Fourth Quarter 2016
Remedial Systems Operations and Maintenance (O&M) Report

TOC Holdings Co. Facility No. 01-176
24205, 24225, 24309 56th Avenue West
Mountlake Terrace, WA

Prepared for:
TOC Holdings Co.
2737 W. Commodore Way
Seattle, WA 98199

March 24, 2017

Prepared by:

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TOC Holdings Co.
2737 West Commodore Way
Seattle, Washington 98199

TOC Holdings Co. Facility No. 01-176
24205, 24225, 24309 56th Avenue West
Mountlake Terrace, WA

Washington State Department of Ecology
Agreed Order No. DE 8661

HydroCon Project No: 01-176

Prepared by:

Mark E. Selman, PE
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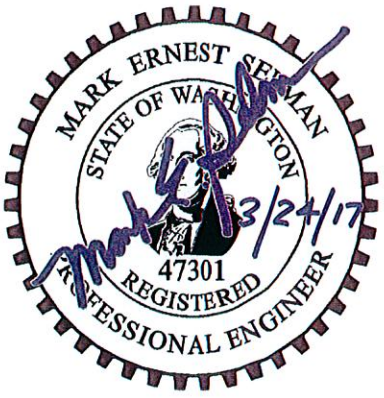
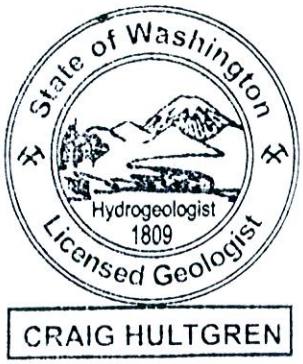


Reviewed by:

Craig Hultgren, LHG
Project Manager



March 24, 2017

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  - 610372-01; -02; Unit 2 Water – October 2016
  - 610373-01; -02; Unit 3 Water – October 2016
  - 610374-01; -02; Unit 1 Water – October 2016
  - 611358-01; Unit 3 Vapor – November 2016
  - 611359-01; Unit 2 Vapor – November 2016

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1 INTRODUCTION

This report was prepared by HydroCon Environmental, LLC (HydroCon) on behalf of TOC Holdings Co. (TOC) to document the Fourth Quarter 2016 (Q4 2016) remedial systems operation and maintenance (O&M) activities. Field activities associated with interim remedial actions were conducted from October through December 2016 at Facility No. 01-176 located in Mountlake Terrace, Snohomish County, Washington (Figure 1).

1.1 SCOPE OF WORK

Ongoing interim remedial actions are conducted under Agreed Order (AO) No. DE 8661, between TOC and the Washington State Department of Ecology[1] entered in October 2011 for TOC's Facility No. 01-176. The O&M scope of work is defined in the *Interim Remedial Action Work Plan*[2] (IRAWP). Per the requirements of the IRAWP, the O&M scope of work includes monthly maintenance and quarterly monitoring events.

As described in the IRAWP, the TOC Facility No. 01-176 is termed the "Interim Remedial Project Area" (IRPA) and consists of the following four properties located in Mountlake Terrace, Washington (Figure 2):

- TOC Property: 24205 56th Avenue West
- TOC/Farmasonis Property: 24225 56th Avenue West
- Drake Property: 24309 56th Avenue West
- Portions of the 56th Avenue West Right-of-Way (ROW): adjacent to the TOC, TOC/Farmasonis and Drake properties

O&M activities are conducted to monitor the performance of three multi-phase extraction (MPE) remediation systems currently operating at the IRPA. The MPE remediation systems were installed to remediate petroleum hydrocarbon-contaminated groundwater, soil vapor, and free product. Unit 1 is located on the TOC Property; Units 2 and 3 are located on the TOC/Farmasonis Property. Unit 1 is associated with the operation of remediation wells installed on the TOC Property; Units 2 and 3 are associated with the operation of wells installed on the TOC/Farmasonis and Drake Properties, respectively.

Details on remediation well identification and locations are provided in the description of remedial systems found in Appendix A.

[1] *Washington State Department of Ecology (Ecology). 2011. Agreed Order No. DE 8661, TOC Facility No. 01-176. October 28.*

[2] *SoundEarth Strategies, Inc. (SES) 2011. Interim Remedial Action Work Plan. TOC Holdings Co. Facility No. 01-176; 24205 56th Avenue West, Mountlake Terrace, WA, Prepared for TOC Holdings Co. July 28.*

1.2 SUMMARY OF Q4 2016 O&M ACTIVITIES

This report includes a description of permit compliance and remedial system performance and optimization efforts. A summary of the remedial system performance and maintenance activities performed from October through December 2016 is provided below.

- O&M consisted of routine, scheduled maintenance activities (as described in the O&M Manual).
- A combined total of 48.5 pounds of vapor-phase hydrocarbons were removed during this reporting period. A cumulative total of approximately 4,698 pounds have been removed since startup in October 2012.
- A combined total volume of 139,732 gallons of groundwater were extracted, treated and discharged during this period. The total volume of water processed since systems were started is approximately 4,846,204 gallons.
- The oil/water separators (OWS) for each system were inspected for the presence of light-nonaqueous phase liquid (LNAPL). No LNAPL was visible in any of the three systems during this quarter.
- Wells MW31 and MW93 (MPE Unit 2) were off-line during 4Q2016. These wells had not been operational since March 2016 and were deliberately taken off-line in August 2016 as groundwater from these two wells has consistently been below MTCA Method A cleanup levels since First Quarter 2014.
- Wells MW70, MW99, and MW101 (MPE Unit 3) were off-line during 4Q2016 (these wells had not been operational since March 2016).

System optimization activities focused on evaluating the cause(s) for the reduction in the historical groundwater recovery volumes observed at the end of the last quarter and during this quarter. The primary causes were determined to be faulty well pumps or pumps that required modifications to restore and enhance recovery rates. These activities are described in more detail in the following sections.

2 REMEDIAL SYSTEMS MAINTENANCE AND MODIFICATIONS

Unit 1: HydroCon again observed the recurring annual increase in vapor concentrations recovered by the system in October 2016. The vapor effluent concentrations started climbing on October 2 measured at 1.8 relative response units (RRU) with a photoionization detector. Vapor concentrations reached a maximum of 5.9 RRU on October 19. At that point, more clean air was introduced into the vapor flow stream to ensure that the effluent vapor concentrations remained below the Puget Sound Clean Air Agency (PSCAA) Notice of Construction (NOC) discharge limits.

HydroCon met Mr. Tom Hudson of the PSCAA at the Site on November 8 at Hudson's request to review the air emissions control equipment installed under the active NOC for Units 1, 2, and 3. According to Mr. Hudson, the effluent stacks did not comply with Condition #4 of the NOC that states "The exhaust gases from a control device shall be discharged vertically upwards and unobstructed from a stack with an exit point no less than 10 feet." The deficiency was related to the rain hoods on the top of the stack, which he deemed to be an obstruction to vapor discharge. According to Mr. Hudson, the point of having an unobstructed discharge is to get the exhaust vapors to discharge vertically as high as possible to prevent odor complaints from neighboring residents. Mr. Hudson indicated that there have been no complaints about odors, but asked that the rain hoods be removed from the active effluent stacks. After Mr. Hudson departed the Site, HydroCon removed the rain hoods from the stacks from all three units and sent Mr. Hudson photographs documenting same. HydroCon received a reply from Mr. Hudson acknowledging that he had received the photos.

HydroCon partially replaced liquid-phase granular activated carbon (GAC) on November 2 in response to high pressure drop observed between the first and second carbon vessels in series.

Unit 2: The system functioned normally during this reporting period without any exceptions.

Unit 3: The transfer pump that conveys recovered groundwater through the liquid-phase GAC pretreatment system failed during this reporting period. This failure was manifested by a slowly reducing flow and pressure. The pump was pulled and repaired by a local pump repair shop and reinstalled back into the system in December. As a result, the system recovered and treated much less water than typically processed during the months of November and December.

3 SYSTEM PERFORMANCE

This section summarizes the performance of the three MPE systems for this reporting period.

3.1 TOC PROPERTY (UNIT 1)

The following is a summary of the Fourth Quarter 2016 system performance for the TOC Property:

- The MPE system operational time for this reporting period was approximately 88 percent. The cumulative operational time over the lifetime of this facility is 75 percent (Table 1-1). System down time is attributed to a planned system shutdown to accommodate groundwater monitoring during this reporting period.
- The vapor-phase hydrocarbon mass removal associated with the soil vapor extraction (SVE) system was approximately 35.8 pounds, and aqueous-phase hydrocarbon removal associated with the GAC treatment process was approximately 0.024 pounds for this reporting period. The cumulative vapor- and aqueous-phase hydrocarbons removed to date are approximately 3,372 and 16.5 pounds, respectively (Tables 1-1, 1-2, and 1-3).
- The volume of groundwater extracted during this reporting period was 58,229 gallons. The cumulative volume of groundwater extracted over the lifetime of this facility is 1,289,147 gallons (Tables 1-1 and 1-3). The average daily groundwater recovery volume during this reporting period was 647 gallons. The cumulative average daily groundwater recovery volume over the lifetime of this facility is 805 gallons (Table 1-1).
- No LNAPL was recovered from the OWS. Also, the OWS was inspected, and no LNAPL or sheen was visible on the liquid contents.
- The daily vapor-phase mass removal rate ranged from 0.24 to 0.53 pounds during this reporting period (Table 1-2).
- Air flow through the catalytic oxidizer (CATOX) from the SVE blower was bypassed in February 2015 because permit conditions for bypass were achieved. According to the PSCAA NOC permit for each unit (1, 2, and 3), the CATOX may be removed or bypassed and directly vented to the atmosphere if benzene and GRPH concentrations in the untreated air remain below 0.5 and 50 parts per million by volume (ppmv), respectively, for a period of 3 consecutive months (refer to Appendix B2 for other permit conditions).

  The concentration of GRPH measured exiting the stack in the October monitoring event was 40 milligrams per cubic meter [mg/m^3] which is equivalent to 13.5 ppmv estimated by using the molecular weight of 72.5 as representative of the composite molecular weight of gasoline[3]. The conversion to ppmv from mg/m^3 assumes a temperature of 25°C and standard pressure (1 atmosphere) (Table 1-4). This concentration was less than the permit threshold limit of 50 ppmv.

[3] *Fremont Analytical. 2015. Personal Communication. Response to email inquiry from Mr. Mark Selman. September 23.*

The concentration of GRPH measured exiting the stack in the November monitoring event was 24 milligrams per cubic meter [mg/m^3] which is equivalent to less than 8.1 ppmv. This concentration was less than the permit threshold limit of 50 ppmv.

The concentration of GRPH measured exiting the stack in the December monitoring event was less than 10 mg/m^3, which is equivalent to less than 3.3 ppmv using the same conversion assumptions. This concentration was less than the permit threshold limit of 50 ppmv.

- The concentrations of benzene exiting the stack during this reporting period were below the laboratory's lower reporting limit of 0.1 mg/m^3, which is equivalent to 0.03 ppmv at 25°C and standard pressure. Laboratory analytical reports are provided in Appendix C.
- In accordance with the State Waste Discharge (SWD) permit for Unit 1, HydroCon monitored the concentrations of the biocide chemical: tetrakis(hydroxymethyl)phosphonium sulfate (Tolcide®) and the sequestering agent: etidronic acid [phosphonic acid, P,P'-(1-hydroxyethylidene) bis-] (Phosphonate®) that are automatically injected into the recovered groundwater flow to prevent bacterial slimes from compromising the treatment system (see Appendix B1). The SWD permit conditions apply to the treated effluent discharged from the Unit 1 system to the City of Edmonds publically owned treatment works (POTW).

  The results of monitoring for Tolcide® and Phosphonate® for this quarter are summarized in the following table and show that the permit conditions were not exceeded for these chemicals:

Results of Tolcide® and Phosphonate Monitoring for Unit 1
Q4 2016

Date	Concentrations in Effluent (mg/L)	
	Tolcide®	Phosphonate
October 25, 2016	7.0	1.6
November 21, 2016	7.0	1.6
December 20, 2016	1.6	0.6
Permit Allowable Daily Maximum	**10**	**3.2**

- System operations are summarized in Tables 1-1 through 1-5. There were no exceedances of permit conditions during this reporting period.

3.2 TOC/FARMASONIS PROPERTY (UNIT 2)

The following is a summary of the Fourth Quarter 2016 system performance for the TOC/Farmasonis Property:

- The MPE system operational time for this reporting period was approximately 90 percent (Table 2-1). The cumulative operational time over the lifetime of this facility is 82 percent. System down time is attributable to a planned system shutdown to accommodate groundwater monitoring during this reporting period.
- The vapor-phase hydrocarbon mass removal associated with the SVE system was approximately 6.4 pounds, and aqueous-phase hydrocarbon removal associated with the GAC treatment process was 0.011 pounds for this reporting period. The cumulative vapor- and aqueous-phase hydrocarbons removed to date are approximately 1,066.6 and 0.96 pounds, respectively (Tables 2-1, 2-2, and 2-3).
- The volume of groundwater extracted during this reporting period was approximately 25,807 gallons, which is 46 percent of the volume recovered in the previous quarter over roughly the same duration. The significant reduction in recovered groundwater for this reporting period is explained by the cessation of groundwater extraction from two remediation wells (MW31 and MW93) based on their locations relative to areas that still exhibit contamination above cleanup levels. In addition, there has been an overall decline in Site-wide groundwater elevations and groundwater volume recovered since 2014, when records generally show historic highs. Historical monitoring records record recurring seasonal fluctuations in groundwater elevation and recovered groundwater volume for the third and fourth calendar quarters compared to the first and second calendar quarters.
- The cumulative volume of groundwater extracted over the lifetime of this facility is 1,308,157 gallons (Tables 2-1 and 2-3). The average daily groundwater recovery volume during this reporting period was 286.7 gallons. The cumulative average daily groundwater recovery volume over the lifetime of this facility is 820 gallons (Table 2-1).
- No LNAPL was recovered from the OWS. Also, the OWS was inspected, and no LNAPL or sheen was visible on the liquid contents.
- The daily vapor-phase mass removal rate was 0.08 pounds during this reporting period (Table 2-2).
- Air flow through the CATOX from the SVE blower was bypassed in September 2014 because permit conditions for bypass had been achieved. Concentrations of benzene and GRPH exiting the stack during this quarter were below the laboratory's lower reporting limits of 0.1 and 10 mg/m^3, respectively (Table 2-4). Laboratory analytical reports are provided in Appendix C.
- System operations were in compliance with the State Waste Discharge (SWD) and PSCAA permit limits (Tables 2-3, 2-4, and 2-5).

3.3 DRAKE PROPERTY (UNIT 3)

The following is a summary of the Fourth Quarter 2016 system performance for the Drake Property:

- The MPE system operational time for this reporting period was approximately 90 percent (Table 3-1). System down time is attributable to the problems experienced with the failing transfer pump (See Section 2) and the planned system shutdown to accommodate groundwater monitoring.
- The vapor-phase hydrocarbon mass removal associated with the SVE system was approximately 6.3 pounds, and aqueous-phase hydrocarbon removal associated with the GAC treatment process was 0.02 pounds for this reporting period. The cumulative vapor- and aqueous-phase hydrocarbons removed to date are approximately 259.4 and 2.27 pounds, respectively (Tables 3-1, 3-2 and 3-3).
- The volume of groundwater extracted during this reporting period was approximately 55,696 gallons. The cumulative volume of groundwater extracted over the lifetime of this facility is 2,248,900 gallons (Tables 3-1 and 3-3). The average daily groundwater recovery volume for this reporting period was 619 gallons. The cumulative average daily groundwater recovery volume over the lifetime of this facility is 1,459 gallons (Table 3-1).
- No LNAPL was recovered from the OWS. Also, the OWS was inspected, and no LNAPL or sheen was visible on the liquid contents.
- The daily vapor-phase mass removal rate was approximately 0.08 pounds during this reporting period (Table 3-2).
- Air flow through the CATOX from the SVE blower was bypassed in September 2014 because permit conditions for bypass had been achieved. Concentrations of benzene and GRPH exiting the stack during this quarter were below the laboratory's lower reporting limits of 0.1 and 10 mg/m^3, respectively (Table 3-4). Laboratory analytical reports are provided in Appendix C.
- System operations were in compliance with the SWD and PSCAA permit limits (Tables 3-3, 3-4, and 3-5).

4 SYSTEM OPTIMIZATION & FUTURE RECOMMENDATIONS

The following is a summary of the Fourth Quarter 2016 system optimization and future recommendations for operation of the MPE systems.

The MPE systems will continue to operate until the terms and conditions of the AO have been satisfied in accordance with Section IX (Satisfaction of Order), or until the work to be performed has been amended in accordance with Section VIII.L (Amendment of Order). Specifically, "the provisions of the [Agreed] Order shall be deemed satisfied upon TOC's receipt of written notification from Ecology that TOC has completed the remedial activity required by the [Agreed] Order, as amended by any modifications, and that TOC has complied with all other provisions of the [Agreed] Order."

4.1 OPTIMIZATION COMPLETED

Optimization activities this quarter focused on repairing and replacing the transfer pump for Unit 3 to restore the Unit 3 groundwater recovery system.

HydroCon continued to evaluate the vapor- and aqueous-phase mass removal performance of individual remediation wells for each system. HydroCon continued to adjust the air flow in individual SVE vents for each system based on the measurements of total volatile organic compounds (VOCs), oxygen, carbon dioxide, and percent of the lower explosive limit concentrations in the recovered vapor stream.

4.2. OPTIMIZATION PLANNED

HydroCon will continue to evaluate the vapor- and aqueous-phase mass removal performance for individual wells that are still operating for each system during the First Quarter 2017. Data generated by the continuing evaluation of the mass removal performance of individual wells has been and will be used to downgrade or eliminate the continued operation of specific remediation wells if it is determined that they are no longer providing a discernable remedial benefit.

HydroCon conducted a comprehensive evaluation of the current groundwater monitoring program to identify wells in the network (including remediation wells) that could legitimately be eliminated from the monitoring program without compromising future monitoring objectives[4]. A reduction in the groundwater monitoring program is warranted because the Site has undergone remedial action and quarterly groundwater monitoring since the mid-1990s. Since the mid-1990s, the monitoring program grew from a relatively small network of 20+ wells on the TOC Property to 103 currently active groundwater/remediation monitoring wells on several other properties.

[4] *HydroCon Environmental, LLC. 2017. Technical Memorandum to Mark Chandler, Vice President Environmental Services of TOC Holdings Co., Clarifications to the Proposal to Downsize the Current Groundwater Monitoring Program TOC Facility No. 01-176; 24205, 24225, and 24309 56th Avenue West, Mountlake Terrace, WA. February 14.*

The results of this evaluation concluded that 65 of the existing 103 active wells could be eliminated from the monitoring and remediation program without compromising the ongoing objective to monitor the progress of the cleanup action at this facility.

TOC notified Ecology of their intention to terminate operation of the three remediation systems[5]. This request was based on the fact that the remedial systems had achieved cleanup levels in most of the IRPA over the course of operation (commencing in 2012). However, despite focused remedial efforts in three separate areas within the IRPA, the systems were not able to achieve cleanup levels in these areas. As a result, TOC is requesting approval to discontinue operation of the remedial systems. Ecology has indicated that they will review and provide an opinion on the proposal to reduce the number and location of wells used to monitor and remediate the facility, as well as discontinuing the operation of the remedial systems. To the extent possible, TOC Holdings Co. will implement any Ecology-approved changes to the existing monitoring plan and remedial systems operations.

[5] *Stantec Consulting Services, Inc. 2017. Letter to Sunny Becker from Rebekah Brooks re: TOC Holdings Co., Mountlake Terrace Site, Plan for Remediation Systems. February 21.*

5 LIMITATIONS

This document entitled, *Fourth Quarter 2016 Remedial Systems Operations & Maintenance Report,* was prepared by HydroCon Environmental, LLC exclusively for and on behalf of TOC Holdings Co. Material contained in this document reflects HydroCon's best judgments regarding the information available at the time of preparation and in accordance with industry-standard practices. Reliance on this document by a third party is the responsibility of the third party; therefore, HydroCon provides no warranty or guarantee related the unauthorized third party use of the information and findings presented herein. Finally, HydroCon accepts no responsibility for damages, if any, claimed by a third party as a result of the unauthorized use of this document.

FIGURES

0 200 400

SCALE IN FEET
1" = 400'

SOURCE: STANTEC, JBR - 2014

N
W E
S

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

DATE: 9-14-15
DWN: JJT
CHK: MS
APPROVED: MS
PRJ. MGR: CH
PROJECT NO: 01-176

FIGURE 1
SITE LOCATION MAP

TOC HOLDINGS CO, FACILITY NO. 01-176
24205 56TH AVENUE WEST
MOUNTLAKE TERRACE, WA.

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0 100 200

SCALE IN FEET
1" = 100'

SOURCE: STANTEC, JBR - 2014

N
W E
S

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

DATE: 9-14-15
DWN: JJT
CHK: MS
APPROVED: MS
PRJ. MGR: CH
PROJECT NO: 01-176

FIGURE 2
SITE MAP

TOC HOLDINGS CO, FACILITY NO. 01-176
24205 56TH AVENUE WEST
MOUNTLAKE TERRACE, WA.

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TABLES

Table 1-1
Summary of System Performance at the Close of Q4 2016
Unit 1 - TOC Property
TOC Holdings Co. Facility No. 01-176
24205 56th Avenue West
Mountlake Terrace, WA

Reporting Period		Days In Reporting Period	Days In Operation	System Run Time (%)	Volume of Treated Groundwater Discharged (gallons)	Average Daily Groundwater Recovery Rate (gallons per day)	GRPH Aqueous-Phase Removal (lb)	GRPH Vapor-Phase Removal (lb)
Start Date	**End Date**							
10/02/12	12/05/12	64	29.6	46%	34,569	540.1	3.67	1,353.0
12/05/12	03/04/13	89	35.6	40%	7,655.9	86.0	0.938	50.6
03/04/13	06/05/13	93	29.1	31%	4,915.8	52.9	0.604	7.2
06/05/13	09/04/13	91	69.0	76%	83,540.3	918.0	3.580	265.4
09/04/13	12/03/13	90	90.0	100%	75,825.2	842.5	1.226	1,061.1
12/03/13	01/31/14	59	26.1	44%	1,166.2	19.8	0.033	158.9
01/31/14	03/19/14	47	29.4	63%	29,991.7	638.1	0.872	35.1
03/19/14	06/16/14	89	69.7	78%	101,082.0	1,135.8	3.328	5.4
06/16/14	09/18/14	94	86.6	92%	101,780.0	1,082.8	1.097	51.2
09/18/14	12/09/14	82	68.7	84%	53,355.0	650.7	0.022	132.0
12/09/14	03/11/15	92	62.0	67%	103,289.0	1,122.7	0.470	4.2
03/11/15	06/08/15	89	77.7	87%	133,855.0	1,504.0	0.072	4.9
06/08/15	09/21/15	105	93.9	89%	98,522.4	938.3	0.041	48.5
09/21/15	12/21/15	91	76.3	84%	36,857.8	405.0	0.019	134.7
12/21/15	03/21/16	91	75.7	83%	129,508.3	1,423.2	0.219	7.6
03/21/16	06/29/16	100	85.7	86%	160,903.1	1,609.0	0.277	6.4
06/29/16	09/21/16	84	73.1	87%	74,101.7	882.2	0.031	10.0
09/21/16	12/20/16	90	79.6	88%	58,228.9	647.0	0.024	35.8
Cumulative Total or Lifetime Average		**1,540**	**1,158**	**75%**	**1,289,147**	**805.4**	**16.52**	**3,372.1**

NOTES:

= data for current reporting period

% = percent
GRPH = gasoline-range petroleum hydrocarbons
lb = pounds
SVE = soil vapor extraction

Table 1-2
Vapor Stream - System Performance Monitoring Data
Unit 1 - TOC Property
TOC Holdings Co. Facility No. 01-176
24205 56th Avenue West
Mountlake Terrace, WA

Date	Run Time		SVE Parameters		Catalytic Oxidizer		GRPH Removal		
	SVE Hours	Total Time in Operation	SVE-Prefilter Vacuum	Air Flow Rate[1]	Catalyst Entrance Temp.	Catalyst Exit Temp.	Influent Concentration[2]	Daily Mass Removal Rate[3]	Cumulative Mass Recovered[4]
	(hours)	(days)	(iow)	(scfm)	(°C)	(°C)	(mg/m^3)	(lb/day)	(lb)
10/02/12	5.0	0.2	70	146.8	330	380	1,600	21.12	0.000
10/10/12	70.2	2.9	69	149.2	330	419	2,600	45.24	132.3
10/17/12	237.7	9.9	69	149.2	330	410	3,400	63.04	572.3
10/24/12	406.9	17.0	68	144.4	330	385	2,400	54.11	953.8
11/07/12	638.2	26.6	73	140.7	330	384	1,700	37.16	1311.9
12/05/12	714.2	29.8	67	148.0	330	344	150	12.98	1353.0
01/08/13	1,482.9	61.8	65	153.8	330	342	35	1.49	1400.8
01/17/13	1,533.7	63.9	76	153.0	330	350	--		
02/05/13	1,537.6	64.1	64	148.6	330	342	53	0.96	1403.0
03/04/13	1,569.4	65.4	27	173.0	330	342	<10	0.46	1403.6
04/03/13	1,587.2	66.1	60	157.4	330	342	14	0.25	1403.8
05/08/13	1,595.4	66.5	17	175.2	330	341	22	0.43	1403.9
06/05/13	2,267.7	94.5	36	166.0	330	340	<10	0.25	1410.8
07/02/13	2,789.8	116.2	39	168.0	330	340	26	0.43	1420.1
08/06/13	3,227.4	134.5	47	162.1	330	341	31	0.65	1432.0
08/09/13	3,302.8	137.6	64	157.1	330	345	--		
09/04/13	3,924.4	163.5	66	152.0	330	351	580	8.41	1676.2
10/07/13	4,715.2	196.5	66	153.1	330	356	710	13.71	2128.1
10/14/13	4,888.3	203.7	72	155.4	330	354	--		
10/15/13	4,913.7	204.7	70	154.7	330	355	--		
10/16/13	4,936.9	205.7	66	154.4	330	364	--		
11/06/13	5,434.8	226.5	45	173.7	330	349	240	8.74	2390.2
11/07/13	5,460.5	227.5	45	168.1	330	346	--		
12/03/13	6,084.2	253.5	74	158.2	330	355	740	12.83	2737.3
01/13/14	6,710.4	279.6	0	0.0	--	--	--		
01/31/14	6,711.6	279.7	47	174.0	330	342	37	6.08	2896.2
02/06/14	6,854.2	285.6	47	173.4	330	343	--		
02/07/14	6,877.1	286.5	47	174.9	330	342	110	2.02	2910.1
03/19/14	7,416.7	309.0	48	174.0	330	340	<10	0.94	2931.2
04/18/14	7,919.8	330.0	48	173.1	330	340	<10	0.08	2932.9
05/19/14	8,420.1	350.8	47	172.8	330	345	<10	0.08	2934.5
06/16/14	9,088.9	378.7	50	172.2	330	345	<10	0.08	2936.7
07/09/14	9,571.0	398.8	50	169.8	330	344	<10	0.08	2938.2
08/12/14	10,287.5	428.6	49	167.4	330	339	19	0.18	2943.6
09/18/14	11,168.4	465.4	48	170.1	330	341	140	1.21	2987.9
10/22/14	11,881.3	495.1	48	166.5	330	342	220	2.72	3068.8
11/17/14	12,301.8	512.6	52	175.0	330	341	63	2.17	3106.9
12/09/14	12,817.3	534.1	52	171.5	330	340	15	0.61	3119.9
01/13/15	13,215.2	550.6	54	174.6	330	340	<10	0.16	3122.5

Table 1-2
Vapor Stream - System Performance Monitoring Data
Unit 1 - TOC Property
TOC Holdings Co. Facility No. 01-176
24205 56th Avenue West
Mountlake Terrace, WA

Date	Run Time		SVE Parameters		Catalytic Oxidizer		GRPH Removal		
	SVE Hours	Total Time in Operation	SVE-Prefilter Vacuum	Air Flow Rate[1]	Catalyst Entrance Temp.	Catalyst Exit Temp.	Influent Concentration[2]	Daily Mass Removal Rate[3]	Cumulative Mass Recovered[4]
	(hours)	(days)	(iow)	(scfm)	(°C)	(°C)	(mg/m^3)	(lb/day)	(lb)
02/18/15	13,815.2	575.6	57	40.7	CATOX OFF		<10	0.05	3123.7
03/11/15	14,305.9	596.1	59	50.9	CATOX OFF		<10	0.02	3124.1
04/22/15	15,074.4	628.1	67	165.6	CATOX OFF		<10	0.05	3125.7
05/19/15	15,691.6	653.8	60	163.4	CATOX OFF		<10	0.07	3127.6
06/08/15	16,171.3	673.8	60	163.7	CATOX OFF		<10	0.07	3129.0
07/28/15	17,221.9	717.6	60	163.5	CATOX OFF		14	0.14	3135.2
08/20/15	17,775.8	740.7	58	164.7	CATOX OFF		43	0.42	3144.9
09/21/15	18,425.5	767.7	60	164.8	CATOX OFF		120	1.21	3177.5
10/28/15	19147.1	797.8	60	165.9	CATOX OFF		190	2.30	3246.8
11/23/15	19762.9	823.5	65	168.9	CATOX OFF		81	2.04	3299.1
12/21/15	20257.1	844.0	65	160.1	CATOX OFF		<10	0.64	3312.2
01/20/16	20978.4	874.1	79	164.8	CATOX OFF		<10	0.07	3314.4
02/23/16	21434.2	893.1	70	164.0	CATOX OFF		11	0.12	3316.7
03/21/16	22073.5	919.7	61	164.2	CATOX OFF		<10	0.12	3319.8
04/22/16	22840.9	951.7	61	166.2	CATOX OFF		<10	0.07	3322.2
05/27/16	23342.2	972.6	62	169.5	CATOX OFF		<10	0.08	3323.8
06/29/16	24130.9	1005.5	58	168.5	CATOX OFF		<10	0.08	3326.3
07/20/16	24634.4	1026.4	56	168.4	CATOX OFF		<10	0.08	3327.9
08/15/16	25258.6	1052.4	57	170.3	CATOX OFF		<10	0.08	3329.8
09/21/16	25885.0	1078.5	56	171.3	CATOX OFF		27	0.25	3336.3
10/25/16	26671.0	1111.3	45	177.3	CATOX OFF		40	0.53	3353.5
11/21/16	27316.7	1138.2	45	180.9	CATOX OFF		24	0.52	3367.3
12/20/16	27796.2	1158.2	45	183.0	CATOX OFF		<10	0.24	3372.1
PSCAA NOC- 10384 Conditions				**max. 350**	**min. 240**	**max. 620**			

NOTES:

[1]Air flow rates calculated using an averaging flow sensor (Dwyer Model DS). Air flow rates between 2/7/14 and 12/09/14 calculated from data. Air flow rates from 1/12/15 forward calculated from averaging flow sensor.

[2]Influent vapor samples collected from SVE sample port prior to air treatment.

[3]Daily mass removal rate (lb/day) = average concentration (mg/m^3) x average flow rate (scfm) x conversion (8.99x10-5 lb-m^3-min/mg-ft^3-day).

[4]Cumulative mass of benzene removed (lb) = daily removal rate (lb/day) x time in operation (days) + previous cumulative total (lb).

-- = not analyzed, measured, or calculated
GRPH = gasoline-range petroleum hydrocarbons
iow = inches of water
lb = pounds
lb/day = pounds per day
mg/m^3 = milligrams per cubic meter
NOC - Notice of Construction
PSCAA = Puget Sound Clean Air Agency
scfm = standard cubic feet per minute
SVE = soil vapor extraction

Table 1-3
Liquid Stream - System Performance Monitoring Data
Unit 1 - TOC Property
TOC Holdings Co. Facility No. 01-176
24205 56th Avenue West
Mountlake Terrace, WA

	Extracted Groundwater			Hydrocarbon Recovery - Aqueous-Phase		
				GRPH Recovery - Aqueous-Phase		
Date	Discharge Flow Totalizer (gallons)	Treated Between Visits (gallons)	Average Daily Flow Rate Between Visits (gallons per day)	Influent GRPH Concentration[1] (µg/L)	GRPH Removed[2][3] (lb)	Cumulative GRPH Removed[3][4] (lb)
10/02/12	636	0	0		--	--
10/10/12	5,761	5,125	641	18,000	0.770	0.77
10/17/12	14,898	9,137	1,305	--		
10/24/12	21,888	6,990	999	--		
11/07/12	31,362	9,473	677	6,100	*2.574*	*3.34*
12/05/12	35,205	3,843	137	14,000	0.322	3.67
01/08/13	38,077	2,872	84	19,000	0.395	4.06
01/17/13	40,712	2,636	293			
02/05/13	41,363	651	34	8,200	0.373	4.43
03/04/13	42,861	1,497	55	19,000	*0.170*	*4.60*
04/03/13	44,190	1,329	44	11,000	*0.166*	*4.77*
05/08/13	46,980	2,790	80	20,000	*0.361*	*5.13*
06/05/13	47,777	797	28	3,200	*0.077*	*5.21*
07/02/13	63,870	16,093	596	17,000	*1.356*	*6.57*
08/06/13	89,988	26,118	746	<100	*1.858*	*8.42*
08/09/13	95,563	5,575	1,858	--	--	
09/04/13	131,317	35,754	1,375	2,400	0.4	8.79
10/07/13	174,445	43,128	1,307	1,100	0.6	9.42
10/14/13	184,152	9,707	1,387	--	--	
10/15/13	184,982	831	831	--	--	
10/16/13	185,955	973	973	--	--	
11/06/13	187,065	1,110	53	3,800	0.3	9.68
11/07/13	188,072	1,007	1,007	--	--	
12/03/13	207,142	19,070	733	240	0.34	10.01
01/13/14	208,154	1,012	25	--	--	
01/31/14	208,308	155	9	6,600	0.03	10.05
02/06/14	214,154	5,846	974	--	--	
02/07/14	214,841	686	686	760	0.20	10.25
03/19/14	238,300	23,460	586	6,100	0.67	10.92
04/18/14	273,331	35,031	1,168	4,300	1.52	12.44
05/19/14	303,504	30,173	973	2,700	0.88	13.32
06/16/14	339,382	35,878	1,281	3,500	0.93	14.25
07/09/14	367,276	27,894	1,213	2,500	0.70	14.94
08/12/14	399,903	32,627	960	180	0.36	15.31
09/18/14	441,162	41,259	1,115	<100	0.03	*15.34*
10/22/14	464,280	23,118	680	<100	*0.010*	*15.35*
11/17/14	478,016	13,736	528	<100	*0.006*	*15.36*
12/09/14	494,517	16,501	750	<100	*0.007*	*15.37*
01/13/15	516,310	21,793	623	1,500	*0.141*	*15.51*
02/18/15	559,454	43,144	1,198	150	*0.297*	*15.80*
03/11/15	597,806	38,352	1,826	<100	*0.032*	*15.84*
04/23/15	658,574	60,768	1,413	<100	*0.025*	*15.86*
05/19/15	702,217	43,643	1,679	<100	*0.018*	*15.88*
06/08/15	731,661	29,444	1,472	180	*0.028*	*15.91*

Table 1-3
Liquid Stream - System Performance Monitoring Data
Unit 1 - TOC Property
TOC Holdings Co. Facility No. 01-176
24205 56th Avenue West
Mountlake Terrace, WA

	Extracted Groundwater			Hydrocarbon Recovery - Aqueous-Phase		
				GRPH Recovery - Aqueous-Phase		
Date	Discharge Flow Totalizer (gallons)	Treated Between Visits (gallons)	Average Daily Flow Rate Between Visits (gallons per day)	Influent GRPH Concentration[1] (µg/L)	GRPH Removed[2][3] (lb)	Cumulative GRPH Removed[3][4] (lb)
07/28/15	786,086	54,425	1,089	<100	*0.023*	*15.93*
08/20/15	805,176	19,090	830	<100	*0.008*	*15.94*
09/21/15	830,183	25,007	781	<100	*0.010*	*15.95*
10/28/15	847,836	17,652	477	<100	*0.007*	*15.96*
11/23/15	857,202	9,366	360	<100	*0.004*	*15.96*
12/21/15	867,041	9,839	351	130	*0.007*	*15.97*
01/20/16	895,118	28,077	936	250	*0.045*	*16.01*
02/23/16	927,146	32,028	942	300	*0.073*	*16.09*
03/21/16	996,550	69,404	2,571	<100	*0.101*	*16.19*
04/22/16	1,069,044	72,495	2,265	<100	*0.030*	*16.22*
05/27/16	1,108,037	38,993	1,114	620	*0.109*	*16.33*
06/29/16	1,157,453	49,416	1,497	<100	*0.138*	*16.46*
07/20/16	1,182,579	25,126	1,196	<100	*0.010*	*16.47*
08/15/16	1,209,169	26,591	1,023	<100	*0.011*	*16.49*
09/21/16	1,231,554	22,385	605	<100	*0.009*	*16.50*
10/25/16	1,251,133	19,578	576	<100	*0.008*	*16.50*
11/30/16	1,273,688	22,556	627	<100	*0.009*	*16.51*
12/20/16	1,289,783	16,095	805	<100	*0.007*	*16.52*
State Waste Discharge Permit ST0007384 Limits			**7,000**			

NOTES:

Sample Analysis conducted by Friedman & Bruya, Inc.

[1]Influent samples collected prior to treatment with liquid-phase granular activated carbon.

[2] Mass removal weight (lb) = gallons recovered x concentration (µg/L)
x conversion factor (8.344E-9 lb-L/µg-gallon).

[3]Nondetectable influent concentrations assumed to be 50% of the laboratory's lower reporting limit.

[4]Cumulative mass (lb) = mass removal between sampling visits (lb) + previous cumulative total (lb).

Totalizer data not recorded on 8/20/15; value is estimated based on average daily flow

DEFINITIONS:

-- = not analyzed, measured, or calculated
< = not detected at the concentration indicated
µg/L = micrograms per liter
GRPH = gasoline-range petroleum hydrocarbons
lb = pound

Table 1-4
Vapor Stream Analytical Results
Unit 1 - TOC Property
TOC Holdings Co. Facility No. 01-176
24205 56th Avenue West
Mountlake Terrace, WA

	Influent Vapor Samples[1] (Sample ID: 1VINF)					Effluent Vapor Samples[2] (Sample ID: 1VEFF)					
	NWTPH-Gx	SW8021B				NWTPH-Gx	SW8021B				
Sample Date	Gasoline Range mg/m^3	Benzene mg/m^3	Toluene mg/m^3	Ethylbenzene mg/m^3	Xylene Total mg/m^3	Gasoline Range mg/m^3	Benzene mg/m^3	Toluene mg/m^3	Ethylbenzene mg/m^3	Xylene Total mg/m^3	GRPH DRE[3] %
10/2/2012	1,600	2	10	5.5	26	<10	<0.1	<0.1	<0.1	<0.3	99.7
10/10/2012	2,600	2.3	13	8.7	37	<10	<0.1	0.2	<0.1	<0.3	99.8
10/17/2012	3,400	3	9.4	11	42	<10	<0.1	<0.1	<0.1	<0.3	99.9
10/24/2012	2,400	1.5	7	9.4	39	<10	<0.1	<0.1	<0.1	<0.3	99.8
11/7/2012	1,700	<0.5	7	7.3	37	<10	<0.1	<0.1	<0.1	<0.3	99.7
12/5/2012	150	<0.1	0.23	<0.1	3.5	<10	<0.1	<0.1	<0.1	<0.3	96.7
1/8/2013	35	<0.1	0.19	0.18	0.86	<10	<0.1	0.16	<0.1	<0.3	85.7
2/5/2013	53	<0.1	0.3	0.13	0.78	<10	<0.1	<0.1	<0.1	<0.3	90.6
3/4/2013	<10	<0.1	0.1	0.1	0.69	<10	<0.1	<0.1	<0.1	<0.3	-
4/3/2013	14	<0.1	0.18	0.14	0.9	<10	<0.1	<0.1	<0.1	<0.3	64.3
5/8/2013	22	<0.1	0.23	<0.1	0.35	<10	<0.1	<0.1	<0.1	<0.3	77.3
6/5/2013	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	-
7/2/2013	26	<0.1	0.24	<0.1	0.48	<10	<0.1	<0.1	<0.1	<0.3	80.8
8/6/2013	31	<0.1	0.21	0.14	0.79	<10	<0.1	<0.1	<0.1	<0.3	83.9
9/4/2013	580	<0.1	5	<0.1	22	<10	<0.1	<0.1	<0.1	<0.3	99.1
10/7/2013	710	<0.1	5.7	<0.1	22	<10	<0.1	<0.1	<0.1	<0.3	99.3
11/6/2013	240	<0.1	1.6	<0.1	6.4	<10	<0.1	<0.1	<0.1	<0.3	97.9
12/3/2013	740	<0.1	6.3	<0.1	19	<10	<0.1	<0.1	<0.1	<0.3	99.3
1/31/2014	37	<0.1	0.4	<0.1	0.75	<10	<0.1	<0.1	<0.1	<0.3	86.5
2/7/2014	110	<0.1	0.77	<0.1	2.2	<10	<0.1	<0.1	<0.1	<0.3	95.5
3/19/2014	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	-
4/18/2014	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	-

Table 1-4
Vapor Stream Analytical Results
Unit 1 - TOC Property
TOC Holdings Co. Facility No. 01-176
24205 56th Avenue West
Mountlake Terrace, WA

	Influent Vapor Samples[1] (Sample ID: 1VINF)					Effluent Vapor Samples[2] (Sample ID: 1VEFF)					
	NWTPH-Gx	SW8021B				NWTPH-Gx	SW8021B				
Sample Date	Gasoline Range mg/m³	Benzene mg/m³	Toluene mg/m³	Ethylbenzene mg/m³	Xylene Total mg/m³	Gasoline Range mg/m³	Benzene mg/m³	Toluene mg/m³	Ethylbenzene mg/m³	Xylene Total mg/m³	GRPH DRE[3] %
5/19/2014	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	-
6/16/2014	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	-
7/9/2014	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	-
8/11/2014	19	<0.1	0.12	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	73.7
9/17/2014	140	<0.1	0.23	0.54	1.6	<10	<0.1	<0.1	<0.1	<0.3	96.4
10/22/2014	220	<0.1	3	<0.1	3.3	<10	<0.1	<0.1	<0.1	<0.3	97.7
11/18/2014	63	<0.1	0.57	<0.1	0.72	<10	<0.1	<0.1	<0.1	<0.3	92.1
12/9/2014	15	<0.1	0.29	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	66.7
1/13/2015	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	-
2/18/2015	CATOX OFF - SAMPLED AT STACK					<10	<0.1	<0.1	<0.1	<0.3	-
3/11/2015	CATOX OFF - SAMPLED AT STACK					<10	<0.1	<0.1	<0.1	<0.3	-
4/23/2015	CATOX OFF - SAMPLED AT STACK					<10	<0.1	<0.1	<0.1	<0.3	-
5/19/2015	CATOX OFF - SAMPLED AT STACK					<10	<0.1	<0.1	<0.1	<0.3	-
6/8/2015	CATOX OFF - SAMPLED AT STACK					<10	<0.1	<0.1	<0.1	<0.3	-
7/28/2015	CATOX OFF - SAMPLED AT STACK					14	<0.1	<0.1	<0.1	<0.3	-
8/20/2015	CATOX OFF - SAMPLED AT STACK					43	<0.1	0.42	0.13	0.34	-
9/21/2015	CATOX OFF - SAMPLED AT STACK					120	<0.1	1.1	0.36	1	-
10/28/2015	CATOX OFF - SAMPLED AT STACK					190	<0.1	1.4	0.68	1.4	-
11/23/2015	CATOX OFF - SAMPLED AT STACK					81	<0.1	<0.1	0.21	0.93	-
12/21/2015	CATOX OFF - SAMPLED AT STACK					<10	<0.1	<0.1	<0.1	<0.3	-
1/20/2016	CATOX OFF - SAMPLED AT STACK					<10	<0.1	<0.1	<0.1	<0.3	-
1/29/2016	CATOX OFF - SAMPLED AT STACK					20	<0.1	0.16	<0.1	0.77	-
2/3/2016	CATOX OFF - SAMPLED AT STACK					<10	<0.1	<0.1	<0.1	<0.3	
2/23/2016	CATOX OFF - SAMPLED AT STACK					11	<0.1	<0.1	<0.1	<0.3	-
3/21/2016	CATOX OFF - SAMPLED AT STACK					<10	<0.1	<0.1	<0.1	<0.3	-
4/22/2016	CATOX OFF - SAMPLED AT STACK					<10	<0.1	0.15	<0.1	<0.3	-

Table 1-4
Vapor Stream Analytical Results
Unit 1 - TOC Property
TOC Holdings Co. Facility No. 01-176
24205 56th Avenue West
Mountlake Terrace, WA

	Influent Vapor Samples[1] (Sample ID: 1VINF)					Effluent Vapor Samples[2] (Sample ID: 1VEFF)					
	NWTPH-Gx	SW8021B				NWTPH-Gx	SW8021B				
Sample Date	Gasoline Range mg/m^3	Benzene mg/m^3	Toluene mg/m^3	Ethylbenzene mg/m^3	Xylene Total mg/m^3	Gasoline Range mg/m^3	Benzene mg/m^3	Toluene mg/m^3	Ethylbenzene mg/m^3	Xylene Total mg/m^3	GRPH DRE[3] %
5/27/2016	CATOX OFF - SAMPLED AT STACK					<10	<0.1	<0.1	<0.1	<0.3	-
6/29/2016	CATOX OFF - SAMPLED AT STACK					<10	<0.1	<0.1	<0.1	<0.3	-
7/20/2016	CATOX OFF - SAMPLED AT STACK					<10	<0.1	<0.1	<0.1	<0.3	-
8/15/2016	CATOX OFF - SAMPLED AT STACK					<10	<0.1	<0.1	<0.1	<0.3	-
9/21/2016	CATOX OFF - SAMPLED AT STACK					27	<0.1	<0.1	<0.1	<0.3	-
10/25/2016	CATOX OFF - SAMPLED AT STACK					40	<0.1	0.33	0.12	<0.3	-
11/21/2016	CATOX OFF - SAMPLED AT STACK					24	<0.1	<0.1	<0.1	<0.3	-
12/20/2016	CATOX OFF - SAMPLED AT STACK					<10	<0.1	<0.1	<0.1	<0.3	-
PSCAA NOC-10384 Restrictions and Conditions						**max 148.2[3]**	**1.6[4]**	**NS**	**NS**	**NS**	**95%[3][5]**

Notes:

Red denotes concentration exceeds PSCAA Conditions

Samples analyzed by Fremont Analytical of Seattle, Washington.

[1] Influent vapor samples collected from SVE port on the pressure side of the blower

[2] Effluent vapor samples collected from the sample port on the effluent stack

[3] DRE shall be at least 95% unless the effluent GRPH concentration does not exceed 50 ppmv (or 148.2 mg/m^3 at standard temperature and pressure assuming an average molecular weight for GRPH of 72.5)

[4] The PSCAA NOC threshold concentration for uncontrolled benzene emission is 0.5 ppmv, which is equivalent to 1.6 mg/m^3 at standard temperature and pressure see below for conversion formula

[5] DRE is calculated by [GRPH inf-GRPH eff]/[GRPH inf] x 100. For results below detection limit, 50% of the value of the detection limit is used in the calculation.

- = not measured; not analyzed; or not applicable

< = not detected at a concentration exceeding the laboratory MRL shown

mg/m^3 = milligrams per cubic meter

CATOX - catalytic oxidizer

DRE = destruction removal efficiency

GRPH = gasoline-range petroleum hydrocarbons

NOC = Notice of Construction

NS = No standard

NWTPH = Northwest Total Petroleum Hydrocarbon

ppmv = parts per million by volume

PSCAA = Puget Sound Clean Air Agency

SVE = soil vapor extraction

Formula to convert concentration in mg/m^3 to ppmv =

(24.45 x mg/m^3)/gram molecular weight of substance

where mg/m^3 = concentration of substance in milligrams per cubic meter

formula assumes standard temperature and pressure.

Source: ACGIH. 2015. Threshold Limit Values (TLVs) and Biological Exposure Indices (BEIs).

Table 1-5
Liquid Stream Analytical Results
Unit 1 - TOC Property
TOC Holdings Co. Facility No. 01-176
24205 56th Avenue West
Mountlake Terrace, WA

	Groundwater Influent Sample[1] (Sample ID: 1WINF)					Groundwater Midstream Sample[2] (Sample ID: 1GAC1)					Groundwater Effluent to POTW Discharge Sample[3] (Sample ID: 1WEFF)							
	NWTPH-Gx	SW8021B				NWTPH-Gx	SW8021B				NWTPH-Gx	SW8021B					EPA 200.8	Field
Sample Date	Gasoline Range µg/L	Benzene µg/L	Toluene µg/L	Ethylbenzene µg/L	Xylene Total µg/L	Gasoline Range µg/L	Benzene µg/L	Toluene µg/L	Ethylbenzene µg/L	Xylene Total µg/L	Gasoline Range µg/L	Benzene µg/L	Toluene µg/L	Ethylbenzene µg/L	Xylene Total µg/L	Total BTEX µg/L	Lead µg/L	pH pH
10/10/2012	18,000	25	370	280	4,500	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.59
11/7/2012	6,100	8.4	99	24	1,200	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.61
12/5/2012	14,000	12	250	200	2,700	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	19.4	7.19
1/8/2013	19,000	60	400	520	3,600	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.71
2/5/2013	8,200	11	83	61	1,200	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	6.86
3/4/2013	19,000	20	200	460	3,900	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.88
4/3/2013	11,000	27	83	<40	2,500	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	6.68
5/8/2013	20,000	11	450	<10	3,400	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.06
6/5/2013	3,200	4	35	<1	350	<100	<1	<1	<1	<3	<100	<1	<1	<1	3.1	<6	3.33	6.8
7/2/2013	17,000	9.9	290	190	3,200	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	6.74
8/6/2013	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	6.89
9/4/2013	2,400	1.1	18	<1	230	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	6.41
10/7/2013	1,100	1.1	12	<1	86	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	6.89
11/6/2013	3,800	27	150	26	810	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	6.94
12/3/2013	240	<1	3.7	<1	19	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	7.05	6.98
1/31/2014	6,600	19	370	<1	1,000	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	-
2/7/2014	760	1	6.6	<1	54	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	6.71
3/19/2014	6,100	2.9	160	<1	1,100	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	8.49
4/18/2014	4,300	<1	100	<1	650	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	6.65
5/19/2014	2,700	2.5	62	<1	310	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	6.9
6/16/2014	3,500	2	86	<1	520	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	1.04	6.59
7/9/2014	2,500	1.7	358	<1	350	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.2
8/12/2014	180	<1	1.5	<1	15	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.29
9/17/2014	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.25
10/22/2014	<100	<1	1.4	<1	4	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.19
11/17/2014	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.56
12/9/2014	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	13.3	7.29
1/13/2015	1,500	<1	35	<1	270	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.37
2/18/2015	150	<1	3.3	<1	25	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.25
3/11/2015	<100	<1	<1	<1	8.5	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.15
4/23/2015	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.25
5/19/2015	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.38

Table 1-5
Liquid Stream Analytical Results
Unit 1 - TOC Property
TOC Holdings Co. Facility No. 01-176
24205 56th Avenue West
Mountlake Terrace, WA

	Groundwater Influent Sample[1] (Sample ID: 1WINF)					Groundwater Midstream Sample[2] (Sample ID: 1GAC1)					Groundwater Effluent to POTW Discharge Sample[3] (Sample ID: 1WEFF)							
	NWTPH-Gx	SW8021B				NWTPH-Gx	SW8021B				NWTPH-Gx	SW8021B					EPA 200.8	Field
Sample Date	Gasoline Range	Benzene	Toluene	Ethylbenzene	Xylene Total	Gasoline Range	Benzene	Toluene	Ethylbenzene	Xylene Total	Gasoline Range	Benzene	Toluene	Ethylbenzene	Xylene Total	Total BTEX	Lead	pH
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	pH
6/8/2015	180	<1	2.8	<1	28	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	5.64	6.5
7/28/2015	<100	<1	<1	<1	<3	-	-	-	-	-	<100	<1	<1	<1	<3	<6	-	6.3
8/20/2015	<100	<1	<1	<1	<3	-	-	-	-	-	<100	<1	<1	<1	<3	<6	-	6.5
9/21/2015	<100	<1	<1	<1	<3	-	-	-	-	-	<100	<1	<1	<1	<3	<6		6.7
10/28/2015	<100	<1	<1	<1	<3	-	-	-	-	-	<100	<1	<1	<1	<3	<6	4.99	6.8
11/23/2015	<100	<1	<1	1.1	<3	-	-	-	-	-	<100	<1	<1	<1	<3	<6		7.0 [4]
12/21/2015	130	<1	5.7	1.8	25	-	-	-	-	-	<100	<1	<1	<1	<3	<6	<1	7.0
1/20/2016	250	<1	3.7	<1	39	-	-	-	-	-	<100	<1	<1	<1	<3	<6		7.0
2/23/2016	300	<1	2.8	2	48	-	-	-	-	-	<100	<1	<1	<1	<3	<6		7.0
3/21/2016	<100	<1	<1	1.1	4.2	-	-	-	-	-	<100	<1	<1	<1	<3	<6	3.04	7.0
4/22/2016	<100	<1	<1	<1	<3	-	-	-	-	-	<100	<1	<1	<1	<3	<6		7.0
5/27/2016	620	<1	9.5	15	140	-	-	-	-	-	<100	<1	<1	<1	<3	<6		7.0
6/29/2016	<100	<1	<1	<1	<3	-	-	-	-	-	<100	<1	<1	<1	<3	<6		7.0
7/20/2016	<100	<1	<1	<1	<3	-	-	-	-	-	<100	<1	<1	<1	<3	<6		7.0
8/15/2016	<100	<1	<1	<1	<3	-	-	-	-	-	<100	<1	<1	<1	<3	<6		7.0
9/21/2016	<100	<1	<1	<1	<3	-	-	-	-	-	<100	<1	<1	<1	<3	<6	<1	7.0
10/25/2016	<100	<1	<1	<1	<3	-	-	-	-	-	<100	<1	<1	<1	<3	<6		7.0
11/21/2016	<100	<1	<1	<1	<3	-	-	-	-	-	<100	<1	<1	<1	<3	<6		7.0
12/20/2016	<100	<1	<1	<1	<3	-	-	-	-	-	<100	<1	<1	<1	<3	<6	<1	7.0
WA Discharge Permit ST0007384 Effluent Limits											1,000	5	NS	NS	NS	100	1,090	6 to 10

Notes:

Red denotes measurement falls outside of the range stipulated in the discharge permit.

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

[1]Three GAC vessels are operated in series mode. 1WINF sample is collected prior to first GAC vessel in series

[2] 1GAC1 sample is collected downstream of GAC-1 and upstream of the GAC-2 vessels in series

[3] Effluent sample collected downstream of third GAC vessel in series, which represents the quality of water discharged to the POTW

[4] pH measured on December 3, 2015

- = not measured; not analyzed; or not applicable

< = not detected at a concentration exceeding the laboratory MRL shown

µg/L = micrograms per liter

EPA = U.S. Environmental Protection Agency

GAC = granular activated carbon

NS = no standard

NWTPH = Northwest Total Petroleum Hydrocarbon

POTW = publicly-owned treatment works

Table 2-1
Summary of System Performance at the Close of Q4 2016
Unit 2 - TOC Farmasonis Property
TOC Holdings Co. Facility No. 01-176
24225 56th Avenue West
Mountlake Terrace, WA

Reporting Period			Days In Reporting Period	Days In Operation	System Run Time (%)	Volume of Treated Groundwater Discharged (gallons)	Average Daily Groundwater Recovery Rate (gallons per day)	GRPH Aqueous-Phase Removal (lb)	GRPH Vapor-Phase Removal (lb)
Start Date	End Date								
10/03/12	12/05/12		63	51.7	82%	12,461	197.8	0.01	671.8
12/05/12	03/04/13		89	52.5	59%	5,900	66.3	0.002	12.8
03/04/13	06/05/13		93	67.1	72%	106,670	1,147	0.356	7.4
06/05/13	09/04/13		91	82.2	90%	123,303	1,355	0.157	9.3
09/04/13	12/03/13		90	89.9	100%	89,204	991.2	0.037	163.5
12/03/13	01/13/14		41	41.1	100%	29,087	709	0.012	73.0
01/13/14	03/18/14		64	41.8	65%	29,578	462.2	0.012	49.7
03/18/14	06/16/14		90	85.4	95%	167,292	1,858.8	0.070	9.7
06/16/14	09/18/14		94	90.7	97%	120,848	1,285.6	0.050	6.2
09/18/14	12/09/14		82	53.9	66%	19,301	235.4	0.008	3.3
12/09/14	03/11/15	[1]	92	43.8	48%	39,860	433.3	0.017	7.1
03/11/15	06/08/15	[1]	89	81.1	91%	160,177	1,799.7	0.067	2.4
06/08/15	09/21/15		105	93.9	89%	84,900	808.6	0.035	6.8
09/21/15	12/21/15		91	71.7	79%	18,651	205.0	0.008	10.3
12/21/15	03/21/16		91	75.8	83%	69,853	767.6	0.029	15.7
03/21/16	06/29/16		100	89.3	89%	157,696	1,577.0	0.066	6.2
06/29/16	09/21/16		84	71.6	85%	47,571	566.3	0.020	5.1
09/21/16	12/20/16		90	81.1	90%	25,807	286.7	0.011	6.4
Cumulative Total or Lifetime Average			**1,539**	**1,265**	**82%**	**1,308,157**	**819.6**	**0.96**	**1,066.6**

NOTES:

= data for current reporting period

% = percent
GRPH = gasoline-range petroleum hydrocarbons
lb = pounds
SVE = soil vapor extraction

[1] An air sample was not collected during the March 11, 2015 site visit because the blower was not operational. Removal is estimated based on extrapolation to April vapor sample

Table 2-2
Vapor Stream - System Performance Monitoring Data
Unit 2 - TOC Farmasonis Property
TOC Holdings Co. Facility No. 01-176
24225 56th Avenue West
Mountlake Terrace, WA

Date	Run Time		SVE Parameters		Catalytic Oxidizer		GRPH Removal		
	SVE Hours	Total Time in Operation	SVE-Prefilter Vacuum	Air Flow Rate[1]	Catalyst Entrance Temp.	Catalyst Exit Temp.	Influent/Effluent Concentration[2]	Daily Mass Removal Rate[3]	Cumulative Mass Recovered[4]
	(hours)	(days)	(iow)	(scfm)	(°C)	(°C)	(mg/m^3)	(lb/day)	(lb)
10/03/12	15.6	0.7	68	149.1	330	350	340	4.56	0.000
10/10/12	73.7	3.1	86	134.1	330	363	1,300	18.71	57.5
10/17/12	242.0	10.1	76	135.8	330	376	1,300	23.66	223.4
10/24/12	410.7	17.1	72	137.2	330	355	1,100	21.47	374.3
10/25/12	434.7	18.1	73	139.2	330	354	--	--	--
11/06/12	722.8	30.1	74	137.8	330	358	--	--	
11/07/12	748.2	31.2	74	138.6	330	352	660	15.00	585.3
12/05/12	1,257.4	52.4	74	124.3	330	338	15	4.08	671.8
12/06/12	1,266.4	52.8	75	135.6	--	--	--	--	
01/08/13	1,989.7	82.9	27	164.7	330	344	15	0.29	680.7
01/09/13	2,012.1	83.8	32	163.5	330	336	--	--	--
01/17/13	2,037.9	84.9	27	166.5	331	336	--	--	--
02/05/13	2,490.2	103.8	33	159.5	330	335	<10	0.18	684.5
02/06/13	2,514.5	104.8	38	157.5	330	335	--	--	--
03/04/13	2,517.2	104.9	31	162.9	330	335	<10	0.11	684.6
03/12/13	2,705.4	112.7	32	161.7	330	335	--	--	--
04/03/13	3,230.7	134.6	33	166.8	330	335	<10	0.11	687.9
05/08/13	3,454.7	143.9	33	164.5	330	338	<10	0.11	688.9
06/05/13	4,127.1	172.0	36	158.9	330	335	<10	0.11	692.0
06/19/13	4,438.7	184.9	34	166.7	330	335	--	--	--
07/02/13	4,746.1	197.8	32	164.2	330	335	<10	0.11	694.8
08/06/13	5,403.6	225.2	10	175.5	330	335	<10	0.11	697.9
08/09/13	5,475.4	228.1	20	168.6	330	335	--	--	--
09/04/13	6,098.7	254.1	20	170.1	330	335	<10	0.12	701.3
10/07/13	6,890.0	287.1	34	163.9	330	336	41	0.65	722.9
10/14/13	7,062.9	294.3	35	165.2	330	336	--	--	--
10/15/13	7,088.0	295.3	74	146.5	330	342	--	--	--
10/16/13	7,111.3	296.3	67	147.6	330	340	--	--	--
11/06/13	7,610.8	317.1	73	150.7	330	338	140	2.27	791.0
11/07/13	7,635.3	318.1	65	148.2	330	338	--	--	--
12/03/13	8,257.0	344.0	65	154.2	330	337	130	2.74	864.8
12/04/13	8,287.9	345.3	66	154.2	330	337	--	--	--
01/13/14	9,242.4	385.1	71	147.8	330	336	66	1.78	937.8
01/23/14	9,485.7	395.2	69	--	--	--	--	--	--

Table 2-2
Vapor Stream - System Performance Monitoring Data
Unit 2 - TOC Farmasonis Property
TOC Holdings Co. Facility No. 01-176
24225 56th Avenue West
Mountlake Terrace, WA

Date	Run Time		SVE Parameters		Catalytic Oxidizer		GRPH Removal		
	SVE Hours	Total Time in Operation	SVE-Prefilter Vacuum	Air Flow Rate[1]	Catalyst Entrance Temp.	Catalyst Exit Temp.	Influent/Effluent Concentration[2]	Daily Mass Removal Rate[3]	Cumulative Mass Recovered[4]
	(hours)	(days)	(iow)	(scfm)	(°C)	(°C)	(mg/m^3)	(lb/day)	(lb)
01/31/14	9,675.8	403.2	68	147.3	330	335	--	--	--
02/07/14	9,694.4	403.9	74	144.7	330	335	82	1.51	966.3
03/18/14	10,246.4	--	74	--	330	334	26	0.87	987.5
04/17/14	10,859.0	452.5	68	146.6	330	336	<10	0.23	993.2
05/20/14	11,645.2	485.2	72	146.9	330	338	<10	0.07	995.4
06/16/14	12,296.4	512.4	62	152.4	330	338	<10	0.07	997.2
07/10/14	12,799.7	533.3	62	150.2	330	338	<10	0.07	998.6
08/12/14	13,588.2	566.2	61	149.4	330	338	<10	0.07	1000.9
09/18/14	14,474.1	603.1	48	158.3	CATOX OFF		<10	0.07	1003.4
10/22/14	14,721.8	613.4	45	72.7	CATOX OFF		<10	0.05	1004.0
11/17/14	15,242.7	635.1	47	166.6	CATOX OFF		<10	0.05	1005.1
12/09/14	15,767.5	657.0	49	156.5	CATOX OFF		<10	0.07	1006.7
01/13/15	16,495.6	687.3	56	156.0	CATOX OFF		<10	0.07	1008.8
02/18/15	16,818.0	700.8	--	--	BLOWER DOWN		--	--	--
03/11/15	16,818.0	700.8	--	--			--	--	--
04/22/15	17,642.7	735.1	59	149.5	CATOX OFF		<10	0.10	1013.8
05/19/15	18,284.4	761.9	57	159.5	CATOX OFF		<10	0.03	1014.7
06/08/15	18,764.9	781.9	65	158.8	CATOX OFF		<10	0.07	1016.1
07/28/15	19,814.3	825.6	50	163.9	CATOX OFF		<10	0.07	1019.3
08/20/15	20,367.2	848.6	54	161.1	CATOX OFF		<10	0.07	1021.0
09/21/15	21,018.3	875.8	56	162.4	CATOX OFF		<10	0.07	1022.9
10/28/15	21,756.8	906.5	53	162.4	CATOX OFF		<10	0.07	1025.2
11/23/15	22,374.4	932.3	55	160.7	CATOX OFF		<10	0.07	1027.1
12/21/15	22,738.4	947.4	51	160.1	CATOX OFF		52	0.41	1033.3
01/20/16	23,458.8	977.5	53	161.1	CATOX OFF		<10	0.41	1045.6
02/23/16	23,915.0	996.5	50	162.4	CATOX OFF		<10	0.07	1047.0
03/21/16	24,557.2	1023.2	45	158.8	CATOX OFF		<10	0.07	1049.0
04/22/16	25,325.0	1055.2	40	147.2	CATOX OFF		<10	0.07	1051.2
05/27/16	25,909.3	1079.6	49	161.3	CATOX OFF		<10	0.07	1052.9
06/29/16	26,700.2	1112.5	42	147.8	CATOX OFF		<10	0.07	1055.1
07/20/16	27,204.2	1133.5	40	146.7	CATOX OFF		<10	0.07	1056.5

Table 2-2
Vapor Stream - System Performance Monitoring Data
Unit 2 - TOC Farmasonis Property
TOC Holdings Co. Facility No. 01-176
24225 56th Avenue West
Mountlake Terrace, WA

Date	Run Time		SVE Parameters		Catalytic Oxidizer		GRPH Removal		
	SVE Hours	Total Time in Operation	SVE-Prefilter Vacuum	Air Flow Rate[1]	Catalyst Entrance Temp.	Catalyst Exit Temp.	Influent/Effluent Concentration[2]	Daily Mass Removal Rate[3]	Cumulative Mass Recovered[4]
	(hours)	(days)	(iow)	(scfm)	(°C)	(°C)	(mg/m^3)	(lb/day)	(lb)
08/15/16	27,828.1	1159.5	56	171.8	CATOX OFF		<10	0.07	1058.4
09/21/16	28,419.8	1184.2	44	166.5	CATOX OFF		<10	0.08	1060.3
10/25/16	29,238.6	1218.3	45	175.5	CATOX OFF		<10	0.08	1062.9
11/21/16	29,885.9	1245.2	45	178.0	CATOX OFF		<10	0.08	1065.0
12/20/16	30,365.5	1265.2	50	177.9	CATOX OFF		<10	0.08	1066.6
PSCAA NOC- 10384 Conditions				**max. 350**	**min. 240**	**max. 620**			

NOTES:

[1]Air flow rates calculated using an averaging flow sensor (Dwyer Model DS). Air flow rates between 2/7/14 and 12/09/14 calculated from data. Air flow rates from 1/12/15 forward calculated from averaging flow sensor.

[2]Were termed "influent" vapor samples and were collected from SVE sample port prior to air treatment while CATOX was still operating prior to September 2014. Were termed "effluent" samples after CATOX was shut down starting in September 2014

[3]Daily mass removal rate (lb/day) = average concentration (mg/m^3) x average flow rate (scfm) x conversion (8.99x10-5 lb-m^3-min/mg-ft^3-day).

[4]Cumulative mass removed (lb) = daily removal rate (lb/day) x time in operation (days) + previous cumulative total (lb).

-- = not analyzed, measured, or calculated
GRPH = gasoline-range petroleum hydrocarbons
iow = inches of water
lb = pounds
lb/day = pounds per day
mg/m^3 = milligrams per cubic meter
NOC - Notice of Construction
PSCAA = Puget Sound Clean Air Agency
scfm = standard cubic feet per minute
SVE = soil vapor extraction

Table 2-3
Liquid Stream - System Performance Monitoring Data
Unit 2 - TOC Farmasonis Property
TOC Holdings Co. Facility No. 01-176
24225 56th Avenue West
Mountlake Terrace, WA

	Extracted Groundwater			Hydrocarbon Recovery - Aqueous-Phase		
				GRPH Recovery - Aqueous-Phase		
Date	Discharge Flow Totalizer (gallons)	Treated Between Visits (gallons)	Average Daily Flow Rate Between Visits (gallons per day)	Influent GRPH Concentration[1] (µg/L)	GRPH Removed[2][3] (lb)	Cumulative GRPH Removed[3][4] (lb)
10/03/12	397.8	0	0	--	--	--
10/10/12	562.6	165	24	<100	0.000	0.000
10/17/12	5,392.6	4,830	690	--	--	--
10/24/12	8,170.9	2,778	397	--	--	--
10/25/12	8,580.4	410	410	--	--	--
11/06/12	10,624.2	2,044	170	--	--	--
11/07/12	10,630.5	6	6	<100	0.004	0.004
12/05/12	12,858.4	2,228	80	<100	0.001	0.005
12/06/12	14,221.5	1,363	1,363	--	--	--
01/08/13	18,643.2	4,422	134	<100	0.002	0.008
01/09/13	18,651.6	8	8	--	--	--
01/17/13	18,753.9	102	13	--	--	--
02/05/13	18,753.9	0	0	<100	0.000	0.008
03/12/13	18,758.0	4	0	--	--	--
03/13/13	18,758.0	0	0	1,100	0.000	0.008
04/03/13	24,667.4	5,909	281	740	0.045	0.053
05/08/13	90,733.6	66,066	1,888	<100	0.218	0.27
06/05/13	125,427.8	34,694	1,239	590	0.093	0.36
06/19/13	131,990.5	6,563	469	--	--	--
07/02/13	172,454.5	40,464	3,113	<100	0.126	0.49
08/06/13	223,496.3	51,042	1,458	<100	0.021	0.51
08/09/13	226,651.9	3,156	1,052	--	--	
09/04/13	248,730.9	22,079	849	<100	0.011	0.52
10/07/13	269,136.3	20,405	618	<100	0.009	0.53
10/14/13	273,636.3	4,500	643	--	--	--
10/15/13	275,837.1	2,201	2,201	--	--	--
10/16/13	277,480.5	1,643	1,643	--	--	--
11/06/13	308,993.4	31,513	1,501	<100	0.017	0.55
11/07/13	310,249.2	1,256	1,256	--	--	--
12/03/13	337,935.2	27,686	1,065	<100	0.012	0.56
12/04/13	339,243.0	1,308	1,308	--	--	--
01/13/14	367,022.0	27,779	694	<100	0.012	0.57
01/31/14	376,637.4	9,615	534	--	--	--
02/07/14	376,875.7	238	34	<100	0.004	0.57
03/18/14	396,600.0	19,724	506	<100	0.008	0.58
04/17/14	424,646.0	28,046	935	<100	0.012	0.59
05/20/14	497,115.0	72,469	2,196	<100	0.030	0.62
06/16/14	563,892.0	66,777	2,473	<100	0.028	0.65
07/09/14	603,616.0	39,724	1,727	<100	0.017	0.67
08/12/14	652,922.0	49,306	1,450	<100	0.021	0.69
09/17/14	684,740.0	31,818	884	<100	0.013	0.70
10/22/14	687,370.0	2,630	75	<100	0.001	0.70
11/17/14	695,157.0	7,787	300	<100	0.003	0.71
12/09/14	704,041.0	8,884	404	<100	0.004	0.71

Table 2-3
Liquid Stream - System Performance Monitoring Data
Unit 2 - TOC Farmasonis Property
TOC Holdings Co. Facility No. 01-176
24225 56th Avenue West
Mountlake Terrace, WA

	Extracted Groundwater			Hydrocarbon Recovery - Aqueous-Phase		
				GRPH Recovery - Aqueous-Phase		
Date	Discharge Flow Totalizer (gallons)	Treated Between Visits (gallons)	Average Daily Flow Rate Between Visits (gallons per day)	Influent GRPH Concentration[1] (µg/L)	GRPH Removed[2][3] (lb)	Cumulative GRPH Removed[3][4] (lb)
01/13/15	725,601.0	21,560	616	<100	0.009	0.72
02/18/15	736,017.0	10,416	289	<100	0.004	0.72
03/11/15	743,901.0	7,884	375	<100	0.003	0.73
04/23/15	816,311.0	72,410	1,684	<100	0.030	0.76
05/19/15	867,016.0	50,705	1,950	<100	0.021	0.78
06/08/15	904,078.0	37,062	1,853	<100	0.015	0.79
07/28/15	958,806.5	54,729	1,095	<100	0.023	0.82
08/20/15	975,527.1	16,721	727	<100	0.007	0.82
09/21/15	988,977.5	13,450	420	<100	0.006	0.83
10/28/15	998,059.9	9,082	245	<100	0.004	0.83
11/23/15	1,004,157.7	6,098	235	<100	0.003	0.84
12/21/15	1,007,628.0	3,470	124	<100	0.001	0.84
01/20/16	1,022,611.4	14,983	499	<100	0.006	0.84
02/23/16	1,039,777.1	17,166	505	<100	0.007	0.85
03/21/16	1,077,480.5	37,703	1,396	<100	0.016	0.87
04/22/16	1,141,293.7	63,813	1,994	<100	0.027	0.89
05/27/16	1,188,059.7	46,766	1,336	<100	0.020	0.91
06/29/16	1,235,176.7	47,117	1,428	<100	0.020	0.93
07/20/16	1,255,600.8	20,424	973	<100	0.009	0.94
08/15/16	1,271,823.6	16,223	624	<100	0.007	0.95
09/21/16	1,282,748.1	10,925	295	<100	0.005	0.95
10/25/16	1,292,979.9	10,232	301	<100	0.004	0.96
11/21/06	1,300,924.6	7,945	-2	<100	0.003	0.96
12/20/16	1,308,555.2	7,631	2	<100	0.003	0.96
State Waste Discharge Permit ST0007384 Limits			**7,000**			

NOTES:

Sample Analysis conducted by Friedman & Bruya, Inc.

[1]Influent samples collected prior to treatment with liquid-phase granular activated carbon.

[2] Mass removal weight (lb) = gallons recovered x concentration (µg/L)
x conversion factor (8.344E-9 lb-L/µg-gallon).

[3]Nondetectable influent concentrations assumed to be 50% of the laboratory's lower reporting limit.

[4]Cumulative mass (lb) = mass removal between sampling visits (lb) + previous cumulative total (lb).

DEFINITIONS:

-- = not analyzed, measured, or calculated

< = not detected at the concentration indicated

µg/L = micrograms per liter

GRPH = gasoline-range petroleum hydrocarbons

lb = pound

Table 2-4
Vapor Stream Analytical Results
Unit 2 - TOC Farmasonis Property
TOC Holdings Co. Facility No. 01-176
24225 56th Avenue West
Mountlake Terrace, WA

	Influent Vapor Samples[1] (Sample ID: 2VINF)					Effluent Vapor Samples[2] (Sample ID: 2VEFF)					
	NWTPH-Gx	SW8021B				NWTPH-Gx	SW8021B				
Sample Date	Gasoline Range mg/m³	Benzene mg/m³	Toluene mg/m³	Ethylbenzene mg/m³	Xylene Total mg/m³	Gasoline Range mg/m³	Benzene mg/m³	Toluene mg/m³	Ethylbenzene mg/m³	Xylene Total mg/m³	GRPH DRE[3] %
10/03/12	340	0.44	1.6	0.96	1.7	<10	<0.1	0.17	<0.1	<0.3	98.5
10/10/12	1,300	0.77	<0.5	4	9.6	<10	<0.1	0.21	<0.1	<0.3	99.6
10/17/12	1,300	0.55	<0.5	3.7	7.9	<10	<0.1	<0.1	<0.1	<0.3	99.6
10/24/12	1,100	0.5	3.1	<0.1	11	<10	<0.1	<0.1	<0.1	<0.3	99.5
11/07/12	660	<0.1	2.7	<0.1	7.1	<10	<0.1	<0.1	<0.1	<0.3	99.2
12/05/12	15	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	66.7
01/08/13	15	<0.1	<0.1	<0.1	<0.3	<10	<0.1	0.1	<0.1	<0.3	66.7
02/05/13	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	--
03/04/13	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	--
04/03/13	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	--
05/08/13	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	--
06/05/13	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	--
07/02/13	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	--
08/06/13	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	--
09/04/13	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	--
10/07/13	41	<0.1	0.19	<0.1	-	<10	<0.1	<0.1	<0.1	<0.3	87.8
11/06/13	140	<0.1	0.52	<0.1	1.4	<10	<0.1	<0.1	<0.1	<0.3	96.4
12/03/13	130	<0.1	0.44	0.73	1.3	<10	<0.1	<0.1	<0.1	<0.3	96.2
01/13/14	66	<0.1	0.31	0.38	0.51	<10	<0.1	<0.1	<0.1	<0.3	92.4
02/07/14	82	<0.1	<0.1	0.73	0.65	<10	<0.1	<0.1	<0.1	<0.3	93.9
03/18/14	26	<0.1	<0.1	0.2	<0.3	<10	<0.1	<0.1	0.2	<0.3	80.8
04/17/14	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	--

Table 2-4
Vapor Stream Analytical Results
Unit 2 - TOC Farmasonis Property
TOC Holdings Co. Facility No. 01-176
24225 56th Avenue West
Mountlake Terrace, WA

	Influent Vapor Samples[1] (Sample ID: 2VINF)					Effluent Vapor Samples[2] (Sample ID: 2VEFF)					
	NWTPH-Gx	SW8021B				NWTPH-Gx	SW8021B				
Sample Date	Gasoline Range mg/m³	Benzene mg/m³	Toluene mg/m³	Ethylbenzene mg/m³	Xylene Total mg/m³	Gasoline Range mg/m³	Benzene mg/m³	Toluene mg/m³	Ethylbenzene mg/m³	Xylene Total mg/m³	GRPH DRE[3] %
05/20/14	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	--
06/16/14	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	--
07/09/14	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	--
08/11/14	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	--
09/17/14	CATOX OFF - SAMPLED AT STACK					<10	<0.1	<0.1	<0.1	<0.3	--
10/22/14	CATOX OFF - SAMPLED AT STACK					<10	<0.1	<0.1	<0.1	<0.3	--
11/18/14	CATOX OFF - SAMPLED AT STACK					<10	<0.1	<0.1	<0.1	<0.3	--
12/09/14	CATOX OFF - SAMPLED AT STACK					<10	<0.1	<0.1	<0.1	<0.3	--
01/13/15	CATOX OFF - SAMPLED AT STACK					<10	<0.1	<0.1	<0.1	<0.3	--
02/18/15	BLOWER DOWN - NO SAMPLE					-	-	-	-	-	--
03/11/15						-	-	-	-	-	--
04/23/15	CATOX OFF - SAMPLED AT STACK					<10	<0.1	<0.1	<0.1	<0.3	--
05/19/15	CATOX OFF - SAMPLED AT STACK					<10	<0.1	<0.1	<0.1	<0.3	--
06/08/15	CATOX OFF - SAMPLED AT STACK					<10	<0.1	<0.1	<0.1	<0.3	--
07/28/15	CATOX OFF - SAMPLED AT STACK					<10	<0.1	<0.1	<0.1	<0.3	--
08/20/15	CATOX OFF - SAMPLED AT STACK					<10	<0.1	<0.1	<0.1	<0.3	--
09/21/15	CATOX OFF - SAMPLED AT STACK					<10	<0.1	<0.1	<0.1	<0.3	--
10/28/15	CATOX OFF - SAMPLED AT STACK					<10	<0.1	<0.1	<0.1	<0.3	--
11/23/15	CATOX OFF - SAMPLED AT STACK					<10	<0.1	<0.1	<0.1	<0.3	--
12/21/15	CATOX OFF - SAMPLED AT STACK					52	<0.1	<0.1	0.45	0.48	--
01/20/16	CATOX OFF - SAMPLED AT STACK					<10	<0.1	<0.1	<0.1	<0.3	--
02/23/16	CATOX OFF - SAMPLED AT STACK					<10	<0.1	<0.1	<0.1	<0.3	--
03/21/16	CATOX OFF - SAMPLED AT STACK					<10	<0.1	<0.1	<0.1	<0.3	--

Table 2-4
Vapor Stream Analytical Results
Unit 2 - TOC Farmasonis Property
TOC Holdings Co. Facility No. 01-176
24225 56th Avenue West
Mountlake Terrace, WA

	Influent Vapor Samples[1] (Sample ID: 2VINF)					Effluent Vapor Samples[2] (Sample ID: 2VEFF)					
	NWTPH-Gx	SW8021B				NWTPH-Gx	SW8021B				
Sample Date	Gasoline Range mg/m^3	Benzene mg/m^3	Toluene mg/m^3	Ethylbenzene mg/m^3	Xylene Total mg/m^3	Gasoline Range mg/m^3	Benzene mg/m^3	Toluene mg/m^3	Ethylbenzene mg/m^3	Xylene Total mg/m^3	GRPH DRE[3] %
04/22/16	CATOX OFF - SAMPLED AT STACK					<10	<0.1	<0.1	<0.1	<0.3	--
05/27/16	CATOX OFF - SAMPLED AT STACK					<10	<0.1	<0.1	<0.1	<0.3	--
06/29/16	CATOX OFF - SAMPLED AT STACK					<10	<0.1	<0.1	<0.1	<0.3	--
07/20/16	CATOX OFF - SAMPLED AT STACK					<10	<0.1	<0.1	<0.1	<0.3	--
08/15/16	CATOX OFF - SAMPLED AT STACK					<10	<0.1	<0.1	<0.1	<0.3	--
09/21/16	CATOX OFF - SAMPLED AT STACK					<10	<0.1	<0.1	<0.1	<0.3	--
10/25/16	CATOX OFF - SAMPLED AT STACK					<10	<0.1	<0.1	<0.1	<0.3	--
11/21/16	CATOX OFF - SAMPLED AT STACK					<10	<0.1	<0.1	<0.1	<0.3	--
12/20/16	CATOX OFF - SAMPLED AT STACK					<10	<0.1	<0.1	<0.1	<0.3	--
PSCAA NOC-10384 Restrictions and Conditions						**max 148.2[3]**	**1.6[4]**	**NS**	**NS**	**NS**	**95%[3][5]**

Notes:

Red denotes concentration exceeds PSCAA Conditions

Samples analyzed by Fremont Analytical of Seattle, Washington.

[1] Influent vapor samples collected from SVE port on the pressure side of the blower

[2] Effluent vapor samples collected from the sample port on the effluent stack

[3] DRE shall be at least 95% unless the effluent GRPH concentration does not exceed 50 ppmv (or 148.2 mg/m^3 at standard temperature and pressure assuming an average molecular weight for GRPH of 72.5)

[4] The PSCAA NOC threshold concentration for uncontrolled benzene emission is 0.5 ppmv, which is equivalent to 1.6 mg/m^3 at standard temperature and pressure see below for conversion formula

[5] DRE is calculated by [GRPH inf-GRPH eff]/[GRPH inf] x 100. For results below detection limit, 50% of the value of the detection limit is used in the calculation.

- = not measured; not analyzed; or not applicable

< = not detected at a concentration exceeding the laboratory MRL shown

mg/m^3 = milligrams per cubic meter

CATOX - catalytic oxidizer

DRE = destruction removal efficiency

GRPH = gasoline-range petroleum hydrocarbons

NOC = Notice of Construction

NS = No standard

NWTPH = Northwest Total Petroleum Hydrocarbon

ppmv = parts per million by volume

PSCAA = Puget Sound Clean Air Agency

SVE = soil vapor extraction

Formula to convert concentration in mg/m^3 to ppmv =

(24.45 x mg/m^3)/gram molecular weight of substance

where mg/m^3 = concentration of substance in milligrams per cubic meter

formula assumes standard temperature and pressure.

Source: ACGIH. 2015. Threshold Limit Values (TLVs) and Biological Exposure Indices (BEIs).

Table 2-5
Liquid Stream Analytical Results
Unit 2 - TOC Farmasonis Property
TOC Holdings Co. Facility No. 01-176
24225 56th Avenue West
Mountlake Terrace, WA

	Groundwater Influent Sample[1] (Sample ID: 2WINF)					Groundwater Midstream Sample[2] (Sample ID: 2GAC1)					Groundwater Effluent to POTW Discharge Sample[3] (Sample ID: 2WEFF)							
	NWTPH-Gx	SW8021B				NWTPH-Gx	SW8021B				NWTPH-Gx	SW8021B					EPA 200.8	Field
Sample Date	Gasoline Range µg/L	Benzene µg/L	Toluene µg/L	Ethylbenzene µg/L	Xylene Total µg/L	Gasoline Range µg/L	Benzene µg/L	Toluene µg/L	Ethylbenzene µg/L	Xylene Total µg/L	Gasoline Range µg/L	Benzene µg/L	Toluene µg/L	Ethylbenzene µg/L	Xylene Total µg/L	Total BTEX µg/L	Lead µg/L	pH pH
10/10/12	<100	<1	<1	<1	3.1	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.59
11/07/12	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.71
12/05/12	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	76.5	8.05
01/08/13	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.29
02/05/13	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.31
03/13/13	1,100	2.9	<1	<1	27	-	-	-	-	-	<100	<1	<1	<1	<3	<6	-	7.59
04/03/13	740	<1	<1	<1	7.9	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.08
05/08/13	<100	<1	<1	<1	5.1	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.51
06/05/13	590	2	1.8	14	120	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	4.51	6.68
07/02/13	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	6.97
08/06/13	<100	<1	<1	<1	5.2	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.1
09/04/13	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	6.96
10/07/13	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.17
11/06/13	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	6.92
12/03/13	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	1.59	7.04
01/13/14	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.13
02/07/14	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.45
03/18/14	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.86
04/17/14	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	6.87
05/20/14	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.18
06/16/14	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	<1	6.91
07/09/14	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	6.82
08/12/14	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.12
09/17/14	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.04
10/22/14	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	5.92
11/17/14	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.83
12/09/14	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	<1	7.29
01/13/15	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.45
02/18/15	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.07
03/11/15	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.26
04/23/15	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	6.97
05/19/15	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.25

Table 2-5
Liquid Stream Analytical Results
Unit 2 - TOC Farmasonis Property
TOC Holdings Co. Facility No. 01-176
24225 56th Avenue West
Mountlake Terrace, WA

	Groundwater Influent Sample[1] (Sample ID: 2WINF)					Groundwater Midstream Sample[2] (Sample ID: 2GAC1)					Groundwater Effluent to POTW Discharge Sample[3] (Sample ID: 2WEFF)							
	NWTPH-Gx	SW8021B				NWTPH-Gx	SW8021B				NWTPH-Gx	SW8021B					EPA 200.8	Field
Sample Date	Gasoline Range µg/L	Benzene µg/L	Toluene µg/L	Ethylbenzene µg/L	Xylene Total µg/L	Gasoline Range µg/L	Benzene µg/L	Toluene µg/L	Ethylbenzene µg/L	Xylene Total µg/L	Gasoline Range µg/L	Benzene µg/L	Toluene µg/L	Ethylbenzene µg/L	Xylene Total µg/L	Total BTEX µg/L	Lead µg/L	pH pH
06/08/15	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	<1	7
07/28/15	<100	<1	<1	<1	<3	-	-	-	-	-	<100	<1	<1	<1	<3	-	-	6.5
08/20/15	<100	<1	<1	<1	<3	-	-	-	-	-	<100	<1	<1	<1	<3	-	-	7.0
09/21/15	<100	<1	<1	<1	<3	-	-	-	-	-	<100	<1	<1	<1	<3	-	-	7.0
10/28/15	<100	<1	<1	<1	<3	-	-	-	-	-	<100	<1	<1	<1	<3	<6	<1	7.0
11/23/15	<100	<1	<1	<1	<3	-	-	-	-	-	<100	<1	<1	<1	<3	<6		7.0[4]
12/21/15	<100	<1	<1	<1	<3	-	-	-	-	-	<100	<1	<1	<1	<3	<6	<1	7.0
01/20/16	<100	<1	<1	<1	<3	-	-	-	-	-	<100	<1	<1	<1	<3	<6		7.0
02/23/16	<100	<1	<1	<1	<3	-	-	-	-	-	<100	<1	<1	<1	<3	<6		7.0
03/21/16	<100	<1	<1	<1	<3	-	-	-	-	-	<100	<1	<1	<1	<3	<6	<1	7.0
04/22/16	<100	<1	<1	<1	<3	-	-	-	-	-	<100	<1	<1	<1	<3	<6		7.0
05/27/16	<100	<1	<1	<1	<3	-	-	-	-	-	<100	<1	<1	<1	<3	<6		7.0
06/29/16	<100	<1	<1	<1	<3	-	-	-	-	-	<100	<1	<1	<1	<3	<6	<1	7.0
07/20/16	<100	<1	<1	<1	<3	-	-	-	-	-	<100	<1	<1	<1	<3	<6		7.0
08/15/16	<100	<1	<1	<1	<3	-	-	-	-	-	<100	<1	<1	<1	<3	<6		7.0
09/21/16	<100	<1	<1	<1	<3	-	-	-	-	-	<100	<1	<1	<1	<3	<6	<1	7.0
10/25/16	<100	<1	<1	<1	<3	-	-	-	-	-	<100	<1	<1	<1	<3	<6		7.0
11/21/16	<100	<1	<1	<1	<3	-	-	-	-	-	<100	<1	<1	<1	<3	<6		7.0
12/20/16	<100	<1	<1	<1	<3	-	-	-	-	-	<100	<1	<1	<1	<3	<6	<1	7.0
WA Discharge Permit ST0007384 Effluent Limits											1,000	5	NS	NS	NS	100	1,090	6 to 10

Notes:

Red denotes measurement falls outside of the range stipulated in the discharge permit.

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

[1]Three GAC vessels are operated in series mode. 2WINF sample is collected prior to first GAC vessel in series

[2] 2GAC1 sample is collected downstream of GAC-1 and upstream of the GAC-2 vessels in series

[3] Effluent sample collected downstream of third GAC vessel in series, which represents the quality of water discharged to the POTW

[4] pH was measured on December 3, 2015 at 7.0

- = not measured; not analyzed; or not applicable

< = not detected at a concentration exceeding the laboratory MRL shown

µg/L = micrograms per liter

EPA = U.S. Environmental Protection Agency

GAC = granular activated carbon

NS = no standard

NWTPH = Northwest Total Petroleum Hydrocarbon

POTW = publicly-owned treatment works

Table 3-1
Summary of System Performance at the Close of Q4 2016
Unit 3 - Drake Property
TOC Holdings Co. Facility No. 01-176
24309 56th Avenue West
Mountlake Terrace, WA

Reporting Period			Days In Reporting Period	Days In Operation	System Run Time (%)	Volume of Treated Groundwater Discharged (gallons)	Average Daily Groundwater Recovery Rate (gallons per day)	GRPH Aqueous-Phase Removal (lb)	GRPH Vapor-Phase Removal (lb)
Start Date	End Date								
10/02/12	12/05/12		64	58.6	92%	69,982	1,093	0.03	60.8
12/05/12	03/04/13		89	73.3	82%	30,269	340	0.14	40.0
03/04/13	06/05/13		93	39.6	43%	74,016	796	0.49	4.1
06/05/13	09/04/13		91	58.1	64%	68,179	749	0.73	7.0
09/04/13	12/03/13		90	75.8	84%	211,043	2,345	0.09	9.4
12/03/13	01/13/14		41	41.0	100%	40,410	986	0.02	5.2
01/13/14	03/18/14		64	58.0	91%	132,724	2,074	0.06	68.3
03/18/14	06/16/14		90	71.3	79%	206,572	2,295	0.09	6.7
06/16/14	09/18/14		94	85.2	91%	225,458	2,398	0.11	7.0
09/18/14	12/09/14		82	70.8	86%	203,925	2,487	0.09	5.9
12/09/14	03/11/15		92	70.6	77%	266,301	2,895	0.11	5.7
03/11/15	06/08/15		89	79.5	89%	221,773	2,492	0.09	5.7
06/08/15	09/21/15		105	93.9	89%	143,422	1,366	0.07	6.9
09/21/15	12/21/15		91	78.5	86%	52,970	582	0.02	5.9
12/21/15	03/21/16		91	68.8	76%	68,725	755	0.03	5.3
03/21/16	06/29/16		100	84.5	85%	61,885	619	0.03	6.4
06/29/16	09/21/16		84	39.7	47%	115,552	1,376	0.06	3.1
09/21/16	12/20/16		90	81.0	90%	55,696	619	0.02	6.3
Cumulative Total or Lifetime Average			**1,540**	**1,228**	**80%**	**2,248,900**	**1,459**	**2.27**	**259.4**

NOTES:

= data for current reporting period

% = percent
GRPH = gasoline-range petroleum hydrocarbons
lb = pounds
SVE = soil vapor extraction

Table 3-2
Vapor Stream - System Performance Monitoring Data
Unit 3 - Drake Property
TOC Holdings Co. Facility No. 01-176
24309 56th Avenue West
Mountlake Terrace, WA

Date	Run Time		SVE Parameters		Catalytic Oxidizer		GRPH Removal		
	SVE Hours	Total Time in Operation	SVE-Prefilter Vacuum	Air Flow Rate[1]	Catalyst Entrance Temp.	Catalyst Exit Temp.	Influent Concentration[2]	Daily Mass Removal Rate[3]	Cumulative Mass Recovered[4]
	(hours)	(days)	(iow)	(scfm)	(°C)	(°C)	(mg/m^3)	(lb/day)	(lb)
10/03/12	11.2	0.5	70	143.8	330	340	13	0.17	0.000
10/10/12	75.7	3.2	73	140.4	330	338	12	0.24	0.75
10/17/12	243.7	10.2	74	141.7	330	337	<10	0.14	1.7
10/24/12	411.9	17.2	74	139.9	330	338	<10	0.09	2.4
11/07/12	750.3	31.3	76	139.1	330	338	<10	0.10	3.7
12/05/12	1,417.6	59.1	76	141.9	330	340	160	2.05	60.8
01/08/13	2,231.8	93.0	83	137.3	330	337	<10	1.07	97.0
02/05/13	2,731.0	113.8	70	144.2	330	337	<10	0.09	99.0
03/04/13	3,177.5	132.4	71	144.6	330	338	<10	0.10	100.8
04/03/13	3,894.4	162.3	64	152.4	330	338	<10	0.10	103.8
05/15/13	4,059.7	169.2	27	173.5	330	301	<10	0.11	104.5
06/05/13	4,126.8	172.0	27	172.9	330	338	<10	0.12	104.8
07/02/13	4,400.3	183.3	17	171.7	330	338	<10	0.12	106.2
08/06/13	5,055.3	210.6	10	182.6	330	338	<10	0.12	109.4
09/04/13	5,520.0	230.0	13	181.6	330	338	<10	0.12	111.8
10/07/13	6,311.3	263.0	13	183.7	330	337	<10	0.12	115.9
11/06/13	7,031.9	293.0	18	185.6	330	338	<10	0.12	119.6
12/03/13	7,339.5	305.8	20	186.4	330	338	<10	0.13	121.2
01/13/14	8,323.6	346.8	24	186.6	330	337	<10	0.13	126.4
02/07/14	8,796.0	366.5	20	188.9	330	340	98	1.70	159.8
03/18/14	9,715.1	404.8	24	187	330	338	<10	0.91	194.7
04/18/14	10,370.2	432.1	27	183.5	330	340	<10	0.12	197.7
05/19/14	10,942.5	455.9	22	184.9	330	342	<10	0.08	199.7
06/16/14	11,425.1	476.0	26	181.8	330	342	<10	0.08	201.4
07/09/14	11,846.3	493.6	24	182.7	330	341	<10	0.08	202.8
08/13/14	12,607.6	525.3	26	181.7	330	337	<10	0.08	205.4
09/18/14	13,470.3	561.3	17	185.0	CATOX OFF		<10	0.08	208.4
10/22/14	14,047.2	585.3	18	185.2	CATOX OFF		<10	0.08	210.4
11/17/14	14,646.6	610.3	19	189.1	CATOX OFF		<10	0.08	212.5
12/09/14	15,168.6	632.0	19	185.6	CATOX OFF		<10	0.08	214.3
01/12/15	15,889.0	662.0	8	197.3	CATOX OFF		<10	0.09	216.9
02/18/15	16,369.4	682.1	64	160.8	CATOX OFF		<10	0.08	218.5
03/11/15	16,862.8	702.6	70	157.8	CATOX OFF		<10	0.07	220.0
04/22/15	17,667.5	736.1	67	160.9	CATOX OFF		<10	0.07	222.4

Table 3-2
Vapor Stream - System Performance Monitoring Data
Unit 3 - Drake Property
TOC Holdings Co. Facility No. 01-176
24309 56th Avenue West
Mountlake Terrace, WA

Date	Run Time		SVE Parameters		Catalytic Oxidizer		GRPH Removal		
	SVE Hours	Total Time in Operation	SVE-Prefilter Vacuum	Air Flow Rate[1]	Catalyst Entrance Temp.	Catalyst Exit Temp.	Influent Concentration[2]	Daily Mass Removal Rate[3]	Cumulative Mass Recovered[4]
	(hours)	(days)	(iow)	(scfm)	(°C)	(°C)	(mg/m^3)	(lb/day)	(lb)
05/19/15	18,290.8	762.1	61	160.1	CATOX OFF		<10	0.07	224.2
06/08/15	18,770.7	782.1	60	159.2	CATOX OFF		<10	0.07	225.7
07/28/15	19,821.2	825.9	52	164.2	CATOX OFF		<10	0.07	228.9
08/20/15	20,372.9	848.9	58	161.3	CATOX OFF		<10	0.07	230.5
09/21/15	21,024.8	876.0	56	164.7	CATOX OFF		<10	0.07	232.5
10/28/15	21,750.6	906.3	57	165.0	CATOX OFF		<10	0.07	234.8
11/23/15	22,368.4	932.0	56	167.9	CATOX OFF		<10	0.07	236.7
12/21/15	22,909.9	954.6	58	170.3	CATOX OFF		<10	0.08	238.4
01/20/16	23,630.2	984.6	63	166.2	CATOX OFF		<10	0.08	240.7
02/23/16	24,090.1	1003.8	49	176.6	CATOX OFF		<10	0.08	242.2
03/21/16	24,561.2	1023.4	56	171.5	CATOX OFF		<10	0.08	243.7
04/22/16	25,328.6	1055.4	58	164.2	CATOX OFF		<10	0.08	246.1
05/27/16	25,850.3	1077.1	57	168.6	CATOX OFF		<10	0.07	247.7
06/29/16	26,590.3	1107.9	55	171.8	CATOX OFF		<10	0.08	250.1
07/20/16	26,881.8	1120.1	56	171.0	CATOX OFF		<10	0.08	251.0
08/15/16	27,168.8	1132.0	54	170.9	CATOX OFF		<10	0.08	251.9
09/21/16	27,543.9	1147.7	54	171.4	CATOX OFF		<10	0.08	253.1
10/25/16	28,362.6	1181.8	54	170.8	CATOX OFF		<10	0.08	255.8
11/21/16	29,009.8	1208.7	55	172.1	CATOX OFF		<10	0.08	257.8
12/20/16	29,489.0	1228.7	55	173.2	CATOX OFF		<10	0.08	259.4
PSCAA NOC- 10384 Conditions				**max. 350**	**min. 240**	**max. 620**			

NOTES:

[1]Air flow rates calculated using an averaging flow sensor (Dwyer Model DS). Air flow rates between 2/7/14 and 12/09/14 calculated from data. Air flow rates from 1/12/15 forward calculated from averaging flow sensor.

[2]Influent vapor samples collected from SVE sample port prior to air treatment.

[3]Daily mass removal rate (lb/day) = average concentration (mg/m^3) x average flow rate (scfm) x conversion (8.99x10-5 lb-m^3-min/mg-ft^3-day).

[4]Cumulative mass removed (lb) = daily removal rate (lb/day) x time in operation (days) + previous cumulative total (lb).

-- = not analyzed, measured, or calculated
GRPH = gasoline-range petroleum hydrocarbons
iow = inches of water
lb = pounds
lb/day = pounds per day
mg/m^3 = milligrams per cubic meter
NOC - Notice of Construction
PSCAA = Puget Sound Clean Air Agency
scfm = standard cubic feet per minute
SVE = soil vapor extraction

HydroCon

Table 3-3
Liquid Stream - System Performance Monitoring Data
Unit 3 - Drake Property
TOC Holdings Co. Facility No. 01-176
24309 56th Avenue West
Mountlake Terrace, WA

	Extracted Groundwater			Hydrocarbon Recovery - Aqueous-Phase		
				GRPH Recovery - Aqueous-Phase		
Date	Discharge Flow Totalizer (gallons)	Treated Between Visits (gallons)	Average Daily Flow Rate Between Visits (gallons per day)	Influent GRPH Concentration[1] (µg/L)	GRPH Removed[2][3] (lb)	Cumulative GRPH Removed[3][4] (lb)
10/02/12	1,178.0	0	0	--	--	--
10/10/12	5,075.9	3,898	487	<100	0.001	0.001
11/07/12	38,565.1	2,266	2,266	<100	0.014	0.014
12/05/12	71,160.2	32,595	1,164	<100	0.014	0.028
01/08/13	71,627.1	467	14	<100	0.000	0.028
02/06/13	84,429.4	12,802	441	160	0.011	0.039
03/04/13	101,429.0	17,000	654	1,700	0.132	0.171
04/03/13	119,013.8	17,585	586	<100	0.128	0.299
05/08/13	157,058.4	38,045	1,087	1,500	0.246	0.55
06/05/13	175,444.9	18,387	657	<100	0.119	0.66
07/02/13	175,445.7	1	0	--	--	--
08/06/13	181,799.7	6,354	182	2,500	0.068	0.73
09/04/13	243,623.6	61,824	2,132	<100	0.658	1.39
10/07/13	333,942.9	90,319	2,737	<100	0.038	1.43
11/06/13	420,282.1	62,248	2,829	<100	0.036	1.46
12/03/13	454,666.4	31,301	1,204	<100	0.014	1.48
01/13/14	495,076.1	36,896	922	<100	0.017	1.49
02/07/14	523,790.1	17,262	2,466	<100	0.012	1.51
03/18/14	627,800.0	104,010	2,667	<100	0.043	1.55
04/18/14	722,961.0	95,161	3,070	<100	0.040	1.59
05/19/14	791,030.0	68,069	2,196	<100	0.028	1.62
06/16/14	834,372.0	43,342	1,548	<100	0.018	1.64
07/10/14	887,218.0	52,846	2,202	130	0.040	1.68
08/13/14	964,443.0	77,225	2,271	<100	0.032	1.71
09/18/14	1,059,830.0	95,387	2,650	<100	0.040	1.75
10/22/14	1,142,560.0	82,730	2,433	<100	0.035	1.78
11/17/14	1,205,945.0	63,385	2,438	<100	0.026	1.81
12/09/14	1,263,755.0	57,810	2,628	<100	0.024	1.83
01/13/15	1,351,575.0	87,820	2,509	<100	0.037	1.87
02/18/15	1,463,712.0	112,137	3,115	<100	0.047	1.92
03/11/15	1,530,056.0	66,344	3,159	<100	0.028	1.94
04/23/15	1,631,881.0	101,825	2,368	<100	0.042	1.99
05/19/15	1,705,576.0	73,695	2,834	<100	0.031	2.02
06/08/15	1,751,829.0	46,253	2,313	<100	0.019	2.04
07/28/15	1,819,655.2	67,826	1,357	100	0.042	2.08
08/20/15	1,852,901.2	33,246	1,445	<100	0.014	2.09
09/21/15	1,895,250.5	42,349	1,323	<100	0.018	2.11
10/28/15	1,921,791.9	26,541	717	<100	0.011	2.12
11/23/15	1,944,832.0	23,040	886	<100	0.010	2.13
12/21/15	1,948,220.2	3,388	121	130	0.003	2.13
01/20/16	1,962,753.7	14,534	484	<100	0.006	2.14
02/23/16	1,981,693.5	18,940	557	<100	0.008	2.15
03/21/16	2,016,944.9	35,251	1,306	<100	0.015	2.16

Table 3-3
Liquid Stream - System Performance Monitoring Data
Unit 3 - Drake Property
TOC Holdings Co. Facility No. 01-176
24309 56th Avenue West
Mountlake Terrace, WA

Date	Extracted Groundwater			Hydrocarbon Recovery - Aqueous-Phase		
				GRPH Recovery - Aqueous-Phase		
	Discharge Flow Totalizer	Treated Between Visits	Average Daily Flow Rate Between Visits	Influent GRPH Concentration[1]	GRPH Removed[2][3]	Cumulative GRPH Removed[3][4]
	(gallons)	(gallons)	(gallons per day)	(µg/L)	(lb)	(lb)
04/22/16	2,027,242.0	10,297	322	<100	0.004	2.17
05/27/16	2,039,238.8	11,997	343	<100	0.005	2.17
06/29/16	2,078,829.7	39,591	1,200	<100	0.017	2.19
07/20/16	2,132,220.9	53,391	2,542	<100	0.022	2.21
08/15/16	2,167,983.5	35,763	1,375	<100	0.015	2.23
09/21/16	2,194,381.7	26,398	713	140	0.021	2.25
10/25/16	2,241,145.2	46,764	1,375	<100	0.020	2.27
11/21/16	2,250,078.0	8,933	331	<100	0.004	2.27
12/20/16	2,250,078.0	0	0	<100	0.000	2.27
State Waste Discharge Permit ST0007384 Limits			**7,000**			

NOTES:

Sample Analysis conducted by Friedman & Bruya, Inc.

[1]Influent samples collected prior to treatment with liquid-phase granular activated carbon.

[2] Mass removal weight (lb) = gallons recovered x concentration (µg/L)

x conversion factor (8.344E-9 lb-L/µg-gallon).

[3]Nondetectable influent concentrations assumed to be 50% of the laboratory's lower reporting limit.

[4]Cumulative mass (lb) = mass removal between sampling visits (lb) + previous cumulative total (lb).

DEFINITIONS:

-- = not analyzed, measured, or calculated

< = not detected at the concentration indicated

µg/L = micrograms per liter

GRPH = gasoline-range petroleum hydrocarbons

lb = pound

Table 3-4
Vapor Stream Analytical Results
Unit 3 - Drake Property
TOC Holdings Co. Facility No. 01-176
24309 56th Avenue West
Mountlake Terrace, WA

	Influent Vapor Samples[1] (Sample ID: 3VINF)					Effluent Vapor Samples[2] (Sample ID: 3VEFF)					
	NWTPH-Gx	SW8021B				NWTPH-Gx	SW8021B				
Sample Date	Gasoline Range mg/m^3	Benzene mg/m^3	Toluene mg/m^3	Ethylbenzene mg/m^3	Xylene Total mg/m^3	Gasoline Range mg/m^3	Benzene mg/m^3	Toluene mg/m^3	Ethylbenzene mg/m^3	Xylene Total mg/m^3	GRPH DRE[3] %
10/2/2012	13	<0.1	0.13	0.12	0.35	<10	<0.1	<0.1	<0.1	<0.3	61.5
10/10/2012	12	<0.1	0.1	<0.1	<0.3	<10	<0.1	0.18	<0.1	<0.3	58.3
10/17/2012	<10	<0.1	0.17	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	-
10/24/2012	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	-
11/7/2012	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	-
12/5/2012	160	<0.1	<0.1	1.5	0.99	<10	<0.1	<0.1	<0.1	<0.3	96.9
1/8/2013	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	0.12	<0.1	<0.3	-
2/5/2013	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	-
3/4/2013	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	-
4/3/2013	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	-
5/15/2013	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	-
6/5/2013	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	-
7/2/2013	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	-
8/6/2013	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	-
9/4/2013	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	-
10/7/2013	<10	<0.1	0.19	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	-
11/6/2013	<10	<0.1	0.52	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	-
12/3/2013	<10	<0.1	0.44	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	-
1/13/2014	<10	<0.1	0.31	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	-
2/7/2014	98	<0.1	<0.1	0.34	0.65	<10	<0.1	<0.1	<0.1	<0.3	94.9
3/18/2014	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	0.2	<0.3	-
4/18/2014	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	-
5/19/2014	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	-
6/16/2014	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	-
7/9/2014	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	-

Table 3-4
Vapor Stream Analytical Results
Unit 3 - Drake Property
TOC Holdings Co. Facility No. 01-176
24309 56th Avenue West
Mountlake Terrace, WA

	Influent Vapor Samples[1] (Sample ID: 3VINF)					Effluent Vapor Samples[2] (Sample ID: 3VEFF)					
	NWTPH-Gx	SW8021B				NWTPH-Gx	SW8021B				
Sample Date	Gasoline Range mg/m^3	Benzene mg/m^3	Toluene mg/m^3	Ethylbenzene mg/m^3	Xylene Total mg/m^3	Gasoline Range mg/m^3	Benzene mg/m^3	Toluene mg/m^3	Ethylbenzene mg/m^3	Xylene Total mg/m^3	GRPH DRE[3] %
8/11/2014	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	-
9/17/2014	-	-	-	-	-	<10	<0.1	<0.1	<0.1	<0.3	-
10/22/2014	-	-	-	-	-	<10	<0.1	<0.1	<0.1	<0.3	-
11/18/2014	-	-	-	-	-	<10	<0.1	<0.1	<0.1	<0.3	-
12/9/2014	-	-	-	-	-	<10	<0.1	<0.1	<0.1	<0.3	-
1/13/2015	-	-	-	-	-	<10	<0.1	<0.1	<0.1	<0.3	-
2/18/2015	-	-	-	-	-	<10	<0.1	<0.1	<0.1	<0.3	-
3/11/2015	-	-	-	-	-	<10	<0.1	<0.1	<0.1	<0.3	-
4/23/2015	-	-	-	-	-	<10	<0.1	<0.1	<0.1	<0.3	-
5/19/2015	-	-	-	-	-	<10	<0.1	<0.1	<0.1	<0.3	-
6/8/2015	-	-	-	-	-	<10	<0.1	<0.1	<0.1	<0.3	-
7/28/2015	-	-	-	-	-	<10	<0.1	<0.1	<0.1	<0.3	-
8/20/2015	-	-	-	-	-	<10	<0.1	<0.1	<0.1	<0.3	-
9/21/2015	-	-	-	-	-	<10	<0.1	<0.1	<0.1	<0.3	-
10/28/2015	-	-	-	-	-	<10	<0.1	<0.1	<0.1	<0.3	-
11/23/2015	-	-	-	-	-	<10	<0.1	<0.1	<0.1	<0.3	-
12/21/2015	-	-	-	-	-	<10	<0.1	<0.1	<0.1	<0.3	-
1/20/2016	-	-	-	-	-	<10	<0.1	<0.1	<0.1	<0.3	-
2/23/2016	-	-	-	-	-	<10	<0.1	<0.1	<0.1	<0.3	-
3/21/2016	-	-	-	-	-	<10	<0.1	<0.1	<0.1	<0.3	-

Table 3-4
Vapor Stream Analytical Results
Unit 3 - Drake Property
TOC Holdings Co. Facility No. 01-176
24309 56th Avenue West
Mountlake Terrace, WA

	Influent Vapor Samples[1] (Sample ID: 3VINF)					Effluent Vapor Samples[2] (Sample ID: 3VEFF)					
	NWTPH-Gx	SW8021B				NWTPH-Gx	SW8021B				
Sample Date	Gasoline Range mg/m^3	Benzene mg/m^3	Toluene mg/m^3	Ethylbenzene mg/m^3	Xylene Total mg/m^3	Gasoline Range mg/m^3	Benzene mg/m^3	Toluene mg/m^3	Ethylbenzene mg/m^3	Xylene Total mg/m^3	GRPH DRE[3] %
4/22/2016	-	-	-	-	-	<10	<0.1	<0.1	<0.1	<0.3	-
5/27/2016	-	-	-	-	-	<10	<0.1	<0.1	<0.1	<0.3	-
6/29/2016	-	-	-	-	-	<10	<0.1	<0.1	<0.1	<0.3	-
7/20/2016	-	-	-	-	-	<10	<0.1	<0.1	<0.1	<0.3	-
8/15/2016	-	-	-	-	-	<10	<0.1	<0.1	<0.1	<0.3	-
9/21/2016	-	-	-	-	-	<10	<0.1	<0.1	<0.1	<0.3	-
10/25/2016						<10	<0.1	<0.1	<0.1	<0.3	-
11/21/2016						<10	<0.1	<0.1	<0.1	<0.3	-
12/20/2016						<10	<0.1	<0.1	<0.1	<0.3	-
PSCAA NOC-10384 Restrictions and Conditions						max 148.2[3]	1.6[4]	NS	NS	NS	95%[3][5]

Notes:

Red denotes concentration exceeds PSCAA Conditions

Samples analyzed by Fremont Analytical of Seattle, Washington.

[1] Influent vapor samples collected from SVE port on the pressure side of the blower

[2] Effluent vapor samples collected from the sample port on the effluent stack

[3] DRE shall be at least 95% unless the effluent GRPH concentration does not exceed 50 ppmv (or 148.2 mg/m^3 at standard temperature and pressure assuming an average molecular weight for GRPH of 72.5)

[4] The PSCAA NOC threshold concentration for uncontrolled benzene emission is 0.5 ppmv, which is equivalent to 1.6 mg/m^3 at standard temperature and pressure see below for conversion formula

[5] DRE is calculated by [GRPH inf-GRPH eff]/[GRPH inf] x 100. For results below detection limit, 50% of the value of the detection limit is used in the calculation.

- = not measured; not analyzed; or not applicable

< = not detected at a concentration exceeding the laboratory MRL shown

mg/m^3 = milligrams per cubic meter

CATOX - catalytic oxidizer

DRE = destruction removal efficiency

GRPH = gasoline-range petroleum hydrocarbons

NOC = Notice of Construction

NS = No standard

NWTPH = Northwest Total Petroleum Hydrocarbon

ppmv = parts per million by volume

PSCAA = Puget Sound Clean Air Agency

SVE = soil vapor extraction

Formula to convert concentration in mg/m^3 to ppmv =

(24.45 x mg/m^3)/gram molecular weight of substance

where mg/m^3 = concentration of substance in milligrams per cubic meter

formula assumes standard temperature and pressure.

Source: ACGIH. 2015. Threshold Limit Values (TLVs) and Biological Exposure Indices (BEIs).

Table 3-5
Liquid Stream Analytical Results
Unit 3 - Drake Property
TOC Holdings Co. Facility No. 01-176
24309 56th Avenue West
Mountlake Terrace, WA

	Groundwater Influent Sample[1] (Sample ID: 3WINF)					Groundwater Midstream Sample[2] (Sample ID: 3GAC1)					Groundwater Effluent to POTW Discharge Sample[3] (Sample ID: 3WEFF)							
	NWTPH-Gx	SW8021B				NWTPH-Gx	SW8021B				NWTPH-Gx	SW8021B					EPA 200.8	Field
Sample Date	Gasoline Range µg/L	Benzene µg/L	Toluene µg/L	Ethylbenzene µg/L	Xylene Total µg/L	Gasoline Range µg/L	Benzene µg/L	Toluene µg/L	Ethylbenzene µg/L	Xylene Total µg/L	Gasoline Range µg/L	Benzene µg/L	Toluene µg/L	Ethylbenzene µg/L	Xylene Total µg/L	Total BTEX µg/L	Lead µg/L	pH pH
10/10/2012	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.87
11/7/2012	<100	1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.83
12/5/2012	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	4.1	7.84
1/8/2013	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.06
2/5/2013	160	<1	<1	1.8	5.8	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.02
3/4/2013	1,700	2.9	1.4	24	160	-	-	-	-	-	<100	<1	<1	<1	<3	<6	-	7.64
4/3/2013	<100	<1	<1	<1	3.7	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	6.89
5/8/2013	1,500	<1	<1	16	120	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.41
6/5/2013	<100	2	1.8	<1	4	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	2.99	7.05
7/2/2013	-	-	-	-	-	-	-	-	-	-	<100	<1	<1	<1	<3	<6	-	6.35
8/6/2013	2,500	1	2.3	40	260	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	8.07
9/4/2013	<100	<1	<1	<1	3.6	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.03
10/7/2013	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.09
11/6/2013	<100	<1	<1	<1	5.7	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	6.94
12/3/2013	<100	<1	<1	<1	5.7	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	1.9	7.35
1/13/2014	<100	<1	<1	<1	<3	<100	<3	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	-
2/7/2014	<100	<1	<1	<1	3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.36
3/18/2014	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	8.38
4/18/2014	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.4
5/19/2014	<100	<1	<1	<1	5.6	<100	<1	<1	<1	-	<100	<1	<1	<1	<3	<6	-	7.25
6/16/2014	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	1.05	5.94
7/9/2014	130	<1	<1	<1	3.8	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	6.67
8/13/2014	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.59
9/17/2014	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.1
10/22/2014	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	5.97
11/17/2014	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.66
12/9/2014	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	1.09	6.89
1/13/2015	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	6.25
2/18/2015	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.46
3/11/2015	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.36
4/23/2015	<100	<1	<1	<1	4.3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	6.8
5/19/2015	<100	<1	<1	<1	4.5	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.19

Table 3-5
Liquid Stream Analytical Results
Unit 3 - Drake Property
TOC Holdings Co. Facility No. 01-176
24309 56th Avenue West
Mountlake Terrace, WA

	Groundwater Influent Sample[1] (Sample ID: 3WINF)					Groundwater Midstream Sample[2] (Sample ID: 3GAC1)					Groundwater Effluent to POTW Discharge Sample[3] (Sample ID: 3WEFF)							
	NWTPH-Gx	SW8021B				NWTPH-Gx	SW8021B				NWTPH-Gx	SW8021B					EPA 200.8	Field
Sample Date	Gasoline Range µg/L	Benzene µg/L	Toluene µg/L	Ethylbenzene µg/L	Xylene Total µg/L	Gasoline Range µg/L	Benzene µg/L	Toluene µg/L	Ethylbenzene µg/L	Xylene Total µg/L	Gasoline Range µg/L	Benzene µg/L	Toluene µg/L	Ethylbenzene µg/L	Xylene Total µg/L	Total BTEX µg/L	Lead µg/L	pH pH
6/8/2015	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	<1	7
7/28/2015	100	<1	<1	<1	5	-	-	-	-	-	<100	<1	<1	<1	<3	-	-	6.7
8/20/2015	<100	<1	<1	<1	<3	-	-	-	-	-	<100	<1	<1	<1	<3	-	-	6.9
9/21/2015	<100	<1	<1	<1	<3	-	-	-	-	-	<100	<1	<1	<1	<3	-	-	7.0
10/28/2015	<100	<1	<1	<1	<3	-	-	-	-	-	<100	<1	<1	<1	<3	<6	<1	7.0
11/23/2015	<100	<1	<1	<1	<3	-	-	-	-	-	<100	<1	<1	<1	<3	<6	-	7.1[4]
12/21/2015	130	<1	<1	<1	5.7	-	-	-	-	-	<100	<1	<1	<1	<3	<6	<1	7.0
1/20/2016	<100	<1	<1	<1	<3	-	-	-	-	-	<100	<1	<1	<1	<3	<6		7.0
2/23/2016	<100	<1	<1	<1	<3	-	-	-	-	-	<100	<1	<1	<1	<3	<6		7.0
3/21/2016	<100	<1	<1	<1	<3	-	-	-	-	-	<100	<1	<1	<1	<3	<6	<1	7.0
4/22/2016	<100	<1	<1	<1	<3	-	-	-	-	-	<100	<1	<1	<1	<3	<6		7.0
5/27/2016	<100	<1	<1	<1	<3	-	-	-	-	-	<100	<1	<1	<1	<3	<6		7.0
6/29/2016	<100	<1	<1	<1	<3	-	-	-	-	-	<100	<1	<1	<1	<3	<6	<1	7.0
7/20/2016	<100	<1	<1	<1	<3	-	-	-	-	-	<100	<1	<1	<1	<3	<6		7.0
8/15/2016	<100	<1	<1	<1	<3	-	-	-	-	-	<100	<1	<1	<1	<3	<6		7.0
9/21/2016	140	<1	<1	<1	<3	-	-	-	-	-	<100	<1	<1	<1	<3	<6	<1	7.0
10/25/2016	<100	<1	<1	<1	<3	-	-	-	-	-	<100	<1	<1	<1	<3	<6		7.0
11/21/2016	<100	<1	<1	<1	<3	-	-	-	-	-	<100	<1	<1	<1	<3	<6		7.0
12/20/2016	<100	<1	<1	<1	<3	-	-	-	-	-	<100	<1	<1	<1	<3	<6	1.56	7.0
WA Discharge Permit ST0007384 Effluent Limits											**1,000**	**5**	**NS**	**NS**	**NS**	**100**	**1,090**	**6 to 10**

Notes:

Red denotes measurement falls outside of the range stipulated in the discharge permit.

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

[1]Three GAC vessels are operated in series mode. 3WINF sample is collected prior to first GAC vessel in series

[2] 3GAC1 sample is collected downstream of GAC-1 and upstream of the GAC-2 vessels in series

[3] Effluent sample collected downstream of third GAC vessel in series, which represents the quality of water discharged to the POTW

[4] pH was measured on December 3, 2015.

- = not measured; not analyzed; or not applicable

< = not detected at a concentration exceeding the laboratory MRL shown

µg/L = micrograms per liter

EPA = U.S. Environmental Protection Agency

GAC = granular activated carbon

NS = no standard

NWTPH = Northwest Total Petroleum Hydrocarbon

POTW = publicly-owned treatment works

APPENDIX A

Remedial Systems Descriptions

APPENDIX A –REMEDIAL SYSTEMS DESCRIPTIONS

The following sections provide remedial systems background, and configurations, respectively.

A.1 BACKGROUND

TOC (formerly Time Oil Co.) operated a retail gasoline station on the TOC Property between 1968 and 1990. One 8,000-gallon and two 6,000-gallon underground storage tanks were removed from the TOC Property in 1991. The TOC Property is currently vacant. In 1996, a dual-phase extraction (DPE) remediation system was installed at the TOC Property to remediate Shallow Zone groundwater impacted by petroleum hydrocarbons and remove LNAPL. The DPE system operated from February 1997 to June 2005 and was later removed following confirmation that the system effectively remediated Shallow Zone groundwater. In 2006, groundwater monitoring results confirmed gasoline-related contamination extending directly downgradient of the TOC Property to the south and west.[5]

Between 1992 and 2013, site investigations were conducted to determine the extent of petroleum contamination which led to the installation of 107 monitoring and remediation wells on the TOC Site and three adjacent properties (a portion of the 242nd Street Southwest ROW and the downgradient Herman and Shin/Choi properties). Six wells have been decommissioned. Two additional wells were installed on the Herman property in July 2015. Currently, there are 103 active monitoring and/or remediation wells installed in three groundwater zones (defined as Shallow, Intermediate and Deep) on the TOC Site and three adjacent properties. Of the 103 active monitoring and remediation wells, 20 are installed in the Shallow Zone, 62 are installed in the Intermediate Zone, 6 are in the Deep Zone, and 15 have well screens intersecting multiple groundwater zones (either shallow-intermediate or intermediate-deep). The three groundwater zones are further discussed in SES 2013 and Stantec 2015a.

In accordance with the AO, SES initiated a remedial investigation (RI) at the TOC Site and determined that remediation by the former DPE system in the Shallow Zone on that property had been effective. The DPE system was removed and three MPE systems were installed in the Intermediate Zone between November 2011 and August 2012. The three MPE systems (Units 1, 2 and 3) began operating in October 2012. MPE is an in situ remedial technology that simultaneously extracts multiple fluid phases from remediation wells. The phases include soil vapor, dissolved (i.e., groundwater), and LNAPL or free product.

A.2 SYSTEM CONFIGURATIONS

Each MPE system is housed in a self-contained, aboveground equipment enclosure surrounded by chain link fence with locked gate. The MPE system for the TOC Property (Unit 1) is located on the TOC Property. The MPE systems for the TOC/Farmasonis Property (Unit

[5] *SES 2013. Draft Remedial Investigation Report, TOC Holdings Co. No. 01-176, 24205 56th Avenue West, Mountlake Terrace, Washington 98043. November 27.*

2) and Drake Property (Unit 3) are co-located within a single fenced enclosure on the TOC/Farmasonis Property. The three MPE systems are basically identical, with the exception of their orientation, mirror-image layouts, and the number of remediation wells serving each MPE system. A total of 22 remediation wells serve the three MPE systems: eight wells on the TOC Property, six wells on the TOC/Farmasonis Property, and eight wells on the Drake Property (Figure A-1).

Wells MW15 (installed on the TOC Property) and MW84 (installed on the Drake Property) were initially connected to Units 1 and 3 as remediation wells, but currently serve only as monitoring wells. The pump in MW15 was removed by Stantec on December 16, 2014 due to the consistent presence of biological buildup in the well. The pump in MW84 was removed by SES on September 17, 2013. Documentation of the purpose for removing the pump from MW84 is not available in the historical files.

The table below identifies the currently active remediation wells connected to each system and their locations.

Wells Serving MPE Remediation Systems

System Name	System Location	Remediation Well ID		Well Location
Unit 1	**TOC Property**	• MW11 • MW18 • MW24 • MW27	• MW29 • MW32 • MW90 • MW91	**TOC Property**
Unit 2	**TOC/Farmasonis Property**	• MW31 • MW41 • MW57	• MW92 • MW93 • MW94	**TOC/Farmasonis Property**
Unit 3	**TOC Farmasonis Property**	• MW69 • MW70 • MW95 • MW96	• MW97 • MW98 • MW99 • MW101	**Drake Property**

The individual MPE equipment enclosures were custom fabricated in accordance with the Washington State Department of Labor and Industry requirements for factory-assembled structures. Each of the remediation wells is equipped with a down-well pneumatic pump to extract petroleum- impacted groundwater (dissolved-phase petroleum hydrocarbons) and recoverable LNAPL. In addition, each MPE system is equipped with a SVE blower. The SVE blowers are intended to extract soil vapors (vapor-phase petroleum hydrocarbons) from the remediation wells and surrounding soil. Buried piping is utilized to convey recovered fluids (groundwater and LNAPL) and vapor from the remediation wells to the MPE system enclosures for treatment. The piping and instrumentation diagram presented on Figure A-2 illustrates the typical process flow and major mechanical equipment associated with each MPE system.

Extracted groundwater is conveyed to each MPE system for phase separation, treatment, and permitted discharge to the sanitary sewer in accordance with Ecology State Waste Discharge Permit No. ST0007384. The extracted groundwater is processed through an OWS, which is designed to process up to 10 gallons per minute (gpm). The effluent from the OWS is pumped through three 55-gallon granular activated carbon (GAC) canisters to remove dissolved phase volatile organic compounds (VOCs) prior to being discharged to the sanitary sewer. When present, LNAPL recovered with the OWS is temporarily stored in a 55-gallon product drum prior to disposal or recycling at an offsite facility.

The SVE blowers create the vacuum necessary to extract soil vapors from the remediation wells. The extracted soil vapors are processed through an air/water separator (AWS) and previously through a CATOX. The AWS removes particulate and liquids from the air stream to prevent damage to the SVE blower and ancillary equipment. Previously, the vapors were thermally treated by the CATOX prior to being discharged to the atmosphere, in accordance with the Puget Sound Clean Air Agency (PSCCA) Notice of Construction (NOC) No. 10384.

LEGEND

- B27 — SOIL BORING (NO WELL INSTALLED)
- MW68 — GROUNDWATER MONITORING WELL (SHALLOW SCREEN)
- MW89 — GROUNDWATER MONITORING WELL (UPPER INTERMEDIATE SCREEN)
- MW77 — GROUNDWATER MONITORING WELL (INTERMEDIATE SCREEN)
- MW78 — GROUNDWATER MONITORING WELL (DEEP SCREEN)
- MW17 — DECOMMISSIONED GROUNDWATER MONITORING WELL
- SG-1 — SOIL GAS SAMPLE
- D-1 — EXCAVATION SOIL SAMPLE
- CURRENT OR FORMER UST
- PP — POWER/LIGHT POST OR SIGN
- EDGE OF EASEMENT
- TOC PROPERTY BOUNDARY
- PARCEL BOUNDARY
- E — UNDERGROUND ELECTRICAL LINE
- FO — FIBER OPTIC
- GAS — NATURAL GAS
- SI — STORM INFILTRATION PIPE
- SD — STORM DRAIN
- SS — SANITARY SEWER
- W — WATER
- OP — OVERHEAD POWER
- FORMER SITE FEATURE
- TREATMENT SYSTEM PROCESS LINES
- C.O. — SANITARY SEWER CLEAN OUT
- UST — UNDERGROUND STORAGE TANK
- CATCH BASIN
- SANITARY SEWER MANHOLE
- SURVEY BENCHMARK
- FORMER INFILTRATION PIT (1975)

YOUNG MOBILE HOME PARK

YOUNG MOBILE HOME PARK

STATE PLANE
N=287352.81
E=1278102.02
PROJECT
N=287375.29
E=1278098.94

FORMER WOOD SHED

PROPERTY BOUNDARY PRIOR TO 1985 (SHORT PLAT 106)

PROPERTY BOUNDARY SINCE 1985 (SHORT PLAT 106)

POWER TRANSFORMER

GRASS FIELD

GRASS FIELD

GRASS FIELD

UST (#####)

UST (REISDORFF 1985)

TOC/FARMASONIS PROPERTY
24225 56TH AVENUE WEST

DRAKE PROPERTY
24309 56TH AVENUE WEST

MOUNTLAKE SENIOR
5525 244TH STREET SOUTHWEST
(CONSTRUCTION PENDING)

FORMER CONCRETE PAD

GRAVEL PARKING

TOC/FARMASONIS AND DRAKE PROPERTIES TREATMENT SYSTEM COMPOUND

EDGE OF ASPHALT PAVEMENT

EDGE OF ASPHALT PAVEMENT

EDGE OF ASPHALT PAVEMENT

HERMAN PROPERTY
24311 56TH AVENUE WEST

USTS (REISDORFF, 1985)

FORMER OIL AND DIESEL LOADING RAMP

(HEATING OIL) ABOVEGROUND STORAGE TANK

UST ABANDONED IN PLACE

WASTE OIL UST

PLANTER

PLANTER

PLANTER

PLANTER

PLANTER

PLANTER

PLANTER

PLANTER

DECK

DECK

ABANDONED PUMP ISLAND

ABANDONED PUMP ISLAND

ROMIO'S PIZZA & PASTA

GETAWAY TAVERN

DAVE'S AUTO SERVICE (FORMER GAS STATION)

FORMER PUMP ISLAND

ABANDONED PUMP ISLAND

FORMER 8,000-GALLON USTs

2001 UST EXCAVATION (K&S)

EZ CORNER MART (FORMER GAS STATION)

FORMER PRODUCT LINES

1996 UST EXCAVATION

1998 PUMP I EXCAVATION

FORMER PUMP ISLAND

SHIN/CHOI PROPERTY
24325 56TH AVENUE WEST

STATE PLANE
N=287719.89
E=1277926.24
PROJECT
N=287739.95
E=1277918.20

TOC HOLDING CO. PROPERTY
24205 56TH AVENUE WEST

TOC PROPERTY TREATMENT SYSTEM COMPOUND

CONCRETE CURB

CONCRETE

FORMER GAS STATION BUILDING (DEMOLISHED 2008)

ASPHALT PAVED PARKING

ASPHALT-PAVED PARKING

ASPHALT-PAVED PARKING

POWER EASEMENT

PRIVATE EASEMENT AND FIRE LANE

242ND STREET SOUTHWEST

SIDEWALK

RAKNES PROPERTY
24121 56TH AVENUE WEST

FORMER 6,000 AND 8,000 GALLON USTS

1991 UST EXCAVATION

WATER METER

SIDEWALK

SIDEWALK

SIDEWALK

SIDEWALK

STORM MANHOLE

56TH AVENUE WEST

238TH ST SW
FOUND PUNCH IN 1 3/4" BRASS DISK IN CONCRETE MONUMENT DOWN 0.35' IN CASE.

240TH ST SW
FOUND PUNCH MARK IN 1 3/4" BRASS DISK ON CONC MON IN CASE, DN. 0.5'
STATE PLANE
N=288416.87
E=1277786.41
PROJECT
N=288434.96
E=1277768.92

244TH ST SW
FOUND DIVOT IN 3"X3" CONC MON IN CASE, DN. 1.5'
STATE PLANE
N=287093.00
E=1277767.07
PROJECT
N=287110.95
E=1277767.54

R E S I D E N T I A L P A R C E L S
24108 THROUGH 24302 56TH AVENUE WEST

DATUM/BASIS OF BEARINGS
HELD A BEARING OF N00°03'34"E ALONG THE MONUMENTED CENTERLINE OF 56TH AVE W BETWEEN 244TH ST SW AND 240TH ST SW PER PLAT OF LAKE FOREST CREST V.10 / P.107

BASIS OF POSITION: CITY OF MONTLAKE TERRACE CONTROL POINT DESIGNATION MTLK127.

ORIGINATING BENCHMARK:
TOP OF MAG NAIL IN CURB AT NORTHWEST CORNER OF SITE PER SITE PLAN BY CPS ENGINEERING PROVIDED TO AXIS BY CLIENT

COORDINATE SYSTEM: NAD 1983 STATEPLANE WASHINGTON NORTH FIPS 4601 (US FEET)

VERTICAL DATUM: NAVD '88

ELEVATION: 363.62'

REFERENCES:

AXIS SURVEY & MAPPING, 2013
LANDAU ASSOCIATES, INC., 2005
CITY OF MOUNTLAKE TERRACE, 2005
K&S ENVIRONMENTAL, 2001
REISDORFF, THOMAS D., 1985
SNOHOMISH COUNTY P.U.D. No.1, 2012
TIME OIL COMPANY (SIC), 1975
AERIAL PHOTOGRAPHS, SNOHOMISH COUNTY, 1974

SCALE IN FEET
0 50 100
1" = 50'

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

DATE: 9-14-15
DWN: JJT
CHK: MS
APPROVED: MS
PRJ. MGR: CH
PROJECT NO: 01-176

FIGURE A-1
REMEDIATION SYSTEMS AND SITE DETAILS MAP
TOC HOLDINGS CO. FACILITY NO. 01-176
24205 56TH AVENUE WEST
MOUNTLAKE TERRACE, WA.

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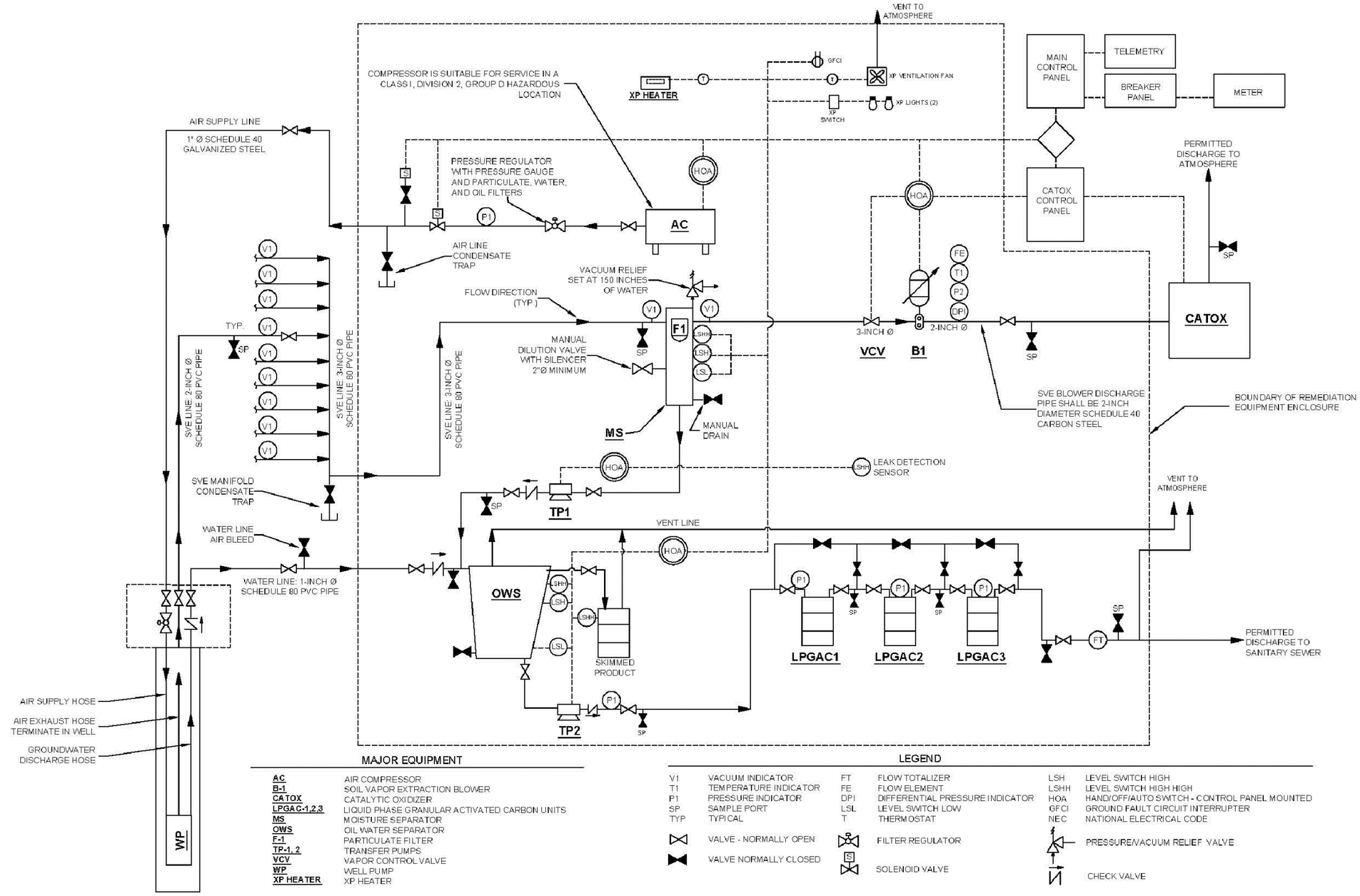


MAJOR EQUIPMENT

AC	AIR COMPRESSOR
B-1	SOIL VAPOR EXTRACTION BLOWER
CATOX	CATALYTIC OXIDIZER
LPGAC-1,2,3	LIQUID PHASE GRANULAR ACTIVATED CARBON UNITS
MS	MOISTURE SEPARATOR
OWS	OIL WATER SEPARATOR
F-1	PARTICULATE FILTER
TP-1, 2	TRANSFER PUMPS
VCV	VAPOR CONTROL VALVE
WP	WELL PUMP
XP HEATER	XP HEATER

LEGEND

V1	VACUUM INDICATOR	FT	FLOW TOTALIZER	LSH	LEVEL SWITCH HIGH
T1	TEMPERATURE INDICATOR	FE	FLOW ELEMENT	LSHH	LEVEL SWITCH HIGH HIGH
P1	PRESSURE INDICATOR	DPI	DIFFERENTIAL PRESSURE INDICATOR	HOA	HAND/OFF/AUTO SWITCH - CONTROL PANEL MOUNTED
SP	SAMPLE PORT	LSL	LEVEL SWITCH LOW	GFCI	GROUND FAULT CIRCUIT INTERRUPTER
TYP	TYPICAL	T	THERMOSTAT	NEC	NATIONAL ELECTRICAL CODE

VALVE - NORMALLY OPEN
VALVE NORMALLY CLOSED
FILTER REGULATOR
SOLENOID VALVE
PRESSURE/VACUUM RELIEF VALVE
CHECK VALVE

SOURCE:
SOUND EARTH STRATEGIES, 2013

NOT TO SCALE

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

DATE: 9-14-15
DWN: JJT
CHK: MS
APPROVED: MS
PRJ. MGR: CH
PROJECT NO: 01-176

FIGURE A-2
PIPING AND INSTRUMENTATION DIAGRAM

TOC HOLDINGS CO. FACILITY NO. 01-176
24205 56TH AVENUE WEST
MOUNTLAKE TERRACE, WA.

APPENDIX B

TOC Facility No. 01-176 Permits

APPENDIX B – TOC FACILITY NO. 01-176 PERMITS

State, regional, and local permit requirements apply to the interim remedial action. Pursuant to the Revised Code of Washington 70.105D.090(1), TOC's interim remedial actions under the AO are exempt from the procedural requirements of any laws requiring or authorizing local government permits or approvals; however, TOC must comply with the substantive requirements of such permits or approvals.

Local requirements for clearing, grading, and erosion control activities were addressed through review under the State Environmental Policy Act (SEPA), which included a public comment period through September 26, 2011. State and regional permit requirements beyond the jurisdiction of the AO are discussed below in Sections B.1 (State Waste Discharge Permit), B.2 [Puget Sound Clean Air Agency (PSCAA) Order of Approval), and B.3 (Special Use Permit [SUP]).

B.1 STATE WASTE DISCHARGE PERMIT

State Waste Discharge Permit ST0007384 (SWD Permit) authorizes and regulates operation of and discharges from the three MPE systems on the TOC Site, effective July 2, 2012 through June 19, 2017.

Ecology's Water Quality Program administers the wastewater discharge permit, wastewater compliance sampling, record-keeping, and submittal schedule. Discharge Monitoring Reports (DMRs) are submitted to Ecology monthly. The DMR is a summary report which presents the monitoring data obtained during the monthly reporting period. A summary of the maximum daily effluent limits established by the permit are summarized below:

- The maximum daily volumes of water to be discharged to Monitoring Points 001 and 002 shall be 7,000 and 14,000 gallons per day (gallons/day), respectively.
- pH shall be between 6 and 10 standard units.
- Benzene concentrations shall not exceed 5 micrograms per liter (µg/L).
- Benzene, toluene, ethylbenzene and total xylene (BTEX) cumulative concentration shall not exceed 100 µg/L.
- Total petroleum hydrocarbons, gasoline range (GRPH) shall not exceed 1,000 µg/L.
- Total lead shall not exceed 1,090 µg/L.

The SWD Permit identifies two monitoring points (001 and 002) where compliance with the maximum daily effluent limits must be attained: the discharge from Unit 1 is monitored at monitoring point 001; the combined discharge from Units 2 and 3 is monitored at point 002. Treated groundwater from both monitoring points discharges to the City of Edmonds, Washington Wastewater Treatment Plant. Effluent from each of the three MPE systems is sampled on a monthly basis at points adjacent to each MPE system (Figure B-1). The minimum, maximum and average effluent concentrations are reported in monthly DMRs submitted to Ecology.

The SWD permit was modified in May 2015[6] by Ecology to allow the injection of additives of Tolcide® and AN-400 (phosphonate) to control the bio-fouling problem in the Unit 1 treatment system to improve treatment efficiency. The following revisions are specified in the permit modification (Ecology 2015):

Permit Modification

On page 5, two parameters and their effluent limits are being added to S1 of the permit for Outfall 001 which reads as follows:

Parameter	Maximum Daily
Tolcide PS20A (CAS ID 2809-21-4)	10 mg/L
AN-400 (CAS ID 55566-30-8)	3.2 mg/L

On page 6, two parameters and a footnote are being added to S2 of the permit for Outfall 001 which reads as follows:

Parameter	Units	Sampling Frequency	Sampling Type
Tolcide PS20A (CAS ID 2809-21-4)	mg/L	Quarterly	Grab[f]
AN-400 (CAS ID 55566-30-8)	mg/L	Quarterly	Grab[f]
[f] Analytical test methods are titration test kits (LaMotte).			

Although not specifically called out in the permit modification (Ecology 2015), Ecology is requiring the submittal of separate quarterly DMRs listing the quarterly grab sample results of the effluent concentrations for Tolcide® and AN-400 (phosphonate).

[6] *Ecology. 2015. Addendum to Fact Sheet; Permit No. ST0007834; TOC Holdings Co. May 11.*

B.2 PSCAA ORDER OF APPROVAL

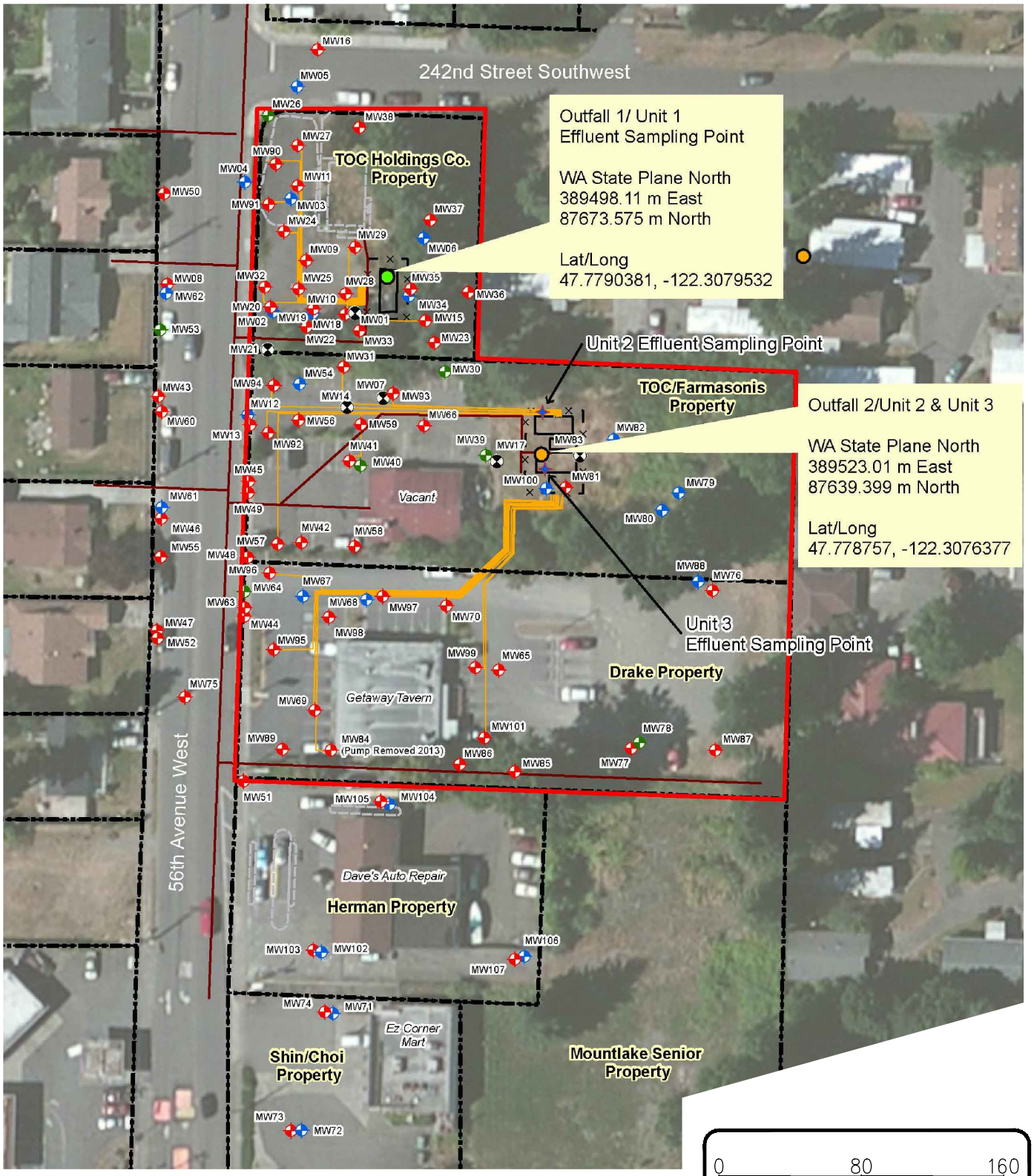
The PSCAA issued an Order of Approval for NOC 10384 on May 13, 2012, which established the conditions and restrictions for the operation of the CATOX units. The key conditions and restrictions are summarized below:

- Emissions from each of the three SVE blowers shall be routed through their associated CATOX.
- The flow through each CATOX shall not exceed 350 standard cubic feet per minute. The flow rate shall be monitored monthly.
- The temperature of the vapor entering the catalytic bed shall be at least 240 degrees Celsius (464 degrees Fahrenheit), and the temperature of the vapor exiting the oxidizer bed shall not exceed 620 degrees Celsius (1148 degrees Fahrenheit).
- The destruction and removal efficiency of the GRPH flowing into and out of the CATOX shall be 95 percent unless the concentration of GRPH in the vapor exiting the CATOX does not exceed 50 parts per million volume (ppmv).
- The CATOX units may be removed and SVE emissions can be vented directly to the atmosphere through a stack provided the benzene and GRPH concentrations remain below 0.5 and 50 ppmv, respectively, for a period of 3 consecutive months. [For this reason, the systems were modified to bypass the CATOX during Fourth Quarter 2014 (Units 2 and 3) and First Quarter 2015 (Unit 1)].
- The CATOX shall be reactivated if concentrations of benzene or GRPH exceed 0.5 or 50 ppmv, respectively. Samples are collected on a monthly basis to monitor the concentrations of benzene and GRPH from the stacks.

B.3 SPECIAL USE PERMIT

The SUP executed between TOC and the City of Mountlake Terrace (City) addresses interim remedial activities that extend into City rights-of-way (ROWs). Specifically, the SUP:

> Allows the discharge of treated wastewater to the City sanitary sewer network for conveyance to the City of Edmonds publicly owned treatment works under the State Waste Discharge Permit, and retroactively administers the installation, maintenance, sampling, repair and/or decommissioning of monitoring wells that are located within City ROWs.



SOURCE: STANTEC - 2014

N
W
E
S

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

DATE: 9-14-15
DWN: JJT
CHK: MS
APPROVED: MS
PRJ. MGR: CH
PROJECT NO: 01-176

FIGURE B-1
STATE WASTE DISCHARGE PERMIT ST0007384
OUTFALL SAMPLING LOCATIONS
TOC HOLDINGS CO, FACILITY NO. 01-176
24205 56TH AVENUE WEST
MOUNTLAKE TERRACE, WA.

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APPENDIX C

Analytical Laboratory Reports

610369-01; Unit 1 Vapor – October 2016
610370-01; Unit 2 Vapor – October 2016
610371–01; Unit 3 Vapor – October 2016
610372-01; -02; Unit 2 Water – October 2016
610373-01; -02; Unit 3 Water – October 2016
610374-01; -02; Unit 1 Water – October 2016
611358-01; Unit 3 Vapor – November 2016
611359-01; Unit 2 Vapor – November 2016
611360-01; Unit 1 Vapor –November 2016
611363-01; -02 Unit 2 Water – November 2016
611364-01; -02 Unit 3 Water – November 2016
611365-01; -02 Unit 1 Water – November 2016
612305-01; Unit 1 Vapor – December 2016
612306-01; Unit 2 Vapor – December 2016
612307-01; Unit 3 Vapor – December 2016
612308-01; -02 Unit 1 Water – December 2016
612309-02; -02 Unit 2 Water – December 2016
612310-01; -02 Unit 3 Water – December 2016

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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

October 31, 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 October 25, 2016 from the TOC_01-176, WORFDB8 F&BI 610369 project. There are 4 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

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

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Rob Honsberger, Allison Greiner
HDC1031R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on October 25, 2016 by Friedman & Bruya, Inc. from the HydroCon TOC_01-176, WORFDB8 F&BI 610369 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	HydroCon
610369 -01	1VEFF

All quality control requirements were acceptable.

Date of Report: 10/31/16
Date Received: 10/25/16
Project: TOC_01-176, WORFDB8 F&BI 610369
Date Extracted: 10/27/16
Date Analyzed: 10/27/16

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

Results Reported as mg/m^3

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
1VEFF 610369-01	<0.1	0.33	0.12	<0.3	40	84
Method Blank 06-2192 MB	<0.1	<0.1	<0.1	<0.3	<10	91

Date of Report: 10/31/16
Date Received: 10/25/16
Project: TOC_01-176, WORFDB8 F&BI 610369

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

Laboratory Code: 610369-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
Benzene	mg/m^3	<0.1	<0.1	nm
Toluene	mg/m^3	0.33 a	0.45 a	29 a
Ethylbenzene	mg/m^3	0.12	0.11	9
Xylenes	mg/m^3	<0.3	<0.3	nm
Gasoline	mg/m^3	40	40	0

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/m^3	5.0	82	70-130
Toluene	mg/m^3	5.0	82	70-130
Ethylbenzene	mg/m^3	5.0	86	70-130
Xylenes	mg/m^3	15	85	70-130
Gasoline	mg/m^3	100	108	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.

610369

SAMPLE CHAIN OF CUSTODY

ME 10/25/16

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 01-176

PO #

REMARKS

INVOICE TO

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

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

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM					Notes
INEFF	01 AB	10-25-16	0905	Vapor	2			X	X								

ANALYSES REQUESTED

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Robert A. Hultgren	Hydrocon	10-25-16	1235
Received by:	Nhan Phan	FCBI	10/25/16	1235
Relinquished by:				
Received by:				

Samples received at 5 °C

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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

October 31, 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 October 25, 2016 from the TOC_01-176, WORFDB8 F&BI 610370 project. There are 4 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

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

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Rob Honsberger, Allison Greiner
HDC1031R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on October 25, 2016 by Friedman & Bruya, Inc. from the HydroCon TOC_01-176, WORFDB8 F&BI 610370 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	HydroCon
610370 -01	2VEFF

All quality control requirements were acceptable.

Date of Report: 10/31/16
Date Received: 10/25/16
Project: TOC_01-176, WORFDB8 F&BI 610370
Date Extracted: 10/27/16
Date Analyzed: 10/27/16

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

Results Reported as mg/m^3

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
2VEFF 610370-01	<0.1	<0.1	<0.1	<0.3	<10	94
Method Blank 06-2192 MB	<0.1	<0.1	<0.1	<0.3	<10	91

Date of Report: 10/31/16
Date Received: 10/25/16
Project: TOC_01-176, WORFDB8 F&BI 610370

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

Laboratory Code: 610369-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
Benzene	mg/m^3	<0.1	<0.1	nm
Toluene	mg/m^3	0.33 a	0.45 a	29 a
Ethylbenzene	mg/m^3	0.12	0.11	9
Xylenes	mg/m^3	<0.3	<0.3	nm
Gasoline	mg/m^3	40	40	0

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/m^3	5.0	82	70-130
Toluene	mg/m^3	5.0	82	70-130
Ethylbenzene	mg/m^3	5.0	86	70-130
Xylenes	mg/m^3	15	85	70-130
Gasoline	mg/m^3	100	108	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.

610370

SAMPLE CHAIN OF CUSTODY

ME 10/25/16

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) [signature]

PROJECT NAME: TOC 01-176

PO #:

REMARKS:

INVOICE TO:

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

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

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM					Notes
						ANALYSES REQUESTED											
2VEFF	01AB	10-25-16	0845	Vapor	2			X	X								

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: [signature]	Robert A. Hultgren	Hydrocon	10-25-16	1235
Received by: [signature]	Nhan Phan	FEBI	10/25/16	1235
Relinquished by:				
Received by:				

Samples received at 5 °C

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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

October 31, 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 October 25, 2016 from the TOC_01-176, WORFDB8 F&BI 610371 project. There are 4 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

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

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Rob Honsberger, Allison Greiner
HDC1031R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on October 25, 2016 by Friedman & Bruya, Inc. from the HydroCon TOC_01-176, WORFDB8 F&BI 610371 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	HydroCon
610371 -01	3VEFF

All quality control requirements were acceptable.

Date of Report: 10/31/16
Date Received: 10/25/16
Project: TOC_01-176, WORFDB8 F&BI 610371
Date Extracted: 10/27/16
Date Analyzed: 10/27/16

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

Results Reported as mg/m^3

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
3VEFF 610371-01	<0.1	<0.1	<0.1	<0.3	<10	93
Method Blank 06-2192 MB	<0.1	<0.1	<0.1	<0.3	<10	91

Date of Report: 10/31/16
Date Received: 10/25/16
Project: TOC_01-176, WORFDB8 F&BI 610371

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

Laboratory Code: 610369-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
Benzene	mg/m^3	<0.1	<0.1	nm
Toluene	mg/m^3	0.33 a	0.45 a	29 a
Ethylbenzene	mg/m^3	0.12	0.11	9
Xylenes	mg/m^3	<0.3	<0.3	nm
Gasoline	mg/m^3	40	40	0

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/m^3	5.0	82	70-130
Toluene	mg/m^3	5.0	82	70-130
Ethylbenzene	mg/m^3	5.0	86	70-130
Xylenes	mg/m^3	15	85	70-130
Gasoline	mg/m^3	100	108	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.

SAMPLE CHAIN OF CUSTODY

610371

ME 10/25/16

Page # 1 of 1

Report To Craig Hultgren

Company Hydrocon

Address 510 Alki st Suite B

City, State, ZIP Kelso WA 98626

Phone _____ Email _____

SAMPLERS (signature)

PROJECT NAME: Toc 01-176

PO #

REMARKS

INVOICE TO

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

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

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM					Notes
						ANALYSES REQUESTED											
3VEFF	01AB	10-25-16	0830	vapor	2			X	X								

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Robert A. Hultgren	Hydrocon	10-25-16	1235
Received by:	Nhan Phan	FEBI	10-25-16	1235
Relinquished by:				
Received by:				

Samples received at 5 °C

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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

October 27, 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 October 25, 2016 from the TOC_01-176, WORFDB8 F&BI 610372 project. There are 4 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

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

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Rob Honsberger, Allison Greiner
HDC1027R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on October 25, 2016 by Friedman & Bruya, Inc. from the HydroCon TOC_01-176, WORFDB8 F&BI 610372 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	HydroCon
610372 -01	2WINF
610372 -02	2WEFF

All quality control requirements were acceptable.

Date of Report: 10/27/16
Date Received: 10/25/16
Project: TOC_01-176, WORFDB8 F&BI 610372
Date Extracted: 10/25/16
Date Analyzed: 10/25/16

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

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 52-124)
2WINF 610372-01	<1	<1	<1	<3	<100	93
2WEFF 610372-02	<1	<1	<1	<3	<100	95
Method Blank 06-2187 MB	<1	<1	<1	<3	<100	93

Date of Report: 10/27/16
Date Received: 10/25/16
Project: TOC_01-176, WORFDB8 F&BI 610372

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

Laboratory Code: 610372-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
Benzene	ug/L (ppb)	<1	<1	nm
Toluene	ug/L (ppb)	<1	<1	nm
Ethylbenzene	ug/L (ppb)	<1	<1	nm
Xylenes	ug/L (ppb)	<3	<3	nm
Gasoline	ug/L (ppb)	<100	<100	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	ug/L (ppb)	50	93	65-118
Toluene	ug/L (ppb)	50	92	72-122
Ethylbenzene	ug/L (ppb)	50	86	73-126
Xylenes	ug/L (ppb)	150	88	74-118
Gasoline	ug/L (ppb)	1,000	88	69-134

Data Qualifiers & Definitions

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

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

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

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

cf - The sample was centrifuged prior to analysis.

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

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

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

SAMPLE CHAIN OF CUSTODY

610372

ME 10/25/16

Page # 1 of 1 VW2

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 01-176

PO #

REMARKS

INVOICE TO

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

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

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM					Notes
						ANALYSES REQUESTED											
2WINF	01A-C	10-25-16	0855	water	3			X	X								
2WEFF	02A-C	"	0850	water	3			X	X								

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:		Robert A. Hultgren	Hydrocon	10-25-16	1235
Received by:		Nhan Pham	FCBI	10/25/16	1235
Relinquished by:					
Received by:					

Samples received at 5 °C

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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

October 27, 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 October 25, 2016 from the TOC_01-176, WORFDB8 F&BI 610373 project. There are 4 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

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

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Rob Honsberger, Allison Greiner
HDC1027R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on October 25, 2016 by Friedman & Bruya, Inc. from the HydroCon TOC_01-176, WORFDB8 F&BI 610373 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	HydroCon
610373 -01	3WINF
610373 -02	3WEFF

All quality control requirements were acceptable.

Date of Report: 10/27/16
Date Received: 10/25/16
Project: TOC_01-176, WORFDB8 F&BI 610373
Date Extracted: 10/25/16
Date Analyzed: 10/25/16

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

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 52-124)
3WINF 610373-01	<1	<1	<1	<3	<100	94
3WEFF 610373-02	<1	<1	<1	<3	<100	98
Method Blank 06-2187 MB	<1	<1	<1	<3	<100	93

Date of Report: 10/27/16
Date Received: 10/25/16
Project: TOC_01-176, WORFDB8 F&BI 610373

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

Laboratory Code: 610372-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
Benzene	ug/L (ppb)	<1	<1	nm
Toluene	ug/L (ppb)	<1	<1	nm
Ethylbenzene	ug/L (ppb)	<1	<1	nm
Xylenes	ug/L (ppb)	<3	<3	nm
Gasoline	ug/L (ppb)	<100	<100	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	ug/L (ppb)	50	93	65-118
Toluene	ug/L (ppb)	50	92	72-122
Ethylbenzene	ug/L (ppb)	50	86	73-126
Xylenes	ug/L (ppb)	150	88	74-118
Gasoline	ug/L (ppb)	1,000	88	69-134

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.

610373

SAMPLE CHAIN OF CUSTODY

ME 10/25/16

Page # 1 of 1 VW2

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 01-176

PO #

REMARKS

INVOICE TO

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

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

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	ANALYSES REQUESTED: TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM					Notes
3W INF	01 A-C	10-25-16	0840	wtr	3			X	X								
3W EFF	02 A-C	10-25-16	0835	"	3			X	X								

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Robert A. Hultgren	Hydrocon	10-25-16	1235
Received by:	Khan Phan	FEBI	10/25/16	1235
Relinquished by:				
Received by:				

Samples received at 5 °C

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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

October 27, 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 October 25, 2016 from the TOC_01-176, WORFDB8 F&BI 610374 project. There are 4 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

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

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Rob Honsberger, Allison Greiner
HDC1027R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on October 25, 2016 by Friedman & Bruya, Inc. from the HydroCon TOC_01-176, WORFDB8 F&BI 610374 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	HydroCon
610374 -01	1WINF
610374 -02	1WEFF

All quality control requirements were acceptable.

Date of Report: 10/27/16
Date Received: 10/25/16
Project: TOC_01-176, WORFDB8 F&BI 610374
Date Extracted: 10/25/16
Date Analyzed: 10/25/16

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

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 52-124)
1WINF 610374-01	<1	<1	<1	<3	<100	97
1WEFF 610374-02	<1	<1	<1	<3	<100	82
Method Blank 06-2187 MB	<1	<1	<1	<3	<100	93

Date of Report: 10/27/16
Date Received: 10/25/16
Project: TOC_01-176, WORFDB8 F&BI 610374

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

Laboratory Code: 610372-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
Benzene	ug/L (ppb)	<1	<1	nm
Toluene	ug/L (ppb)	<1	<1	nm
Ethylbenzene	ug/L (ppb)	<1	<1	nm
Xylenes	ug/L (ppb)	<3	<3	nm
Gasoline	ug/L (ppb)	<100	<100	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	ug/L (ppb)	50	93	65-118
Toluene	ug/L (ppb)	50	92	72-122
Ethylbenzene	ug/L (ppb)	50	86	73-126
Xylenes	ug/L (ppb)	150	88	74-118
Gasoline	ug/L (ppb)	1,000	88	69-134

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.

610374

SAMPLE CHAIN OF CUSTODY

ME 10/25/16

Page # 1 of 1 VW2

Report To Craig Hultgren

Company Hydroscan

Address 510 Allen St Suite B

City, State, ZIP Kelso WA 98626

Phone _____ Email _____

SAMPLERS (signature)

PROJECT NAME: Toc 01-176

PO #

REMARKS

INVOICE TO

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

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

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM					Notes
IWINF	01 A-C	10-25-16	0915	water	3			X	X								
IWEFF	02 A-C	"	0910	water	3			X	X								

ANALYSES REQUESTED

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:		Robert A. Hultgren	Hydroscan	10-25-16	1235
Received by:		Nhan Phan	FedEx	10-25-16	1235
Relinquished by:					
Received by:					

Samples received at 5 °C

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Seattle, WA 98119-2029
Ph. (206) 285-8282

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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fbi@isomedia.com
www.friedmanandbruya.com

December 1, 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 November 21, 2016 from the TOC_01-176, WORFDB8 F&BI 611358 project. There are 4 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

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

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Rob Honsberger, Allison Greiner
HDC1201R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on November 21, 2016 by Friedman & Bruya, Inc. from the HydroCon TOC_01-176, WORFDB8 F&BI 611358 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	HydroCon
611358 -01	3VEFF

The NWTPH-Gx gasoline laboratory control sample exceeded the acceptance criteria. Gasoline range material was not detected in the sample, therefore the data were acceptable.

All other quality control requirements were acceptable.

Date of Report: 12/01/16
Date Received: 11/21/16
Project: TOC_01-176, WORFDB8 F&BI 611358
Date Extracted: 11/23/16
Date Analyzed: 11/23/16

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

Results Reported as mg/m^3

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
3VEFF 611358-01	<0.1	<0.1	<0.1	<0.3	<10	87
Method Blank 06-2396 MB	<0.1	<0.1	<0.1	<0.3	<10	85

Date of Report: 12/01/16
Date Received: 11/21/16
Project: TOC_01-176, WORFDB8 F&BI 611358

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

Laboratory Code: 611358-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
Benzene	mg/m^3	<0.1	<0.1	nm
Toluene	mg/m^3	<0.1	<0.1	nm
Ethylbenzene	mg/m^3	<0.1	<0.1	nm
Xylenes	mg/m^3	<0.3	<0.3	nm
Gasoline	mg/m^3	<10	<10	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/m^3	5.0	96	70-130
Toluene	mg/m^3	5.0	99	70-130
Ethylbenzene	mg/m^3	5.0	110	70-130
Xylenes	mg/m^3	15	107	70-130
Gasoline	mg/m^3	100	160 vo	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.

611358

SAMPLE CHAIN OF CUSTODY

ME 11-21-16

Report To Craig Hultgren
Company HydroCon
Address SW Allen St Suite B
City, State, ZIP Kelso WA 98626
Phone _____ Email _____

SAMPLERS (signature)
PROJECT NAME: TOL 01-176
PO #:
REMARKS:
INVOICE TO:

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

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

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM					Notes
						ANALYSES REQUESTED											
3VEFF	01 A-B	11-21-16	1110	Vapor	2			X	X								
																	Samples received at 22 °C

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Robert A Hansberger	Hydrocon	11-21-16	1315
Received by:	DAVID	FEBZ	11-21-16	1816
Relinquished by:				
Received by:				

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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

December 1, 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 November 21, 2016 from the TOC_01-176, WORFDB8 F&BI 611359 project. There are 4 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

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

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Rob Honsberger, Allison Greiner
HDC1201R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on November 21, 2016 by Friedman & Bruya, Inc. from the HydroCon TOC_01-176, WORFDB8 F&BI 611359 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	HydroCon
611359 -01	2VEFF

The NWTPH-Gx gasoline laboratory control sample exceeded the acceptance criteria. Gasoline range material was not detected in the sample, therefore the data were acceptable.

All other quality control requirements were acceptable.

Date of Report: 12/01/16
Date Received: 11/21/16
Project: TOC_01-176, WORFDB8 F&BI 611359
Date Extracted: 11/23/16
Date Analyzed: 11/23/16

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

Results Reported as mg/m^3

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
2VEFF 611359-01	<0.1	<0.1	<0.1	<0.3	<10	87
Method Blank 06-2396 MB	<0.1	<0.1	<0.1	<0.3	<10	85

Date of Report: 12/01/16
Date Received: 11/21/16
Project: TOC_01-176, WORFDB8 F&BI 611359

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

Laboratory Code: 611358-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
Benzene	mg/m^3	<0.1	<0.1	nm
Toluene	mg/m^3	<0.1	<0.1	nm
Ethylbenzene	mg/m^3	<0.1	<0.1	nm
Xylenes	mg/m^3	<0.3	<0.3	nm
Gasoline	mg/m^3	<10	<10	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/m^3	5.0	96	70-130
Toluene	mg/m^3	5.0	99	70-130
Ethylbenzene	mg/m^3	5.0	110	70-130
Xylenes	mg/m^3	15	107	70-130
Gasoline	mg/m^3	100	160 vo	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.

611359

ME 11-21-16

SAMPLE CHAIN OF CUSTODY

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 01-176

PO #:

REMARKS:

INVOICE TO:

TURNAROUND TIME
☑ Standard Turnaround
☐ RUSH
Rush charges authorized by:

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

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM					Notes
						ANALYSES REQUESTED											
2VEFF	01A-B	11-21-16	1625	Vapor	2			X	X								
																	Samples received at 22°C

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Robert A Hardesty	HydroCon	11-21-16	1315
Received by:		FEBI	11-21-16	13:41
Relinquished by:				
Received by:				

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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

December 1, 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 November 21, 2016 from the TOC_01-176, WORFDB8 F&BI 611360 project. There are 4 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

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

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Rob Honsberger, Allison Greiner
HDC1201R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on November 21, 2016 by Friedman & Bruya, Inc. from the HydroCon TOC_01-176, WORFDB8 F&BI 611360 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	HydroCon
611360 -01	1VEFF

The NWTPH-Gx gasoline laboratory control sample exceeded the acceptance criteria. The data were flagged accordingly. There was insufficient holding time to reanalyze the sample.

All other quality control requirements were acceptable.

Date of Report: 12/01/16
Date Received: 11/21/16
Project: TOC_01-176, WORFDB8 F&BI 611360
Date Extracted: 11/23/16
Date Analyzed: 11/23/16

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

Results Reported as mg/m^3

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
1VEFF 611360-01	<0.1	<0.1	<0.1	<0.3	24 jl	88
Method Blank 06-2396 MB	<0.1	<0.1	<0.1	<0.3	<10	85

Date of Report: 12/01/16
Date Received: 11/21/16
Project: TOC_01-176, WORFDB8 F&BI 611360

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

Laboratory Code: 611358-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
Benzene	mg/m^3	<0.1	<0.1	nm
Toluene	mg/m^3	<0.1	<0.1	nm
Ethylbenzene	mg/m^3	<0.1	<0.1	nm
Xylenes	mg/m^3	<0.3	<0.3	nm
Gasoline	mg/m^3	<10	<10	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/m^3	5.0	96	70-130
Toluene	mg/m^3	5.0	99	70-130
Ethylbenzene	mg/m^3	5.0	110	70-130
Xylenes	mg/m^3	15	107	70-130
Gasoline	mg/m^3	100	160 vo	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.

611360

SAMPLE CHAIN OF CUSTODY

ME 11-21-16

Page # 1 of 1

Report To Craig Hultgen

Company Hydrocon

Address 510 Allen St Suite B

City, State, ZIP Kirkland WA 98626

Phone _____ Email _____

SAMPLERS (signature)	
PROJECT NAME: TOL 01-176	PO #
REMARKS	INVOICE TO

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

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

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM					Notes
INFF	01A-B	11-21-16	1045	water	2			X	X								
																	Samples received at 22°C

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Robert A Hansberger	Hydrocon	11-21-16	1315
Received by:	DOV	FedEx	11-21-16	13:15
Relinquished by:				
Received by:				

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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

November 29, 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 November 21, 2016 from the TOC_01-176, WORFDB8 F&BI 611363 project. There are 4 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

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

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Rob Honsberger, Allison Greiner
HDC1129R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on November 21, 2016 by Friedman & Bruya, Inc. from the HydroCon TOC_01-176, WORFDB8 F&BI 611363 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	HydroCon
611363 -01	2WINF
611363 -02	2WEFF

All quality control requirements were acceptable.

Date of Report: 11/29/16
Date Received: 11/21/16
Project: TOC_01-176, WORFDB8 F&BI 611363
Date Extracted: 11/22/16
Date Analyzed: 11/22/16

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

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 52-124)
2WINF 611363-01	<1	<1	<1	<3	<100	90
2WEFF 611363-02	<1	<1	<1	<3	<100	93
Method Blank 06-2392 MB	<1	<1	<1	<3	<100	93

Date of Report: 11/29/16
Date Received: 11/21/16
Project: TOC_01-176, WORFDB8 F&BI 611363

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

Laboratory Code: 611365-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
Benzene	ug/L (ppb)	<1	<1	nm
Toluene	ug/L (ppb)	<1	<1	nm
Ethylbenzene	ug/L (ppb)	<1	<1	nm
Xylenes	ug/L (ppb)	<3	<3	nm
Gasoline	ug/L (ppb)	<100	<100	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	ug/L (ppb)	50	111	65-118
Toluene	ug/L (ppb)	50	111	72-122
Ethylbenzene	ug/L (ppb)	50	114	73-126
Xylenes	ug/L (ppb)	150	110	74-118
Gasoline	ug/L (ppb)	1,000	102	69-134

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.

611363

ME 11-21-16

VWQ

SAMPLE CHAIN OF CUSTODY

Page # 1 of 1

Report To Craig Hultgren

Company HydroCon

Address 510 Alder St Suite B

City, State, ZIP Kelso WA 98626

Phone _____ Email _____

SAMPLERS (signature)

PROJECT NAME: TOC 01-176

PO #

REMARKS

INVOICE TO

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

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

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM					Notes
						ANALYSES REQUESTED											
2W INF	61 A-C	11-21-16	1105	water	3			X	X								
2W EFF	62 T	"	1100	"	3			X	X								

Samples received at 4 °C

4°C @

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Robert A Horsburgh	HydroCon	11-21-16	1315
Received by:	DOD	FEDEX	11-21-16	13.15
Relinquished by:				
Received by:				

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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

November 29, 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 November 21, 2016 from the TOC_01-176, WORFDB8 F&BI 611364 project. There are 4 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

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

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Rob Honsberger, Allison Greiner
HDC1129R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on November 21, 2016 by Friedman & Bruya, Inc. from the HydroCon TOC_01-176, WORFDB8 F&BI 611364 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	HydroCon
611364 -01	3WINF
611364 -02	3WEFF

All quality control requirements were acceptable.

Date of Report: 11/29/16
Date Received: 11/21/16
Project: TOC_01-176, WORFDB8 F&BI 611364
Date Extracted: 11/22/16
Date Analyzed: 11/22/16

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

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 52-124)
3WINF 611364-01	<1	<1	<1	<3	<100	91
3WEFF 611364-02	<1	<1	<1	<3	<100	92
Method Blank 06-2392 MB	<1	<1	<1	<3	<100	93

Date of Report: 11/29/16
Date Received: 11/21/16
Project: TOC_01-176, WORFDB8 F&BI 611364

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

Laboratory Code: 611365-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
Benzene	ug/L (ppb)	<1	<1	nm
Toluene	ug/L (ppb)	<1	<1	nm
Ethylbenzene	ug/L (ppb)	<1	<1	nm
Xylenes	ug/L (ppb)	<3	<3	nm
Gasoline	ug/L (ppb)	<100	<100	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	ug/L (ppb)	50	111	65-118
Toluene	ug/L (ppb)	50	111	72-122
Ethylbenzene	ug/L (ppb)	50	114	73-126
Xylenes	ug/L (ppb)	150	110	74-118
Gasoline	ug/L (ppb)	1,000	102	69-134

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.

611364

SAMPLE CHAIN OF CUSTODY

ME 11-21-16

VW2

Report To Craig Hultgren

Company Hydrocon

Address 510 Alder St Suite B

City, State, ZIP Kelso WA 98626

Phone _____ Email _____

SAMPLERS (signature) _____

PROJECT NAME: TOL 01-176

PO #

REMARKS

INVOICE TO

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

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

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM					Notes
						ANALYSES REQUESTED											
SWINF	01A-C	11-21-16	1105	water	3			X	X								
SWEFF	02T	"	1120	"	3			X	X								
																	Samples received at 4 °C

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Robert A Hershberger	Hydrocon	11-21-16	1315
Received by:	DOD	FEDEX	11/21/16	13:15
Relinquished by:				
Received by:				

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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

November 29, 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 November 21, 2016 from the TOC_01-176, WORFDB8 F&BI 611365 project. There are 4 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

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

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Rob Honsberger, Allison Greiner
HDC1129R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on November 21, 2016 by Friedman & Bruya, Inc. from the HydroCon TOC_01-176, WORFDB8 F&BI 611365 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	HydroCon
611365 -01	1WINF
611365 -02	1WEFF

All quality control requirements were acceptable.

Date of Report: 11/29/16
Date Received: 11/21/16
Project: TOC_01-176, WORFDB8 F&BI 611365
Date Extracted: 11/22/16
Date Analyzed: 11/22/16

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

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 52-124)
1WINF 611365-01	<1	<1	<1	<3	<100	90
1WEFF 611365-02	<1	<1	<1	<3	<100	92
Method Blank 06-2392 MB	<1	<1	<1	<3	<100	93

Date of Report: 11/29/16
Date Received: 11/21/16
Project: TOC_01-176, WORFDB8 F&BI 611365

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

Laboratory Code: 611365-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
Benzene	ug/L (ppb)	<1	<1	nm
Toluene	ug/L (ppb)	<1	<1	nm
Ethylbenzene	ug/L (ppb)	<1	<1	nm
Xylenes	ug/L (ppb)	<3	<3	nm
Gasoline	ug/L (ppb)	<100	<100	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	ug/L (ppb)	50	111	65-118
Toluene	ug/L (ppb)	50	111	72-122
Ethylbenzene	ug/L (ppb)	50	114	73-126
Xylenes	ug/L (ppb)	150	110	74-118
Gasoline	ug/L (ppb)	1,000	102	69-134

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.

611365

SAMPLE CHAIN OF CUSTODY

HE 11-21-16

Page # 1 of 1

Report To Craig Hultgren

Company HydroCon

Address SW Alden St Suite B

City, State, ZIP Kelso WA 98626

Phone _____ Email _____

SAMPLERS (signature)	
PROJECT NAME: TOC 01-176	PO #
REMARKS	INVOICE TO

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

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

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	ANALYSES REQUESTED: TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM					Notes
IWINF	01 A-C	11-21-16	1355	WW	3			X	X								
IWEFF	02 T	"	1350	"	3			X	X								
																Samples received at 4 °C	

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Robert A Hansberger	HydroCon	11-21-16	1315
Received by:	DOW	FedEx	11-21-16	13-15
Relinquished by:				
Received by:				

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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

December 28, 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 20, 2016 from the TOC_01-176, WORFDB8 F&BI 612305 project. There are 4 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

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

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Rob Honsberger, Allison Greiner
HDC1228R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on December 20, 2016 by Friedman & Bruya, Inc. from the HydroCon TOC_01-176, WORFDB8 F&BI 612305 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	HydroCon
612305 -01	1VEFF

All quality control requirements were acceptable.

Date of Report: 12/28/16
Date Received: 12/20/16
Project: TOC_01-176, WORFDB8 F&BI 612305
Date Extracted: 12/22/16
Date Analyzed: 12/22/16

RESULTS FROM THE ANALYSIS OF AIR SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING MODIFIED METHODS 8021B AND

Results Reported as mg/m^3

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range (C6-C10)	Surrogate (% Recovery) (Limit 50-150)
1VEFF 612305-01	<0.1	<0.1	<0.1	<0.3	<10	84
Method Blank 06-2612 MB	<0.1	<0.1	<0.1	<0.3	<10	87

Date of Report: 12/28/16
Date Received: 12/20/16
Project: TOC_01-176, WORFDB8 F&BI 612305

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

Laboratory Code: 612305-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
Benzene	mg/m^3	<0.1	<0.1	nm
Toluene	mg/m^3	<0.1	<0.1	nm
Ethylbenzene	mg/m^3	<0.1	<0.1	nm
Xylenes	mg/m^3	<0.3	<0.3	nm
Gasoline	mg/m^3	<10	<10	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/m^3	5.0	88	70-130
Toluene	mg/m^3	5.0	86	70-130
Ethylbenzene	mg/m^3	5.0	95	70-130
Xylenes	mg/m^3	15	96	70-130
Gasoline	mg/m^3	100	112	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.

SAMPLE CHAIN OF CUSTODY ME 12/20/16

612305

Report To Craig Hultgren

Company Hydrocon

Address 510 Aiken St. Suite B

City, State, ZIP Kelso WA 98626

Phone _____ Email _____

SAMPLERS (*signature*)

PROJECT NAME: 01-176

PO #:

REMARKS

INVOICE TO

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

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

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM					Notes
INFF	01AB	12-20-16	1015	Aw	2			X	X								
																	Samples received at 20 °C

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Robert A. Hunsberger	Hydrocon	12-20-16	1215
Received by:	Nhan Phan	FCBI	12/20/16	1215
Relinquished by:				
Received by:				

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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

December 28, 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 20, 2016 from the TOC_01-176, WORFDB8 F&BI 612306 project. There are 4 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

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

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Rob Honsberger, Allison Greiner
HDC1228R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on December 20, 2016 by Friedman & Bruya, Inc. from the HydroCon TOC_01-176, WORFDB8 F&BI 612306 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	HydroCon
612306 -01	2VEFF

All quality control requirements were acceptable.

Date of Report: 12/28/16
Date Received: 12/20/16
Project: TOC_01-176, WORFDB8 F&BI 612306
Date Extracted: 12/22/16
Date Analyzed: 12/22/16

RESULTS FROM THE ANALYSIS OF AIR SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING MODIFIED METHODS 8021B AND

Results Reported as mg/m^3

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range (C6-C10)	Surrogate (% Recovery) (Limit 50-150)
2VEFF 612306-01	<0.1	<0.1	<0.1	<0.3	<10	84
Method Blank 06-2612 MB	<0.1	<0.1	<0.1	<0.3	<10	87

Date of Report: 12/28/16
Date Received: 12/20/16
Project: TOC_01-176, WORFDB8 F&BI 612306

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

Laboratory Code: 612305-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
Benzene	mg/m^3	<0.1	<0.1	nm
Toluene	mg/m^3	<0.1	<0.1	nm
Ethylbenzene	mg/m^3	<0.1	<0.1	nm
Xylenes	mg/m^3	<0.3	<0.3	nm
Gasoline	mg/m^3	<10	<10	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/m^3	5.0	88	70-130
Toluene	mg/m^3	5.0	86	70-130
Ethylbenzene	mg/m^3	5.0	95	70-130
Xylenes	mg/m^3	15	96	70-130
Gasoline	mg/m^3	100	112	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.

612306

SAMPLE CHAIN OF CUSTODY ME 12/20/16

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: 01-176

PO #:

REMARKS:

INVOICE TO:

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

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

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	ANALYSES REQUESTED: TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM					Notes
2VEFF	01AB	12-20-16	1000	Air	2			X	X								
																	Samples received at 20 °C

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Robert A. Hultgren	Hydrocon	12-20-16	1215
Received by:	Nhan Phan	FEBI	12/20/16	1215
Relinquished by:				
Received by:				

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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Yelena Aravkina, M.S.
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Eric Young, B.S.

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Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

December 28, 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 20, 2016 from the TOC_01-176, WORFDB8 F&BI 612307 project. There are 4 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

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

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Rob Honsberger, Allison Greiner
HDC1228R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on December 20, 2016 by Friedman & Bruya, Inc. from the HydroCon TOC_01-176, WORFDB8 F&BI 612307 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	HydroCon
612307 -01	3VEFF

All quality control requirements were acceptable.

Date of Report: 12/28/16
Date Received: 12/20/16
Project: TOC_01-176, WORFDB8 F&BI 612307
Date Extracted: 12/22/16
Date Analyzed: 12/22/16

RESULTS FROM THE ANALYSIS OF AIR SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING MODIFIED METHODS 8021B AND

Results Reported as mg/m^3

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range (C6-C10)	Surrogate (% Recovery) (Limit 50-150)
3VEFF 612307-01	<0.1	<0.1	<0.1	<0.3	<10	87
Method Blank 06-2612 MB	<0.1	<0.1	<0.1	<0.3	<10	87

Date of Report: 12/28/16
Date Received: 12/20/16
Project: TOC_01-176, WORFDB8 F&BI 612307

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

Laboratory Code: 612305-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
Benzene	mg/m^3	<0.1	<0.1	nm
Toluene	mg/m^3	<0.1	<0.1	nm
Ethylbenzene	mg/m^3	<0.1	<0.1	nm
Xylenes	mg/m^3	<0.3	<0.3	nm
Gasoline	mg/m^3	<10	<10	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/m^3	5.0	88	70-130
Toluene	mg/m^3	5.0	86	70-130
Ethylbenzene	mg/m^3	5.0	95	70-130
Xylenes	mg/m^3	15	96	70-130
Gasoline	mg/m^3	100	112	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.

612307

SAMPLE CHAIN OF CUSTODY

ME 12/20/16

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 01-176	PO #
REMARKS	INVOICE TO

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

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

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM					Notes
						ANALYSES REQUESTED											
3VEFF	01 AB	12-20-16	0945	Air	2			X	X								

received at 20 °C

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Robert A. Hunsberger	Hydrocon	12-20-16	1215
Received by:	Nhan Phan	FEBI	12/20/16	1215
Relinquished by:				
Received by:				

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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

December 28, 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 20, 2016 from the TOC_01-176, WORFDB8 F&BI 612308 project. There are 7 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
HDC1228R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on December 20, 2016 by Friedman & Bruya, Inc. from the HydroCon TOC_01-176, WORFDB8 F&BI 612308 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	HydroCon
612308 -01	1WEFF
612308 -02	1WINF

All quality control requirements were acceptable.

Date of Report: 12/28/16
Date Received: 12/20/16
Project: TOC_01-176, WORFDB8 F&BI 612308
Date Extracted: 12/21/16
Date Analyzed: 12/21/16

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

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 52-124)
1WEFF 612308-01	<1	<1	<1	<3	<100	86
1WINF 612308-02	<1	<1	<1	<3	<100	83
Method Blank 06-2605 MB	<1	<1	<1	<3	<100	87

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	1WEFF	Client:	HydroCon
Date Received:	12/20/16	Project:	TOC_01-176, WORFDB8 F&BI 612308
Date Extracted:	12/21/16	Lab ID:	612308-01
Date Analyzed:	12/22/16	Data File:	612308-01.028
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Lead	<1

Analysis For Total Metals By EPA Method 200.8

Client ID:	Method Blank	Client:	HydroCon
Date Received:	NA	Project:	TOC_01-176, WORFDB8 F&BI 612308
Date Extracted:	12/21/16	Lab ID:	I6-841 mb
Date Analyzed:	12/22/16	Data File:	I6-841 mb.026
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Lead	<1

Date of Report: 12/28/16
Date Received: 12/20/16
Project: TOC_01-176, WORFDB8 F&BI 612308

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

Laboratory Code: 612310-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
Benzene	ug/L (ppb)	<1	<1	nm
Toluene	ug/L (ppb)	<1	<1	nm
Ethylbenzene	ug/L (ppb)	<1	<1	nm
Xylenes	ug/L (ppb)	<3	<3	nm
Gasoline	ug/L (ppb)	<100	<100	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	ug/L (ppb)	50	105	65-118
Toluene	ug/L (ppb)	50	104	72-122
Ethylbenzene	ug/L (ppb)	50	107	73-126
Xylenes	ug/L (ppb)	150	103	74-118
Gasoline	ug/L (ppb)	1,000	103	69-134

Date of Report: 12/28/16
Date Received: 12/20/16
Project: TOC_01-176, WORFDB8 F&BI 612308

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

Laboratory Code: 612308-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Lead	ug/L (ppb)	10	<1	89	90	70-130	1

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Lead	ug/L (ppb)	10	104	85-115

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.

612308

SAMPLE CHAIN OF CUSTODY

ME 12/20/16

Page # 1 of 1

Report To Craig Hultgren

Company Hydrocon

Address 510 Alkn St. Suite B

City, State, ZIP Kelso WA 98626

Phone _____ Email _____

SAMPLERS (*signature*)

PROJECT NAME: 01-176

PO #:

REMARKS

INVOICE TO

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

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

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	ANALYSES REQUESTED: TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM	Lead				Notes
1WEFF	01A-D	12-20-16	1005	water	4			X	X				X				
1WINF	02A-C	"	1010	"	3			X	X								
																Samples received at 4 °C	

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Robert A. Hultgren	Hydrocon	12-20-16	1145
Received by:	Nhan Phan	FedEx	12/20/16	1215
Relinquished by:				
Received by:				

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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Seattle, WA 98119-2029
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fbi@isomedia.com
www.friedmanandbruya.com

December 28, 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 20, 2016 from the TOC_01-176, WORFDB8 F&BI 612309 project. There are 7 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
HDC1228R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on December 20, 2016 by Friedman & Bruya, Inc. from the HydroCon TOC_01-176, WORFDB8 F&BI 612309 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	HydroCon
612309 -01	2WEFF
612309 -02	2WINF

All quality control requirements were acceptable.

Date of Report: 12/28/16
Date Received: 12/20/16
Project: TOC_01-176, WORFDB8 F&BI 612309
Date Extracted: 12/21/16
Date Analyzed: 12/21/16

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

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 52-124)
2WEFF 612309-01	<1	<1	<1	<3	<100	86
2WINF 612309-02	<1	<1	<1	<3	<100	83
Method Blank 06-2605 MB	<1	<1	<1	<3	<100	87

Analysis For Total Metals By EPA Method 200.8

Client ID:	2WEFF	Client:	HydroCon
Date Received:	12/20/16	Project:	TOC_01-176, WORFDB8 F&BI 612309
Date Extracted:	12/21/16	Lab ID:	612309-01
Date Analyzed:	12/22/16	Data File:	612309-01.077
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Lead	<1

Analysis For Total Metals By EPA Method 200.8

Client ID:	Method Blank	Client:	HydroCon
Date Received:	NA	Project:	TOC_01-176, WORFDB8 F&BI 612309
Date Extracted:	12/21/16	Lab ID:	I6-841 mb
Date Analyzed:	12/22/16	Data File:	I6-841 mb.026
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Lead	<1

Date of Report: 12/28/16
Date Received: 12/20/16
Project: TOC_01-176, WORFDB8 F&BI 612309

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

Laboratory Code: 612310-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
Benzene	ug/L (ppb)	<1	<1	nm
Toluene	ug/L (ppb)	<1	<1	nm
Ethylbenzene	ug/L (ppb)	<1	<1	nm
Xylenes	ug/L (ppb)	<3	<3	nm
Gasoline	ug/L (ppb)	<100	<100	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	ug/L (ppb)	50	105	65-118
Toluene	ug/L (ppb)	50	104	72-122
Ethylbenzene	ug/L (ppb)	50	107	73-126
Xylenes	ug/L (ppb)	150	103	74-118
Gasoline	ug/L (ppb)	1,000	103	69-134

Date of Report: 12/28/16
Date Received: 12/20/16
Project: TOC_01-176, WORFDB8 F&BI 612309

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

Laboratory Code: 612308-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Lead	ug/L (ppb)	10	<1	89	90	70-130	1

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Lead	ug/L (ppb)	10	104	85-115

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.

612309

SAMPLE CHAIN OF CUSTODY

ME 12/20/16

Page # 1 of 1

VW3
AI3

Report To Craig Hultgren

Company Hydrocon

Address 510 Alden St. Suite B

City, State, ZIP Kelso WA 98626

Phone _____ Email _____

SAMPLERS (signature)

PROJECT NAME: 01-176

PO #:

REMARKS

INVOICE TO

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

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

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	ANALYSES REQUESTED: TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM	Lead				Notes
2WEFF	01 A-D	12-20-16	0950	wtr	4			X	X				X				
2WINF	02 A-C	1<	0955	wtr	3			X	X								
																	Samples received at 4 °C

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Robert A. Hunsberger	Hydrocon	12-20-16	1215
Received by:	Nhan Phan	FEBI	12/20/16	1215
Relinquished by				
Received by:				

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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

December 28, 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 20, 2016 from the TOC_01-176, WORFDB8 F&BI 612310 project. There are 7 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,

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Michael Erdahl
Project Manager

Enclosures
c: Rob Honsberger, Allison Greiner
HDC1228R.DOC

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This case narrative encompasses samples received on December 20, 2016 by Friedman & Bruya, Inc. from the HydroCon TOC_01-176, WORFDB8 F&BI 612310 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	HydroCon
612310 -01	3WEFF
612310 -02	3WINF

All quality control requirements were acceptable.

Date of Report: 12/28/16
Date Received: 12/20/16
Project: TOC_01-176, WORFDB8 F&BI 612310
Date Extracted: 12/21/16
Date Analyzed: 12/21/16

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Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 52-124)
3WEFF 612310-01	<1	<1	<1	<3	<100	85
3WINF 612310-02	<1	<1	<1	<3	<100	84
Method Blank 06-2605 MB	<1	<1	<1	<3	<100	87

Analysis For Total Metals By EPA Method 200.8

Client ID:	3WEFF	Client:	HydroCon
Date Received:	12/20/16	Project:	TOC_01-176, WORFDB8 F&BI 612310
Date Extracted:	12/21/16	Lab ID:	612310-01
Date Analyzed:	12/22/16	Data File:	612310-01.078
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Lead	1.56

Analysis For Total Metals By EPA Method 200.8

Client ID:	Method Blank	Client:	HydroCon
Date Received:	NA	Project:	TOC_01-176, WORFDB8 F&BI 612310
Date Extracted:	12/21/16	Lab ID:	I6-841 mb
Date Analyzed:	12/22/16	Data File:	I6-841 mb.026
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Lead	<1

Date of Report: 12/28/16
Date Received: 12/20/16
Project: TOC_01-176, WORFDB8 F&BI 612310

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

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612310

SAMPLE CHAIN OF CUSTODY

ME 12/20/16 VW3/A33

Page # 1 of 1

Report To Craig Hultgren

Company Hydrocon

Address 510 Aiken St. Suite B

City, State, ZIP Kelso WA 98626

Phone _____ Email _____

SAMPLERS (*signature*)

PROJECT NAME: 01-176

PO #:

REMARKS

INVOICE TO

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

SAMPLE DISPOSAL
- ☐ Dispose after 30 days
- ☐ Archive Samples
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Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	ANALYSES REQUESTED: TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM	Lead				Notes
3WEFF	01 A D	12-20-16	0935	water	4			X	X				X				
3WINF	02 A C	11	0940	11	3			X	X								
																	Samples received at 4 °C

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Robert A. Hunsberger	Hydrocon	12-20-16	1215
Received by:	Nhan Phan	FCBI	12/20/16	1245
Relinquished by:				
Received by:				

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