Additional Subsurface Investigation Report

TOC Holdings Co. Site 01-323
301 Central Avenue North, Kent, Washington

Prepared for:
TOC Holding Co.
c/o Mr. Mark Chandler
2737 W. Commodore Way
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February 11, 2016

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Acronyms

ASI	Additional Subsurface Investigation
BTEX	benzene, toluene, ethylbenzene, and total xylenes
COC	Chemical of Concern
CUL	cleanup level
DRPH	diesel range petroleum hydrocarbons
Ecology	Washington Department of Ecology
EDB	1,2-dibromoethane
EDC	1,2-dichloroethane
GRPH	gasoline range petroleum hydrocarbons
HASP	Health and Safety Plan
HydroCon	HydroCon Environmental LLC
LDPE	low-density polyethylene
mg/kg	milligram per kilogram
MRL	method reporting limit
MTBE	methyl tertiary-butyl ether
MTCA	Model Toxics Control Act
ORPH	oil range petroleum hydrocarbons
OSHA	Occupational Safety and Health Administration
PAHs	polynuclear aromatic hydrocarbons
PCBs	polychlorinated biphenyls
PID	photoionization detector
PVC	polyvinyl chloride
SI	subsurface investigation
TPH	total petroleum hydrocarbons
UST	underground storage tank
VOCs	volatile organic compounds

1.0 INTRODUCTION

HydroCon Environmental, LLC (HydroCon) prepared this Additional Subsurface Investigation Report (ASI) on behalf of TOC Holdings Co. (formerly Time Oil Co.) for the former TOC Holdings Co. Facility No. 01-323 located at 301 Central Avenue North, Kent, Washington (the Property; Figure 1).

1.1 *Purpose*

This ASI Report provides the scope and findings of a subsurface investigation conducted in December 2015. The purpose of the ASI was to collect data necessary to adequately characterize the Site for the purposes of developing and evaluating cleanup action alternatives. Historical information regarding the former use of the Property and surrounding parcels and summaries of previous investigations will be included in the Remedial Investigation/Feasibility Study currently under development.

2.0 BACKGROUND

HydroCon (2015) conducted their initial site investigation (SI) scope of work in June and July 2015. Results of the SI investigation are summarized in the following paragraphs.

2.1 *Soil Conditions Revealed During the SI*

Based on the results of field screening and laboratory analysis, diesel-range petroleum hydrocarbons (DRPH), gasoline-range petroleum hydrocarbons (GRPH), and/or benzene, toluene, ethylbenzene, and total xylene (BTEX) constituents were observed above MTCA Method A cleanup levels (CUL) in soil samples collected in the southeast corner of the Site. This area of impact appeared to be constrained to the south by the lack of detections above cleanup levels in boreholes HC15, HC16, and HC17 and to the west by boreholes HC14, MW01, and HC01; however, the area to the east was not constrained as a result of the investigation. An area north of the existing Site building at HC08 is also impacted. The conclusion of the SI was that additional borings were needed to define the eastern boundary of soil contamination.

2.2 *Groundwater Conditions Revealed During the SI*

Similarly, the results of the groundwater sampling indicated that the southeast portion of the Site exhibits groundwater impacted with GRPH, DRPH, oil-range petroleum hydrocarbons (ORPH), benzene, and lead as indicated by results from MW02, MW03, HC02, HC04, and HC10 through HC13. Impacts to the east of the property boundary were not constrained. Further investigation was deemed necessary to determine the full extent of the groundwater plume.

3.0 PRE-INVESTIGATION ACTIVITIES

The following sections describe pre-investigation activities.

3.1 *Permits*

Prior to commencing work, HydroCon obtained a street use permit (Number CNST-2151834STU, Revision Number RVS5-2154165) from the City of Kent for the off-Site drilling in Central Avenue and E. Smith Street. Traffic control was provided and set up by National Barricade and the City of Kent provided a police officer to help with traffic control.

3.2 *Health and Safety Plan*

HydroCon prepared a Site-specific health and safety plan (HASP) to govern health and safety protocols during this investigation. Work was performed using Occupational Safety and Health Administration (OSHA) Level D personal protective equipment 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 conflict 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. The Washington Utility Notification Center was notified on December 17, 2015 (Ticket Number 15365553) who notified the following offsite utilities:

- Comcast Cable
- AT&T Corp
- King County Metro Sewer
- City Of Kent
- MCI
- Zayo FNA Abovenet
- Puget Sound Energy Electric
- Puget Sound Energy Gas
- CentryLink
- Sound Transit

During the June/July 2015 SI, a private locating company, Bravo Environmental, was retained to identify the location of onsite subsurface utilities and to clear specific boring locations located near potential utility conflicts (HydroCon 2015). HydroCon instructed the surveyors (Axis Surveying and

Mapping of Redmond, 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 Figure 2 where the locations of water, sewer, storm, electrical, fiber optic, and gas lines are shown.

4.0 SUBSURFACE INVESTIGATION

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

4.1 *Field Methods*

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

4.1.1 Soil Borings

ESN Northwest of Olympia, Washington was subcontracted to perform the drilling services. Twelve direct push borings (HC18 through HC29) were drilled and sampled. The borings were advanced to a maximum depth of 15 feet bgs at the Site on December 28 and 29, 2015 in an effort to evaluate the horizontal extent of impacted soil and groundwater identified during previous investigations. Boring locations are shown on Figure 2 and boring logs are provided in Appendix A. Borings were advanced at the following locations:

- HC18 through HC21 were located north of the site building to investigate the extent of chemicals of concern (COCs) detected near HC08.
- HC24 was located in the apparent downgradient direction of the main area of impact south of the building to evaluate the extent of impacts.
- HC22, HC23, HC28, and HC29, were located south in or near the main area of impact to further evaluate the nature and extent of impacts.
- HC25 through 27 were located east of the main area of impact beneath Central Avenue to evaluate the eastern extent of impacts.

Each boring was advanced in five-foot intervals to a completion depth up to 15 feet bgs. Continuous soil samples were collected using a five-foot long “macro” core tube sampler equipped with new, clear polyethylene liners in each boring sampled for soil.

Each 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 as 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 28 soil samples were collected for laboratory analysis.

After the completion of soil sampling, borings HC24 through HC27 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 investigation-derived waste generated during purging and decontamination was placed in a labeled 55-gallon drum and stored on Site pending disposal to a licensed disposal facility.

4.1.2 **Soil Gas Sampling**

Soil gas samples were collected from three direct-push boreholes, SG01, SG02, and SG03. The boreholes were located near the center of the south side of the building, near the southeast corner of the building, and near the northeast corner of the building. (Figures 2 and 5).

The probes were advanced to a depth of three feet below ground surface (bgs). At target depth, the probe rod was withdrawn approximately three to six inches to disengage the expendable probe tip and minimize the terminal void space volume. New, dedicated disposable Teflon® tubing was then fitted with a barbed steel end nut, pushed into the base of the probe rod, and threaded onto a downhole terminal fitting sealed with an O-ring to prevent vapor short-circuiting to the surface through the rod annulus.

Once the sampling probe was lowered to target depth and probe tip exposed, the borehole was backfilled with sand to a depth of approximately 2 feet above the sampling probe. The area above the sand and immediately around the probe rods was grouted using hydrated bentonite grout. The bentonite was allowed to congeal for a minimum of 30 minutes.

Prior to sampling, the initial vacuum of each Summa canister was measured and compared to the laboratory-supplied tag.

The canisters were then fitted with the laboratory-provided steel filter. The sampling train [steel-filter, flow-controller (if used), and Summa canister] were attached to a T-connector with an in-line vacuum gauge and vacuum tight flow valves (Swagelok) at each end. The sample tubing was threaded through the leak-check shroud and connected to the soil gas sampling point.

After the sampling system was set up, it was checked for leaks. The purge valve was opened (the valve connecting the purge pump to the apparatus, all other valves remain closed) and approximately ten inches of mercury vacuum was applied to the T-connector and valves. The purge valve was then closed and checked to verify that there was no loss of vacuum within the sampling apparatus (T-connector and valves) over a one-minute period of time.

The probe point surface seal was also checked for leakage. Helium gas was used as a tracer to check for and correct potential leaks in the field prior to sampling. HydroCon used the helium tracer gas method listed in ITRC's "Technical and Regulatory Guidance, Vapor Intrusion Pathway: A Practical Guideline" dated January 2007 (ITRC 2007).

The sample train was then purged at a low flow rate (100 to 200 ml/min) to minimize the potential for inducing leakage. After purging, the purge valve was closed prior to opening the sampling valve. The sample valve was then opened followed by slowly opening the Summa canister valve. The canister's valve was closed when the vacuum gauge showed a vacuum of 5 inches of mercury (inches Hg) (pressure of -5 inches Hg). *Soil Gas Collection Forms* are included in Appendix B.

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 methyl tertiary-butyl ether (MTBE), 1,2-dibromoethane (EDB), 1,2-dichloroethane (EDC), and naphthalene by EPA Method 8260C
- Polychlorinated Biphenyls (PCBs) by EPA Method SW8082.
- Polynuclear Aromatic Hydrocarbons (PAHs) by EPA Method 8270D SIM
- Lead by EPA Method 200.1

Groundwater samples obtained from 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)
- Total lead by EPA Method 200.8 (monitoring wells)

Soil gas samples obtained from boreholes were submitted for the following laboratory analyses:

- Volatile organic compounds by EPA Method TO-15
- Volatile aromatic and aliphatic compounds by Air-Phase Petroleum Hydrocarbons (APH)

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

5.0 INVESTIGATION RESULTS

5.1 *Subsurface Conditions*

The portion of the Site where drilling was completed is paved with asphalt that is approximately 3-4 inches thick. Beneath the asphalt, the soil typically consists of silty sand to a depth of about 3 feet followed by sand which extends down to the maximum depth explored (15 feet bgs). The silty sand was not present at all drilling locations.

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/or hydrocarbon odors were detected at 5 of the 12 soil borings:

Field Screening Results

Boring ID	Hydrocarbon Odor	PID Readings ppmv @ depth (feet)
HC18	--	--
HC19	--	--
HC20	--	--
HC21	--	--
HC22	--	3.7@15’
HC23	--	702@12’ 832@15’
HC24	--	2.5@15’
HC25	--	--
HC26	--	--
HC27	--	--
HC28	--	5.7-548@5-15’
HC29	--	4.5-958@3-15

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 1-4. The laboratory analytical reports and chain-of-custody records are provided in Appendix C. The laboratory results are compared to the MTCA Method A CULs for soil and groundwater; Method B CULs where there are no published Method A

CULs, and Soil Cleanup Levels Protective of Groundwater. Cleanup levels for soil gas are only established under MTCA Methods B and C. The following sections describe the results of the testing.

5.3.1 Soil Analytical Results

Soil analytical results for total petroleum hydrocarbons (TPH), VOCs, and lead 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 4 of the 28 samples collected at concentrations above the laboratory method reporting limit (MRL), ranging from 550 mg/kg to 4,300 mg/kg (Table 1). One of the samples had a concentration above the CUL of 2,000 mg/kg (HC29-05). In addition, all but one of the 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 4 of the 28 samples collected at concentrations above the laboratory MRL (Table 1), ranging from 460 mg/kg to 5,400 mg/kg. Each of these samples (HC23-12, HC23-15, HC28-05, and HC29-05) had concentrations above the CUL of 30 mg/kg.

Ethylbenzene was detected in 2 of the samples collected at concentrations above the laboratory MRLs (Table 1). None of these samples exceeded the CUL of 6 mg/kg. Benzene, toluene, and xylenes did not exceed MRLs or their respective CUL.

Samples HC24-07 and HC29-05 were analyzed for EDC and sample HC29-05 was analyzed for MTBE (Table 1). These samples did not exceed MRLs. Two samples were analyzed for lead, HC23-12 and HC29-05. Lead was detected in both samples but at levels below the CUL of 250 mg/kg.

Two samples were analyzed for additional halogenated volatiles, fuel oxygenates, PCBs, and PAHs: HC23-12 and HC29-05 (Table 2). The PAH compound benz(a)anthracene was the only detected analyte that exceeded an Ecology Soil CUL (the CUL Protective of Groundwater) in the sample from HC29-05. No PCBs, halogenated volatiles, or fuel oxygenates were detected above the other CULs, although for several analytes, the MRL was not low enough to detect an exceedance of many of the CULs Protective of Groundwater.

5.3.2 Borehole Groundwater Analytical Results

HydroCon collected groundwater samples from 4 temporary boreholes (HC24, HC25, HC26, and HC27) for laboratory analysis (Table 3, Figure 4). Analyses included DRPH, ORPH, GRPH, and BTEX.

Water from HC24 was also analyzed for EDB, EDC, MTBE, and naphthalene. None of these constituents were detected above the CULs.

5.3.3 Soil Gas Analytical Results

Three soil gas samples were submitted for analyses of constituents listed in Ecology's Tier II Vapor Assessment Analyte List (Ecology 2015) and compared to the corresponding Sub-Slab Screening Level. Each sample exceeded one or more of Ecology's Sub-Slab Screening Levels (Table 4, Figure 5).

6.0 DATA VALIDATION

Laboratory testing of soil and groundwater resulted in four laboratory reports including Friedman and Bruya Work Orders 512447 (soil), 5142474 (soil), 512472 (borehole water), 512448 (borehole water), and 512454 (soil gas). The laboratory reports are included in Appendix C. 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
- Method Blank
- Field Duplicates
- Target Analyte List
- Reporting Limits (MDL and MRL)
- Reported Results

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

6.1 *512447 (soil)*

DRPH results for samples HC23-12 and HC23-15 were given the lab qualifier "x" meaning "The sample chromatographic pattern does not resemble the fuel standard used for quantitation."

Diisopropyl ether was not reported in the list of HVOCs by method 8260C.

All other quality control criteria are acceptable for the groundwater samples; therefore, no action is required and analytical results are usable to meet the project objectives.

6.2 *512474 (soil)*

DRPH results for samples HC28-05 and HC29-05 were given the lab qualifier "x" meaning "The sample chromatographic pattern does not resemble the fuel standard used for quantitation."

The percent recovery for GRPH on sample HC29-05 fell outside of control limits and was given the validation qualifier "J" meaning "The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample."

All other quality control criteria are acceptable for the soil samples; therefore, no action is required and analytical results are usable to meet the project objectives.

6.3 *512472 (borehole water)*

All quality control criteria are acceptable for the groundwater samples; therefore, no action is required and analytical results are usable to meet the project objectives.

6.4 *512448 (borehole water)*

The non-detected EDB result was given the validation qualifier "ec" meaning "Method reporting limit exceeds Clean Up Level shown."

The DRPH result for sample HC24 was given the laboratory qualifier "x" meaning "The sample chromatographic pattern does not resemble the fuel standard used for quantitation."

All quality control criteria are acceptable for the samples; therefore, no action is required and analytical results are usable to meet the project objectives.

6.5 *512454 (soil gas)*

The analyte APH EC5-8 aliphatics results for samples SG-01, SG-02, and SG-03 were given the lab qualifier "ve". The analyte APH EC9-12 aliphatics result for samples SG-02 and SG-03 were given the lab qualifier "ve". The analytes benzene, toluene, ethylbenzene, m,p-xylene, o-xylene and hexane for Method TO-15 on sample SG-01 were given the lab qualifier "ve". The analyte hexane for Method TO-15 on samples SG-01 1/200 and SG-02 1/1000 were given the lab qualifier "ve". The lab report defines "ve" for all samples as: "The analyte response exceeded the valid instrument calibration range. The value reported is an estimate."

A second TO-15 analysis was run for SG-01 at a dilution of 1/200. The two sets of data were evaluated, and only the appropriate results were reported in the quarterly summary table. Results not reported are listed in Appendix B of the laboratory report: Data Validation Qualified Summary Table.

The analyte EDB for Method TO-15 on samples SG-01, SG-01 1/200, SG-02 1/1000 and SG-03 were given the lab qualifier "j" meaning: "The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate."

Sample results for Method APH for sample SG-02 and SG-03, and Method TO-15 for sample SG-01, SG-02 and SG-03 with surrogate recoveries that fell outside their recovery limits, and were qualified by the lab with "ip" were given the validation qualifier "J" meaning: "The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample."

SG-01 non-detect results for EDB and naphthalene; SG-02 non-detect results for o-xylene, 1,2,4-trimethylbenzene, EDB, EDC, MTBE, and naphthalene; and SG-03 non-detect results for 1,2,4-

trimethylbenzene, EDB, and EDC were given the validation qualifier "ec", meaning "Method reporting limit exceeds Clean Up Level."

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.

7.0 CONCLUSIONS

The purpose of the ASI was to collect data necessary to adequately characterize the Site for the purposes of developing and evaluating cleanup action alternatives. This purpose was achieved insofar as the extent of soil and groundwater contamination resulting from the historical fuel storage and distribution operations at the Property was confirmed.

The extent of soil gas contamination was not fully established as a result of this investigation; however, a Tier II VIA is planned that includes as an objective an attempt to define the areal extent of soil gas contamination exceeding Ecology's Sub-Slab Soil Gas Screening Levels.

8.0 REFERENCES

HydroCon Environmental LLC. 2015. Subsurface Investigation Report. TOC Holdings Co. Site 01-323 301 Central Avenue North, Kent, Washington. Prepared for TOC Holdings Co. October 23.

ITRC, 2007 (January). Technical and Regulatory Guidance, Vapor Intrusion Pathway: A Practical Guideline. Interstate Technology & Regulatory Council.

9.0 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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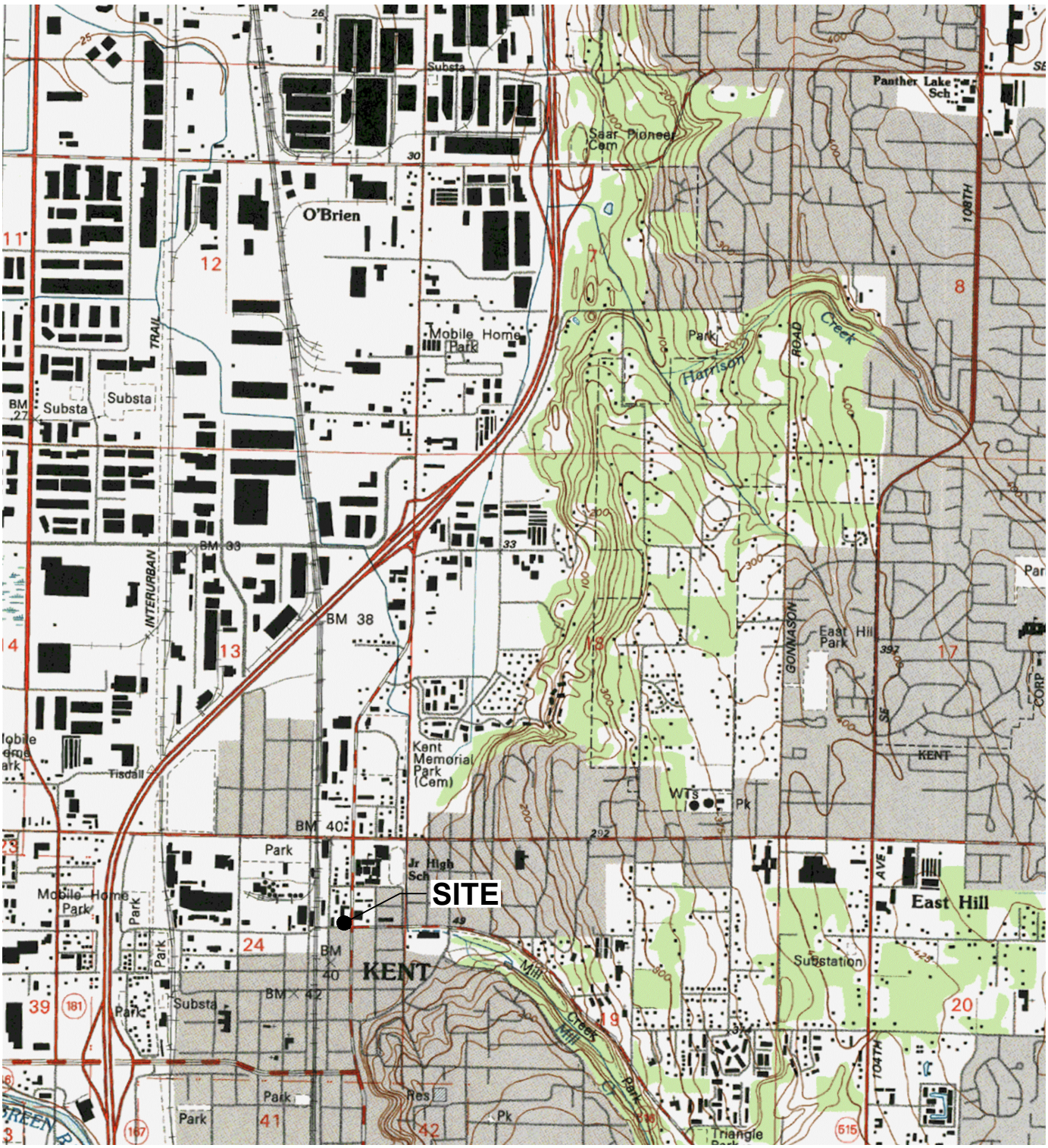
FIGURES



NOTE(S):

USGS, RENTON QUADRANGLE
WASHINGTON-KING CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)

0 2000 4000

SCALE IN FEET
1" = 2000'

N
W E
S

HydroCon

DATE: 3-7-16
DWN: JJT
CHK: NV
APPROVED: CH
PRJ. MGR: RH
PROJECT NO: 01-323

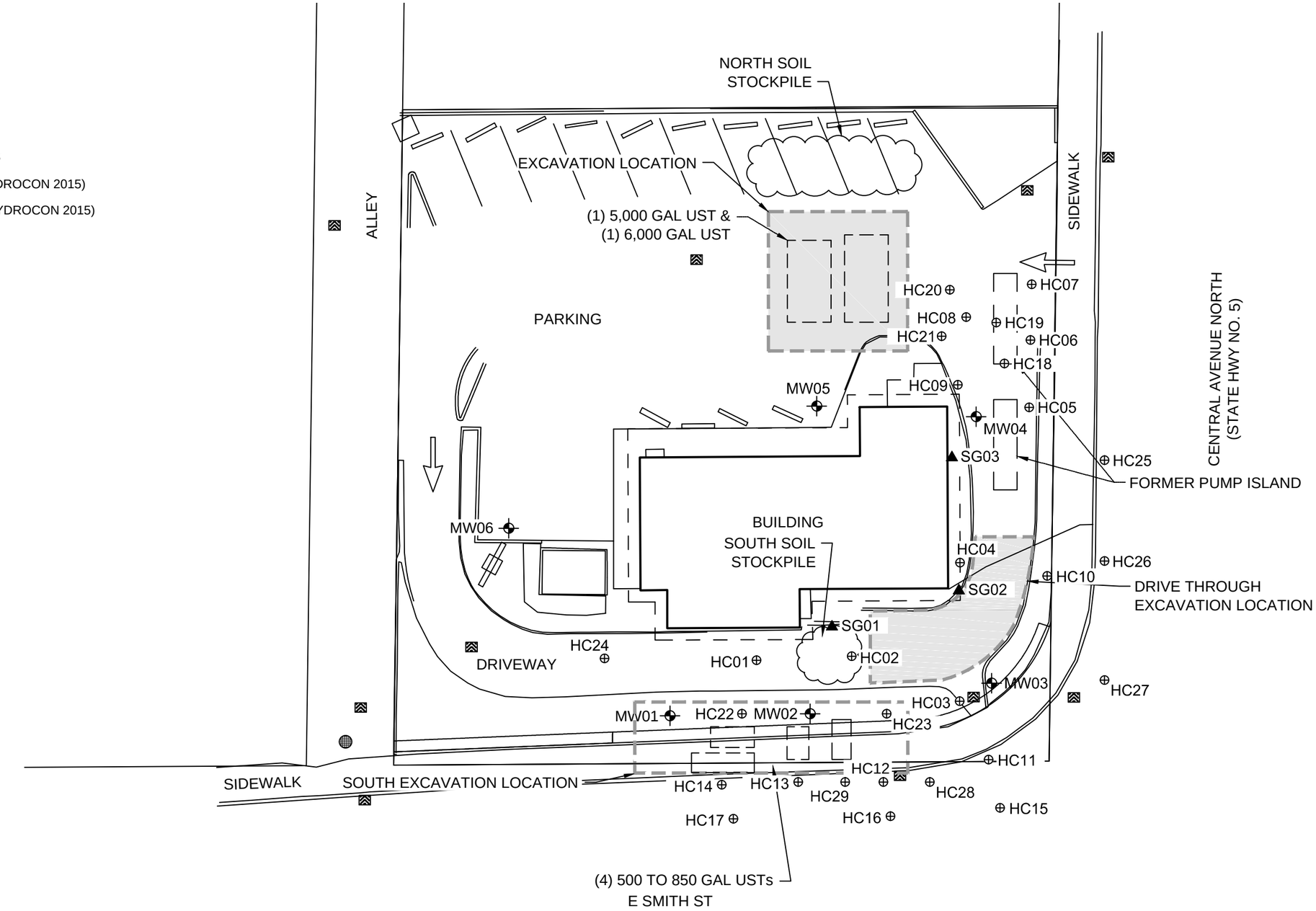
FIGURE 1
SITE LOCATION MAP

TOC HOLDING CO. FACILITY NO. 01-323
301 N CENTRAL AVE
KENT, WA.

C:\Users\Josh\Desktop\Autocad Backup\Hydrocon-Autocad\01-323 Kent\2016\Jan 2016\01-323_SSI-030716.dwg 2.17.2014

LEGEND

- BUILDING
- MW01 — MONITORING WELL
- CATCH BASIN
- EXCAVATION LOCATIONS
- HC01 — BORING LOCATIONS (HYDROCON 2015)
- SG01 — SOIL GAS LOCATIONS (HYDROCON 2015)



N W E S

0 20 40

SCALE IN FEET
1" = 20'

Hydro Con
510 Allen St. Suite B Kelso, Wa 98626, Ph(360)-703-6086

DATE: 3-7-16
DWN: JJT
CHK: NV
APPROVED: CH
PRJ. MGR: CH
PROJECT NO: 01-323

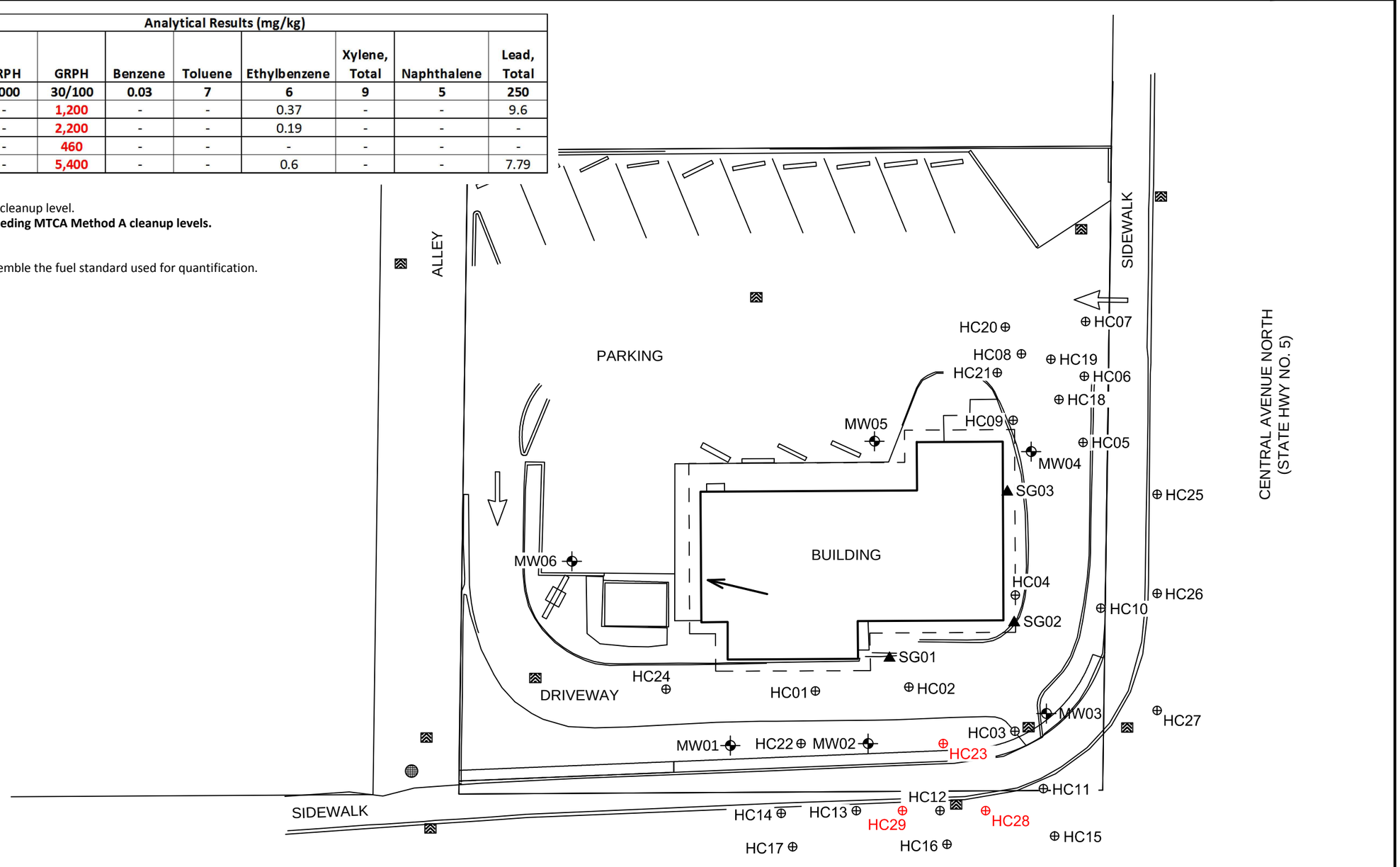
FIGURE 2
SITE FEATURES

TOC HOLDING CO. FACILITY NO. 01-323
301 N CENTRAL AVE
KENT, WA.

C:\Users\Josh\Desktop\Autocad Backup\Hydrocon-Autocad\01-323 Kent\2016\Jan 2016\01-323_SSI-030716.dwg 2.17.2014

Well ID	Date	Analytical Results (mg/kg)								
		DRPH	ORPH	GRPH	Benzene	Toluene	Ethylbenzene	Xylene, Total	Naphthalene	Lead, Total
WA Method A		**2,000**	**2,000**	**30/100**	**0.03**	**7**	**6**	**9**	**5**	**250**
HC23-12	12/28/2015	550 x	-	**1,200**	-	-	0.37	-	-	9.6
HC23-15	12/28/2015	670 x	-	**2,200**	-	-	0.19	-	-	-
HC28-05	12/29/2015	1,400 x	-	**460**	-	-	-	-	-	-
HC29-05	12/29/2015	**4,300 x**	-	**5,400**	-	-	0.6	-	-	7.79

Notes:
Red denotes concentration exceeds MTCA Method A cleanup level.
Results shown only for samples with detections exceeding MTCA Method A cleanup levels.
See Table 1 for complete results.
Lab Qualifiers:
x - The sample chromatographic pattern does not resemble the fuel standard used for quantification.



LEGEND

- BUILDING
- MW01 — MONITORING WELL
- HC01 — BORING LOCATIONS (HYDROCON 2015)
- CATCH BASIN
- APPROXIMATE GROUNDWATER FLOW DIRECTION

*RED INDICATES IMPACTED SOIL

N W E S

0 20 40
SCALE IN FEET
1" = 20'

HydroCon
510 Allen St. Suite B Kelso, Wa 98626, Ph(360)-703-6086

DATE: 3-7-16
DWN: JJT
CHK: NV
APPROVED: CH
PRJ. MGR: CH
PROJECT NO: 01-323

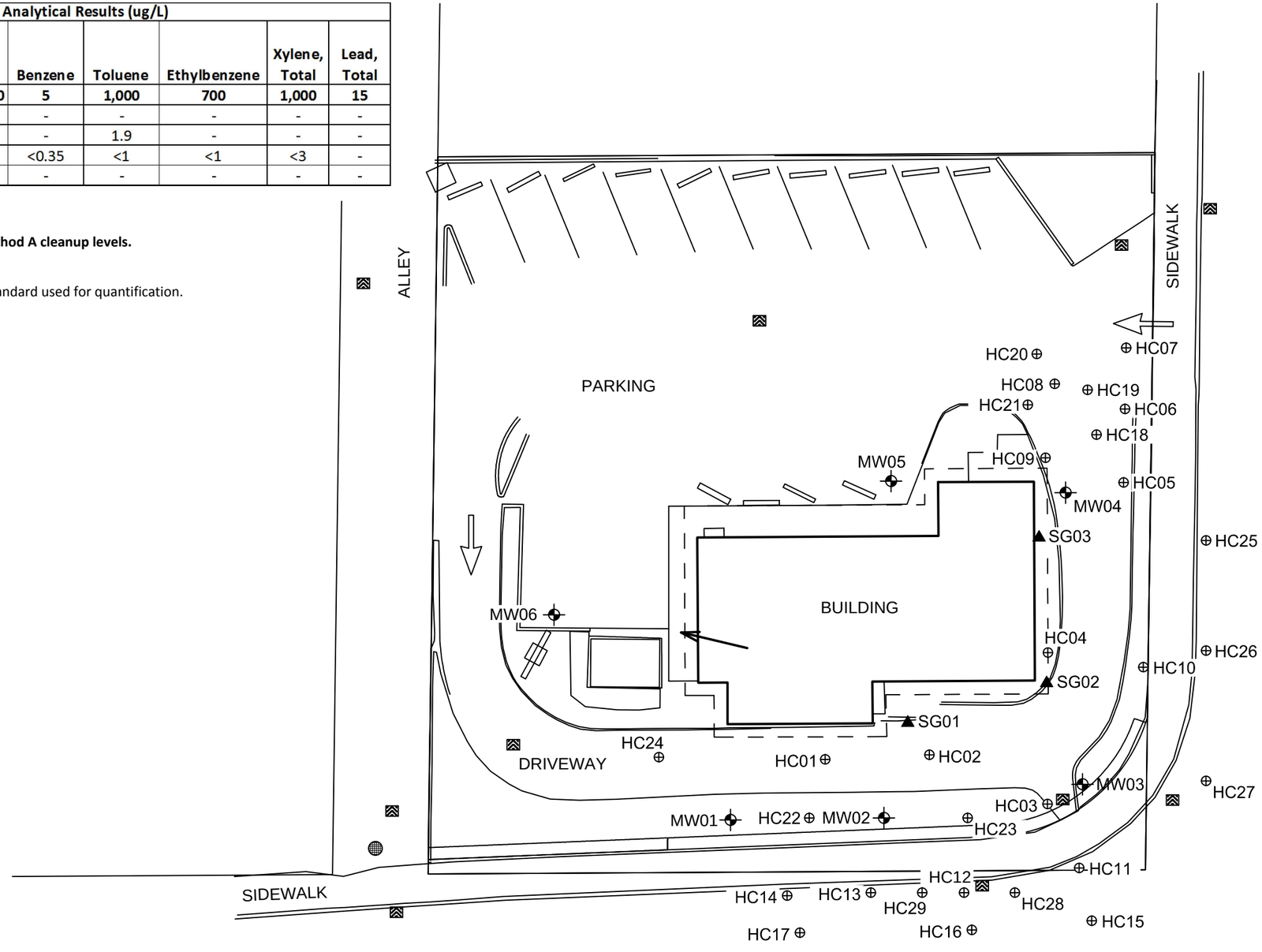
FIGURE 3
SOIL ANALYTICAL RESULTS

TOC HOLDING CO. FACILITY NO. 01-323
301 N CENTRAL AVE
KENT, WA.

C:\Users\Josh\Desktop\Autocad Backup\Hydrocon-Autocad\01-323 Kent\2016\Jan 2016\01-323_SSI-030716.dwg 2.17.2014

Well ID	Date	Analytical Results (ug/L)							
		DRPH	ORPH	GRPH	Benzene	Toluene	Ethylbenzene	Xylene, Total	Lead, Total
WA Method A		**500**	**500**	**800/1,000**	**5**	**1,000**	**700**	**1,000**	**15**
HC24	12/28/2015	69 x	-	-	-	-	-	-	-
HC25	12/29/2015	-	-	-	-	1.9	-	-	-
HC26	12/29/2015	<60	<280	<100	<0.35	<1	<1	<3	-
HC27	12/29/2015	-	310	-	-	-	-	-	-

Notes:
Red denotes concentration exceeds MTCA Method A cleanup level.
Results shown only for samples with detections exceeding MTCA Method A cleanup levels.
See Table 1 for complete results.
Lab Qualifiers:
x - The sample chromatographic pattern does not resemble the fuel standard used for quantification.



LEGEND

- BUILDING
- MW01 — MONITORING WELL
- HC01 — BORING LOCATIONS (HYDROCON 2015)
- SG01 — SOIL GAS LOCATIONS (HYDROCON 2015)
- CATCH BASIN
- APPROXIMATE GROUNDWATER FLOW DIRECTION

N W E S

0 20 40
SCALE IN FEET
1" = 20'

HydroCon
510 Allen St. Suite B Kelso, Wa 98626, Ph(360)-703-6086

DATE: 3-7-16
DWN: JJT
CHK: NV
APPROVED: CH
PRJ. MGR: CH
PROJECT NO: 01-323

FIGURE 4
2015 BOREHOLE GROUNDWATER ANALYTICAL RESULTS
TOC HOLDING CO. FACILITY NO. 01-323
301 N CENTRAL AVE
KENT, WA.

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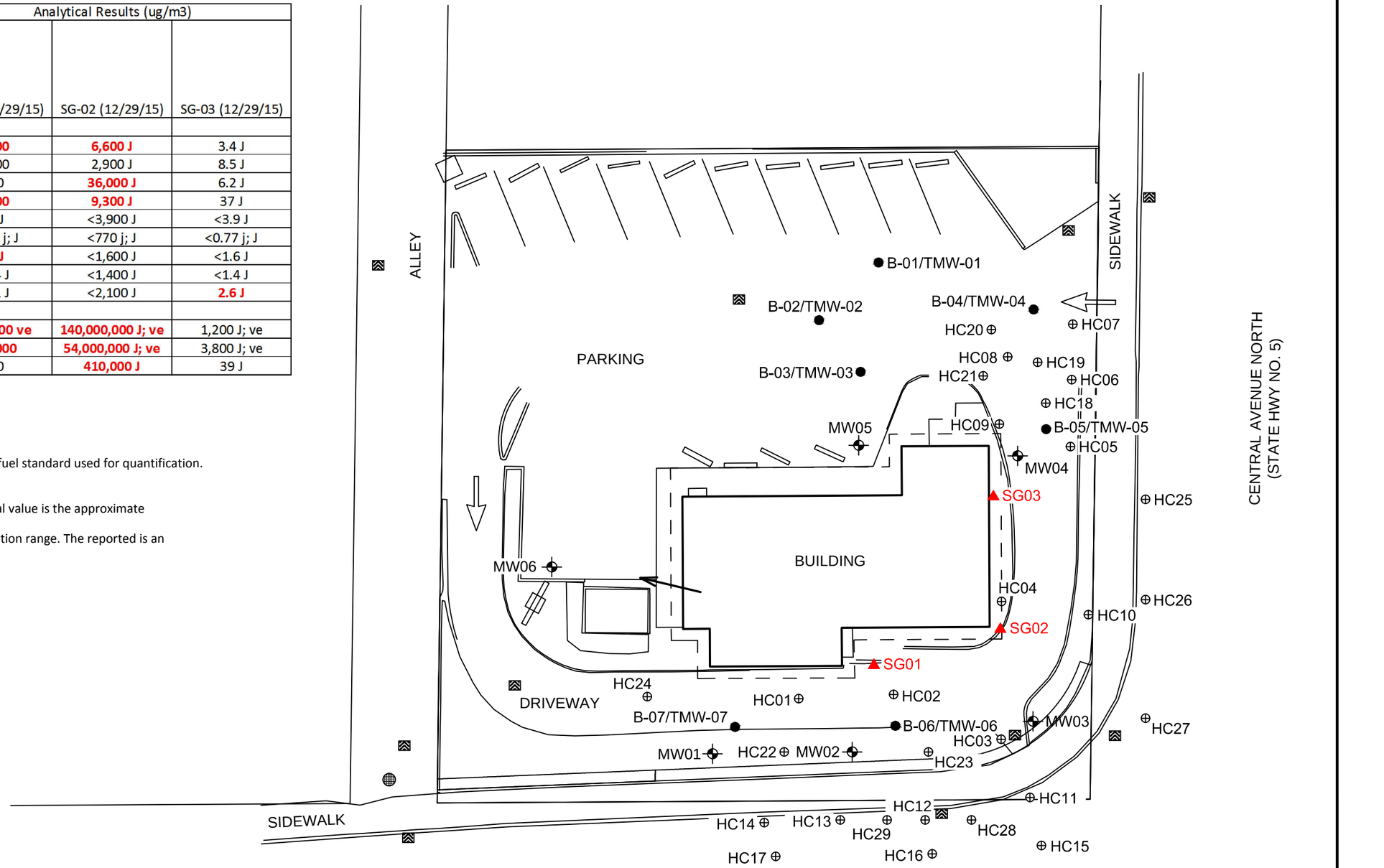
	Ecology's Lowest Sub-Slab Soil Gas Screening Level	Analytical Results (ug/m3)		
		SG-01 (12/29/15)	SG-02 (12/29/15)	SG-03 (12/29/15)
Volatiles-TO15				
Benzene	**10.7**	**6,600**	**6,600 J**	3.4 J
Toluene	**76,200**	9,200	2,900 J	8.5 J
Ethylbenzene	**15,200**	860	**36,000 J**	6.2 J
Xylene Total	**1,520**	**6,500**	**9,300 J**	37 J
1,2,4-trimethylbenzene	**107**	85 J	<3,900 J	<3.9 J
EDB	**0.139**	<0.77 j; J	<770 j; J	<0.77 j; J
EDC	**3.21**	**63 J**	<1,600 J	<1.6 J
MTBE	**321**	<1.4 J	<1,400 J	<1.4 J
Naphthalene	**2.45**	<2.1 J	<2,100 J	**2.6 J**
Volatiles-APH				
APH EC5-8 aliphatics	**90,000**	**2,300,000 ve**	**140,000,000 J; ve**	1,200 J; ve
APH EC9-12 aliphatics	**4,700**	**200,000**	**54,000,000 J; ve**	3,800 J; ve
APH EC9-10 aromatics	**6,000**	830	**410,000 J**	39 J

Notes:
Red denotes concentration exceeds sub-slab screening level.
See Table 1 for complete results.
Lab Qualifiers:
x - The sample chromatographic pattern does not resemble the fuel standard used for quantification.
ec - Method reporting limit exceeds Clean Up Level shown.
j - Estimated value; result is less than normal reporting limits.
J - The analyte was positively identified; the associated numerical value is the approximate concentration.
ve - The analytle response exceeded the valid instrument calibration range. The reported is an estimate.



LEGEND

- BUILDING
- MW01 — MONITORING WELL
- HC01 — BORING LOCATIONS (HYDROCON 2015)
- SG01 — SOIL GAS LOCATIONS (HYDROCON 2015)
- CATCH BASIN
- APPROXIMATE GROUNDWATER FLOW DIRECTION

*RED INDICATES IMPACTED SOIL OR GROUNDWATER

N W E S

0 20 40
SCALE IN FEET
1" = 20'

Hydro Con
510 Allen St. Suite B Kelso, Wa 98626, Ph(360)-703-6086

DATE: 3-16-16
DWN: JJT
CHK: NV
APPROVED: CH
PRJ. MGR: CH
PROJECT NO: 01-323

FIGURE 5
2015 VAPOR RESULTS

TOC HOLDING CO. FACILITY NO. 01-323
301 N CENTRAL AVE
KENT, WA.

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TABLES

Table 1
Summary of Soil Analytical Results
TOC Holding Co. Facility No. 01-323
301 North Central Avenue
Kent, Washington

		Fuels		Volatiles									Metal
		DRPH	ORPH	GRPH	Benzene	Toluene	Ethylbenzene	Xylene, Total	Naphthalene	EDB	EDC	MTBE	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	5	0.005		0.1	250
Benzene (Non Detect)				100									
Benzene (Detect)				30									
Field ID	**Date**												
HC18-05	12/28/2015	<50	<250	<2	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC19-05	12/28/2015	<50	<250	<2	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC20-05	12/28/2015	<50	<250	<2	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC21-05	12/28/2015	<50	<250	<2	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC22-05	12/28/2015	<50	<250	<2	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC22-07	12/28/2015	<50	<250	<2	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC22-15	12/28/2015	<50	<250	<2	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC23-05	12/28/2015	<50	<250	<2	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC23-12	12/28/2015	550 x	<250	1,200	<0.03	<0.05	0.37	<0.15	-	-	-	-	9.6
HC23-15	12/28/2015	670 x	<250	2,200	<0.03	<0.05	0.19	<0.15	-	-	-	-	-
HC24-05	12/28/2015	<50	<250	<2	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC24-07	12/28/2015	<50	<250	<2	<0.03	<0.05	<0.05	<0.15	-	-	<0.05	-	-
HC24-15	12/28/2015	<50	<250	<2	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC25-05	12/29/2015	<50	<250	<2	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC25-10	12/29/2015	<50	<250	<2	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC25-15	12/29/2015	<50	<250	<2	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC26-05	12/29/2015	<50	<250	<2	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC26-10	12/29/2015	<50	<250	<2	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC26-15	12/29/2015	<50	<250	<2	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC27-05	12/29/2015	<50	<250	<2	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC27-10	12/29/2015	<50	<250	<2	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC27-15	12/29/2015	<50	<250	<2	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC28-05	12/29/2015	1,400	<250	460	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC28-10	12/29/2015	<50	<250	17	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC28-15	12/29/2015	<50	<250	<2	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC29-05	12/29/2015	4,300 x	<250	5,400	<0.03	<0.05	0.6	<0.15	-	-	<0.05	<0.05	7.79
HC29-10	12/29/2015	<50	<250	<2	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-
HC29-15	12/29/2015	<50	<250	<2	<0.03	<0.05	<0.05	<0.15	-	-	-	-	-

Table 1
Summary of Soil Analytical Results
TOC Holding Co. Facility No. 01-323
301 North Central Avenue
Kent, Washington

	Fuels		Volatiles									Metal
	DRPH	ORPH	GRPH	Benzene	Toluene	Ethylbenzene	Xylene, Total	Naphthalene	EDB	EDC	MTBE	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	5	0.005		0.1	250
Benzene (Non Detect)			100									
Benzene (Detect)			30									
Field ID Date												

Notes
Red denotes concentration exceeds MTCA Method A cleanup level.
MTCA Method A Cleanup Levels, Table 740-1 of Section 900 of Chapter 173-340 of the Washington Administrative Code, revised November 2007.
GRPH analyzed by Method NWTPH-Gx.
DRPH and ORPH analyzed by Method NWTPH-Dx.
Volatiles analyzed by EPA 8260B, 8260C or 8021B.
Metals analyzed by EPA Method 6010B, 6010C or 200.8.

J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.
x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

- = not measured/not analyzed
< = not detected at a concentration exceeding the laboratory MRL shown
mg/kg = milligrams per kilogram
DRPH = Diesel Range Petroleum Hydrocarbons
EDB = 1,2-dibromoethane (ethylene dibromide)
EDC = 1,2-dichloroethane (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
NWTPH = Northwest Total Petroleum Hydrocarbon
ORPH = Oil Range Petroleum Hydrocarbons

Table 2
Summary of Soil PCB/PAH/HVOC Analytical Results
TOC Holding Co. Facility No. 01-323
301 North Central Avenue
Kent, Washington

	Units	WA Method A Cleanup for Unrestricted Land Use	Method B Non cancer	Method B Cancer	Protective of Groundwater Vadose @ 25 degrees C	Protective of Groundwater Vadose @ 13 degrees C	Protective of Groundwater Saturated	12/28/2015 HC23-12	12/29/2015 HC29-05
PCBs									
PCB Mixtures (total PCBs)	mg/kg	1	--	0.5	--	--	--		
Aroclor 1016	mg/kg	--	5.6	14.3	--	--	--	<0.02	<0.02
Aroclor 1221	mg/kg	--	--	--	--	--	--	<0.02	<0.02
Aroclor 1232	mg/kg	--	--	--	--	--	--	<0.02	<0.02
Aroclor 1242	mg/kg	--	--	--	--	--	--	<0.02	<0.02
Aroclor 1248	mg/kg	--	--	--	--	--	--	<0.02	<0.02
Aroclor 1254	mg/kg	--	1.6	0.5	--	--	--	<0.02	<0.02
Aroclor 1260	mg/kg	--	--	0.5	--	--	--	<0.02	<0.02
Aroclor 1268	mg/kg	--	--	--	--	--	--	<0.02	<0.02
Aroclor 1262	mg/kg	--	--	--	--	--	--	<0.02	<0.02
PAHs									
Acenaphthene	mg/kg	--	4,800	--	--	97.9	4.98	-	0.037
Acenaphthylene	mg/kg	--	--	--	--	--	--	-	<0.01
Anthracene	mg/kg	--	24,000	--	2,275	--	114	-	0.039
Benz(a)anthracene	mg/kg	--	--	1.37	0.858	--	0.0429	<0.01	0.045
Benzo(a) pyrene	mg/kg	0.1	--	0.137	2.33	--	0.116	0.019	0.037
Benzo(b)fluoranthene	mg/kg	--	--	1.37	2.95	2.95	0.147	0.024	0.05
Benzo(g,h,i)perylene	mg/kg	--	--	--	--	--	--	-	0.014
Benzo(k)fluoranthene	mg/kg	--	--	13.7	269.5	--	1.47	<0.01	0.016
Chrysene	mg/kg	--	--	137	95.5	95.5	4.77	0.014	0.054
Dibenz(a,h)anthracene	mg/kg	--	--	0.137	0.429	--	0.0214	<0.01	<0.01
Fluoranthene	mg/kg	--	3,200	--	631	--	31.6	-	0.16
Fluorene	mg/kg	--	3,200	--	101	101	5.12	-	0.078
Indeno(1,2,3-c,d)pyrene	mg/kg	--	--	1.37	8.32	--	0.416	0.015	0.018
Naphthalene	mg/kg	5	1,600	--	4.46	4.45	0.236	-	<0.01
Phenanthrene	mg/kg	--	--	--	--	--	--	-	0.24
Pyrene	mg/kg	--	2,400	--	655	655	32.8	-	0.17
Volatiles-HVOCs									
1,1,1-trichloroethane	mg/kg	2	160,000	--	1.58	1.49	0.0843	<0.05	<0.05
1,1-dichloroethane	mg/kg	--	16,000	175	0.042	0.041	0.0026	<0.05	<0.05
1,1-dichloroethene	mg/kg	--	4,000	--	0.05	0.0457	0.00246	<0.05	<0.05
Chloroethane	mg/kg	--	--	--	--	--	--	<0.5	<0.5
cis-1,2-dichloroethene	mg/kg	--	160		0.08	0.078	0.00515	<0.05	<0.05
Dichloromethane	mg/kg	0.02	480	500	0.022	0.022	0.00148	<0.5	<0.5
Diisopropyl ether	mg/kg	--	--	--	--	--	--	-	<0.05
ETBE	mg/kg	--	--	--	--	--	--	<0.05	<0.05
Ethanol	mg/kg	--	--	--	--	--	--	<50	<50
TAME	mg/kg	--	--	--	--	--	--	<0.05	<0.05
tert-Butyl alcohol	mg/kg	--	--	--	--	--	--	<2.5	<2.5
Trichloroethene	mg/kg	0.03	40	12	0.0264	0.0252	0.00152	<0.02	<0.02
Tetrachloroethene	mg/kg	0.05	480	476	0.053	0.05	0.00276	<0.025	<0.025
trans-1,2-dichloroethene	mg/kg	--	1,600		0.543	0.518	0.0325	<0.05	<0.05
Vinyl chloride	mg/kg	--	240	0.67	0.00183	0.00167	0.0000885	<0.05	<0.05

Notes
Red denotes concentration exceeds MTCA Method A (or Method B cleanup level) if no Method A cleanup level is established
-- means no standard promulgated
Samples analyzed by Friedman & Bruya, Inc., of Seattle, Washington.
MTCA Method A Cleanup Levels, Table 740-1 of Section 900 of Chapter 173-340 of the Washington Administrative Code, revised November 2007.
Method B Soil Cleanup Levels Protective of Groundwater from CLARC Master Tables; Updated August 2015
Volatiles analyzed by EPA 8260B, 8260C or 8021B.
PCBs analyzed by SW8082.
PAHs analyzed by SW 8270SIM or SW8270D.

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

- = not measured/not analyzed
< = not detected at a concentration exceeding the laboratory MRL shown
mg/kg = milligrams per kilogram
ETBE - Ethyl tert-butyl ether
TAME - tert-Amyl methyl ether
PCB - Polychlorinated Biphenyl
PAH - Polynuclear Aromatic Hydrocarbon
HVOC - Halogenated volatile organic compound

Table 3
Summary of Borehole Groundwater Analytical Results
TOC Holding Co. Facility No. 01-323
301 North Central Avenue
Kent, Washington

	Fuels		Volatiles									Metal
	DRPH	ORPH	GRPH	Benzene	Toluene	Ethylbenzene	Xylene, Total	EDB	EDC	MTBE	Naphthalene	Lead, Total
	µg/L	µg/L	µg/L	µg/L	µg/L	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**	0.01	**5**	**20**	**160**	**15**
Benzene (Non Detect)			**1,000**									
Benzene (Detect)			**800**									
Field ID **Date**												
Temporary Borehole Wells												
HC24 12/28/2015	69 x	<250	<100	<0.35	<1	<1	<3	<1 ec	<1	<1	<1	-
HC25 12/29/2015	<50	<250	<100	<0.35	1.9	<1	<3	-	-	-	-	-
HC26 12/29/2015	<60	<280	<100	<0.35	<1	<1	<3	-	-	-	-	-
HC27 12/29/2015	<60	310	<100	<0.35	<1	<1	<3	-	-	-	-	-

Red denotes concentration in excess of MTCA Cleanup Level for Groundwater.
Samples analyzed by Friedman & Bruya, Inc., of Seattle, Washington
MTCA Method A Cleanup Code, revised November 2007.
GRPH analyzed by Method NWTPH-Gx.
DRPH and ORPH analyzed by Method NWTPH-Dx.
Volatiles analyzed by EPA 8260B, 8260C or 8021B.
Metals analyzed by EPA Method 6010B, 6010C or 200.8.

ec - Method reporting limit exceeds Clean Up Level shown.
x - The sample chromatographic pattern does not resemble the fuel standard used for quantification.

- = not measured/not analyzed
< = not detected at a concentration exceeding the laboratory reporting limit
µg/L = micrograms per liter
DRPH = Diesel Range Petroleum Hydrocarbon
EDB = 1,2-dibromoethane (ethylene dibromide)
EDC = 1,2-dichloroethane (ethylene dichloride)
EPA = U.S. Environmental Protection Agency
GRPH = Gasoline Range Petroleum Hydrocarbon
MTBE = methyl tertiary-butyl ether
MTCA = Washington State Model Toxics Control Act
NWTPH = Northwest Total Petroleum Hydrocarbon
ORPH = Oil Range Petroleum Hydrocarbon

Table 4
Summary of 2015 Soil Vapor Analytical Results
TOC Holding Co. Facility No. 01-323
301 North Central Avenue
Kent, Washington

	unit	2015 Sub-Slab Screening Level Method B (Noncancer)	2015 Sub-Slab Screening Level Method B (Cancer)	12/29/2015 SG-01	12/29/2015 SG-02	12/29/2015 SG-03
Volatiles-TO15						
Benzene	µg/m3	457	10.7	6,600	6,600 J	3.4 J
Toluene	µg/m3	76,200		9,200	2,900 J	8.5 J
Ethylbenzene	µg/m3	15,200		860	36,000 J	6.2 J
m,p-Xylene	µg/m3	1,520		4,800	7,600	27
o-Xylene	µg/m3	1,520		1,700	<1,700 ec	10
1,2,4-trimethylbenzene	µg/m3	107		85 J	<3,900 ec; J	<3.9 ec; J
EDB	µg/m3	137	0.139	<0.77 ec; j; J	<770 ec; j; J	<0.77 ec; j; J
EDC	µg/m3	107	3.21	63 J	<1,600 ec; J	<1.6 ec; J
Hexane	µg/m3	10,700		110,000 ve	820,000 ve	170
MTBE	µg/m3	45,700	321	<1.4 J	<1,400 ec; J	<1.4 J
Naphthalene	µg/m3	45.7	2.45	<2.1 ec; J	<2,100 ec; J	2.6 J
Volatiles-APH						
APH EC5-8 aliphatics	µg/m3	90,000		2,300,000 ve	140,000,000 J; ve	1,200 J; ve
APH EC9-10 aromatics	µg/m3	4,700		830	410,000 J	39 J
APH EC9-12 aliphatics	µg/m3	6,000		200,000	54,000,000 J; ve	3,800 J; ve

Notes
Red denotes concentration exceeds MTCA cleanup level.
Samples analyzed by Friedman & Bruya, Inc., of Seattle, Washington.
Washington State Department of Ecology (Ecology). 2009. Guidance for Evaluating Soil Vapor Intrusion in the Washington State – Investigation and Remedial Action; Publication No. 09-09-047. Toxics Cleanup Program. October. Table B-1 Updated April 2015.
If there are two cleanup levels for an analyte, the lower of the two is the required mininum detection limit for the analytical method requested.
< = not detected at a concentration exceeding the laboratory reporting limit
µg/m3 = micrograms per cubic meter
Volatiles analyzed by APH or TO15.
EDB = 1,2-dibromoethane (ethylene dibromide)
EDC = 1,2-dichloroethane (ethylene dichloride)
MTBE = methyl tertiary-butyl ether

ec - Method reporting limit exceeds Clean Up Level shown.
j - Estimated value; result is less than normal reporting limits.
J - The analyte was positively identified; the associated numerical value is the approximate concentration
ve - The analytle response exceeded the valid instrument calibration range. The reported is an estimate.

APPENDIX A
Boring Logs

HydroCon

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

WELL/BORING NUMBER: HC18

PROJECT NAME: TOC Kent
PROJECT NUMBER: 01-323
PROJECT LOCATION: Kent, WA
LOGGED BY: R. Honsberger
REVIEWED BY: C. Hultgren
DATE: 12-28-15

LOCATION MAP

N

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	0							
GRAVEL Fill (GP), brown, 70% fine subangular up to 5/8" gravel and 30% medium to fine sand, no hydrocarbon odor, damp.					0.4			
SAND (SP), dark brown, 90% medium to fine sand and 10% low plastic fines, no hydrocarbon odor, damp.					0.4			
	5			HC18-05	0.4			
BOTTOM OF BORING AT 5' B.G.S.								
Boring backfilled with hydrated bentonite upon completion.	10							
	15							
	20							
	25							
	30							

WELL CONSTRUCTION

Depths (feet bgs)

Borehole: 5
Sump:
Screen:
Casing:
Backfill: 0-5
Sand Pack:
Bentonite:
Concrete:
Stabilizers:

MATERIALS USED

Casing:
Well Screen:
End Cap:
Sand Pack:
Bentonite:
Concrete:
Monument:
Well Cap:
Other:

LEGEND:

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

DRILLING CONTRACTOR: ESN
DRILLING METHOD: Direct Push
BOREHOLE DIAMETER: 2-Inch
SAMPLING METHOD: Continuous Core
WELL TAG ID: --

CASING ELEVATION: --
GROUND SURFACE ELEVATION: --
NORTHING: 143060.02
EASTING: 1294113.33

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

WELL/BORING NUMBER: HC19

PROJECT NAME: TOC Kent
PROJECT NUMBER: 01-323
PROJECT LOCATION: Kent, WA
LOGGED BY: R. Honsberger
REVIEWED BY: C. Hultgren
DATE: 12-28-15

LOCATION MAP

N

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	0							
GRAVEL Fill (GP), brown, 70% fine subangular up to 5/8" gravel and 30% medium to fine sand, no hydrocarbon odor, damp.					0.4			
SAND (SP), dark brown, 90% medium to fine sand and 10% low plastic fines, no hydrocarbon odor, damp.					0.4			
	5			HC19-05	0.4			
BOTTOM OF BORING AT 5' B.G.S.								
Boring backfilled with hydrated bentonite upon completion.	10							
	15							
	20							
	25							
	30							

WELL CONSTRUCTION

Depths (feet bgs)

Borehole: 5
Sump:
Screen:
Casing:
Backfill: 0-5
Sand Pack:
Bentonite:
Concrete:
Stabilizers:

MATERIALS USED

Casing:
Well Screen:
End Cap:
Sand Pack:
Bentonite:
Concrete:
Monument:
Well Cap:
Other:

LEGEND:

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

DRILLING CONTRACTOR: ESN
DRILLING METHOD: Direct Push
BOREHOLE DIAMETER: 2-Inch
SAMPLING METHOD: Continuous Core
WELL TAG ID: --

CASING ELEVATION: --
GROUND SURFACE ELEVATION: --
NORTHING: 143067.52
EASTING: 1294111.83

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Kelso, WA 98626
Phone: 360-703-6079

WELL/BORING NUMBER: HC20

PROJECT NAME: TOC Kent
PROJECT NUMBER: 01-323
PROJECT LOCATION: Kent, WA
LOGGED BY: R. Honsberger
REVIEWED BY: C. Hultgren
DATE: 12-28-15

LOCATION MAP

N

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	0							
GRAVEL Fill (GP), brown, 70% fine subangular up to 5/8" gravel and 30% medium to fine sand, no hydrocarbon odor, damp.					0.3			
SAND (SP), dark brown, 90% medium to fine sand and 10% low plastic fines, no hydrocarbon odor, damp.					0.3			
	5			HC20-05	0.3			
BOTTOM OF BORING AT 5' B.G.S.								
Boring backfilled with hydrated bentonite upon completion.	10							
	15							
	20							
	25							
	30							

WELL CONSTRUCTION

Depths (feet bgs)

Borehole: 5
Sump:
Screen:
Casing:
Backfill: 0-5
Sand Pack:
Bentonite:
Concrete:
Stabilizers:

MATERIALS USED

Casing:
Well Screen:
End Cap:
Sand Pack:
Bentonite:
Concrete:
Monument:
Well Cap:
Other:

LEGEND:

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

DRILLING CONTRACTOR: ESN
DRILLING METHOD: Direct Push
BOREHOLE DIAMETER: 2-Inch
SAMPLING METHOD: Continuous Core
WELL TAG ID: --

CASING ELEVATION: --
GROUND SURFACE ELEVATION: --
NORTHING: 143073.52
EASTING: 1294103.33

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

WELL/BORING NUMBER: HC21

PROJECT NAME: TOC Kent
PROJECT NUMBER: 01-323
PROJECT LOCATION: Kent, WA
LOGGED BY: R. Honsberger
REVIEWED BY: C. Hultgren
DATE: 12-28-15

LOCATION MAP

N

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	0							
GRAVEL Fill (GP), brown, 70% fine subangular up to 5/8" gravel and 30% medium to fine sand, no hydrocarbon odor, damp.					0.3			
SAND (SP), dark brown, 90% medium to fine sand and 10% low plastic fines, no hydrocarbon odors, damp.					0.3			
	5			HC21-05	0.3			
BOTTOM OF BORING AT 5' B.G.S.								
Boring backfilled with hydrated bentonite upon completion.	10							
	15							
	20							
	25							
	30							

WELL CONSTRUCTION

Depths (feet bgs)

Borehole: 5
Sump:
Screen:
Casing:
Backfill: 0-5
Sand Pack:
Bentonite:
Concrete:
Stabilizers:

MATERIALS USED

Casing:
Well Screen:
End Cap:
Sand Pack:
Bentonite:
Concrete:
Monument:
Well Cap:
Other:

LEGEND:

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

DRILLING CONTRACTOR: ESN
DRILLING METHOD: Direct Push
BOREHOLE DIAMETER: 2-Inch
SAMPLING METHOD: Continuous Core
WELL TAG ID: --

CASING ELEVATION: --
GROUND SURFACE ELEVATION: --
NORTHING: 143065.02
EASTING: 1294101.83

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

WELL/BORING NUMBER: HC22

PROJECT NAME: TOC Kent
PROJECT NUMBER: 01-323
PROJECT LOCATION: Kent, WA
LOGGED BY: R. Honsberger
REVIEWED BY: C. Hultgren
DATE: 12-28-15

LOCATION MAP

N

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 and topsoil	0							
SAND (SP), brown, 85% fine to medium sand, 10% nonplastic fines, and 5% fine subangular up to 5/8" gravel no hydrocarbon odor, damp.					0.3			
SAND (SP), dark brown, 90% medium to fine sand and 10% low plastic fines, no hydrocarbon odor, damp. Becomes wet at 7'bgs.	5			HC22-05	0.5			
				HC22-07	0.3			
					0.5			
	10				0.5			
					0.5			
SAND (SP), dark brown, 95% medium to fine sand and 5% low plastic fines, no hydrocarbon odor, wet.					0.5			
	15			HC22-15	3.7			
BOTTOM OF BORING AT 15' B.G.S.								
Boring backfilled with hydrated bentonite upon completion.								
	20							
	25							
	30							

WELL CONSTRUCTION

Depths (feet bgs)

Borehole: 15
Sump:
Screen:
Casing:
Backfill: 0-15
Sand Pack:
Bentonite:
Concrete:
Stabilizers:

MATERIALS USED

Casing:
Well Screen:
End Cap:
Sand Pack:
Bentonite:
Concrete:
Monument:
Well Cap:
Other:

LEGEND:

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

DRILLING CONTRACTOR: ESN
DRILLING METHOD: Direct Push
BOREHOLE DIAMETER: 2-Inch
SAMPLING METHOD: Continuous Core
WELL TAG ID: --

CASING ELEVATION: --
GROUND SURFACE ELEVATION: --
NORTHING: 142995.91
EASTING: 1294065.26

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Phone: 360-703-6079

WELL/BORING NUMBER: HC23

PROJECT NAME: TOC Kent
PROJECT NUMBER: 01-323
PROJECT LOCATION: Kent, WA
LOGGED BY: R. Honsberger
REVIEWED BY: C. Hultgren
DATE: 12-28-15

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
Grass and topsoil	0							
SAND (SP), dark brown, 90% medium to fine sand and 10% low plastic fines, no hydrocarbon odor, damp. Becomes wet at 7'bgs.					0.5			
					0.5			
	5			HC23-05	0.5			
No Recovery 5' to 10'bgs.	10							
				HC23-12	702			
SAND (SP), dark brown, 95% medium to fine sand and 5% low plastic fines, no hydrocarbon odor, wet.								
	15			HC23-15	832			
BOTTOM OF BORING AT 15' B.G.S.								
Boring backfilled with hydrated bentonite upon completion.	20							
	25							
	30							

WELL CONSTRUCTION

Depths (feet bgs)

Borehole: 15
Sump:
Screen:
Casing:
Backfill: 0-15
Sand Pack:
Bentonite:
Concrete:
Stabilizers:

MATERIALS USED

Casing:
Well Screen:
End Cap:
Sand Pack:
Bentonite:
Concrete:
Monument:
Well Cap:
Other:

LEGEND:

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

DRILLING CONTRACTOR: ESN
DRILLING METHOD: Direct Push
BOREHOLE DIAMETER: 2-Inch
SAMPLING METHOD: Continuous Core
WELL TAG ID: --

CASING ELEVATION: --
GROUND SURFACE ELEVATION: --
NORTHING: 142995.91
EASTING: 1294091.76

Hydro Con

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

WELL/BORING NUMBER: HC24

PROJECT NAME: TOC Kent
PROJECT NUMBER: 01-323
PROJECT LOCATION: Kent, WA
LOGGED BY: R. Honsberger
REVIEWED BY: C. Hultgren
DATE: 12-28-15

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	0							
SAND (SP), dark brown, 90% medium to fine sand and 10% low plastic fines, no hydrocarbon odor, damp. Becomes wet at 7'bgs.					0.5			
					0.5			
	5			HC24-05	0.5			
				HC24-07	0.5			
					0.5			
	10							
					0.5			
SAND (SP), dark brown, 95% medium to fine sand and 5% low plastic fines, no hydrocarbon odor, wet.					0.5			
					0.5			
	15			HC24-15	2.5			
BOTTOM OF BORING AT 15' B.G.S.								
Boring backfilled with hydrated bentonite upon completion.								
	20							
	25							
	30							

WELL CONSTRUCTION

Depths (feet bgs)

Borehole: 15
Sump:
Screen:
Casing:
Backfill: 0-15
Sand Pack:
Bentonite:
Concrete:
Stabilizers:

MATERIALS USED

Casing:
Well Screen:
End Cap:
Sand Pack:
Bentonite:
Concrete:
Monument:
Well Cap:
Other:

LEGEND:

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

DRILLING CONTRACTOR: ESN
DRILLING METHOD: Direct Push
BOREHOLE DIAMETER: 2-Inch
SAMPLING METHOD: Continuous Core
WELL TAG ID: --

CASING ELEVATION: --
GROUND SURFACE ELEVATION: --
NORTHING: 143006.06
EASTING: 1294040.10

HydroCon

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Phone: 360-703-6079

WELL/BORING NUMBER: HC25

PROJECT NAME: TOC Kent
PROJECT NUMBER: 01-323
PROJECT LOCATION: Kent, WA
LOGGED BY: R. Honsberger
REVIEWED BY: C. Hultgren
DATE: 12-29-15

LOCATION MAP

N

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 4" thick at ground surface	0							
SAND (SP), dark brown, 90% medium to fine sand and 10% low plastic fines, no hydrocarbon odor, damp. Becomes wet at 5'bgs.					0.3			
					0.3			
	5			HC25-05	0.3			
					0.3			
					0.3			
	10			HC25-10	0.3			
					0.3			
					0.2			
	15			HC25-15	0.2			
BOTTOM OF BORING AT 15' B.G.S.								
Boring backfilled with hydrated bentonite upon completion.								
Set temporary PVC screen from 4' to 9' bgs.	20							
	25							
	30							

WELL CONSTRUCTION

Depths (feet bgs)

Borehole: 15
Sump:
Screen:
Casing:
Backfill: 0-15
Sand Pack:
Bentonite:
Concrete:
Stabilizers:

MATERIALS USED

Casing:
Well Screen:
End Cap:
Sand Pack:
Bentonite:
Concrete:
Monument:
Well Cap:
Other:

LEGEND:

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

DRILLING CONTRACTOR: ESN
DRILLING METHOD: Direct Push
BOREHOLE DIAMETER: 2-Inch
SAMPLING METHOD: Continuous Core
WELL TAG ID: --

CASING ELEVATION: --
GROUND SURFACE ELEVATION: --
NORTHING: 143042.33
EASTING: 1294131.64

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

WELL/BORING NUMBER: HC26

PROJECT NAME: TOC Kent
PROJECT NUMBER: 01-323
PROJECT LOCATION: Kent, WA
LOGGED BY: R. Honsberger
REVIEWED BY: C. Hultgren
DATE: 12-29-15

LOCATION MAP

N

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 4" thick at ground surface	0							
SAND (SP), dark brown, 90% medium to fine sand and 10% low plastic fines, no hydrocarbon odor, damp.					0.3			
SAND (SP), brown, 85% medium to fine sand, 10% low plastic fines, and 5% subrounded gravel up to 5/8" diameter, no hydrocarbon odor, damp. Becomes wet at 5'bgs.					0.3			
	5			HC26-05	0.3			
SAND (SP), dark brown, 90% medium to fine sand and 10% low plastic fines, no hydrocarbon odor, wet.					0.4			
					0.4			
	10			HC26-10	0.4			
					0.4			
					0.4			
	15			HC26-15	0.4			
BOTTOM OF BORING AT 15' B.G.S.								
Boring backfilled with hydrated bentonite upon completion.								
Set temporary PVC screen from 4' to 9' bgs.								
	20							
	25							
	30							

WELL CONSTRUCTION

Depths (feet bgs)

Borehole: 15
Sump:
Screen:
Casing:
Backfill: 0-15
Sand Pack:
Bentonite:
Concrete:
Stabilizers:

MATERIALS USED

Casing:
Well Screen:
End Cap:
Sand Pack:
Bentonite:
Concrete:
Monument:
Well Cap:
Other:

LEGEND:

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

DRILLING CONTRACTOR: ESN
DRILLING METHOD: Direct Push
BOREHOLE DIAMETER: 2-Inch
SAMPLING METHOD: Continuous Core
WELL TAG ID: --

CASING ELEVATION: --
GROUND SURFACE ELEVATION: --
NORTHING: 143023.89
EASTING: 1294131.64

Hydro Con

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

WELL/BORING NUMBER: HC27

PROJECT NAME: TOC Kent
PROJECT NUMBER: 01-323
PROJECT LOCATION: Kent, WA
LOGGED BY: R. Honsberger
REVIEWED BY: C. Hultgren
DATE: 12-29-15

LOCATION MAP

N

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 4" thick at ground surface	0							
SAND (SP), dark brown, 90% medium to fine sand and 10% low plastic fines, no hydrocarbon odor, damp.					0.4			
SAND (SP), brown, 80% medium to fine sand, 10% low plastic fines, and 10% subrounded gravel up to 5/8" diameter, no hydrocarbon odor, damp. Becomes wet at 5'bgs.					0.4			
	5			HC27-05	0.4			
					0.4			
					0.4			
SILTY SAND (SM), dark brown, 90% medium to fine sand and 10% low plastic fines, woodwaste, no hydrocarbon odor, wet.	10			HC27-10	0.4			
SAND (SP), dark brown, 60% fine sand and 40% low plastic fines, no hydrocarbon odor, wet.					0.4			
					0.4			
	15			HC27-15	0.4			
BOTTOM OF BORING AT 15' B.G.S.								
Boring backfilled with hydrated bentonite upon completion.								
Set temporary PVC screen from 4' to 9' bgs.	20							
	25							
	30							

WELL CONSTRUCTION

Depths (feet bgs)

Borehole: 15
Sump:
Screen:
Casing:
Backfill: 0-15
Sand Pack:
Bentonite:
Concrete:
Stabilizers:

MATERIALS USED

Casing:
Well Screen:
End Cap:
Sand Pack:
Bentonite:
Concrete:
Monument:
Well Cap:
Other:

LEGEND:

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

DRILLING CONTRACTOR: ESN
DRILLING METHOD: Direct Push
BOREHOLE DIAMETER: 2-Inch
SAMPLING METHOD: Continuous Core
WELL TAG ID: --

CASING ELEVATION: --
GROUND SURFACE ELEVATION: --
NORTHING: 143002.10
EASTING: 1294131.64

Hydro Con

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

WELL/BORING NUMBER: HC28

PROJECT NAME: TOC Kent
PROJECT NUMBER: 01-323
PROJECT LOCATION: Kent, WA
LOGGED BY: R. Honsberger
REVIEWED BY: C. Hultgren
DATE: 12-29-15

LOCATION MAP

N

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 4" thick at ground surface	0							
SAND (SP), brown, 80% medium to fine sand, 10% low plastic fines, and 10% subrounded gravel up to 5/8" diameter, no hydrocarbon odor, damp. Becomes wet at 5'bgs.					7.1			
SAND (SP), brown, 90% medium to fine sand and 10% low plastic fines, no hydrocarbon odor, damp. Becomes wet at 5'bgs.	5			HC28-05	548			
					309			
	10			HC28-10	51			
					219			
	15			HC28-15	5.7			
BOTTOM OF BORING AT 15' B.G.S.								
Boring backfilled with hydrated bentonite upon completion.	20							
	25							
	30							

WELL CONSTRUCTION

Depths (feet bgs)

Borehole: 15
Sump:
Screen:
Casing:
Backfill: 0-15
Sand Pack:
Bentonite:
Concrete:
Stabilizers:

MATERIALS USED

Casing:
Well Screen:
End Cap:
Sand Pack:
Bentonite:
Concrete:
Monument:
Well Cap:
Other:

LEGEND:

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

DRILLING CONTRACTOR: ESN
DRILLING METHOD: Direct Push
BOREHOLE DIAMETER: 2-Inch
SAMPLING METHOD: Continuous Core
WELL TAG ID: --

CASING ELEVATION: --
GROUND SURFACE ELEVATION: --
NORTHING: 142983.40
EASTING: 1294099.66

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

WELL/BORING NUMBER: HC29

PROJECT NAME: TOC Kent
PROJECT NUMBER: 01-323
PROJECT LOCATION: Kent, WA
LOGGED BY: R. Honsberger
REVIEWED BY: C. Hultgren
DATE: 12-29-15

LOCATION MAP

N

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 4" thick at ground surface	0							
SAND (SP), brown, 80% medium to fine sand, 10% low plastic fines, and 10% subrounded gravel up to 5/8" diameter, no hydrocarbon odor, damp. Becomes wet at 5'bgs.					373			
SAND (SP), brown, 90% medium to fine sand and 10% low plastic fines, no hydrocarbon odor, damp. Becomes wet at 5'bgs.	5			HC29-05	958			
					663			
	10			HC29-10	201			
					131			
BOTTOM OF BORING AT 15' B.G.S.	15			HC29-15	4.5			
Boring backfilled with hydrated bentonite upon completion.	20							
	25							
	30							

WELL CONSTRUCTION
Depths (feet bgs)

Borehole: 15
Sump:
Screen:
Casing:
Backfill: 0-15
Sand Pack:
Bentonite:
Concrete:
Stabilizers:

MATERIALS USED

Casing:
Well Screen:
End Cap:
Sand Pack:
Bentonite:
Concrete:
Monument:
Well Cap:
Other:

LEGEND:

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

DRILLING CONTRACTOR: ESN
DRILLING METHOD: Direct Push
BOREHOLE DIAMETER: 2-Inch
SAMPLING METHOD: Continuous Core
WELL TAG ID: --

CASING ELEVATION: --
GROUND SURFACE ELEVATION: --
NORTHING: 142983.40
EASTING: 1294084.16

APPENDIX B
Soil Gas Collection Forms

SOIL GAS SAMPLE COLLECTION

Sample I.D. SG-01
Sample Location
Date 12-28-15

Project Name TOC Kent
Project # 01-323
Sampler RH/LN/CH

EQUIPMENT INFORMATION

Canister ID # 18561
Canister Size 6L
Initial Vacuum Pressure 30 (in Hg)

Flow Controller ID #

PURGE AND LEAK CHECK DATA

Ambient PID Reading (ppmv) 0.0
Volume of Air to Purge 2L
Purge Rate (mL/minute) 200
PID Reading during purge (ppmv) 21
Tightness Test Shut in Pressure (psig) 10
Pass or Fail (circle one)
Leak Check – Leak Check Method (Helium 5.5 grade)
Pass or Fail (circle one)

SAMPLE INFORMATION

Start Time (date/time) 12/28/15 1147
End Time (date/time) 12/28/15 1223

Final Vacuum Pressure 5 (in Hg)

LABORATORY INFORMATION

LABORATORY: Friedman & Bruya

Analytical Method: TO15 SIM

NOTES/COMMENTS:

Sampler's Signature

Date 12-28-15

SOIL GAS SAMPLE COLLECTION

Sample I.D. SG-02
Sample Location
Date 12-28-15

Project Name TOC Kent
Project # 01-723
Sampler RH/LN/CH

EQUIPMENT INFORMATION

Canister ID # 18567
Canister Size 6L
Initial Vacuum Pressure 30 (in Hg)

Flow Controller ID #

PURGE AND LEAK CHECK DATA

Ambient PID Reading (ppmv) 0.0
Volume of Air to Purge 2L
Purge Rate (~~mls~~/minute) 200
PID Reading during purge (ppmv) 171 - 903
Tightness Test Shut in Pressure (psig) 10
Pass or Fail (circle one)
Leak Check – Leak Check Method (Helium 5.5 grade)
Pass or Fail (circle one)

SAMPLE INFORMATION

Start Time (date/time) 12/28/15 1309
End Time (date/time) 12/25/15 1345

Final Vacuum Pressure 5 (in Hg)

LABORATORY INFORMATION

LABORATORY: Friedman & Bruya

Analytical Method: TO15 SIM

NOTES/COMMENTS:

Sampler's Signature CH Date 12-28-15

SOIL GAS SAMPLE COLLECTION

Sample I.D. SG-03
Sample Location
Date 12-28-15

Project Name TOC Kent
Project # 01-323
Sampler RH/LN/CH

EQUIPMENT INFORMATION

Canister ID # 18563
Canister Size 6L
Initial Vacuum Pressure 30 (in Hg)

Flow Controller ID #

PURGE AND LEAK CHECK DATA

Ambient PID Reading (ppmv) 0.0.
Volume of Air to Purge 2L
Purge Rate (~~mL~~ L/minute) 200
PID Reading during purge (ppmv) 49
Tightness Test Shut in Pressure (psig) 10
(Pass) or Fail (circle one)
Leak Check – Leak Check Method (Helium 5.5 grade)
(Pass) or Fail (circle one)

SAMPLE INFORMATION

Start Time (date/time) 12/28/15 1416
End Time (date/time) 12/28/15 1454

Final Vacuum Pressure 5 (in Hg)

LABORATORY INFORMATION

LABORATORY: Friedman & Bruya

Analytical Method: TO15 SIM

NOTES/COMMENTS:

Sampler's Signature CH Date 12-29-15

APPENDIX C
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.

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

February 9, 2016

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

Dear Mr. Hultgren:

Included is the amended report from the testing of material submitted on December 29, 2015 from the TOC_01-323, WORFDB8 F&BI 512447 project. The cVOCs and oxygenates have been removed from sample HC24-07 and added to HC23-12 as originally requested.

We apologize for the inconvenience 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
HDC0113R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
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Eric Young, B.S.

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

January 13, 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 29, 2015 from the TOC_01-323, WORFDB8 F&BI 512447 project. There are 33 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
HDC0113R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on December 29, 2015 by Friedman & Bruya, Inc. from the HydroCon TOC_01-323, WORFDB8 F&BI 512447 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	HydroCon
512447 -01	HC18-05
512447 -02	HC19-05
512447 -03	HC20-05
512447 -04	HC21-05
512447 -05	HC22-05
512447 -06	HC22-07
512447 -07	HC22-15
512447 -08	HC23-05
512447 -09	HC23-12
512447 -10	HC23-15
512447 -11	HC24-05
512447 -12	HC24-07
512447 -13	HC24-15

All quality control requirements were acceptable.

Date of Report: 01/13/16
Date Received: 12/29/15
Project: TOC_01-323, WORFDB8 F&BI 512447
Date Extracted: 12/29/15
Date Analyzed: 12/29/15

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)

Sample ID Laboratory ID	Gasoline Range	Surrogate (% Recovery) (Limit 58-139)
HC18-05 512447-01	<2	89
HC19-05 512447-02	<2	89
HC20-05 512447-03	<2	89
HC21-05 512447-04	<2	88
HC22-05 512447-05	<2	89
HC22-07 512447-06	<2	90
HC22-15 512447-07	<2	88
HC23-05 512447-08	<2	91
HC23-12 512447-09 1/10	1,200	136
HC23-15 512447-10 1/20	2,200	137
HC24-05 512447-11	<2	89

Date of Report: 01/13/16
Date Received: 12/29/15
Project: TOC_01-323, WORFDB8 F&BI 512447
Date Extracted: 12/29/15
Date Analyzed: 12/29/15

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)

Sample ID Laboratory ID	Gasoline Range	Surrogate (% Recovery) (Limit 58-139)
HC24-07 512447-12	<2	89
HC24-15 512447-13	<2	88
Method Blank 05-2598 MB2	<2	90

Date of Report: 01/13/16
Date Received: 12/29/15
Project: TOC_01-323, WORFDB8 F&BI 512447
Date Extracted: 12/29/15
Date Analyzed: 12/29/15

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)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 53-144)
HC18-05 512447-01	<50	<250	89
HC19-05 512447-02	<50	<250	95
HC20-05 512447-03	<50	<250	86
HC21-05 512447-04	<50	<250	96
HC22-05 512447-05	<50	<250	99
HC22-07 512447-06	<50	<250	93
HC22-15 512447-07	<50	<250	85
HC23-05 512447-08	<50	<250	98
HC23-12 512447-09	550 x	<250	100
HC23-15 512447-10	670 x	<250	101
HC24-05 512447-11	<50	<250	90

Date of Report: 01/13/16
Date Received: 12/29/15
Project: TOC_01-323, WORFDB8 F&BI 512447
Date Extracted: 12/29/15
Date Analyzed: 12/29/15

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)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 53-144)
HC24-07 512447-12	<50	<250	91
HC24-15 512447-13	<50	<250	91
Method Blank 05-2622 MB	<50	<250	85

Analysis For Total Metals By EPA Method 200.8

Client ID:	HC23-12	Client:	HydroCon
Date Received:	12/29/15	Project:	TOC_01-323, WORFDB8 F&BI 512447
Date Extracted:	12/31/15	Lab ID:	512447-09
Date Analyzed:	12/31/15	Data File:	512447-09.045
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	103	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	9.60

Analysis For Total Metals By EPA Method 200.8

Client ID:	Method Blank	Client:	HydroCon
Date Received:	NA	Project:	TOC_01-323, WORFDB8 F&BI 512447
Date Extracted:	12/31/15	Lab ID:	I5-758 mb
Date Analyzed:	12/31/15	Data File:	I5-758 mb.014
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	<1

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC18-05	Client:	HydroCon
Date Received:	12/29/15	Project:	TOC_01-323, WORFDB8 F&BI 512447
Date Extracted:	12/29/15	Lab ID:	512447-01
Date Analyzed:	12/29/15	Data File:	122916.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	97	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

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC19-05	Client:	HydroCon
Date Received:	12/29/15	Project:	TOC_01-323, WORFDB8 F&BI 512447
Date Extracted:	12/29/15	Lab ID:	512447-02
Date Analyzed:	12/29/15	Data File:	122917.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	97	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

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC20-05	Client:	HydroCon
Date Received:	12/29/15	Project:	TOC_01-323, WORFDB8 F&BI 512447
Date Extracted:	12/29/15	Lab ID:	512447-03
Date Analyzed:	12/29/15	Data File:	122918.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	103	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

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC21-05	Client:	HydroCon
Date Received:	12/29/15	Project:	TOC_01-323, WORFDB8 F&BI 512447
Date Extracted:	12/29/15	Lab ID:	512447-04
Date Analyzed:	12/29/15	Data File:	122919.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	97	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

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC22-05	Client:	HydroCon
Date Received:	12/29/15	Project:	TOC_01-323, WORFDB8 F&BI 512447
Date Extracted:	12/29/15	Lab ID:	512447-05
Date Analyzed:	12/29/15	Data File:	122920.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	97	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

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC22-07	Client:	HydroCon
Date Received:	12/29/15	Project:	TOC_01-323, WORFDB8 F&BI 512447
Date Extracted:	12/29/15	Lab ID:	512447-06
Date Analyzed:	12/29/15	Data File:	122921.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	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

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC22-15	Client:	HydroCon
Date Received:	12/29/15	Project:	TOC_01-323, WORFDB8 F&BI 512447
Date Extracted:	12/29/15	Lab ID:	512447-07
Date Analyzed:	12/29/15	Data File:	122922.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	97	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

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC23-05	Client:	HydroCon
Date Received:	12/29/15	Project:	TOC_01-323, WORFDB8 F&BI 512447
Date Extracted:	12/29/15	Lab ID:	512447-08
Date Analyzed:	12/29/15	Data File:	122923.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	97	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

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC23-12	Client:	HydroCon
Date Received:	12/29/15	Project:	TOC_01-323, WORFDB8 F&BI 512447
Date Extracted:	12/29/15	Lab ID:	512447-09
Date Analyzed:	12/29/15	Data File:	122924.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	101	64	137
4-Bromofluorobenzene	94	81	119

Compounds:	Concentration mg/kg (ppm)
Ethanol	<50
t-Butyl alcohol (TBA)	<2.5
Ethyl t-butyl ether (ETBE)	<0.05
t-Amyl methyl ether (TAME)	<0.05
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	0.37
m,p-Xylene	<0.1
o-Xylene	<0.05
Vinyl chloride	<0.05
Chloroethane	<0.5
1,1-Dichloroethene	<0.05
Methylene chloride	<0.5
trans-1,2-Dichloroethene	<0.05
1,1-Dichloroethane	<0.05
cis-1,2-Dichloroethene	<0.05
1,2-Dichloroethane (EDC)	<0.05
1,1,1-Trichloroethane	<0.05
Trichloroethene	<0.02
Tetrachloroethene	<0.025

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC23-15	Client:	HydroCon
Date Received:	12/29/15	Project:	TOC_01-323, WORFDB8 F&BI 512447
Date Extracted:	12/29/15	Lab ID:	512447-10
Date Analyzed:	12/29/15	Data File:	122925.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	97	81	119

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	0.19
m,p-Xylene	<0.1
o-Xylene	<0.05

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC24-05	Client:	HydroCon
Date Received:	12/29/15	Project:	TOC_01-323, WORFDB8 F&BI 512447
Date Extracted:	12/29/15	Lab ID:	512447-11
Date Analyzed:	12/29/15	Data File:	122926.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	97	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

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC24-07	Client:	HydroCon
Date Received:	12/29/15	Project:	TOC_01-323, WORFDB8 F&BI 512447
Date Extracted:	12/29/15	Lab ID:	512447-12
Date Analyzed:	12/29/15	Data File:	122927.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	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

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC24-15	Client:	HydroCon
Date Received:	12/29/15	Project:	TOC_01-323, WORFDB8 F&BI 512447
Date Extracted:	12/29/15	Lab ID:	512447-13
Date Analyzed:	12/29/15	Data File:	122928.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

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	Method Blank	Client:	HydroCon
Date Received:	Not Applicable	Project:	TOC_01-323, WORFDB8 F&BI 512447
Date Extracted:	12/29/15	Lab ID:	05-2623 mb
Date Analyzed:	12/29/15	Data File:	122908.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	102	81	119

Compounds:	Concentration mg/kg (ppm)
Ethanol	<50
t-Butyl alcohol (TBA)	<2.5
Ethyl t-butyl ether (ETBE)	<0.05
t-Amyl methyl ether (TAME)	<0.05
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05
Vinyl chloride	<0.05
Chloroethane	<0.5
1,1-Dichloroethene	<0.05
Methylene chloride	<0.5
trans-1,2-Dichloroethene	<0.05
1,1-Dichloroethane	<0.05
cis-1,2-Dichloroethene	<0.05
1,2-Dichloroethane (EDC)	<0.05
1,1,1-Trichloroethane	<0.05
Trichloroethene	<0.02
Tetrachloroethene	<0.025

Analysis For Semivolatile Compounds By EPA Method 8270D SIM

Client Sample ID:	HC23-12	Client:	HydroCon
Date Received:	12/29/15	Project:	TOC_01-323, WORFDB8 F&BI 512447
Date Extracted:	12/30/15	Lab ID:	512447-09 1/5
Date Analyzed:	12/31/15	Data File:	123113.D
Matrix:	Soil	Instrument:	GCMS6
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Anthracene-d10	110	31	163
Benzo(a)anthracene-d12	124	24	168

Compounds:	Concentration mg/kg (ppm)
Benz(a)anthracene	<0.01
Chrysene	0.014
Benzo(a)pyrene	0.019
Benzo(b)fluoranthene	0.024
Benzo(k)fluoranthene	<0.01
Indeno(1,2,3-cd)pyrene	0.015
Dibenz(a,h)anthracene	<0.01

Analysis For Semivolatile Compounds By EPA Method 8270D SIM

Client Sample ID:	Method Blank	Client:	HydroCon
Date Received:	Not Applicable	Project:	TOC_01-323, WORFDB8 F&BI 512447
Date Extracted:	12/30/15	Lab ID:	05-2631 mb 1/5
Date Analyzed:	12/31/15	Data File:	123105.D
Matrix:	Soil	Instrument:	GCMS6
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Anthracene-d10	92	31	163
Benzo(a)anthracene-d12	121	24	168

Compounds:	Concentration mg/kg (ppm)
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

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	HC23-12	Client:	HydroCon
Date Received:	12/29/15	Project:	TOC_01-323, WORFDB8 F&BI 512447
Date Extracted:	01/04/16	Lab ID:	512447-09 1/5
Date Analyzed:	01/06/16	Data File:	10.D\ECD1A.CH
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	mp

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	146 vo	24	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.02
Aroclor 1232	<0.02
Aroclor 1016	<0.02
Aroclor 1242	<0.02
Aroclor 1248	<0.02
Aroclor 1254	<0.02
Aroclor 1260	<0.02
Aroclor 1262	<0.02
Aroclor 1268	<0.02

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	Method Blank	Client:	HydroCon
Date Received:	Not Applicable	Project:	TOC_01-323, WORFDB8 F&BI 512447
Date Extracted:	01/04/16	Lab ID:	06-016 mb 1/5
Date Analyzed:	01/06/16	Data File:	06.D\ECD1A.CH
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	mp

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	92	24	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.02
Aroclor 1232	<0.02
Aroclor 1016	<0.02
Aroclor 1242	<0.02
Aroclor 1248	<0.02
Aroclor 1254	<0.02
Aroclor 1260	<0.02
Aroclor 1262	<0.02
Aroclor 1268	<0.02

Date of Report: 01/13/16
Date Received: 12/29/15
Project: TOC_01-323, WORFDB8 F&BI 512447

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

Laboratory Code: 512447-01 (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	95	61-153

Date of Report: 01/13/16
Date Received: 12/29/15
Project: TOC_01-323, WORFDB8 F&BI 512447

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

Laboratory Code: 512447-01 (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	93	93	64-133	0

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Diesel Extended	mg/kg (ppm)	5,000	103	58-147

Date of Report: 01/13/16
Date Received: 12/29/15
Project: TOC_01-323, WORFDB8 F&BI 512447

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

Laboratory Code: 512455-05 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Lead	mg/kg (ppm)	50	1.50	85	87	70-130	2

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Lead	mg/kg (ppm)	50	101	85-115

Date of Report: 01/13/16
Date Received: 12/29/15
Project: TOC_01-323, WORFDB8 F&BI 512447

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

Laboratory Code: 512452-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Ethanol	mg/kg (ppm)	125	<50	84	82	27-130	2
Vinyl chloride	mg/kg (ppm)	2.5	<0.05	47	45	10-91	4
Chloroethane	mg/kg (ppm)	2.5	<0.5	63	60	10-101	5
1,1-Dichloroethene	mg/kg (ppm)	2.5	<0.05	64	62	11-103	3
Methylene chloride	mg/kg (ppm)	2.5	<0.5	71	70	14-128	1
t-Butyl alcohol (TBA)	mg/kg (ppm)	125	<2.5	88	87	36-119	1
trans-1,2-Dichloroethene	mg/kg (ppm)	2.5	<0.05	72	70	13-112	3
1,1-Dichloroethane	mg/kg (ppm)	2.5	<0.05	78	74	23-115	5
Ethyl t-butyl ether (ETBE)	mg/kg (ppm)	2.5	<0.05	88	86	38-110	2
cis-1,2-Dichloroethene	mg/kg (ppm)	2.5	<0.05	78	76	25-120	3
t-Amyl methyl ether (TAME)	mg/kg (ppm)	2.5	<0.05	82	80	41-111	2
1,2-Dichloroethane (EDC)	mg/kg (ppm)	2.5	<0.05	71	69	22-124	3
1,1,1-Trichloroethane	mg/kg (ppm)	2.5	<0.05	74	72	27-112	3
Benzene	mg/kg (ppm)	2.5	<0.03	80	77	26-114	4
Trichloroethene	mg/kg (ppm)	2.5	<0.02	78	77	30-112	1
Toluene	mg/kg (ppm)	2.5	<0.05	86	83	34-112	4
Tetrachloroethene	mg/kg (ppm)	2.5	<0.025	79	75	25-114	5
Ethylbenzene	mg/kg (ppm)	2.5	<0.05	91	87	34-115	4
m,p-Xylene	mg/kg (ppm)	5	<0.1	91	88	25-125	3
o-Xylene	mg/kg (ppm)	2.5	<0.05	91	89	27-126	2

Date of Report: 01/13/16
Date Received: 12/29/15
Project: TOC_01-323, WORFDB8 F&BI 512447

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
Ethanol	mg/kg (ppm)	125	106	51-164
Vinyl chloride	mg/kg (ppm)	2.5	73	42-107
Chloroethane	mg/kg (ppm)	2.5	91	47-115
1,1-Dichloroethene	mg/kg (ppm)	2.5	87	65-110
Methylene chloride	mg/kg (ppm)	2.5	97	50-127
t-Butyl alcohol (TBA)	mg/kg (ppm)	125	104	73-123
trans-1,2-Dichloroethene	mg/kg (ppm)	2.5	94	71-113
1,1-Dichloroethane	mg/kg (ppm)	2.5	97	74-109
Ethyl t-butyl ether (ETBE)	mg/kg (ppm)	2.5	108	74-117
cis-1,2-Dichloroethene	mg/kg (ppm)	2.5	95	73-110
t-Amyl methyl ether (TAME)	mg/kg (ppm)	2.5	101	74-118
1,2-Dichloroethane (EDC)	mg/kg (ppm)	2.5	85	73-111
1,1,1-Trichloroethane	mg/kg (ppm)	2.5	98	72-116
Benzene	mg/kg (ppm)	2.5	98	72-106
Trichloroethene	mg/kg (ppm)	2.5	96	72-107
Toluene	mg/kg (ppm)	2.5	106	74-111
Tetrachloroethene	mg/kg (ppm)	2.5	101	73-111
Ethylbenzene	mg/kg (ppm)	2.5	111	75-112
m,p-Xylene	mg/kg (ppm)	5	113	77-115
o-Xylene	mg/kg (ppm)	2.5	112	76-115

Date of Report: 01/13/16
Date Received: 12/29/15
Project: TOC_01-323, WORFDB8 F&BI 512447

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

Laboratory Code: 512469-02 1/5 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Acceptance Criteria
Benz(a)anthracene	mg/kg (ppm)	0.17	0.026	99	23-144
Chrysene	mg/kg (ppm)	0.17	0.034	93	32-149
Benzo(b)fluoranthene	mg/kg (ppm)	0.17	0.043	121 b	23-176
Benzo(k)fluoranthene	mg/kg (ppm)	0.17	0.013	114	42-139
Benzo(a)pyrene	mg/kg (ppm)	0.17	0.033	119	21-163
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.17	0.017	101	23-170
Dibenz(a,h)anthracene	mg/kg (ppm)	0.17	<0.01	92	31-146

Laboratory Code: Laboratory Control Sample 1/5

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Benz(a)anthracene	mg/kg (ppm)	0.17	94	94	51-115	0
Chrysene	mg/kg (ppm)	0.17	97	96	55-129	1
Benzo(b)fluoranthene	mg/kg (ppm)	0.17	116	122	56-123	5
Benzo(k)fluoranthene	mg/kg (ppm)	0.17	109	108	54-131	1
Benzo(a)pyrene	mg/kg (ppm)	0.17	102	103	51-118	1
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.17	114	120	49-148	5
Dibenz(a,h)anthracene	mg/kg (ppm)	0.17	106	112	50-141	6

Date of Report: 01/13/16
Date Received: 12/29/15
Project: TOC_01-323, WORFDB8 F&BI 512447

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR POLYCHLORINATED BIPHENYLS AS AROCLOR 1016/1260 BY EPA METHOD 8082A

Laboratory Code: 512447-09 1/5(Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet Wt)	Percent Recovery MS	Control Limits
Aroclor 1016	mg/kg (ppm)	0.8	<0.02	82	50-150
Aroclor 1260	mg/kg (ppm)	0.8	<0.02	88	50-150

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Aroclor 1016	mg/kg (ppm)	0.8	95	99	55-130	4
Aroclor 1260	mg/kg (ppm)	0.8	109	108	58-133	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.

512447

SAMPLE CHAIN OF CUSTODY ME 12/29/15

VS4/E03

Page # 1 of 2

Report To Craig Hultgren

Company Hydrocon

Address 510 Alki St Ste B

City, State, ZIP Kelso WA 98626

Phone _____ Email _____

SAMPLERS (signature)

PROJECT NAME: Toc 01-323

PO #

REMARKS

INVOICE TO

TURNAROUND TIME
- ☐ Standard (10 Business Days)
- ☑ RUSH 3 day for Dx
- Rush charges authorized by:

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

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	ANALYSES REQUESTED: NWTPH-Dx	NWTPH-Gx	BTEX by 8021B	Halogenated VOCs by 8260C	SVOCs by 8270D	HFS	BTEx by 8260C	Total Lead	PCBs 8082	Cations-CPMS 6020	Notes
HC18-05	01 A-E	12-28-15	0845	S.1	5	X	X					X				* - per RH
HC19-05	02		0850		5	X	X					X				12/30/15
HC20-05	03		0855		5	X	X					X				MS
~~HC~~ HC21-05	04		0900		5	X	X					X				
HC22-05	05		0910		5	X	X					X				
HC22-07	06		0915		5	X	X					X				
HC22-15	07		0920		5	X	X					X				
HC23-05	08		0930		5	X	X					X				
HC23-12	09		0940		5	X	X		*			X	*	*	*	
HC23-15	10		0935		5	X	X					X				

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

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Larry Namba	Hydrocon Environ.	12/29/15	1050
Received by:	DDD	F&BI	12-29-15	10.58
Relinquished by:				
Received by:				

FORMS\COC\COC.DOC

Samples received at 5 °C

512447

SAMPLE CHAIN OF CUSTODY

ME 12/29/15

VS4/E03

Page # 2 of 2

Report To

Company Soc Page 1

Address

City, State, ZIP

Phone Email

SAMPLERS (signature)

PROJECT NAME | PO #

REMARKS | INVOICE TO

TURNAROUND TIME
- ☐ Standard (10 Business Days)
- ☑ RUSH 3 day for Dx

Rush charges authorized by:

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

						ANALYSES REQUESTED										
Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	NWTPH-Dx	NWTPH-Gx	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	HFS	BTEX by 8260C	RCRA	PAHs	Total Lead	Notes
HC24-05	11 A-E	12-29-15	0945	Soil	5	X	X					X				
HC24-07	12	"	0950	"	5	X	X					X				
HC24-15	13	"	0955	"	5	X	X					X				

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

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Larry Nordby	Hydrocon Enviro	12/29/15	1050
Received by:	DD UO	FBI	12-29-15	10.50
Relinquished by:				
Received by:				

FORMS\COC\COC.DOC

Samples received at ___ °C

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

January 19, 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 30, 2015 from the TOC_01-323, F&BI 512474 project. There are 38 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
HDC0119R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on December 30, 2015 by Friedman & Bruya, Inc. from the HydroCon TOC_01-323, F&BI 512474 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	HydroCon
512474 -01	HC25-05
512474 -02	HC25-10
512474 -03	HC25-15
512474 -04	HC26-05
512474 -05	HC26-10
512474 -06	HC26-15
512474 -07	HC27-05
512474 -08	HC27-10
512474 -09	HC27-15
512474 -10	HC28-05
512474 -11	HC28-10
512474 -12	HC28-15
512474 -13	HC29-05
512474 -14	HC29-10
512474 -15	HC29-15

All quality control requirements were acceptable.

Date of Report: 01/19/16
Date Received: 12/30/15
Project: TOC_01-323, F&BI 512474
Date Extracted: 12/30/15
Date Analyzed: 12/30/15 and 12/31/15

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)

Sample ID Laboratory ID	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
HC25-05 512474-01	<2	97
HC25-10 512474-02	<2	98
HC25-15 512474-03	<2	98
HC26-05 512474-04	<2	98
HC26-10 512474-05	<2	99
HC26-15 512474-06	<2	97
HC27-05 512474-07	<2	100
HC27-10 512474-08	<2	99
HC27-15 512474-09	<2	97
HC28-05 512474-10 1/20	460	109

Date of Report: 01/19/16
Date Received: 12/30/15
Project: TOC_01-323, F&BI 512474
Date Extracted: 12/30/15
Date Analyzed: 12/30/15 and 12/31/15

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)

Sample ID Laboratory ID	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
HC28-10 512474-11	17	103
HC28-15 512474-12	<2	99
HC29-05 512474-13 1/20	5,400	304
HC29-10 512474-14	<2	102
HC29-15 512474-15	<2	99
Method Blank 05-2633 MB	<2	91

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC25-05	Client:	HydroCon
Date Received:	12/30/15	Project:	TOC_01-323, F&BI 512474
Date Extracted:	12/31/15	Lab ID:	512474-01
Date Analyzed:	12/31/15	Data File:	123119.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	89	113
Toluene-d8	98	64	137
4-Bromofluorobenzene	105	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

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC25-10	Client:	HydroCon
Date Received:	12/30/15	Project:	TOC_01-323, F&BI 512474
Date Extracted:	12/31/15	Lab ID:	512474-02
Date Analyzed:	12/31/15	Data File:	123120.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	98	89	113
Toluene-d8	97	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

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC25-15	Client:	HydroCon
Date Received:	12/30/15	Project:	TOC_01-323, F&BI 512474
Date Extracted:	12/31/15	Lab ID:	512474-03
Date Analyzed:	12/31/15	Data File:	123121.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	98	89	113
Toluene-d8	97	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

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC26-05	Client:	HydroCon
Date Received:	12/30/15	Project:	TOC_01-323, F&BI 512474
Date Extracted:	12/31/15	Lab ID:	512474-04
Date Analyzed:	12/31/15	Data File:	123122.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

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

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC26-10	Client:	HydroCon
Date Received:	12/30/15	Project:	TOC_01-323, F&BI 512474
Date Extracted:	12/31/15	Lab ID:	512474-05
Date Analyzed:	12/31/15	Data File:	123123.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	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

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC26-15	Client:	HydroCon
Date Received:	12/30/15	Project:	TOC_01-323, F&BI 512474
Date Extracted:	12/31/15	Lab ID:	512474-06
Date Analyzed:	12/31/15	Data File:	123124.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	89	113
Toluene-d8	98	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

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC27-05	Client:	HydroCon
Date Received:	12/30/15	Project:	TOC_01-323, F&BI 512474
Date Extracted:	12/31/15	Lab ID:	512474-07
Date Analyzed:	12/31/15	Data File:	123125.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	89	113
Toluene-d8	96	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

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC27-10	Client:	HydroCon
Date Received:	12/30/15	Project:	TOC_01-323, F&BI 512474
Date Extracted:	12/31/15	Lab ID:	512474-08
Date Analyzed:	12/31/15	Data File:	123126.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	89	113
Toluene-d8	97	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

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC27-15	Client:	HydroCon
Date Received:	12/30/15	Project:	TOC_01-323, F&BI 512474
Date Extracted:	12/31/15	Lab ID:	512474-09
Date Analyzed:	12/31/15	Data File:	123127.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	89	113
Toluene-d8	97	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

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC28-05	Client:	HydroCon
Date Received:	12/30/15	Project:	TOC_01-323, F&BI 512474
Date Extracted:	12/31/15	Lab ID:	512474-10
Date Analyzed:	12/31/15	Data File:	123128.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	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

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC28-10	Client:	HydroCon
Date Received:	12/30/15	Project:	TOC_01-323, F&BI 512474
Date Extracted:	12/31/15	Lab ID:	512474-11
Date Analyzed:	12/31/15	Data File:	123129.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	89	113
Toluene-d8	97	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

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC28-15	Client:	HydroCon
Date Received:	12/30/15	Project:	TOC_01-323, F&BI 512474
Date Extracted:	12/31/15	Lab ID:	512474-12
Date Analyzed:	12/31/15	Data File:	123130.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	89	113
Toluene-d8	98	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

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC29-10	Client:	HydroCon
Date Received:	12/30/15	Project:	TOC_01-323, F&BI 512474
Date Extracted:	12/31/15	Lab ID:	512474-14
Date Analyzed:	12/31/15	Data File:	123131.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	89	113
Toluene-d8	97	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

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC29-15	Client:	HydroCon
Date Received:	12/30/15	Project:	TOC_01-323, F&BI 512474
Date Extracted:	12/31/15	Lab ID:	512474-15
Date Analyzed:	12/31/15	Data File:	123132.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	97	89	113
Toluene-d8	98	64	137
4-Bromofluorobenzene	104	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

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	Method Blank	Client:	HydroCon
Date Received:	Not Applicable	Project:	TOC_01-323, F&BI 512474
Date Extracted:	12/31/15	Lab ID:	05-2628 mb
Date Analyzed:	12/31/15	Data File:	123107.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	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

Date of Report: 01/19/16
Date Received: 12/30/15
Project: TOC_01-323, F&BI 512474
Date Extracted: 12/31/15
Date Analyzed: 12/31/15

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)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 48-168)
HC25-05 512474-01	<50	<250	97
HC25-10 512474-02	<50	<250	96
HC25-15 512474-03	<50	<250	93
HC26-05 512474-04	<50	<250	94
HC26-10 512474-05	<50	<250	96
HC26-15 512474-06	<50	<250	101
HC27-05 512474-07	<50	<250	94
HC27-10 512474-08	<50	<250	101
HC27-15 512474-09	<50	<250	100
HC28-05 512474-10	1,400 x	<250	95

Date of Report: 01/19/16
Date Received: 12/30/15
Project: TOC_01-323, F&BI 512474
Date Extracted: 12/31/15
Date Analyzed: 12/31/15

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)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 48-168)
HC28-10 512474-11	<50	<250	95
HC28-15 512474-12	<50	<250	97
HC29-05 512474-13	4,300 x	<250	91
HC29-10 512474-14	<50	<250	101
HC29-15 512474-15	<50	<250	96
Method Blank 05-2637 MB	<50	<250	104

Analysis For Total Metals By EPA Method 200.8

Client ID:	HC29-05	Client:	HydroCon
Date Received:	12/30/15	Project:	TOC_01-323, F&BI 512474
Date Extracted:	01/06/16	Lab ID:	512474-13
Date Analyzed:	01/07/16	Data File:	512474-13.031
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	117	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	7.79

Analysis For Total Metals By EPA Method 200.8

Client ID:	Method Blank	Client:	HydroCon
Date Received:	Not Applicable	Project:	TOC_01-323, F&BI 512474
Date Extracted:	01/06/16	Lab ID:	I6-11 mb
Date Analyzed:	01/06/16	Data File:	I6-11 mb.041
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Holmium	119	60	125

Analyte:	Concentration mg/kg (ppm)
Lead	<1

Analysis For Semivolatile Compounds By EPA Method 8270D SIM

Client Sample ID:	HC29-05	Client:	HydroCon
Date Received:	12/30/15	Project:	TOC_01-323, F&BI 512474
Date Extracted:	01/05/16	Lab ID:	512474-13 1/5
Date Analyzed:	01/05/16	Data File:	010507.D
Matrix:	Soil	Instrument:	GCMS6
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Anthracene-d10	99	31	163
Benzo(a)anthracene-d12	121	24	168

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.01
Acenaphthylene	<0.01
Acenaphthene	0.037
Fluorene	0.078
Phenanthrene	0.24
Anthracene	0.039
Fluoranthene	0.16
Pyrene	0.17
Benz(a)anthracene	0.045
Chrysene	0.054
Benzo(a)pyrene	0.037
Benzo(b)fluoranthene	0.050
Benzo(k)fluoranthene	0.016
Indeno(1,2,3-cd)pyrene	0.018
Dibenz(a,h)anthracene	<0.01
Benzo(g,h,i)perylene	0.014

Analysis For Semivolatile Compounds By EPA Method 8270D SIM

Client Sample ID:	Method Blank	Client:	HydroCon
Date Received:	Not Applicable	Project:	TOC_01-323, F&BI 512474
Date Extracted:	01/05/16	Lab ID:	06-015 mb2 1/5
Date Analyzed:	01/05/16	Data File:	010503.D
Matrix:	Soil	Instrument:	GCMS6
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Anthracene-d10	107	31	163
Benzo(a)anthracene-d12	124	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

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC29-05	Client:	HydroCon
Date Received:	12/30/15	Project:	TOC_01-323, F&BI 512474
Date Extracted:	12/31/15	Lab ID:	512474-13
Date Analyzed:	01/12/16	Data File:	011225.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	105	64	137
4-Bromofluorobenzene	105	81	119

Compounds:	Concentration mg/kg (ppm)
Ethanol	<50
Vinyl chloride	<0.05
Chloroethane	<0.5
1,1-Dichloroethene	<0.05
Methylene chloride	<0.5
t-Butyl alcohol (TBA)	<2.5
Methyl t-butyl ether (MTBE)	<0.05
trans-1,2-Dichloroethene	<0.05
Diisopropyl ether (DIPE)	<0.05
1,1-Dichloroethane	<0.05
Ethyl t-butyl ether (ETBE)	<0.05
cis-1,2-Dichloroethene	<0.05
t-Amyl methyl ether (TAME)	<0.05
1,2-Dichloroethane (EDC)	<0.05
1,1,1-Trichloroethane	<0.05
Benzene	<0.03
Trichloroethene	<0.02
Toluene	<0.05
Tetrachloroethene	<0.025
Ethylbenzene	0.60
m,p-Xylene	<0.1
o-Xylene	<0.05

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	Method Blank	Client:	HydroCon
Date Received:	Not Applicable	Project:	TOC_01-323, F&BI 512474
Date Extracted:	12/31/15	Lab ID:	05-2628 mb
Date Analyzed:	12/31/15	Data File:	123107.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	89	113
Toluene-d8	99	64	137
4-Bromofluorobenzene	103	81	119

Compounds:	Concentration mg/kg (ppm)
Ethanol	<50
Vinyl chloride	<0.05
Chloroethane	<0.5
1,1-Dichloroethene	<0.05
Methylene chloride	<0.5
t-Butyl alcohol (TBA)	<2.5
Methyl t-butyl ether (MTBE)	<0.05
trans-1,2-Dichloroethene	<0.05
Diisopropyl ether (DIPE)	<0.05
1,1-Dichloroethane	<0.05
Ethyl t-butyl ether (ETBE)	<0.05
cis-1,2-Dichloroethene	<0.05
t-Amyl methyl ether (TAME)	<0.05
1,2-Dichloroethane (EDC)	<0.05
1,1,1-Trichloroethane	<0.05
Benzene	<0.03
Trichloroethene	<0.02
Toluene	<0.05
Tetrachloroethene	<0.025
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	HC29-05	Client:	HydroCon
Date Received:	12/30/15	Project:	TOC_01-323, F&BI 512474
Date Extracted:	01/05/16	Lab ID:	512474-13 1/5
Date Analyzed:	01/06/16	Data File:	12.D\ECD1A.CH
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	mp

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	87	24	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.02
Aroclor 1232	<0.02
Aroclor 1016	<0.02
Aroclor 1242	<0.02
Aroclor 1248	<0.02
Aroclor 1254	<0.02
Aroclor 1260	<0.02
Aroclor 1262	<0.02
Aroclor 1268	<0.02

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	Method Blank	Client:	HydroCon
Date Received:	Not Applicable	Project:	TOC_01-323, F&BI 512474
Date Extracted:	01/04/16	Lab ID:	06-016 mb3 1/5
Date Analyzed:	01/06/16	Data File:	07.D\ECD1A.CH
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	mp

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	91	24	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.02
Aroclor 1232	<0.02
Aroclor 1016	<0.02
Aroclor 1242	<0.02
Aroclor 1248	<0.02
Aroclor 1254	<0.02
Aroclor 1260	<0.02
Aroclor 1262	<0.02
Aroclor 1268	<0.02

Date of Report: 01/19/16
Date Received: 12/30/15
Project: TOC_01-323, F&BI 512474

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

Laboratory Code: 512474-01 (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	95	71-131

Date of Report: 01/19/16
Date Received: 12/30/15
Project: TOC_01-323, F&BI 512474

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

Laboratory Code: 512474-01 (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	67	66	26-114	2
Toluene	mg/kg (ppm)	2.5	<0.05	73	73	34-112	0
Ethylbenzene	mg/kg (ppm)	2.5	<0.05	76	75	34-115	1
m,p-Xylene	mg/kg (ppm)	5	<0.1	76	76	25-125	0
o-Xylene	mg/kg (ppm)	2.5	<0.05	77	76	27-126	1

Date of Report: 01/19/16
Date Received: 12/30/15
Project: TOC_01-323, F&BI 512474

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	91	72-106
Toluene	mg/kg (ppm)	2.5	98	74-111
Ethylbenzene	mg/kg (ppm)	2.5	101	75-112
m,p-Xylene	mg/kg (ppm)	5	104	77-115
o-Xylene	mg/kg (ppm)	2.5	103	76-115

Date of Report: 01/19/16
Date Received: 12/30/15
Project: TOC_01-323, F&BI 512474

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

Laboratory Code: 512474-01 (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	106	108	73-135	2

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Diesel Extended	mg/kg (ppm)	5,000	108	74-139

Date of Report: 01/19/16
Date Received: 12/30/15
Project: TOC_01-323, F&BI 512474

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

Laboratory Code: 601018-11 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Lead	mg/kg (ppm)	50	<1	90	87	70-130	3

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Lead	mg/kg (ppm)	50	92	85-115

Date of Report: 01/19/16
Date Received: 12/30/15
Project: TOC_01-323, F&BI 512474

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

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	89	91	58-121	2
Acenaphthylene	mg/kg (ppm)	0.17	91	93	54-121	2
Acenaphthene	mg/kg (ppm)	0.17	88	92	54-123	4
Fluorene	mg/kg (ppm)	0.17	90	93	56-127	3
Phenanthrene	mg/kg (ppm)	0.17	89	93	55-122	4
Anthracene	mg/kg (ppm)	0.17	85	90	50-120	6
Fluoranthene	mg/kg (ppm)	0.17	91	93	54-129	2
Pyrene	mg/kg (ppm)	0.17	95	103	53-127	8
Benz(a)anthracene	mg/kg (ppm)	0.17	88	93	51-115	6
Chrysene	mg/kg (ppm)	0.17	89	97	55-129	9
Benzo(b)fluoranthene	mg/kg (ppm)	0.17	117	116	56-123	1
Benzo(k)fluoranthene	mg/kg (ppm)	0.17	105	112	54-131	6
Benzo(a)pyrene	mg/kg (ppm)	0.17	98	100	51-118	2
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.17	99	96	49-148	3
Dibenz(a,h)anthracene	mg/kg (ppm)	0.17	96	90	50-141	6
Benzo(g,h,i)perylene	mg/kg (ppm)	0.17	91	88	52-131	3

Date of Report: 01/19/16
Date Received: 12/30/15
Project: TOC_01-323, F&BI 512474

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

Laboratory Code: 512474-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Ethanol	mg/kg (ppm)	125	<50	69	69	27-130	0
Vinyl chloride	mg/kg (ppm)	2.5	<0.05	34	34	10-91	0
Chloroethane	mg/kg (ppm)	2.5	<0.5	51	50	10-101	2
1,1-Dichloroethene	mg/kg (ppm)	2.5	<0.05	48	49	11-103	2
Methylene chloride	mg/kg (ppm)	2.5	<0.5	78	79	14-128	1
t-Butyl alcohol (TBA)	mg/kg (ppm)	125	<2.5	71	71	36-119	0
Methyl t-butyl ether (MTBE)	mg/kg (ppm)	2.5	<0.05	70	69	17-134	1
trans-1,2-Dichloroethene	mg/kg (ppm)	2.5	<0.05	58	58	13-112	0
Diisopropyl ether (DIPE)	mg/kg (ppm)	2.5	<0.05	67	66	35-107	2
1,1-Dichloroethane	mg/kg (ppm)	2.5	<0.05	64	64	23-115	0
Ethyl t-butyl ether (ETBE)	mg/kg (ppm)	2.5	<0.05	75	77	38-110	3
cis-1,2-Dichloroethene	mg/kg (ppm)	2.5	<0.05	64	64	25-120	0
t-Amyl methyl ether (TAME)	mg/kg (ppm)	2.5	<0.05	71	70	41-111	1
1,2-Dichloroethane (EDC)	mg/kg (ppm)	2.5	<0.05	60	59	22-124	2
1,1,1-Trichloroethane	mg/kg (ppm)	2.5	<0.05	56	58	27-112	4
Benzene	mg/kg (ppm)	2.5	<0.03	67	66	26-114	2
Trichloroethene	mg/kg (ppm)	2.5	<0.02	67	65	30-112	3
Toluene	mg/kg (ppm)	2.5	<0.05	73	73	34-112	0
Tetrachloroethene	mg/kg (ppm)	2.5	<0.025	66	66	25-114	0
Ethylbenzene	mg/kg (ppm)	2.5	<0.05	76	75	34-115	1
m,p-Xylene	mg/kg (ppm)	5	<0.1	76	76	25-125	0
o-Xylene	mg/kg (ppm)	2.5	<0.05	77	76	27-126	1

Date of Report: 01/19/16
Date Received: 12/30/15
Project: TOC_01-323, F&BI 512474

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
Ethanol	mg/kg (ppm)	125	96	51-164
Vinyl chloride	mg/kg (ppm)	2.5	66	42-107
Chloroethane	mg/kg (ppm)	2.5	82	47-115
1,1-Dichloroethene	mg/kg (ppm)	2.5	81	65-110
Methylene chloride	mg/kg (ppm)	2.5	104	50-127
t-Butyl alcohol (TBA)	mg/kg (ppm)	125	94	73-123
Methyl t-butyl ether (MTBE)	mg/kg (ppm)	2.5	91	72-122
trans-1,2-Dichloroethene	mg/kg (ppm)	2.5	85	71-113
Diisopropyl ether (DIPE)	mg/kg (ppm)	2.5	86	67-120
1,1-Dichloroethane	mg/kg (ppm)	2.5	89	74-109
Ethyl t-butyl ether (ETBE)	mg/kg (ppm)	2.5	100	74-117
cis-1,2-Dichloroethene	mg/kg (ppm)	2.5	88	73-110
t-Amyl methyl ether (TAME)	mg/kg (ppm)	2.5	93	74-118
1,2-Dichloroethane (EDC)	mg/kg (ppm)	2.5	79	73-111
1,1,1-Trichloroethane	mg/kg (ppm)	2.5	87	72-116
Benzene	mg/kg (ppm)	2.5	91	72-106
Trichloroethene	mg/kg (ppm)	2.5	89	72-107
Toluene	mg/kg (ppm)	2.5	98	74-111
Tetrachloroethene	mg/kg (ppm)	2.5	91	73-111
Ethylbenzene	mg/kg (ppm)	2.5	101	75-112
m,p-Xylene	mg/kg (ppm)	5	104	77-115
o-Xylene	mg/kg (ppm)	2.5	103	76-115

Date of Report: 01/19/16
Date Received: 12/30/15
Project: TOC_01-323, F&BI 512474

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR POLYCHLORINATED BIPHENYLS AS AROCLOR 1016/1260 BY EPA METHOD 8082A

Laboratory Code: 512447-09 1/5 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet Wt)	Percent Recovery MS	Control Limits
Aroclor 1016	mg/kg (ppm)	0.8	<0.02	82	50-150
Aroclor 1260	mg/kg (ppm)	0.8	<0.02	88	50-150

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Aroclor 1016	mg/kg (ppm)	0.8	95	99	55-130	4
Aroclor 1260	mg/kg (ppm)	0.8	109	108	58-133	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.

512474

SAMPLE CHAIN OF CUSTODY

ME12-30-15

E04/V52

Page # 1 of 2

Report To Craig Haltgren

Company Hydrocon

Address 510 Allen ST Suite B

City, State, ZIP Kelso WA 98626

Phone _____ Email _____

SAMPLERS (signature) [signature]

PROJECT NAME: TOC 01-323

PO #:

REMARKS:

INVOICE TO:

TURNAROUND TIME
- ☐ Standard (10 Business Days)
- ☐ RUSH _____
- Rush charges authorized by: _____

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

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	ANALYSES REQUESTED: NWTPH-Dx	NWTPH-Gx	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	HFS	Bunker Spec	Lead	PCBs	PAHs	Notes
HC25-05	01 A-E	12-29-15	1930	Soil	5	X	X					X				
HC25-10	02		1935		5	X	X					X				
HC25-15	03		1940		5	X	X					X				
HC26-05	04		2005		5	X	X					X				
HC26-10	05		2010		5	X	X					X				
HC26-15	06 V		2015		5	X	X					X				
HC27-05	07 A-D		2045		4	X	X					X				
HC27-10	08 A-E		2050		5	X	X					X				
HC27-15	09		2055		5	X	X					X				
HC28-05	10 V		2220		5	X	X					X				Dx 3day TAT

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

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: [signature]	Larry Namba	Hydrocon Enviro.	12/30/15	1300
Received by: [signature]	HONG NGUYEN	FBI	"	"
Relinquished by:				
Received by:		Samples received at 8 °C		

FORMS\COC\COC.DOC

Samples received at _____ °C

512474

SAMPLE CHAIN OF CUSTODY

ME12-30-15 [redacted]

E04/VS2

Report To [redacted]

Company See Pg 1

Address

City, State, ZIP

Phone Email

SAMPLERS (signature)

PROJECT NAME: TJC 01-323

PO #

REMARKS

INVOICE TO

Page # 2 of 2

TURNAROUND TIME
- ☐ Standard (10 Business Days)
- ☐ RUSH
- Rush charges authorized by:

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

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	NWTPH-Dx	NWTPH-Gx	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	cVOCs + ~~HFS~~ Oxygenates	BTEX by 8260C	PCB	PAHs	Total Lead	Notes (* per RH 1/5/16)
HC28-10	11 A-E	12-29-15	2225	Soil	5	X	X					X				Dx 3 day TAT
HC28-15	12		2230	Soil	5	X	X					X				11
HC~~28~~29-05	13		2245	Soil	5	X	X				*	X	*	*	*	11
HC~~28~~29-10	14		2250	Soil	5	X	X					X				11
HC~~28~~29-15	15		2255	Soil	5	X	X					X				11
DCR																
																Samples received at 6 °C

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

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	[signature]	Larry Namba	Hydrocon Enviro	12/30/15	1300
Received by:	[signature]	HONG NGUYEN	FBI	✓	✓
Relinquished by:					
Received by:					

FORMS\COC\COC.DOC

Samples received at °C

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

January 5, 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 30, 2015 from the TOC_01-323, F&BI 512472 project. There are 12 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

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

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Rob Honsberger, Allison Greiner
HDC0105R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on December 30, 2015 by Friedman & Bruya, Inc. from the HydroCon TOC_01-323, F&BI 512472 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	HydroCon
512472 -01	HC25
512472 -02	HC26
512472 -03	HC27

All quality control requirements were acceptable.

Date of Report: 01/05/16
Date Received: 12/30/15
Project: TOC_01-323, F&BI 512472
Date Extracted: 12/30/15
Date Analyzed: 12/30/15

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
HC25 512472-01	<100	93
HC26 512472-02	<100	98
HC27 cf 512472-03	<100	97
Method Blank 05-2601 MB	<100	98

Date of Report: 01/05/16
Date Received: 12/30/15
Project: TOC_01-323, F&BI 512472
Date Extracted: 12/31/15
Date Analyzed: 12/31/15

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)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 41-152)
HC25 512472-01	<50	<250	72
HC26 512472-02 1/1.1	<60	<280	72
HC27 512472-03 1/1.1	<60	310	74
Method Blank 05-2636 MB	<50	<250	77

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC25	Client:	HydroCon
Date Received:	12/30/15	Project:	TOC_01-323, F&BI 512472
Date Extracted:	12/30/15	Lab ID:	512472-01
Date Analyzed:	12/30/15	Data File:	123030.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	96	91	108
4-Bromofluorobenzene	100	76	126

Compounds:	Concentration ug/L (ppb)
Benzene	<0.35
Toluene	1.9
Ethylbenzene	<1
m,p-Xylene	<2
o-Xylene	<1

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC26	Client:	HydroCon
Date Received:	12/30/15	Project:	TOC_01-323, F&BI 512472
Date Extracted:	12/30/15	Lab ID:	512472-02
Date Analyzed:	12/30/15	Data File:	123031.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	97	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

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC27 cf	Client:	HydroCon
Date Received:	12/30/15	Project:	TOC_01-323, F&BI 512472
Date Extracted:	12/30/15	Lab ID:	512472-03
Date Analyzed:	12/30/15	Data File:	123032.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	99	91	108
4-Bromofluorobenzene	103	76	126

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

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	Method Blank	Client:	HydroCon
Date Received:	Not Applicable	Project:	TOC_01-323, F&BI 512472
Date Extracted:	12/30/15	Lab ID:	05-2627 mb
Date Analyzed:	12/30/15	Data File:	123023.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	102	76	126

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

Date of Report: 01/05/16
Date Received: 12/30/15
Project: TOC_01-323, F&BI 512472

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

Laboratory Code: 512466-07 (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	99	70-119

Date of Report: 01/05/16
Date Received: 12/30/15
Project: TOC_01-323, F&BI 512472

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	133	133	63-142	0

Date of Report: 01/05/16
Date Received: 12/30/15
Project: TOC_01-323, F&BI 512472

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

Laboratory Code: 512475-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Acceptance Criteria
Benzene	ug/L (ppb)	50	<0.35	97	78-108
Toluene	ug/L (ppb)	50	<1	102	73-117
Ethylbenzene	ug/L (ppb)	50	<1	105	71-120
m,p-Xylene	ug/L (ppb)	100	<2	107	63-128
o-Xylene	ug/L (ppb)	50	<1	108	64-129

Date of Report: 01/05/16
Date Received: 12/30/15
Project: TOC_01-323, F&BI 512472

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	96	81-108	0
Toluene	ug/L (ppb)	50	101	102	83-108	1
Ethylbenzene	ug/L (ppb)	50	103	105	83-111	2
m,p-Xylene	ug/L (ppb)	100	104	106	84-112	2
o-Xylene	ug/L (ppb)	50	107	107	81-117	0

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.

512472

SAMPLE CHAIN OF CUSTODY

ME 12-30-15

E03/V2

Page # 1 of 1

Report To Craig Hultgren

Company HydroCon

Address 510 Allen St Suite B

City, State, ZIP Kelso WA 98626

Phone _____ Email _____

SAMPLERS (signature)

PROJECT NAME: TX 01-323

PO #

REMARKS

INVOICE TO

TURNAROUND TIME
- ☐ Standard (10 Business Days)
- ☐ RUSH _____

Rush charges authorized by: _____

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

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	ANALYSES REQUESTED: NWTPH-Dx	NWTPH-Gx	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	HFS	Ethers by 8260				Notes
HC25	01 A-F	12-24-15	1950	water	6	X	X					X				
HC26	02		2025	water	6	X	X					X				
HC27	03		2110	water	6	X	X					X				

Samples received at Ø °C

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Larry Namba	Hydrocon Enviro.	12/30/15	1300
Received by:	HONG NGUYEN	FBE	"	"
Relinquished by:				
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

Samples received at Ø °C

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

January 12, 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 29, 2015 from the TOC_01-323, WORFDB8 F&BI 512448 project. There are 9 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
HDC0112R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on December 29, 2015 by Friedman & Bruya, Inc. from the HydroCon TOC_01-323, WORFDB8 F&BI 512448 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	HydroCon
512448 -01	HC24

All quality control requirements were acceptable.

Date of Report: 01/12/16
Date Received: 12/29/15
Project: TOC_01-323, WORFDB8 F&BI 512448
Date Extracted: 12/29/15
Date Analyzed: 12/29/15

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Gasoline Range	Surrogate (% Recovery) (Limit 51-134)
HC24 512448-01	<100	91
Method Blank 05-2599 MB	<100	88

Date of Report: 01/12/16
Date Received: 12/29/15
Project: TOC_01-323, WORFDB8 F&BI 512448
Date Extracted: 12/30/15
Date Analyzed: 12/30/15

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)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 51-134)
HC24 512448-01	69 x	<250	105
Method Blank 05-2619 MB2	<50	<250	101

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC24	Client:	HydroCon
Date Received:	12/29/15	Project:	TOC_01-323, WORFDB8 F&BI 512448
Date Extracted:	12/30/15	Lab ID:	512448-01 rr
Date Analyzed:	01/04/16	Data File:	010418.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
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
Benzene	<0.35
Toluene	<1
Ethylbenzene	<1
m,p-Xylene	<2
o-Xylene	<1
1,2-Dichloroethane (EDC)	<1
1,2-Dibromoethane (EDB)	<1
Hexane	<1
Naphthalene	<1

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	Method Blank	Client:	HydroCon
Date Received:	Not Applicable	Project:	TOC_01-323, WORFDB8 F&BI 512448
Date Extracted:	01/04/16	Lab ID:	06-018 mb
Date Analyzed:	01/04/16	Data File:	010413.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	VM

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

Compounds:	Concentration ug/L (ppb)
Methyl t-butyl ether (MTBE)	<1
Benzene	<0.35
Toluene	<1
Ethylbenzene	<1
m,p-Xylene	<2
o-Xylene	<1
1,2-Dichloroethane (EDC)	<1
1,2-Dibromoethane (EDB)	<1
Hexane	<1
Naphthalene	<1

Date of Report: 01/12/16
Date Received: 12/29/15
Project: TOC_01-323, WORFDB8 F&BI 512448

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

Laboratory Code: 512434-05 (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	93	69-134

Date of Report: 01/12/16
Date Received: 12/29/15
Project: TOC_01-323, WORFDB8 F&BI 512448

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

Date of Report: 01/12/16
Date Received: 12/29/15
Project: TOC_01-323, WORFDB8 F&BI 512448

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

Laboratory Code: 512495-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Acceptance Criteria
Hexane	ug/L (ppb)	50	<1	93	61-127
Methyl t-butyl ether (MTBE)	ug/L (ppb)	50	<1	96	68-125
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	<1	82	70-119
Benzene	ug/L (ppb)	50	<0.35	95	78-108
Toluene	ug/L (ppb)	50	<1	98	73-117
1,2-Dibromoethane (EDB)	ug/L (ppb)	50	<1	111	79-120
Ethylbenzene	ug/L (ppb)	50	<1	101	71-120
m,p-Xylene	ug/L (ppb)	100	<2	102	63-128
o-Xylene	ug/L (ppb)	50	<1	103	64-129
Naphthalene	ug/L (ppb)	50	<1	109	62-140

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Hexane	ug/L (ppb)	50	96	93	51-153	3
Methyl t-butyl ether (MTBE)	ug/L (ppb)	50	101	98	70-122	3
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	86	83	79-109	4
Benzene	ug/L (ppb)	50	99	96	81-108	3
Toluene	ug/L (ppb)	50	103	99	83-108	4
1,2-Dibromoethane (EDB)	ug/L (ppb)	50	116	113	82-118	3
Ethylbenzene	ug/L (ppb)	50	106	102	83-111	4
m,p-Xylene	ug/L (ppb)	100	107	104	84-112	3
o-Xylene	ug/L (ppb)	50	107	105	81-117	2
Naphthalene	ug/L (ppb)	50	117	117	72-131	0

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.

512448

SAMPLE CHAIN OF CUSTODY ME 12/29/15

E03/V1

Page # 1 of 1

Report To Craig Hultgren

Company Hydrocon

Address 510 Allen St Suite B

City, State, ZIP Kelso WA 98626

Phone _____ Email _____

SAMPLERS (signature)

PROJECT NAME: Toc 01-323

PO #

REMARKS

INVOICE TO

TURNAROUND TIME
- ☑ Standard (10 Business Days)
- ☐ RUSH _____

Rush charges authorized by: _____

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

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	ANALYSES REQUESTED: NWTPH-Dx	NWTPH-Gx	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	HFS	Btex by 8260 + Oxygenates				Notes
HC24	01 A-F	12/28/15	1005	water	6	X	X					X				

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

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:		Larry Namba	Hydrocon Enviro.	12/29/15	1050
Received by:		DO VO	F&BI	12-29-15	10:05
Relinquished by:					
Received by:					

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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

January 22, 2016

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

Dear Mr. Hultgren:

Included is the amended report from the testing of material submitted on December 29, 2015 from the TOC_01-323, WORFDB8 F&BI 512454 project. The date received and the date collected have been corrected.

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
HDC0122R.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

January 22, 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 29, 2015 from the TOC_01-323, WORFDB8 F&BI 512454 project. There are 13 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
HDC0122R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on December 29, 2015 by Friedman & Bruya, Inc. from the HydroCon TOC_01-323, WORFDB8 F&BI 512454 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	HydroCon
512454 -01	SG-01
512454 -02	SG-02
512454 -03	SG-03

Many analytes exceeded the calibration range of the instrument for both the TO-15 and the APH analyses. Sample dilution canisters were also prepared and analyzed. The data were flagged accordingly.

All quality control requirements were acceptable.

Analysis For Volatile Compounds By Method APH

Client Sample ID:	SG-01 1/200	Client:	HydroCon
Date Received:	12/29/15	Project:	TOC_01-323, WORFDB8 F&BI 512454
Date Collected:	12/29/15	Lab ID:	512454-01 1/200
Date Analyzed:	01/08/16	Data File:	010807.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	114	70	130

Compounds:	Concentration ug/m3
APH EC5-8 aliphatics	2,300,000 ve
APH EC9-12 aliphatics	200,000
APH EC9-10 aromatics	830

Analysis For Volatile Compounds By Method APH

Client Sample ID:	SG-02 1/1000	Client:	HydroCon
Date Received:	12/29/15	Project:	TOC_01-323, WORFDB8 F&BI 512454
Date Collected:	12/29/15	Lab ID:	512454-02 1/1000
Date Analyzed:	01/08/16	Data File:	010809.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	1163 ip	70	130

Compounds:	Concentration ug/m3
APH EC5-8 aliphatics	140,000,000 ve
APH EC9-12 aliphatics	54,000,000 ve
APH EC9-10 aromatics	410,000

Analysis For Volatile Compounds By Method APH

Client Sample ID:	SG-03	Client:	HydroCon
Date Received:	12/29/15	Project:	TOC_01-323, WORFDB8 F&BI 512454
Date Collected:	12/29/15	Lab ID:	512454-03
Date Analyzed:	01/20/16	Data File:	011924.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	172 ip	70	130

Compounds:	Concentration ug/m3
APH EC5-8 aliphatics	1,200 ve
APH EC9-12 aliphatics	3,800 ve
APH EC9-10 aromatics	39

Analysis For Volatile Compounds By Method APH

Client Sample ID:	Method Blank	Client:	HydroCon
Date Received:	Not Applicable	Project:	TOC_01-323, WORFDB8 F&BI 512454
Date Collected:	Not Applicable	Lab ID:	05-2626 mb
Date Analyzed:	01/04/16	Data File:	010406.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	100	70	130

Compounds:	Concentration ug/m3
APH EC5-8 aliphatics	<23
APH EC9-12 aliphatics	<35
APH EC9-10 aromatics	<5

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	SG-01	Client:	HydroCon
Date Received:	12/29/15	Project:	TOC_01-323, WORFDB8 F&BI 512454
Date Collected:	12/29/15	Lab ID:	512454-01
Date Analyzed:	01/04/16	Data File:	010407.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	1185 ip	70	130

Compounds:	Concentration ppbv	ug/m3
Benzene	390 ve	1,200 ve
Toluene	510 ve	1,900 ve
1,2-Dibromoethane (EDB)	<0.1 j	<0.77 j
Ethylbenzene	60 ve	260 ve
m,p-Xylene	360 ve	1,600 ve
o-Xylene	140 ve	630 ve
Methyl t-butyl ether	<0.4	<1.4
Hexane	2,800 ve	9,900 ve
1,2,4-Trimethylbenzene	17	85
1,2-Dichloroethane (EDC)	16	63
Naphthalene	<0.4	<2.1

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	SG-01 1/200	Client:	HydroCon
Date Received:	12/29/15	Project:	TOC_01-323, WORFDB8 F&BI 512454
Date Collected:	12/29/15	Lab ID:	512454-01 1/200
Date Analyzed:	01/08/16	Data File:	010807.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	111	70	130

Compounds:	Concentration ppbv	ug/m3
Benzene	2,100	6,600
Toluene	2,400	9,200
1,2-Dibromoethane (EDB)	<20 j	<154 j
Ethylbenzene	200	860
m,p-Xylene	1,100	4,800
o-Xylene	390	1,700
Methyl t-butyl ether	<80	<290
1,2,4-Trimethylbenzene	<80	<400
Hexane	31,000 ve	110,000 ve
1,2-Dichloroethane (EDC)	<80	<320
Naphthalene	<80	<420

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	SG-02 1/1000	Client:	HydroCon
Date Received:	12/29/15	Project:	TOC_01-323, WORFDB8 F&BI 512454
Date Collected:	12/29/15	Lab ID:	512454-02 1/1000
Date Analyzed:	01/08/16	Data File:	010809.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	1136 ip	70	130

Compounds:	Concentration ppbv	ug/m3
Benzene	2,100	6,600
Toluene	770	2,900
1,2-Dibromoethane (EDB)	<100 j	<770 j
Ethylbenzene	8,200	36,000
m,p-Xylene	1,800	7,600
o-Xylene	<400	<1,700
Methyl t-butyl ether	<400	<1,400
1,2,4-Trimethylbenzene	<800	<3,900
Hexane	230,000 ve	820,000 ve
1,2-Dichloroethane (EDC)	<400	<1,600
Naphthalene	<400	<2,100

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	SG-03	Client:	HydroCon
Date Received:	12/29/15	Project:	TOC_01-323, WORFDB8 F&BI 512454
Date Collected:	12/29/15	Lab ID:	512454-03
Date Analyzed:	01/20/16	Data File:	011924.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	177 ip	70	130

Compounds:	Concentration ppbv	ug/m3
Benzene	1.1	3.4
Toluene	2.2	8.5
1,2-Dibromoethane (EDB)	<0.1 j	<0.77 j
Ethylbenzene	1.4	6.2
m,p-Xylene	6.1	27
o-Xylene	2.3	10
Methyl t-butyl ether	<0.4	<1.4
1,2,4-Trimethylbenzene	<0.8	<3.9
Hexane	48	170
1,2-Dichloroethane (EDC)	<0.4	<1.6
Naphthalene	0.49	2.6

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	Method Blank	Client:	HydroCon
Date Received:	Not Applicable	Project:	TOC_01-323, WORFDB8 F&BI 512454
Date Collected:	Not Applicable	Lab ID:	05-2626 mb
Date Analyzed:	01/04/16	Data File:	010406.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	97	70	130

Compounds:	Concentration ppbv	Concentration ug/m3
Benzene	<0.2	<0.64
Toluene	<0.4	<1.5
1,2-Dibromoethane (EDB)	<0.1 j	<0.77 j
Ethylbenzene	<0.4	<1.7
m,p-Xylene	<0.8	<3.5
o-Xylene	<0.4	<1.7
Methyl t-butyl ether	<0.4	<1.4
1,2,4-Trimethylbenzene	<0.8	<3.9
Hexane	<2	<7
1,2-Dichloroethane (EDC)	<0.4	<1.6
Naphthalene	<0.4	<2.1

Date of Report: 01/22/16
Date Received: 12/29/15
Project: TOC_01-323, WORFDB8 F&BI 512454

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

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Methyl t-butyl ether	ppbv	10	77	70-130
Hexane	ppbv	10	73	70-130
1,2-Dichloroethane (EDC)	ppbv	10	84	70-130
Benzene	ppbv	10	79	70-130
Toluene	ppbv	10	86	70-130
1,2-Dibromoethane (EDB)	ppbv	10	93	70-130
Chlorobenzene	ppbv	10	94	70-130
Ethylbenzene	ppbv	10	93	70-130
m,p-Xylene	ppbv	20	96	70-130
o-Xylene	ppbv	10	97	70-130
1,2,4-Trimethylbenzene	ppbv	10	98	70-130
Naphthalene	ppbv	10	109	70-130

Date of Report: 01/22/16
Date Received: 12/29/15
Project: TOC_01-323, WORFDB8 F&BI 512454

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF VAPOR SAMPLES FOR VOLATILES BY METHOD APH

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
APH EC5-8 aliphatics	ug/m3	230	101	70-130
APH EC9-12 aliphatics	ug/m3	350	113	70-130
APH EC9-10 aromatics	ug/m3	251	89	70-130

Data Qualifiers & Definitions

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

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

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

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

cf - The sample was centrifuged prior to analysis.

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

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

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

512454

SAMPLE CHAIN OF CUSTODY

ME 12-29-15

Report To Craig Hultgren
Company Hydrocon
Address 510 Alki St Ste B
City, State, ZIP Kirkland WA 98626
Phone _____ Email _____

SAMPLERS (signature)

PROJECT NAME	PO #
TOC 01-323	
REMARKS	**INVOICE TO**

Page # 1 of 1

TURNAROUND TIME
- ☑ Standard
- ☐ RUSH _____
- Rush charges authorized by: _____

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

ANALYSIS REQUESTED

Sample Name	Lab ID	Canister ID	Flow Controller ID	Sample Type	Field Initial Press. (Hg)	Field Initial Time	Field Final Press. (Hg)	Field Final Time	TO-15 Full Scan	TO-15 Chlorinated	TO-15 SIM	TO-15 (see below)	Notes
SG-01	01	18561	FB18	A.r GL	30	1147	5	1223				X	
SG-02	02	18567	FB17	A.r GL	30	1309	5	1345				X	
SG-03	03	18563	FB35	A.r GL	30	1416	5	1454				X	
													Samples received at 18 °C

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

FORMS\COC\COCTO-15.DOC

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Lanny Ngamba	Hydrocon Enviro.	12/29/15	1050
Received by:	DdVd	F&B2	12-29-15	10.50
Relinquished by:				
Received by:				

tir

3A

APPENDIX D
Data Validation Reports

TO: Craig Hultgren, HydroCon

FROM: Katie Jensen, Eureka Project Solutions, LLC.

DATE: February 9, 2016

SUBJECT: Laboratory Validation Report

HydroCon TOC Site No. 01-323

Sampling Event Type: Investigation

Number of Samples: 13

Laboratory Work Order: 512447 Amended

Final Report Date: 2-9-16

Analysis & Method

- [x] Gasoline Range Hydrocarbon (NWTPH-Gx)
- [x] Diesel Range Hydrocarbon without Silica Gel (NWTPH-Dx)
- [ ] Diesel Range Organics with Silica Gel (NWTPH-DxSG)
- [x] Volatile Organic Compounds (EPA 8260C)
- [ ] BETX (8021B)
- [x] Lead (200.8) - Total
- [ ] Sulfate (300.0)
- [x] Other Carcinogenic PAHs (8270D SIM), PCBs (8082A)

Data Package Completeness:

Anomalies were discussed in the case narrative regarding corrective action processes. Explanation below.

Amended report contains the following narrative in the report cover letter: "Included is the amended report from the testing of material submitted on December 29, 2015 from the TOC_01-323, WORFDB8 F&BI 512447 project. The cVOCs and oxygenates have been removed from sample HC24-07 and added to HC23-12 as originally requested."

EDD to Hardcopy Verification:

The EDD results were compared with the laboratory analytical report hard copy results. No anomalies found.

Technical Data Validation:

- [x] Holding Times & Sample Receipt
- [x] Surrogate Compounds
- [x] Associated Matrix Spike/Matrix Spike Duplicate (MS/MSD)
- [x] Associated Laboratory Duplicate
- [x] Laboratory Control Sample/ Laboratory Control Sample Duplicates (LCS/LCSD)
- [x] Method Blank
- [ ] Field Duplicates
- [x] Target Analyte List
- [x] Reporting Limits (MDL and MRL)
- [x] 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 was associated with method NWTPH-Dx and PCB 1016 & 1260 for EPA Method 8082A.

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:

Target analytes were missing. Explanation below.

Diisopropyl ether is not reported in the list of HVOCs by method 8260C.

Reporting Limits (MDL and MRL):

Reporting limits were within acceptance criteria.

Reported Results:

Reported results for all analyte methods were within acceptance criteria.

Diesel results for samples HC23-12 and HC23-15 were given the lab qualifier "x" meaning "The sample chromatographic pattern does not resemble the fuel standard used for quantitation."

Diisopropyl ether was not reported in the list of HVOCs by method 8260C.

Lab Validation Assessment

Diesel results for samples HC23-12 and HC23-15 were given the lab qualifier "x" meaning "The sample chromatographic pattern does not resemble the fuel standard used for quantitation."

On 12-30-16, Hydrocon sent an email to the lab requesting HVOCs, Total Pb, PCBs, and CPAHs on HC23-15. Later that day HydroCon emailed the lab canceling the HC23-15 request, and changed it to HC23-12 instead (see emails attached). The original Analytical Report received on 1-13-16 reported the additional HVOC analysis on the wrong sample. The amended reported received 2-9-16, reports the requested HVOCs with the correct sample.

Diisopropyl ether was not reported in the list of HVOCs by method 8260C.

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.

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 results for samples HC23-12 and HC23-15 were given the lab qualifier "x" meaning "The sample chromatographic pattern does not resemble the fuel standard used for quantitation."

Diisopropyl ether was not reported in the list of HVOCs by method 8260C.

All other quality control criteria are acceptable for the groundwater 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

Not applicable.

From: Robert Honsberger
To: Michael Erdahl; Craig Hultgren; Allison Greiner
Subject: RE: TOC 01-323
Date: Wednesday, December 30, 2015 11:04:10 AM

Mike could you run sample HC23-15 for HVOCs, Total Lead, PCBs, and cPAHs. Standard turn please. Thanks and have a happy new year.

From: Michael Erdahl [mailto:merdahl@friedmanandbruya.com]
Sent: Wednesday, December 30, 2015 10:56 AM
To: Craig Hultgren; Robert Honsberger; Allison Greiner - Eureka
Subject: TOC 01-323

Hi guys,

Attached are the Dx and Gx results for your soil samples. Please let me know if you need any additional testing.

Thanks,

Michael Erdahl
Senior Project Manager
Friedman and Bruya
(206) 285-8282 x 247
(206) 446-5926 (cell)

From: Robert Honsberger
To: Michael Erdahl; Craig Hultgren; Allison Greiner
Subject: RE: TOC 01-323
Date: Wednesday, December 30, 2015 11:49:05 AM

Mike Could you run. The HC23-12 foot sample for the extra analysis instead of the 15' sample. Let me know if you need anything else.

From: Michael Erdahl [mailto:merdahl@friedmanandbruya.com]
Sent: Wednesday, December 30, 2015 10:56 AM
To: Craig Hultgren; Robert Honsberger; Allison Greiner - Eureka
Subject: TOC 01-323

Hi guys,

Attached are the Dx and Gx results for your soil samples. Please let me know if you need any additional testing.

Thanks,

Michael Erdahl
Senior Project Manager
Friedman and Bruya
(206) 285-8282 x 247
(206) 446-5926 (cell)

TO: Craig Hultgren, HydroCon

FROM: Mallory Taylor, Eureka Project Solutions, LLC.

DATE: February 4, 2016

SUBJECT: Laboratory Validation Report

HydroCon TOC Site No. 01-323

Sampling Event Type: Investigation

Number of Samples: 15

Laboratory Work Order: 512474

Final Report Date: 1/19/2016

Analysis & Method

- [x] Gasoline Range Hydrocarbon (NWTPH-Gx)
- [x] Diesel Range Hydrocarbon without Silica Gel (NWTPH-Dx)
- [ ] Diesel Range Organics with Silica Gel (NWTPH-DxSG)
- [x] Volatile Organic Compounds (EPA 8260C)
- [ ] BETX (8021B)
- [x] Lead (200.8) - Total
- [ ] Sulfate (300.0)
- [x] Other Carcinogenic PAHs (8270DSIM), PCBs (8082A), Oxygenates (8260C)

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:

- [x] Holding Times & Sample Receipt
- [x] Surrogate Compounds
- [x] Associated Matrix Spike/Matrix Spike Duplicate (MS/MSD)
- [x] Associated Laboratory Duplicate
- [x] Laboratory Control Sample/ Laboratory Control Sample Duplicates (LCS/LCSD)
- [x] Method Blank
- [ ] Field Duplicates
- [x] Target Analyte List
- [x] Reporting Limits (MDL and MRL)
- [x] 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 percent recovery for the GRPH result on sample HC29-05 fell outside of control limits and was given the validation qualifier "J" meaning "The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample."

Associated Matrix Spike/Matrix Spike Duplicate (MS/MSD):

MS/MSD were within acceptance criteria.

The matrix spike was associated with methods 8260C and NWTPH-Dx.

Associated Laboratory Duplicate:

The associated lab duplicate was within acceptance criteria.

The laboratory 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):

Not applicable.

Reported Results:

Reported results for all analyte methods were within acceptance criteria.

The COC was filled out incorrectly, with two sets of HC28 and no sets of HC29. Per client request, the field ID names were modified by the lab from the COC. See attached email from 1/4/2016.

Add ons were requested by the client via email for Sample HC28-05, however the sample was out of hold time and the add ons were canceled for HC28-05. See attached email from 1/15/2016.

Diesel results for samples HC28-05 and HC29-05 were given the lab qualifier "x" meaning "The sample chromatographic pattern does not resemble the fuel standard used for quantitation."

Lab Validation Assessment

The percent recovery for GRPH on sample HC29-05 fell outside of control limits and was given the validation qualifier "J" meaning "The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample."

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.

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. DRPH results for samples HC28-05 and HC29-05 were given the lab qualifier "x" meaning "The sample chromatographic pattern does not resemble the fuel standard used for quantitation."

The percent recovery for GRPH on sample HC29-05 fell outside of control limits and was given the validation qualifier "J" meaning "The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample."

All other quality control criteria are acceptable for the soil 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
HC28-05	512474-13	NWTPH-Gx	GRPH	5400	Mg/kg		J

Validation Qualifier Defintion:

J- The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

From: Robert Honsberger
To: Craig Hultgren; Michael Erdahl
Cc: Allison Greiner
Subject: RE: 01-323 Dx results
Date: Monday, January 4, 2016 11:05:40 PM

Yep I duplicated HC28 the last three samples should be HC29 -05, 10, and 15. We will need to amend the Lab report. Those two borings were advanced on Smith Street.

From: Craig Hultgren
Sent: Monday, January 04, 2016 10:31 PM
To: Michael Erdahl
Cc: Robert Honsberger; Allison Greiner - Eureka
Subject: Re: 01-323 Dx results

Let's talk about the COC and lab report tomorrow. There's an obvious problem with sample ID (2 borings being called HC28).

Sent from my iPad

On Jan 4, 2016, at 7:58 PM, Michael Erdahl <merdahl@friedmanandbruya.com> wrote:

> Hi Rob, Allison, and Craig,
>
> Attached are the Dx results for the next set of soil amples.
>
> Hope you guys had a Happy New Year!
>
> Michael Erdahl
> Senior Project Manager
> Friedman and Bruya
> (206) 285-8282 x 247
> (206) 446-5926 (cell)
>
> <01-323, FBI 512474.pdf>

From: Robert Honsberger
To: eyoung@friedmanandbruya.com
Cc: Mike Erdahl; Allison Greiner; Craig Hultgren
Subject: RE: 01-323 Dx results
Date: Friday, January 15, 2016 6:15:35 PM

Eric, please cancel the extra analysis I requested earlier today. Thanks.

From: eyoung@friedmanandbruya.com [mailto:eyoung@friedmanandbruya.com]
Sent: Friday, January 15, 2016 5:11 PM
To: Robert Honsberger
Cc: Mike Erdahl; Allison Greiner - Eureka; Craig Hultgren
Subject: Re: 01-323 Dx results

Hello All,

The PAHs are out of hold, but the PCBs and total lead are fine. Do you still want the PAHs?

Eric Young
Friedman & Bruya, Inc.
P (206)285-8282
C (206)683-1731

From: Robert Honsberger
Sent: Friday, January 15, 2016 5:05 PM
To: eyoung@friedmanandbruya.com
Subject: FW: 01-323 Dx results

Eric I just got Mikes Vacation email. Could you run the extra analysis on the listed sample below. Thanks

---

From: Robert Honsberger
Sent: Friday, January 15, 2016 5:10 PM
To: 'Michael Erdahl'
Cc: Allison Greiner - Eureka; Craig Hultgren
Subject: RE: 01-323 Dx results

Mike could you run the extra analysis on HC28-05. The same as the other sample PCBs, PAHs, and total lead. Sorry for the late reply our email has been out since Tuesday. Let me know if there will be any hold issues. Thanks

---

From: Michael Erdahl [mailto:merdahl@friedmanandbruya.com]
Sent: Monday, January 04, 2016 2:03 PM
To: Robert Honsberger; Allison Greiner - Eureka; Craig Hultgren
Subject: 01-323 Dx results

Hi Rob, Allison, and Craig,

Attached are the Dx results for the next set of soil amples.

Hope you guys had a Happy New Year!

Michael Erdahl
Senior Project Manager
Friedman and Bruya
(206) 285-8282 x 247
(206) 446-5926 (cell)

TO: Craig Hultgren, HydroCon

FROM: Emily Swanson, Eureka Project Solutions, LLC.

DATE: February 4, 2016

SUBJECT: Laboratory Validation Report

HydroCon TOC Site No. 01-323

Sampling Event Type: Miscellaneous Sampling

Number of Samples: 3

Laboratory Work Order: 512472

Final Report Date: January 5, 2016

Analysis & Method

- [x] Gasoline Range Hydrocarbon (NWTPH-Gx)
- [x] Diesel Range Hydrocarbon without Silica Gel (NWTPH-Dx)
- [ ] Diesel Range Organics with Silica Gel (NWTPH-DxSG)
- [x] Volatile Organic Compounds (EPA 8260C)
- [ ] BETX (8021B)
- [ ] Lead (200.8) - _____
- [ ] 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:

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

Not applicable.

Associated Laboratory Duplicate:

Not applicable.

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.

For sample HC27, reported results for 8260C and NWTPH-Gx 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.

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.

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. All quality control criteria are acceptable for the groundwater 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

Not applicable.

TO: Craig Hultgren, HydroCon

FROM: Emily Swanson, Eureka Project Solutions, LLC.

DATE: February 4, 2016

SUBJECT: Laboratory Validation Report

HydroCon TOC Site No. 01-323

Sampling Event Type: Investigation

Number of Samples: 1

Laboratory Work Order: 512448

Final Report Date: 1-12-16

Analysis & Method

- [x] Gasoline Range Hydrocarbon (NWTPH-Gx)
- [x] Diesel Range Hydrocarbon without Silica Gel (NWTPH-Dx)
- [ ] Diesel Range Organics with Silica Gel (NWTPH-DxSG)
- [x] Volatile Organic Compounds (EPA 8260C)
- [ ] BETX (8021B)
- [ ] Lead (200.8) - _____
- [ ] 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:

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

Not applicable.

Associated Laboratory Duplicate:

Not applicable.

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.

The reporting limit for EDB is above the cleanup level of 0.01 ug/L.

Reported Results:

Reported results for all analyte methods were within acceptance criteria.

The non-detected EDB result was given the validation qualifier "ec" meaning "Method reporting limit exceeds Clean Up Level."

The DRPH result for sample HC24 was given the laboratory qualifier "x" meaning "The sample chromatographic pattern does not resemble the fuel standard used for quantitation."

Lab Validation Assessment

The non-detected EDB result was given the validation qualifier "ec" meaning "Method reporting limit exceeds Clean Up Level shown."

The DRPH result for sample HC24 was given the laboratory qualifier "x" meaning "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.

Field Note Assessment

Not applicable.

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.

The non-detected EDB result was given the validation qualifier "ec" meaning "Method reporting limit exceeds Clean Up Level shown."

The DRPH result for sample HC24 was given the laboratory qualifier "x" meaning "The sample chromatographic pattern does not resemble the fuel standard used for quantitation."

All 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

Data validation qualified summary table attached.

Appendix B. Data Validation Qualified Summary Table

Sample ID	Laboratory ID	Method	Parameter Name	Result	Result Units	Laboratory Qualifier	Vaidation Qualifier
HC24	512448-01	SW8260C	1,2-Dibromoethane (EDB)	<0.1	ug/L		ec

Validation Qualifier Definitions:
ec – Method reporting limit exceeds Clean Up Level.

TO: Craig Hultgren, HydroCon

FROM: Mallory Taylor, Eureka Project Solutions, LLC.

DATE: February 4, 2016

SUBJECT: Laboratory Validation Report

HydroCon TOC Site No. 01-323

Sampling Event Type: Investigation

Number of Samples: 3

Laboratory Work Order: 512454

Final Report Date: 1/22/2016

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 APH and TO-15

Data Package Completeness:

Anomalies were discussed in the case narrative regarding corrective action processes. Explanation below.

Many analytes exceeded the calibration range of the instrument for both the TO-15 and the APH analyses. Sample dilution canisters were also prepared and analyzed. The data were flagged accordingly.

An EDD was not provided in the data package.

An amended lab report was received on 1/22/2016, a day after the original report. The first amended report had revised units and identical data. A second amended report was requested on 2/2/2016 and received on 2/3/2016. Amendments include a copy of the attachment referenced in the COC, revised Received Date and revised Collected Date.

EDD to Hardcopy Verification:

The EDD was not provided. Not applicable.

Technical Data Validation:

- [x] Holding Times & Sample Receipt
- [x] Surrogate Compounds
- [ ] Associated Matrix Spike/Matrix Spike Duplicate (MS/MSD)
- [ ] Associated Laboratory Duplicate
- [x] Laboratory Control Sample/ Laboratory Control Sample Duplicates (LCS/LCSD)
- [x] Method Blank
- [ ] Field Duplicates
- [x] Target Analyte List
- [x] Reporting Limits (MDL and MRL)
- [x] 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 4-Bromoflourobenzene for Method APH for sample SG-02 and SG-03 fell outside the recovery limits at a recovery of 1,163% and 172%, respectively. Both recoveries are qualified with "ip" meaning: "Recovery fell outside of control limits. Compounds in the sample matrix interfered with the quantitation of the analyte."

The surrogate 4-Bromoflourobenzene for Method TO-15 for sample SG-01, SG-02 and SG-03 fell outside the recovery limits at a recovery of 1,185%, 1,136% and 177%, respectively. All results are qualified with "ip" meaning: "Recovery fell outside of control limits. Compounds in the sample matrix interfered with the quantitation of the analyte."

Sample SG-01 was run again at a dilution of 1/200 for Method TO-15 and the surrogate fell within the recovery limits.

Sample results qualified by the "ip" have a validation qualifier added "J" meaning "The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample."

Associated Matrix Spike/Matrix Spike Duplicate (MS/MSD):

Not applicable.

Associated Laboratory Duplicate:

Not applicable.

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.

SG-01 non-detect results for EDB and Naphthalene; SG-02 non-detect results for o-xylene, 1,2,4-trimethylbenzene, EDB, EDC, MTBE, and Naphthalene; and SG-03 non-detect results for 1,2,4-trimethylbenzene, EDB, and EDC were given the validation qualifier "ec", meaning "Method reporting limit exceeds Clean Up Level."

Reported Results:

Reported results for all analyte methods were within acceptance criteria.

The TO-15 analysis was provided in two concentrations, ppbv and ug/m3, with the units reported as ug/m3. MTCA A Vapor Intrusion limits for vapor are in ug/m3; the reported result units are consistent with MTCA A units.

The TO-15 analysis was run twice at different dilutions for sample SG-01. The attached email provides direction on which results to report for Hexane and EDB.

The analyte APH EC5-8 aliphatics results for samples SG-01, SG-02 and SG-03 were given the lab qualifier "ve". The analyte APH EC9-12 aliphatics result for samples SG-02 and SG-03 were given the lab qualifier "ve". The analytes Benzene, Toluene, Ethylbenzene, m,p-Xylene, o-Xylene and Hexane for Method TO-15 on sample SG-01 were given the lab qualifier "ve". The analyte Hexane for Method TO-15 on samples SG-01 1/200 and SG-02 1/1000 were given the lab qualifier "ve". The lab report defines "ve" for all samples as: "The analyte response exceeded the valid instrument calibration range. The value reported is an estimate."

A second TO-15 analysis was run for SG-01 at a dilution of 1/200. The two sets of data were evaluated, and only the appropriate results were reported in the quarterly summary table. Results not reported are listed in Appendix B. Data Validation Qualified Summary Table.

The analyte EDB for Method TO-15 on samples SG-01, SG-01 1/200, SG-02 1/1000 and SG-03 were given the lab qualifier "j" meaning: "The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate."

SG-01 non-detect results for EDB and Naphthalene; SG-02 non-detect results for o-xylene, 1,2,4-trimethylbenzene, EDB, EDC, MTBE, and Naphthalene; and SG-03 non-detect results for 1,2,4-trimethylbenzene, EDB, and EDC were given the validation qualifier "ec", meaning "Method reporting limit exceeds Clean Up Level."

Lab Validation Assessment

Sample results qualified by the "ip" have a validation qualifier added "J" meaning "The anlayte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample."

SG-01 non-detect results for EDB and Naphthalene; SG-02 non-detect results for o-xylene, 1,2,4-trimethylbenzene, EDB, EDC, MTBE, and Naphthalene; and SG-03 non-detect results for 1,2,4-trimethylbenzene, EDB, and EDC were given the validation qualifier "ec", meaning "Method reporting limit exceeds Clean Up Level."

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.

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.

The analyte APH EC5-8 aliphatics results for samples SG-01, SG-02 and SG-03 were given the lab qualifier "ve". The analyte APH EC9-12 aliphatics result for samples SG-02 and SG-03 were given the lab qualifier "ve". The analytes Benzene, Toluene, Ethylbenzene, m,p-Xylene, o-Xylene and Hexane for Method TO-15 on sample SG-01 were given the lab qualifier "ve". The analyte Hexane for Method TO-15 on samples SG-01 1/200 and SG-02 1/1000 were given the lab qualifier "ve". The lab report defines "ve" for all samples as: "The analyte response exceeded the valid instrument calibration range. The value reported is an estimate."

A second TO-15 analysis was run for SG-01 at a dilution of 1/200. The two sets of data were evaluated, and only the appropriate results were reported in the quarterly summary table. Results not reported are listed in Appendix B. Data Validation Qualified Summary Table.

The analyte EDB for Method TO-15 on samples SG-01, SG-01 1/200, SG-02 1/1000 and SG-03 were given the lab qualifier "j" meaning: "The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate."

Sample results for Method APH for sample SG-02 and SG-03, and Method TO-15 for sample SG-01, SG-02 and SG-03 with surrogate recoveries that fell outside their recovery limits, and were qualified by the lab with "ip" were given the validation qualifier "J" meaning: "The anlayte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample."

SG-01 non-detect results for EDB and Naphthalene; SG-02 non-detect results for o-xylene, 1,2,4-trimethylbenzene, EDB, EDC, MTBE, and Naphthalene; and SG-03 non-detect results for 1,2,4-trimethylbenzene, EDB, and EDC were given the validation qualifier "ec", meaning "Method reporting limit exceeds Clean Up Level."

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
SG-02 1/1000	512454-02 1/1000	APH	APH EC5-8 aliphatics	140,000,000	ug/m^3	ve	J
SG-02 1/1000	512454-02 1/1000	APH	APH EC9-12 aliphatics	54,000,000	ug/m^3	ve	J
SG-02 1/1000	512454-02 1/1000	APH	APH EC9-10 aromatics	410,000	ug/m^3		J
SG-03	512454-03	APH	APH EC5-8 aliphatics	1,200	ug/m^3	ve	J
SG-03	512454-03	APH	APH EC9-12 aliphatics	3,800	ug/m^3	ve	J
SG-03	512454-03	APH	APH EC9-10 aromatics	39	ug/m^3		J
SG-01	512454-01	TO-15	Benzene	1,200	ug/m^3	ve	DNR
SG-01	512454-01	TO-15	Toluene	1,900	ug/m^3	ve	DNR
SG-01	512454-01	TO-15	Ethylbenzene	260	ug/m^3	ve	DNR
SG-01	512454-01	TO-15	m,p-Xylene	1,600	ug/m^3	ve	DNR
SG-01	512454-01	TO-15	o-Xylene	630	ug/m^3	ve	DNR
SG-01	512454-01	TO-15	Hexane	9,900	ug/m^3	ve	DNR
SG-01	512454-01	TO-15	Benzene	390	ppbv	ve	DNR
SG-01	512454-01	TO-15	Toluene	510	ppbv	ve	DNR
SG-01	512454-01	TO-15	EDB	<0.1	ppbv	j	DNR
SG-01	512454-01	TO-15	Ethylbenzene	60	ppbv	ve	DNR
SG-01	512454-01	TO-15	m,p-Xylene	360	ppbv	ve	DNR
SG-01	512454-01	TO-15	o-Xylene	140	ppbv	ve	DNR
SG-01	512454-01	TO-15	MTBE	<0.4	ppbv		DNR
SG-01	512454-01	TO-15	Hexane	2,800	ppbv	ve	DNR
SG-01	512454-01	TO-15	1,2,4-Trimethylbenzene	17	ppbv		DNR
SG-01	512454-01	TO-15	EDC	16	ppbv		DNR

Sample ID	Laboratory ID	Method	Parameter Name	Result Value	Result Units	Laboratory Qualifier	Validation Qualifier
SG-01	512454-01	TO-15	Napthlalene	<0.4	ppbv		DNR
SG-01	512454-01	TO-15	EDB	<0.77	ug/m^3	j	ec; J
SG-01	512454-01	TO-15	MTBE	<1.4	ug/m^3		J
SG-01	512454-01	TO-15	1,2,4-Trimethylbenzene	85	ug/m^3		J
SG-01	512454-01	TO-15	EDC	63	ug/m^3		J
SG-01	512454-01	TO-15	Napthlalene	<2.1	ug/m^3		ec; J
SG-01 1/200	512454-01 1/200	TO-15	EDB	<154	ug/m^3	j	DNR
SG-01 1/200	512454-01 1/200	TO-15	MTBE	<290	ug/m^3		DNR
SG-01 1/200	512454-01 1/200	TO-15	1,2,4-Trimethylbenzene	<400	ug/m^3		DNR
SG-01 1/200	512454-01 1/200	TO-15	EDC	<320	ug/m^3		DNR
SG-01 1/200	512454-01 1/200	TO-15	Naphthalene	<420	ug/m^3		DNR
SG-01 1/200	512454-01 1/200	TO-15	Benzene	2,100	ppbv		DNR
SG-01 1/200	512454-01 1/200	TO-15	Toluene	2,400	ppbv		DNR
SG-01 1/200	512454-01 1/200	TO-15	EDB	<20	ppbv	j	DNR
SG-01 1/200	512454-01 1/200	TO-15	Ethylbenzene	200	ppbv		DNR
SG-01 1/200	512454-01 1/200	TO-15	m,p-Xylene	1,100	ppbv		DNR
SG-01 1/200	512454-01 1/200	TO-15	o-Xylene	390	ppbv		DNR
SG-01 1/200	512454-01 1/200	TO-15	MTBE	<80	ppbv		DNR
SG-01 1/200	512454-01 1/200	TO-15	Hexane	31,000	ppbv	ve	DNR
SG-01 1/200	512454-01 1/200	TO-15	1,2,4-Trimethylbenzene	<80	ppbv		DNR
SG-01 1/200	512454-01 1/200	TO-15	EDC	<80	ppbv		DNR
SG-01 1/200	512454-01 1/200	TO-15	Napthlalene	<80	ppbv		DNR
SG-02 1/1000	512454-02 1/1000	TO-15	Benzene	2,100	ppbv		DNR
SG-02 1/1000	512454-02 1/1000	TO-15	Toluene	770	ppbv		DNR
SG-02 1/1000	512454-02 1/1000	TO-15	EDB	<100	ppbv	j	DNR
SG-02 1/1000	512454-02 1/1000	TO-15	Ethylbenzene	8200	ppbv		DNR

Sample ID	Laboratory ID	Method	Parameter Name	Result Value	Result Units	Laboratory Qualifier	Validation Qualifier
SG-02 1/1000	512454-02 1/1000	TO-15	m,p-Xylene	1,800	ppbv		DNR
SG-02 1/1000	512454-02 1/1000	TO-15	o-Xylene	<400	ppbv		DNR
SG-02 1/1000	512454-02 1/1000	TO-15	MTBE	<400	ppbv		DNR
SG-02 1/1000	512454-02 1/1000	TO-15	Hexane	230,000	ppbv	ve	DNR
SG-02 1/1000	512454-02 1/1000	TO-15	1,2,4-Trimethylbenzene	<800	ppbv		DNR
SG-02 1/1000	512454-02 1/1000	TO-15	EDC	<400	ppbv		DNR
SG-02 1/1000	512454-02 1/1000	TO-15	Napthlalene	<400	ppbv		DNR
SG-02 1/1000	512454-02 1/1000	TO-15	Benzene	6,600	ug/m^3		J
SG-02 1/1000	512454-02 1/1000	TO-15	Toluene	2,900	ug/m^3		J
SG-02 1/1000	512454-02 1/1000	TO-15	EDB	<770	ug/m^3	j	ec; J
SG-02 1/1000	512454-02 1/1000	TO-15	Ethylbenzene	36,000	ug/m^3		J
SG-02 1/1000	512454-02 1/1000	TO-15	m,p-Xylene	7,600	ug/m^3		J
SG-02 1/1000	512454-02 1/1000	TO-15	o-Xylene	<1,700	ug/m^3		ec; J
SG-02 1/1000	512454-02 1/1000	TO-15	MTBE	<1,400	ug/m^3		ec; J
SG-02 1/1000	512454-02 1/1000	TO-15	1,2,4-Trimethylbenzene	<3,900	ug/m^3		ec: J
SG-02 1/1000	512454-02 1/1000	TO-15	Hexane	820,000	ug/m^3	ve	J
SG-02 1/1000	512454-02 1/1000	TO-15	EDC	<1,600	ug/m^3		ec; J
SG-02 1/1000	512454-02 1/1000	TO-15	Naphthalene	<2,100	ug/m^3		ec; J
SG-03	512454-03	TO-15	Benzene	1	ppbv		DNR
SG-03	512454-03	TO-15	Toluene	2	ppbv		DNR
SG-03	512454-03	TO-15	EDB	<0.1	ppbv	j	DNR
SG-03	512454-03	TO-15	Ethylbenzene	1.4	ppbv		DNR
SG-03	512454-03	TO-15	m,p-Xylene	6	ppbv		DNR
SG-03	512454-03	TO-15	o-Xylene	2.3	ppbv		DNR
SG-03	512454-03	TO-15	MTBE	<0.4	ppbv		DNR
SG-03	512454-03	TO-15	Hexane	48	ppbv		DNR

Sample ID	Laboratory ID	Method	Parameter Name	Result Value	Result Units	Laboratory Qualifier	Validation Qualifier
SG-03	512454-03	TO-15	1,2,4-Trimethylbenzene	<0.8	ppbv		DNR
SG-03	512454-03	TO-15	EDC	<0.4	ppbv		DNR
SG-03	512454-03	TO-15	Napthlalene	0.49	ppbv		DNR
SG-03	512454-03	TO-15	Benzene	3.4	ug/m^3		J
SG-03	512454-03	TO-15	Toluene	8.5	ug/m^3		J
SG-03	512454-03	TO-15	EDB	<0.77	ug/m^3	j	ec; J
SG-03	512454-03	TO-15	Ethylbenzene	6.2	ug/m^3		J
SG-03	512454-03	TO-15	m,p-Xylene	27	ug/m^3		J
SG-03	512454-03	TO-15	o-Xylene	10	ug/m^3		J
SG-03	512454-03	TO-15	MTBE	<1.4	ug/m^3		J
SG-03	512454-03	TO-15	1,2,4-Trimethylbenzene	<3.9	ug/m^3		ec; J
SG-03	512454-03	TO-15	Hexane	170	ug/m^3		J
SG-03	512454-03	TO-15	EDC	<1.6	ug/m^3		ec; J
SG-03	512454-03	TO-15	Naphthalene	2.6	ug/m^3		J

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 the approximate concentration of the analyte in the sample.

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

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

Mallory Taylor

From: Allison Greiner
Sent: Friday, February 05, 2016 4:09 PM
To: Mallory Taylor
Subject: FW: HDC TOC_01-323, WORFDB 512454--SG-01 EDB and Hexane

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From: Michael Erdahl [mailto:merdahl@friedmanandbruya.com]
Sent: Friday, January 29, 2016 10:51 AM
To: Allison Greiner <allisongreiner@eurekaprojectsolutions.net>
Cc: Emily Swanson <Emily@eurekaprojectsolutions.net>; Katie Jensen <KatieJensen@eurekaprojectsolutions.net>
Subject: Re: HDC TOC_01-323, WORFDB 512454--SG-01 EDB and Hexane

Hi Allison,

That is a perfect summary of the discussion and the situation.

Emily---Welcome to the Eureka family :).

Mike

From: Allison Greiner
Sent: Friday, January 29, 2016 10:43 AM
To: Michael Erdahl
Cc: Emily Swanson ; Katie Jensen
Subject: FW: HDC TOC_01-323, WORFDB 512454--SG-01 EDB and Hexane

Hi Mike…Great getting to chat with you today!!

Thank you kindly for discussing SG-01 TO-15 compounds with me. To summarize our conversation:

1. Hexane report off the second run. Both results are above the top of the calibration curve. Due to the exponential nature of the calibration curve and the limitations of the reporting range at each dilution, the second run is more representative of the analyte concentration.

2. EDB report off the original run. The j flag is because it is reported to the MDL, due to the reg limits for the compound. The ip qualifier on the surrogate is does not negatively affect the ND result. If there would have been issues associated, the analytist would have raised the MDL to account for the affect.

Thanks!
Allison

From: Friedman & Bruya, Inc. [mailto:friedmanandbruya@gmail.com]
Sent: Friday, January 22, 2016 1:37 PM
To: Craig Hultgren - HydroCon (HDC) <craigh@HydroConLLC.net>
Cc: Rob Honsberger - HydroCon (HDC) <RobertH@HydroConLLC.net>; Allison Greiner <allisongreiner@eurekaprojectsolutions.net>
Subject: Re: HDC TOC_01-323, WORFDB 512454

Attached are your document(s).

Sula Olson

This e-mail account is for outgoing messages only. Please send messages to

fbi@isomedia.com
Friedman & Bruya, Inc.
3012 16th Ave. W.
Seattle, WA 98119
Voice: (206) 285-8282
(800) 487-8231
Fax: (206) 283-5044

> ----- Original Message -----
> **From:** Friedman & Bruya, Inc.
> **To:** Craig Hultgren - HydroCon (HDC)
> **Cc:** Rob Honsberger - HydroCon (HDC) ; Allison Greiner - Hydrocon (HDC)
> **Sent:** Friday, January 22, 2016 1:29 PM
> **Subject:** Re: HDC TOC_01-323, WORFDB 512454
>
> Please disregard previous report. Updated report to follow

Sula Olson

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Seattle, WA 98119
Voice: (206) 285-8282
(800) 487-8231
Fax: (206) 283-5044

----- Original Message -----
From: Friedman & Bruya, Inc.
To: Craig Hultgren - HydroCon (HDC)
Cc: Rob Honsberger - HydroCon (HDC) ; Allison Greiner - Hydrocon (HDC)
Sent: Thursday, January 21, 2016 3:56 PM
Subject: HDC TOC_01-323, WORFDB 512454

Attached are your document(s).

Sula Olson

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