results on samples HC10-13, HC11-20 and HC12-11 were given the lab qualifier "ip" meaning "Recovery fell outside of control limits. Compounds in the sample matrix interfered with the quantitation of the analyte." The percent recovery for the surrogate 4-Bromofluorobenzene, associated with the 8260C Direct Sparge, for HC11-14 contains lab qualifiers "ip" and "J". The lab defines "J" as "The internal standard associated with the analyte is out of control limits. The reported concentration should be considered an estimate." Surrogate recoveries qualified with the lab qualifier(s) "ip" and "J" have a validation qualifier on the sample concentration, "J", meaning "The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample."

The surrogate recoveries for 8260D SIM on samples HC10-W (1/250), HC10-W(1/2500), and HC11-14 (1/100) were given the lab qualifier "d", meaning "The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful."

The matrix spike duplicate was associated with methods NWTPH-Dx, 8270D and 8260C. The percent recovery for the compounds Naphthalene, Fluorene and Phenanthrene for method 8270D SIM were given a lab qualifier "b", meaning "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."

All other quality control criteria are acceptable for the samples; therefore, no action is required and analytical results are usable to meet the project objectives.

Field Note Assessment

Not applicable.

A hand written COC was used for this field event.

Data Quality Review Statement for Report

Explanation below.

A QA/QC review of the analytical results, which included a review of accuracy and precision of the data supplied by the laboratory.

Due to dilution necessary for analysis, Benzene results for samples HC10-W and HC11-W were non detect, and were given the validation qualifier "ec" meaning "Method reporting limit exceeds Clean Up Level shown".

Diesel results for samples HC11-14, HC12-11, HC09-W, HC10-W, HC11-W, and HC12-W were given the lab qualifier "x" meaning "The sample chromatographic pattern does not resemble the fuel standard used for quantitation."

NWTPH-Gx results for HC10-13, HC11-20, HC12-11, and results for EDC for HC11-14, are qualified with a validation qualifier "J" meaning "The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample" due to surrogate recoveries."

All other quality control criteria are acceptable for the samples; therefore, no action is required and analytical results are usable to meet the project objectives.

Appendix A. Data Validation Qualifiers and Definitions

The following lists the data validation qualifier codes and their definitions that were assigned to analytical results in this data validation review process.

Data Validation Qualifiers and Definitions:

- (R) The sample result is reject due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.
 - (DNR) Do not report. A more appropriate result is reported from another analysis or dilution.
 - (ec) Method reporting limit exceeds Clean Up Level shown.
 - (J) The analyte was positively identified; the associated numerical value is approximate concentration of the analyte in the sample.
-

Appendix B. Data Validation Qualified Summary Table

Data validation qualified summary table attached.

Appendix B. Data Validation Qualified Summary Table

Sample ID	Laboratory ID	Method	Parameter Name	Result Value	Result Units	Laboratory Qualifier	Validation Qualifier
HC10-13	511178-11 1/10	NWTPH-Gx	GRPH	680	mg/kg	ip	J
HC11-20	511178-16 1/5	NWTPH-Gx	GRPH	1300	mg/kg	ip	J
HC12-11	511178-19 1/5	NWTPH-Gx	GRPH	1700	mg/kg	ip	J
HC10-W	511178-25 1/50	8260C	Benzene	<17	ug/L		ec
HC11-W	511178-26 1/50	8260C	Benzene	<17	ug/L		ec
HC11-14	511178-15	8260C Direct Sparge	1,2-Dibromoethane (EDB)	<0.005	mg/kg	ip	J
HC10-W	511178-25 1/250	8270D SIM	Naphthalene	8800	ug/L	ve	DNR
HC10-W	511178-25 1/2500	8270D SIM	Acenaphthylene	<100	ug/L		DNR
HC10-W	511178-25 1/2500	8270D SIM	Acenaphthene	<100	ug/L		DNR
HC10-W	511178-25 1/2500	8270D SIM	Fluorene	170	ug/L		DNR
HC10-W	511178-25 1/2500	8270D SIM	Phenanthrene	160	ug/L		DNR
HC10-W	511178-25 1/2500	8270D SIM	Anthracene	<100	ug/L		DNR
HC10-W	511178-25 1/2500	8270D SIM	Fluoranthene	<100	ug/L		DNR
HC10-W	511178-25 1/2500	8270D SIM	Pyrene	<100	ug/L		DNR
HC10-W	511178-25 1/2500	8270D SIM	Benz(a)anthracene	<100	ug/L		DNR
HC10-W	511178-25 1/2500	8270D SIM	Chrysene	<100	ug/L		DNR
HC10-W	511178-25 1/2500	8270D SIM	Benzo(a)pyrene	<100	ug/L		DNR
HC10-W	511178-25 1/2500	8270D SIM	Benzo(b)fluoranthene	<100	ug/L		DNR
HC10-W	511178-25 1/2500	8270D SIM	Benzo(k)fluoranthene	<100	ug/L		DNR
HC10-W	511178-25 1/2500	8270D SIM	Indeno(1,2,3-cd)pyrene	<100	ug/L		DNR
HC10-W	511178-25 1/2500	8270D SIM	Dibenz(a,h)anthracene	<100	ug/L		DNR
HC10-W	511178-25 1/2500	8270D SIM	Benzo(g,h,i)perylene	<100	mg/kg		DNR
HC11-14	511178-15 1/5	8270D SIM	Naphthalene	14	mg/kg	ve	DNR
HC11-15	511178-15 1/100	8270D SIM	Acenaphthylene	<0.2	mg/kg		DNR
HC11-16	511178-15 1/100	8270D SIM	Acenaphthene	<0.2	mg/kg		DNR
HC11-17	511178-15 1/100	8270D SIM	Fluorene	<0.2	mg/kg		DNR
HC11-18	511178-15 1/100	8270D SIM	Phenanthrene	<0.2	mg/kg		DNR
HC11-19	511178-15 1/100	8270D SIM	Anthracene	<0.2	mg/kg		DNR
HC11-20	511178-15 1/100	8270D SIM	Fluoranthene	<0.2	mg/kg		DNR
HC11-21	511178-15 1/100	8270D SIM	Pyrene	<0.2	mg/kg		DNR
HC11-22	511178-15 1/100	8270D SIM	Benz(a)anthracene	<0.2	mg/kg		DNR
HC11-23	511178-15 1/100	8270D SIM	Chrysene	<0.2	mg/kg		DNR
HC11-24	511178-15 1/100	8270D SIM	Benzo(a)pyrene	<0.2	mg/kg		DNR
HC11-25	511178-15 1/100	8270D SIM	Benzo(b)fluoranthene	<0.2	mg/kg		DNR
HC11-26	511178-15 1/100	8270D SIM	Benzo(k)fluoranthene	<0.2	mg/kg		DNR
HC11-27	511178-15 1/100	8270D SIM	Indeno(1,2,3-cd)pyrene	<0.2	mg/kg		DNR
HC11-28	511178-15 1/100	8270D SIM	Dibenz(a,h)anthracene	<0.2	mg/kg		DNR
HC11-29	511178-15 1/100	8270D SIM	Benzo(g,h,i)perylene	<0.2	mg/kg		DNR

Validation Qualifier Definitions:

J – The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

ec - Method reporting limits exceeds Clean Up Level shown.

DNR - Do not report. A more appropriate result is reported from another analysis or dilution

Laboratory Qualifier Definitions:

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

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

TO: Craig Hultgren, HydroCon
FROM: Emily Swanson, Eureka Project Solutions, LLC.
DATE: December 1, 2015
SUBJECT: Laboratory Validation Report

HydroCon TOC Site No. 01-103

Sampling Event Type: Miscellaneous Sampling

Number of Samples: 20

Laboratory Work Order: 511197
Analysis & Method

Final Report Date: 11-14-15

- Gasoline Range Hydrocarbon (NWTPH-Gx)
- Diesel Range Hydrocarbon without Silica Gel (NWTPH-Dx)
- Diesel Range Organics with Silica Gel (NWTPH-DxSG)
- Volatile Organic Compounds (EPA 8260C)
- BETX (8021B)
- Lead (200.8) - _____
- Sulfate (300.0)
- Other _____

Data Package Completeness:
Anomalies were discussed in the case narrative regarding corrective action processes. Explanation below.

The VOA vials for samples HC15-W and HC16-W were received with headspace present in the samples. The data were flagged accordingly.

EDD to Hardcopy Verification:
The EDD results were compared with the laboratory analytical report hard copy results. No anomalies found.

Technical Data Validation:

- Holding Times & Sample Receipt
- Surrogate Compounds
- Associated Matrix Spike/Matrix Spike Duplicate (MS/MSD)
- Associated Laboratory Duplicate
- Laboratory Control Sample/ Laboratory Control Sample Duplicates (LCS/LCSD)
- Method Blank
- Field Duplicates
- Target Analyte List
- Reporting Limits (MDL and MRL)
- Reported Results

Holding Times & Sample Receipt:

All holding times and sample receipt were acceptable.

Surrogate Compounds:

The percent R (%R) value(s) for all analyte methods were within laboratory limits. No anomalies found.

Associated Matrix Spike/Matrix Spike Duplicate (MS/MSD):

MS/MSD were within acceptance criteria.

The matrix spike duplicate was associated with methods 8260C and NWTPH-Dx.

Associated Laboratory Duplicate:

The associated lab duplicate was within acceptance criteria.

The lab duplicate was associated with method NWTPH-Gx.

Laboratory Control Sample/Laboratory Control Sample Duplicates:

LCS/LCSD were evaluated per target analytes. No anomalies were found.

Method Blank:

Method blanks analyzed at the appropriate frequency. No target analytes reported in the method blank control.

Field Duplicate(s):

The measurement quality objective (MQO) for field duplicate RPD is 35% for water samples where concentrations are greater than five times (5x) the reporting limit (RL). For concentrations less than 5x the RL, the difference between the sample result and the replicate result must be less than the RL.

Not applicable

Target Analyte List:

All requested analytes were present.

Reporting Limits (MDL and MRL):

Reporting limits were within acceptance criteria.

Reported Results:

Reported results for all analyte methods were within acceptance criteria.

Diesel Range Organics results for HC15-W and HC16-W were given the lab qualifier "x". The lab qualifier "x" is defined as "The sample chromatographic pattern does not resemble the fuel standard used for quantitation."

The 8260C and NWTPH-Gx results for HC13-W, HC14-W, HC15-W, HC16-W, and HC17-W were given the lab qualifier "cf". The lab qualifier "cf" is defined as " The sample was centrifuged prior to analysis." The lab qualifier is lab process informational and is not reported in the data table. There is no known result biases effecting data quality that occurs when sample is centrifuged.

The 8260C results for HC15-W and HC16-W were given the lab qualifier "hs". The lab qualifier "hs" is defined as "Headspace was present in the container used for analysis. "

Lab Validation Assessment

Diesel Range Organics results for HC15-W and HC16-W were given the lab qualifier "x". The lab qualifier "x" is defined as "The sample chromatographic pattern does not resemble the fuel standard used for quantitation."

The 8260C and NWTPH-Gx results for HC13-W, HC14-W, HC15-W, HC16-W, and HC17-W were given the lab qualifier "cf". The lab qualifier "cf" is defined as " The sample was centrifuged prior to analysis." The lab qualifier is lab process informational and is not reported in the data table. There is no known result biases effecting data quality that occurs when sample is centrifuged.

The 8260C results for HC15-W and HC16-W were given the lab qualifier "hs". The lab qualifier "hs" is defined as "Headspace was present in the container used for analysis. "

All other quality control criteria are acceptable for the samples; therefore, no action is required and analytical results are usable to meet the project objectives.

Field Note Assessment

Not applicable.

A hand written COC was used for this field event.

Data Quality Review Statement for Report

Explanation below.

A QA/QC review of the analytical results, which included a review of accuracy and precision of the data supplied by the laboratory.

Diesel Range Organics results for HC15-W and HC16-W were given the lab qualifier "x". The lab qualifier "x" is defined as "The sample chromatographic pattern does not resemble the fuel standard used for quantitation."

The 8260C results for HC13-W, HC14-W, HC15-W, HC16-W, and HC17-W were given the lab qualifier "cf". The lab qualifier "cf" is defined as " The sample was centrifuged prior to analysis." The lab qualifier is lab process informational and is not reported in the data table. There is no known result biases effecting data quality that occurs when sample is centrifuged.

The 8260C results for HC15-W and HC16-W were given the lab qualifier "hs". The lab qualifier "hs" is defined as "Headspace was present in the container used for analysis. "

All other quality control criteria are acceptable for the samples; therefore, no action is required and analytical results are usable to meet the project objectives.

Appendix A. Data Validation Qualifiers and Definitions

The following lists the data validation qualifier codes and their definitions that were assigned to analytical results in this data validation review process.

Data Validation Qualifiers and Definitions:

- (R) The sample result is reject due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.
 - (DNR) Do not report. A more appropriate result is reported from another analysis or dilution.
 - (ec) Method reporting limit exceeds Clean Up Level.
 - (J) The analyte was positively identified; the associated numerical value is approximate concentration of the analyte in the sample.
-

Appendix B. Data Validation Qualified Summary Table

Not applicable.

TO:
FROM:
DATE:
SUBJECT:

HydroCon
TOC Site No.

Sampling Event
Type:

Number of
Samples:

Laboratory Work
Order:

Final Report
Date:

Analysis & Method

- Gasoline Range Hydrocarbon (NWTPH-Gx)
- Diesel Range Hydrocarbon without Silica Gel (NWTPH-Dx)
- Diesel Range Organics with Silica Gel (NWTPH-DxSG)
- Volatile Organic Compounds (EPA 8260C)
- BETX (8021B)
- Lead (200.8) -
- Sulfate (300.0)
- Other

Data Package Completeness:

EDD to Hardcopy Verification:

Technical Data Validation:

Holding Times & Sample Receipt

Surrogate Compounds

Associated Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Associated Laboratory Duplicate

Laboratory Control Sample/ Laboratory Control Sample Duplicates (LCS/LCSD)

Method Blank

Field Duplicates

Target Analyte List

Reporting Limits (MDL and MRL)

Reported Results

Holding Times & Sample Receipt:

Surrogate Compounds:

Associated Matrix Spike/Matrix Spike Duplicate (MS/MSD):

Associated Laboratory Duplicate:

Laboratory Control Sample/Laboratory Control Sample Duplicates:

Method Blank:

Field Duplicate(s):

The measurement quality objective (MQO) for field duplicate RPD is 35% for water samples where concentrations are greater than five times (5x) the reporting limit (RL). For concentrations less than 5x the RL, the difference between the sample result and the replicate result must be less than the RL.

Target Analyte List:**Reporting Limits (MDL and MRL):**

Reported Results:

Lab Validation Assessment

Field Note Assessment

Data Quality Review Statement for Report

Appendix A. Data Validation Qualifiers and Definitions

The following lists the data validation qualifier codes and their definitions that were assigned to analytical results in this data validation review process.

**Data Validation
Qualifiers and
Definitions:**

(R) The sample result is reject due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

(DNR) Do not report. A more appropriate result is reported from another analysis or dilution.

Appendix B. Data Validation Qualified Summary Table

Appendix B. Data Validation Qualified Summary Table

Sample ID	Laboratry ID	Method	Parameter Name	Result	Result Units	Laboratory Qualifier	Validation Qualifier
MW01A	512428-01	SW8260C	1,2-Dibromoethane (EDB)	<1	ug/L		ec
MW02A	512428-02	SW8260C	1,2-Dibromoethane (EDB)	<1	ug/L		ec
MW03A	512428-03	SW8260C	1,2-Dibromoethane (EDB)	<1	ug/L		ec
MW04A	512428-04	SW8260C	1,2-Dibromoethane (EDB)	<1	ug/L		ec
MW05	512428-05	SW8260C	1,2-Dibromoethane (EDB)	<1	ug/L		ec
MW06	512428-06	SW8260C	1,2-Dibromoethane (EDB)	<1	ug/L		ec
MW99	512428-07	SW8260C	1,2-Dibromoethane (EDB)	<1	ug/L		ec

Validation Qualifier Definitions:

ec – Method reporting limit exceeds Clean Up Level.