ADDENDUM TO GROUNDWATER MONITORING PLAN, VERSION 3

TOC HOLDINGS CO. FACILITY NO. 01-176
24205, 24225, 24309 56TH AVENUE WEST
MOUNTLAKE TERRACE, WASHINGTON

APRIL 2017

This addendum to the Groundwater Monitoring Plan (GMP)[1] for the TOC Holdings Co. Facility No. 01-176 was prepared on behalf of TOC Holdings Co. (TOC), in response to the changes in the scope of groundwater monitoring. These changes were proposed by HydroCon in January 2017 (HydroCon 2017b) and approved by the State of Washington, Department of Ecology (Ecology) in March 2017[2]. Interim remedial actions and groundwater monitoring at the facility remain ongoing under the terms of Agreed Order (AO) No. DE 8661, between TOC and Ecology[3] entered in October 2011. Incorporated into the AO is a facility-wide *Interim Remedial Action Work Plan*[4] (IRAWP) that defined the initial scope of groundwater monitoring. The IRAWP and groundwater monitoring scope of work evolved during the period 2011 to 2016 as necessary to monitor the contaminant distribution as remediation progressed. This addendum is being submitted to Ecology for their review and approval to comply with the terms of the AO that requires Ecology confirmation of any major modifications to the IRAWP, and represents a request to formally amend the scope of the groundwater monitoring program for the AO.

The Ecology-approved changes for the GMP include ceasing the monitoring of 65 of the existing 103 active monitoring wells; thus leaving a total of 38 existing wells for future monitoring. The reasoning for the selection of the specific monitoring wells to be retained for future monitoring was presented in HydroCon 2017 (a,b). HydroCon is also proposing that the frequency of monitoring for the 38 remaining wells be changed to biannual sampling in consideration of the long and well understood monitoring record, and the overall success of remediation at the Site. Attached Figures 1, 2, and 3 illustrate the site location, a site plan with the locations of all wells currently included in the active monitoring network, and a site plan showing only the wells that will be monitored in the future as part of this addendum, respectively.

Contents of the Addendum

This addendum is comprised of the following items:

Attachment 1 - Table 1 – **Revised GWP.** The revised groundwater sampling schedule presented in **Table 1** provides a summary of the wells that are being retained in the monitoring program, including associated details related to sampling methodology, number and type of sample containers, and requested analyses.

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[1] *Stantec Consulting Services, Inc. 2017. Groundwater Monitoring Plan v.3. TOC Holdings Co. Facility No. 01-176; 24205 56th Avenue West; Mountlake Terrace, WA 98043.*

[2] *Ecology. 2017. Letter to Mr. Mark Chandler of TOC Holdings Co. from Sunny Becker re: comments on submitted documents:*
1) HydroCon. 2017a. "Proposed Alternative Approaches to Remediate Residual Groundwater Contamination", dated January 12;
2) HydroCon. 2017b. "Clarifications to the Proposal to Downsize the Current Groundwater Monitoring Program", dated February 14;
3) HydroCon. 2016. "Enhanced Fluid Recovery Methods and Results", dated December 22;
4) Stantec. 2017. "TOC Holdings Co.; Mountlake Terrace Site, Plan for Remediation Systems", dated February 21.

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

[4] *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.*

The wells included on Table 1 are proposed to be sampled on a biannual basis: once during seasonally high groundwater levels (usually during the first calendar quarter); and again during seasonally low groundwater levels (usually during the third calendar quarter).

Attachment 2- Groundwater Monitoring Plan version 3 (Stantec 2017) was modified as needed to reflect the revised monitoring program. All sections of Stantec (2017) related to sampling procedures and documentation are unchanged, and; therefore, incorporated by reference into this addendum, with the exception of **Tables A-1 and A-2**, which were edited and replaced by **Attachment 1 - Table 1** to reflect the revised groundwater sampling schedule.

Figures

1 – Site Location Map
2 – Locations of Monitoring Wells and Remediation Systems
3 – Monitoring Wells Retained in Monitoring Program

Attachments

1 – Table 1 Revised Groundwater Sampling Schedule
2 – Groundwater Monitoring Plan version 3 (Stantec 2017)

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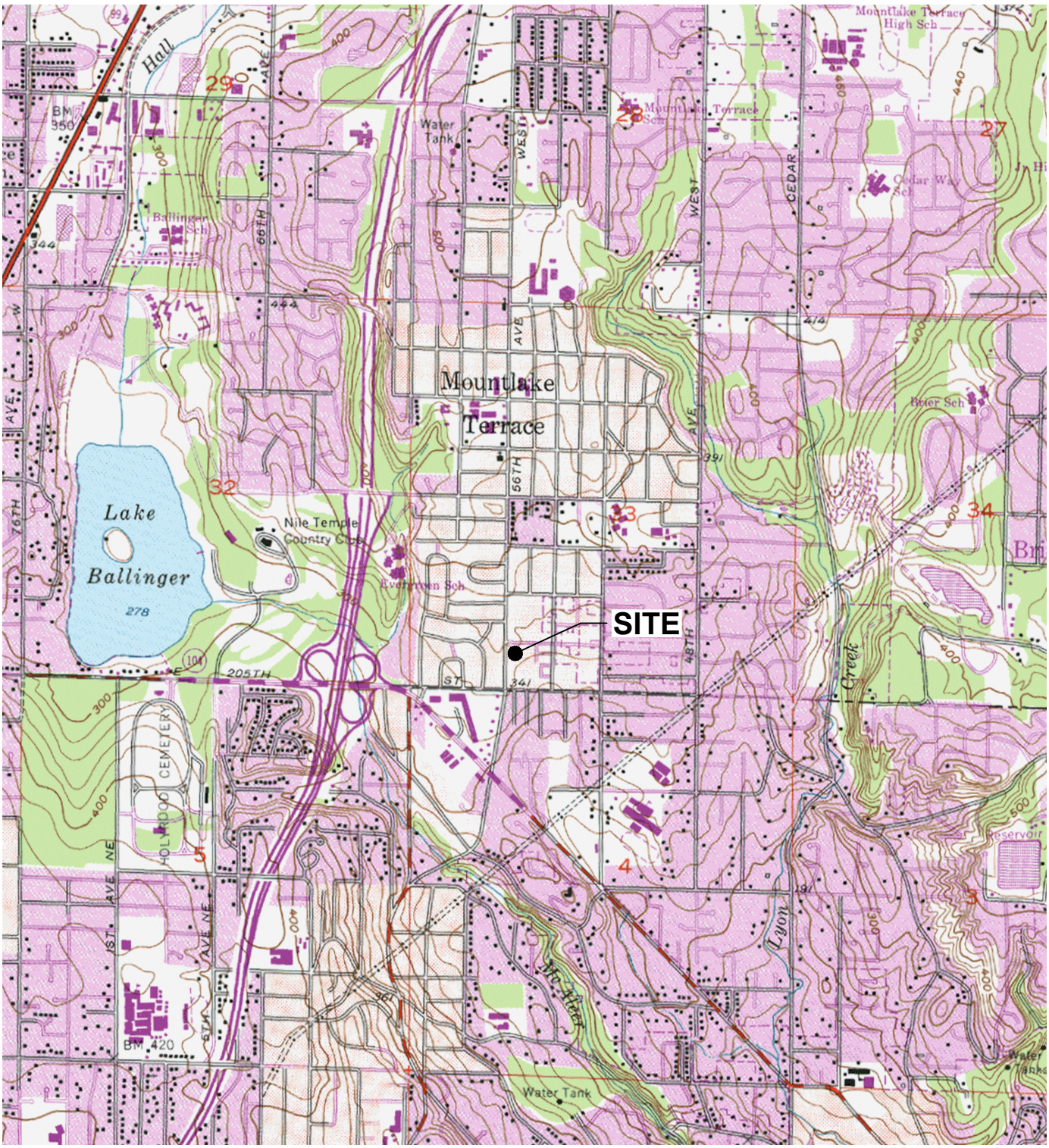
FIGURES



NOTE(S):

USGS, EDMONDS EAST QUADRANGLE
WASHINGTON
7.5 MINUTE SERIES (TOPOGRAPHIC)

0 2000 4000

SCALE IN FEET
1" = 2000'

N
W E
S

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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 AVE. W.
MOUNTLAKE TERRACE, WA.

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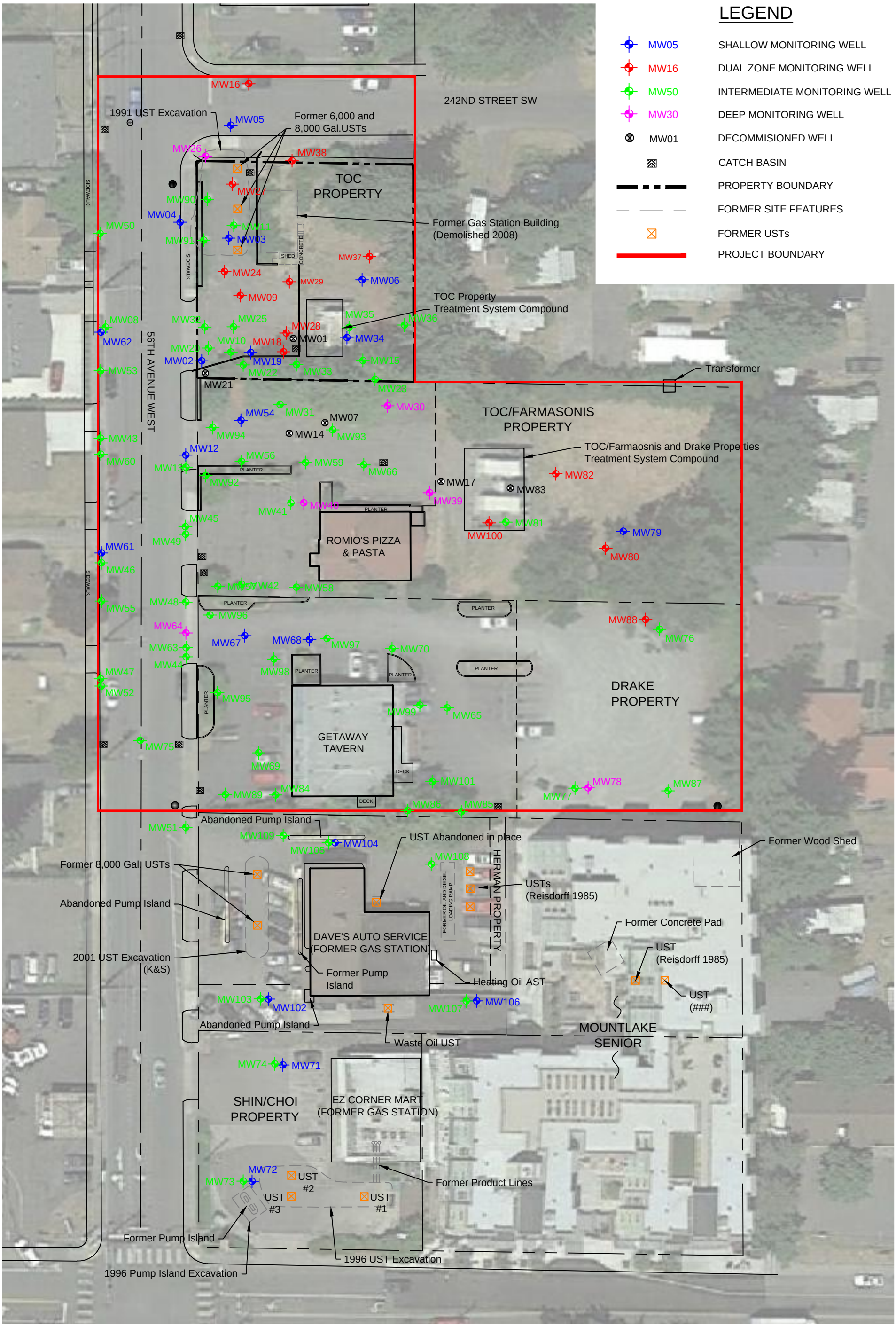

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FIGURE 2
LOCATIONS OF MONITORING WELLS AND REMEDIATION SYSTEMS
TOC HOLDINGS CO. FACILITY NO. 01-176
24205 56TH AVENUE WEST
MOUNTLAKE TERRACE, WA.

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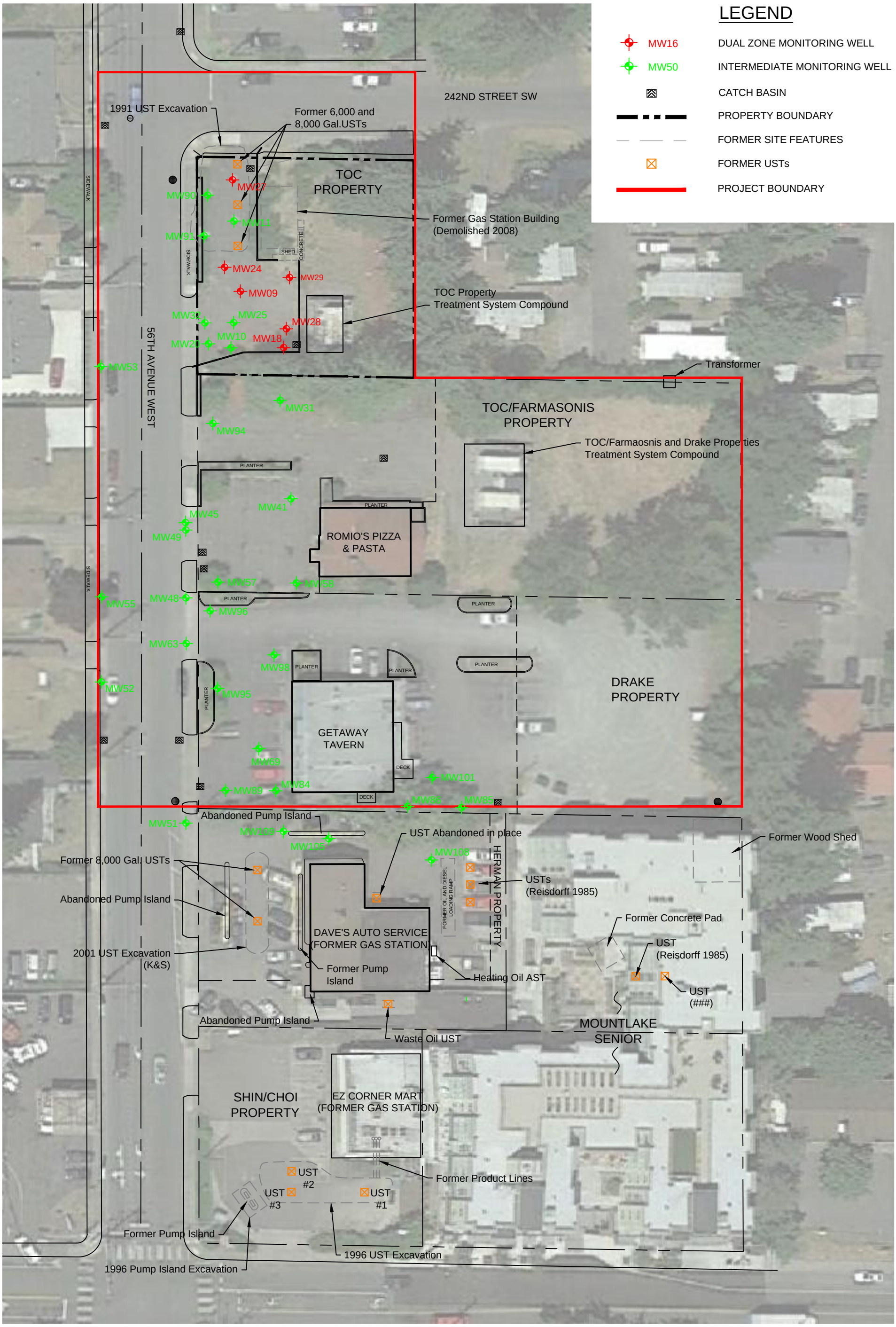

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FIGURE 3
MONITORING WELLS RETAINED IN MONITORING PROGRAM
TOC HOLDINGS CO. FACILITY NO. 01-176
24205 56TH AVENUE WEST
MOUNTLAKE TERRACE, WA.

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ATTACHMENTS

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TABLE 1
Revised Groundwater Sampling Schedule
TOC Holdings Co. No. 01-176
Mountlake Terrace, WA

Well Information					Container Type & Quantity			Sample Method & Quantity[1]					Laboratory Analyses & Method				
Well ID	Property	Groundwater Zone	Current Well Use	Notes	40mL VOA	250mL HNO_3	500mL UN-P Amber	Pneumatic Pump	Peristaltic Pump	Submersible Pump	Bailer (2-inch)	Bailer (4-inch)	Gx + BTEX (NWTPH-Gx + EPA SW8021B/ SW8260C)	MTBE (EPA 8260C)	Dx + PAHs (NWTPH-Dx + EPA 8270D SIM)	Total + Dissolved Pb (EPA 200.8)	EDC + EDB (EPA SW8260C + EPA 2021B)
MW09	TOC	Shallow-Intermediate	Monitoring Well	**QA/QC sample location**	12	0	0		2				2				
MW10	TOC	Intermediate	Monitoring Well		6	0	0		1				1				
MW11	TOC	Intermediate	4" Remediation Well		6	0	0	1					1				
MW18	TOC	Shallow-Intermediate	4" Remediation Well		6	0	0	1					1				
MW20	TOC	Intermediate	Monitoring Well	**QA/QC sample location**	12	0	2					2	2	2	2		
MW24	TOC	Shallow-Intermediate	4" Remediation Well		6	0	0	1					1				
MW25	TOC	Intermediate	Monitoring Well		6	0	0		1				1				
MW27	TOC	Shallow-Intermediate	2" Remediation Well		6	0	0	1					1				
MW28	TOC	Shallow-Intermediate	Monitoring	**QA/QC sample location**	12	0	0				2		2				
MW29	TOC	Shallow-Intermediate	2" Remediation Well		6	2	0	1					1			1	
MW31	TOC/Farmasonis	Intermediate	2" Remediation Well		6	2	0	1					1			1	
MW32	TOC	Intermediate	4" Remediation Well		6	2	0	1					1			1	
MW41	TOC/Farmasonis	Intermediate	2" Remediation Well		6	2	0	1					1			1	
MW45	56th Ave ROW	Intermediate	Monitoring Well	well is typically dry	6	2	0				1		1			1	
MW48	56th Ave ROW	Intermediate	Monitoring Well		6	2	0				1		1			1	
MW49	56th Ave ROW	Intermediate	Monitoring Well		6	0	0			1			1				
MW51	56th Ave ROW	Intermediate	Monitoring Well		6	0	0					1	1				
MW52	56th Ave ROW	Intermediate	Monitoring Well		6	0	0					1	1				
MW53	56th Ave ROW	Intermediate	Monitoring Well		6	0	0			1			1				
MW55	56th Ave ROW	Intermediate	Monitoring Well		6	0	0					1	1				
MW57	TOC/Farmasonis	Intermediate	4" Remediation Well		6	0	0	1					1	1			
MW58	TOC/Farmasonis	Intermediate	Monitoring Well		6	0	0					1	1				

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TABLE 1
Revised Groundwater Sampling Schedule
TOC Holdings Co. No. 01-176
Mountlake Terrace, WA

Well Information					Container Type & Quantity			Sample Method & Quantity[1]					Laboratory Analyses & Method				
Well ID	Property	Groundwater Zone	Current Well Use	Notes	40mL VOA	250mL HNO_3	500mL UN-P Amber	Pneumatic Pump	Peristaltic Pump	Submersible Pump	Bailer (2-inch)	Bailer (4-inch)	Gx + BTEX (NWTPH-Gx + EPA SW8021B/ SW8260C)	MTBE (EPA 8260C)	Dx + PAHs (NWTPH-Dx + EPA 8270D SIM)	Total + Dissolved Pb (EPA 200.8)	EDC + EDB (EPA SW8260C + EPA 2021B)
MW63	56th Ave ROW	Intermediate	Monitoring Well		6	0	0			1			1				
MW69	Drake	Intermediate	2" Remediation Well		6	0	2				1		1	1	1		
MW84	Drake	Intermediate	Monitoring Well		6	0	2			1			1	1	1		
MW85	Drake	Intermediate	Monitoring Well		6	0	2			1			1	1	1		
MW86	Drake	Intermediate	Monitoring Well	**QA/QC sample location**	16	4	4				2		2	2	2	2	2
MW89	Drake	Intermediate	Monitoring Well		6	0	2			1			1	1	1		
MW90	TOC	Intermediate	4" Remediation Well		6	2	0	1					1			1	
MW91	TOC	Intermediate	4" Remediation Well		6	2	2	1					1	1	1	1	
MW94	TOC/Farmasonis	Intermediate	4" Remediation Well		6	0	0	1					1				
MW95	Drake	Intermediate	4" Remediation Well	Pump turned off 04/30/15.	6	0	0	1					1	1			
MW96	Drake	Intermediate	4" Remediation Well		6	0	0	1					1	1			
MW98	Drake	Intermediate	4" Remediation Well		6	0	0	1					1	1			
MW101	Drake	Intermediate	4" Remediation Well		8	2	2					1	1	1	1	1	1
MW105	Herman	Intermediate	Monitoring Well		8	2	2				1		1	1	1	1	1
MW108	Herman	Intermediate	Monitoring Well		8	2	2				1		1	1	1	1	1
MW109	Herman	Intermediate	Monitoring Well		8	2	2				1		1	1	1	1	1
				Subtotal	**264**	**28**	**24**	**15**	**4**	**6**	**10**	**7**	**42**	**17**	**13**	**14**	**6**
				Equipment/Rinsate Blank x4	**16**	**8**	**4**						**As needed/All**				
				Water Blank x2	**8**	**4**	**2**						**As needed/All**				
				Total	**288**	**40**	**30**	**15**	**4**	**6**	**10**	**7**	**42**	**17**	**13**	**14**	**6**

SAMPLE ID PROTOCOL:
Primary Sample: Well ID
QA/QC Sample: MLT-01, MLT-02, MLT-03, etc. (First three letters are "MLT" and are followed by a two digit number that does not correspond to the well ID.)
Equipment/Rinsate Blank: EB-031815 (First two letters identify the sample type and are followed a six digit sampling date [e.g., mm/dd/yy].)
Water Blank: WB-031815 (First two letters identify the sample type and are followed a six digit sampling date [e.g., mm/dd/yy].)

NOTES:
[1] If the water column is less than five feet and recharge makes sampling with a submersible pump problematic, a bailer may be used to collect groundwater samples.

ACRONYMS:
BTEX = benzene, toluene, ethylbenzene and total xylenes
Dx = diesel- and motor oil-range petroleum hydrocarbons
EDB = ethylene dibromide (1,2-dibromoethane)
EDC = ethylene dichloride (1,2-dicholoroethane)
Gx = gasoline-range petroleum hydrocarbons
HNO_3 = nitric acid
mL = milliLiter
MTBE = methyl tertiary-butyl ether
QA/QC = quality assurance / quality control
PAH = polycyclic aromatic hydrocarbons
ROW = right-of-way
T/D Pb = total and dissolved lead
UN-P = unpreserved
VOA = volatile organic analysis

Groundwater Monitoring Plan

TOC Holdings Co.
Facility No. 01-176
24205 56th Avenue West
Mountlake Terrace, WA 98043

Prepared for:
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2737 West Commodore Way
Seattle, WA 98199

Prepared by:
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v.3

Sign-off Sheet

This document entitled, *Groundwater Monitoring Plan*, was prepared by Stantec Consulting Services Inc. (Stantec) on behalf of TOC Holdings Co. (TOC) for specific application to TOC Facility No. 01-176 in Mountlake Terrace, Washington. Services conducted by Stantec for this project were conducted in accordance with the Environmental Services Contract between HydroCon Environmental, LLC (HydroCon) and Stantec. Any reliance on this document by a third party is strictly prohibited. The material in it reflects Stantec's professional judgment in light of the scope, schedule and other limitations stated in the document and in the contract between Stantec and HydroCon. The opinions in the document are based on conditions and information existing at the time the document was published and do not take into account any subsequent changes. In preparing the document, Stantec did not verify information supplied to it by others. Any use which a third party makes of this document is the responsibility of such third party. Such third party agrees that Stantec shall not be responsible for costs or damages of any kind, if any, suffered by it or any other third party as a result of decisions made or actions taken based on this document.

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Reviewed by:

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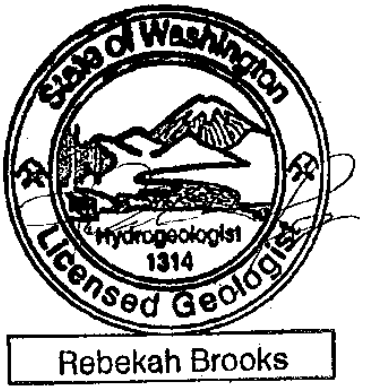
Senior Associate, Hydrogeology



Reviewed by:

Marty Minter, PG, RG
Manager, Geology

Table of Contents

1.0 INTRODUCTION 1

2.0 HEALTH AND SAFETY 2

3.0 GROUNDWATER MONITORING METHODS & PROCEDURES 3
3.1 DEPTH-TO-WATER/DEPTH-TO-PRODUCT MEASUREMENTS 3
3.1.1 Materials & Equipment for DTW/DTP Measurements 4
3.1.2 Electronic Probe Calibration 4
3.1.3 Measuring Point Locations 4
3.1.4 Measuring Procedures 5
3.1.5 Total Well Casing Depth Measurement Procedures 6
3.2 GROUNDWATER SAMPLE COLLECTION 6
3.2.1 Materials & Equipment 6
3.2.2 Sample Containers & Volumes 7
3.2.3 Sample Container Labeling 8
3.2.4 Sample Equipment Calibration 8
3.2.5 Groundwater Sampling Methods & Procedures 8
3.2.6 Groundwater Sampling 10
3.2.7 Sample Filtration 10
3.2.8 Sample Documentation 11
3.2.9 Sample Packaging, Preservation & Shipping 11
3.2.10 Sample Custody 11
3.2.11 Equipment Decontamination Procedures 12

4.0 QA/QC METHODS & PROCEDURES 13
4.1 FIELD QA/QC SAMPLES 13
4.1.1 Blind Field Duplicate Samples 13
4.1.2 Field Blank Samples 13
4.2 LABORATORY QA/QC SAMPLES 14
4.3 DATA VALIDATION 14

5.0 REFERENCES 16

LIST OF TABLES

A-1 Groundwater Sampling Schedule – First Quarter/Annual Event

A-2 Groundwater Sampling Schedule – Second, Third and Fourth Quarter Events

ATTACHMENTS

1 Health & Safety Plan

2 Field Forms

- Daily Field Report Form
- Groundwater Purge and Sample Collection Form
- Groundwater Data Information Form
- Water Quality Meter Calibration Form
- Daily Tailgate Meeting Form
- Chain-of-Custody Form

Acronyms & Abbreviations

°C	degrees Celsius
°F	degrees Fahrenheit
AO	Agreed Order
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene and total xylenes
BTOC	below top of casing
CFR	Code of Federal Regulations
COC	chain of custody
DOT	U.S. Department of Transportation
DRPH	diesel-range petroleum hydrocarbons
DTP	depth to product
DTW	depth to water
Ecology	Washington State Department of Ecology
EDB	ethylene dibromide (1,2-dibromoethane)
EDC	ethylene dichloride (1,2-dicholoroethane)
EPA	U.S. Environmental Protection Agency
FSDS	Field Sample Data Sheet
GRPH	gasoline-range petroleum hydrocarbons
HASP	Health and Safety Plan
HCl	hydrochloric acid
HNO_3	nitric acid
HydroCon	HydroCon Environmental, LLC
ID	Identifier
IRAWP	Interim Remedial Action Work Plan
L/min	liters per minute
LNAPL	light non-aqueous phase liquid
MTBE	methyl tertiary-butyl ether
NWTPH-Dx	Northwest Total Petroleum Hydrocarbon for diesel-range organics
NWTPH-Gx	Northwest Total Petroleum Hydrocarbon for gasoline-range organics
ORPH	Oil-Range Petroleum Hydrocarbons
OSHA	Occupational Safety and Health Administration
PAH	polycyclic aromatic hydrocarbons
QA/QC	Quality Assurance / Quality Control
RCRA	Resource Conservation and Recovery Act
ROW	right-of-way
RPD	relative percent difference
Stantec	Stantec Consulting Services Inc.
TOC	TOC Holdings Co.
USGS	U.S. Geology Survey
VOA	volatile organic analysis
VOC	volatile organic compound

List of Properties – TOC Site

TOC Property	24205 56th Avenue West, Mountlake Terrace, WA
TOC/Farmasonis Property	24225 56th Avenue West, Mountlake Terrace, WA
Drake Property	24309 56th Avenue West, Mountlake Terrace, WA
56th Avenue West ROW	Right-of-way adjacent to TOC, TOC/Farmasonis & Drake properties

List of Properties – Adjacent to TOC Site

Herman Property	24311 56th Avenue West, Mountlake Terrace, WA
Shin/Choi Property	24325 56th Avenue West, Mountlake Terrace, WA
242nd Street Southwest ROW	Right-of-way adjacent to TOC Property

1.0 INTRODUCTION

This *Groundwater Monitoring Plan* presents the field procedures and protocol to be followed during annual and quarterly groundwater monitoring events associated with the interim remedial action at the TOC Holdings Co. (TOC) Facility No. 01-176 located in Mountlake Terrace, Snohomish County, Washington. Ongoing groundwater monitoring is conducted under Agreed Order (AO) No. DE 8661, entered in October 2011 between TOC and the Washington State Department of Ecology (Ecology 2011). As specified in the AO, the site encompasses the following four properties located in Mountlake Terrace, Washington:

- **TOC Property:** 24205 56th Avenue West;
- **TOC/Farmasonis Property**: 24225 56th Avenue West;
- **Drake Property:** 24309 56th Avenue West; and
- **56th Avenue West Right-of-Way (ROW):** adjacent to the three properties identified above.

- The groundwater monitoring scope of work defined in the *Interim Remedial Action Work Plan* (IRAWP; SES 2011) encompasses the four properties identified above (collectively referred to as the "TOC Site") as well as the following two adjacent properties:
- **Shin/Choi Property:** 24325 56th Avenue West (south of the TOC Site) and
- **242nd Street Southwest ROW:** adjacent to the TOC Property (north of the TOC Site).

- Following completion of the IRAWP, several monitoring wells were installed on the following property that is also adjacent to the TOC Site:
- **Herman Property:** 24311 56th Avenue West (directly south of the TOC Site).

The procedures presented herein are intended to be general in nature and, as the work progresses and, when warranted, appropriate revisions may be made based on current site conditions. Beginning with the 2016 annual (first quarter) event, all groundwater monitoring field activities will be performed by HydroCon Environmental, LLC (HydroCon) and data evaluation and reporting will be performed by Stantec Consulting Services Inc. (Stantec) as a subconsultant to HydroCon.

2.0 HEALTH AND SAFETY

A site-specific Health and Safety Plan (HASP) was prepared by HydroCon (provided as ***Attachment 1***) in accordance with the Occupational Safety and Health Administration (OSHA) Code of Federal Regulation (CFR) 1910.120. The HASP includes a site-specific chemical and physical hazard evaluation; operations plan; safety equipment and procedures; and emergency procedures. The HASP encompasses health and safety protocols to be used by HydroCon field personnel during performance of groundwater monitoring and other field activities. The HASP will also be used to inform HydroCon field personnel of the site hazards and appropriate safety measures to be undertaken when working onsite.

All personnel that perform field activities must read and understand the contents of the HASP and sign the signature page prior to conducting fieldwork. The recent HASP must be in the possession field personnel when onsite. The field crew lead will hold an onsite safety meeting at the beginning (and end, if necessary) of each workday. All field personnel and any other personnel onsite at the time of the groundwater monitoring event must attend the daily safety meetings. Safety meetings will be documented by the field crew lead on the Daily Tailgate Meeting form.

In the case of a safety Incident involving injury, potential injury, or report of pain, soreness, or discomfort, field personnel must immediately report the incident (within one hour) to TOC Holdings (Mark Chandler), the Stantec project manager (Rebekah Brooks), and the HydroCon project manager (Craig Hultgren). Protocols indicated in HydroCon's HASP must be followed for response and reporting of any incidents.

3.0 GROUNDWATER MONITORING METHODS & PROCEDURES

The methods and procedures described in this plan were developed primarily from the U.S. Environmental Protection Agency (EPA) and U.S. Geological Survey (USGS) sources identified below.

- *Standard Operating Procedure for the Standard/Well-Volume Method for Collecting a Ground-Water Sample from Monitoring Wells for Site Characterization* (EPA, Region 9)
- *Low Stress (low flow) Purging and Sampling Procedure for the Collection of Ground Water Samples from Monitoring Wells* (EPA 2010)
- *Ground-Water Sampling Guidelines for Superfund and RCRA Project Managers. Ground Water Forum Issue Paper* (EPA 2002)
- *National field manual for the collection of water-quality data: U.S. Geological Survey Techniques of Water-Resources Investigations*, Book 9, Chapters A1-A9 (USGS, Various Dates)

The following sections summarize the methods and protocols that will be used for the annual and quarterly groundwater monitoring events.

3.1 Depth-to-Water/Depth-to-Product Measurements

In accordance with the scope of work defined in the IRAWP (SES 2011), depth-to-water/depth-to-product (DTW/DTP) levels are measured during each field event to determine groundwater flow characteristics and contaminant distribution. DTW/DTP measurements will be collected in accordance with the following schedule:

1) "System-on" Measurements: System-on measurements will be collected from all active wells at the beginning of each annual and quarterly groundwater monitoring event while the multi-phase extraction (MPE) remediation systems are operating. Data will be used to assess performance of the remediation systems and how pumping is influencing groundwater flow. All measurements will be collected on the same day.

2) "System-off" Measurements: System-off measurements will be collected from all active wells during annual and quarterly groundwater monitoring events. However, the DTW level will only be measured in MW75 (located in the 56th Avenue ROW) during the annual event per the Traffic Control Plan (WSDOT 2014). Prior to collecting system-off measurements, the remediation systems will be turned off for several days (typically 5 days) to allow groundwater levels to equilibrate. System-off measurements will be used to assess natural groundwater conditions (i.e. without influence of the remediation systems). All measurements will be collected on the same day.

3) DTW measurements will also be collected from each well location where sampling is attempted during annual and quarterly groundwater monitoring events. Measurements will be obtained prior to collecting the groundwater sample.

3.1.1 Materials & Equipment for DTW/DTP Measurements

Materials and equipment required for DTW/DTP level measurements are described below.

- **Project Records:**
  - Well Construction Records and Previous DTW/DTP Measurements
  - HASP (provided in **Attachment 1**)
  - *Groundwater Monitoring Plan* (provided herein)
- **Field Notebook and Forms** (provided in **Attachment 2**)
  - Daily Field Report Forms
  - Groundwater Data Information Form
  - Water Quality Meter Calibration Form
- **Electronic Probes:** An electronic probe consists of a contact electrode attached to the end of an insulated electrical cable marked with length indicators, and a reel which houses an ammeter, buzzer or other closed circuit indicator. The indicator shows a closed circuit and flow of current when the electrode touches a water or light non-aqueous phase liquid (LNAPL) surface. At locations where LNAPL is not present, DTW levels will be measured with an electronic water level probe to an accuracy of 0.01 feet. Where LNAPL is present (or was previously observed or is expected to occur), an oil/water interface probe will be used to check for the presence of LNAPL and measure the DTP and DTW.

3.1.2 Electronic Probe Calibration

The electronic probes used for DTW/DTP measurements will be calibrated at least annually (as part of regular maintenance) by comparing the position of the electrode relative to the marked graduations on the cable to those on a steel surveyors tape. The electronic probes will be calibrated more frequently if there is reason to suspect the probe was stretched (e.g. it was stuck in a well and pulled vigorously for retrieval or if the probe requires repair that could have affected the length of the cable).

If more than one electronic probe will be used for the measurement event, a baseline measurement from one well location will be collected using each probe to check for consistency between the instruments. Any differences between measurements will then be used to calibrate the instruments and correct the groundwater elevations, if necessary. The serial number of the electronic probe(s) selected for the measurement event will be recorded on the Groundwater Data Information form and/or in the designated field notebook. If an instrument cannot be calibrated, it will be removed from service and labeled as needing repair.

3.1.3 Measuring Point Locations

A measuring point has been established and marked at the top of the inner casing of each well where DTW/DTP measurements are made. The measuring point is based on the reference point used for the topographic survey conducted by a licensed surveyor following well installation or following any modification of the well casing or previously established measuring point. Generally, this point is the top of the well casing on the north side. The measuring point is permanently marked using an indelible marker or a notch cut into the casing. When a monitoring well is surveyed, the licensed surveyor will reference the measuring point elevation relative to the local datum for location and elevation.

3.1.4 Measuring Procedures

As described in ***Section 3.1.1***, DTW/DTP measurements will be collected using an electronic water level probe or an electronic oil-water interface probe. The procedures summarized below will be used by field staff for each DTW/DTP measurement event.

- During field event preparation activities, check the electronic probe(s) to confirm the battery is fully charged.
- Prior to collecting DTW/DTP measurements, review well construction details and previously collected measurements from each well location to gain insight on expected measurement values and to be alerted to any anomalous readings.
- Prior to collecting measurements, open each well casing for a minimum of 15 minutes to allow groundwater levels to equilibrate with atmospheric pressure.
- Select the appropriate electronic probe for each measurement location. (As described in ***Section 3.1.1***, where LNAPL was previously observed or is expected to occur, an electronic oil/water interface probe will be used to check for the presence of LNAPL and measure the DTP and DTW.)
- To avoid cross contamination between wells, rinse the indicator probes and affected cables with deionized or tap water prior to the first measurement location, between each measurement location, and following the last measurement location.
- Lower the probe into the well until the indicator shows a closed circuit. Raise and lower the probe slightly until the shortest length of cable that gives the maximum indicator response is found.
- With the cable in this fixed position, measure the DTW/DTP levels relative to the measuring point at the top of the well casing (described further in ***Section 4.1.3***) to an accuracy of 0.01 feet. In the event LNAPL is encountered in the well, the DTP level will be recorded first and the DTW level will be recorded second. The probe(s) will identify the DTP level with a solid, continuous buzzer sound and will identify the DTW level with a pulsating buzzer sound.
- The measurement procedures will be repeated as many times as necessary until two identical DTW/DTP measurements are obtained at each well location.
- System-on and system-off measurements will be recorded on the Groundwater Data Information form along with the date and time of each measurement and any notable observations. Measurements collected at the time of sampling will be recorded on the Groundwater Purge and Sample Collection forms. Field forms are provided in ***Attachment 2***.

Groundwater elevations will be calculated from the DTW measurement and the surveyed measuring point elevation at each well. If DTP measurements are collected, the product (LNAPL) thickness will be determined by subtracting the DTP from the DTW measurement. LNAPL is lighter than water and slightly depresses the groundwater table as a function of the specific gravity difference between the two media. If LNAPL is measured in any wells, the reported groundwater elevations will be normalized using the industry-standard specific gravity estimate of the LNAPL (gasoline at the TOC Site) relative to a specific gravity of 1.0 for water. The following equation and associated values will be used to obtain the normalized groundwater elevation:

Normalized Groundwater Elevation (feet) = [(H_{TOC} - H_W) * 1.0] + [(H_W - H_{LNAPL}) * SG]	
H_{TOC} = top of well casing elevation	**H_{LNAPL}** = DTP level below the top of well casing
H_W = DTW level below the top of well casing	**SG** = specific gravity of LNAPL

3.1.5 Total Well Casing Depth Measurement Procedures

To confirm the total depth of an existing well casing (if needed), the total depth of a well casing will be measured immediately after construction or at any time when conditions of the well may have changed or are in question. The total well depth is measured by sounding the bottom of the well with a weighted steel surveyors' tape or other graduated and weighted steel or fiberglass measuring tape. The electronic water level probe may also be used as a measuring device, if weighted.

To measure the total depth of the well, the weighted measuring tape or probe will be lowered into the well until there is slack in the tape or until there is a noticeable decrease in weight, which indicates the instrument has reached the bottom of the well. The tape will be lowered slowly to avoid damaging the bottom of the well with the additional weight. The tape will be raised slowly until it just becomes taut. With the tape in this fixed position, the tape reading opposite the measuring point at the top of the casing (or on the north side of the casing, if the well has not yet been surveyed) will be recorded to the nearest 0.1 feet.

3.2 Groundwater Sample Collection

Groundwater samples are collected to monitor contaminant concentrations and distribution and to evaluate the performance and efficacy of the remediation systems located on the TOC Site and their effect on groundwater quality. The groundwater sampling method selected for each well location depends upon the function of the well (i.e. monitoring or remediation), the depth to groundwater in the well, and the volume of groundwater available for sample collection.

3.2.1 Materials & Equipment

Materials and equipment required for groundwater sampling are listed below.

- **Project Records:**
  - Well Construction Records
  - HASP (provided in ***Attachment 1***)
  - *Groundwater Monitoring Plan* (provided herein)
  - Sampling Schedule (***Table A-1*** for annual event or ***Table A-2*** for quarterly events)
- **Field Notebook and Forms** (provided in ***Attachment 2***)
  - Daily Field Report Forms
  - Groundwater Purge and Sample Collection Form
  - Water Quality Meter Calibration Forms
  - Chain of Custody (COC) Form (provided by analytical laboratory)
  - Health and Safety Forms (Daily Tailgate Meeting Form)
- **Groundwater Sampling Equipment:**
  - Pneumatic Pump
  - Peristaltic Pump
  - Submersible Pump
  - Bailers
  - Water Quality Meters
  - Flow-through Cells and Filters
  - Sample Containers and Insulated Coolers (provided by analytical laboratory)
  - Ice for Coolers

3.2.2 Sample Containers & Volumes

Groundwater samples will be collected into sample containers appropriate for the analytical method. Pre-cleaned containers will be obtained from the licensed analytical laboratory performing the analyses (Friedman & Bruya, Inc.). Different containers will be required for specific groups of analytes in accordance with applicable EPA Methods. ***Table A-1*** (subject to change and approved by the Project Manager prior to the field events) provides the quarterly sampling schedule and analyses for each well, per the requirements of the IRAWP (SES 2011). Field personnel will coordinate with Friedman & Bruya to confirm the appropriate containers and preservatives are provided prior to each sampling event. The table provided in this section summarizes the types of analyses and associated sample containers and preservatives that will be provided for each well scheduled for sampling.

Type & Quantity of Sample Containers Required per Sample Location

Laboratory Analysis	Analytical Method	Sample Containers		
		40mL VOA Glass Vials (preserved with HCl)	250mL Plastic Bottle (preserved with HNO_3)	500mL Amber Glass Bottle (unpreserved)
Gasoline-Range Petroleum Hydrocarbons (GRPH)	NWTPH-Gx	3	-	-
Benzene, Toluene, Ethylbenzene, & Total Xylenes (BTEX)	EPA Method 8021B or 8260C			
Methyl Tertiary-Butyl Ether (MTBE)	EPA Method 8260C	1	-	-
1,2-Dicholoroethane/ Ethylene Dichloride (EDC)	EPA Method 8260C	-	2	-
1,2-Dibromoethane/ Ethylene Dibromide (EDB)	EPA Method 8011M			
Dissolved Lead*	EPA Method 200.8			
Total Lead	EPA Method 200.8			
Oil-Range Petroleum Hydrocarbons (ORPH)	NWTPH-Dx	-	-	1
Diesel-Range Petroleum Hydrocarbons (DRPH)	NWTPH-Dx			
Polycyclic Aromatic Hydrocarbons (PAH)	EPA Method 8270SIM			

HCl = hydrochloric acid; HNO_3 = nitric acid; mL = milliliter; VOA = volatile organic analysis

Groundwater samples for this analysis will typically be field-filtered using the procedure described in **Section 3.2.7.*

3.2.3 Sample Container Labeling

Prior to collecting samples, field personnel will label each sample container with the project identifier (ID), unique sample ID, and date and time written in waterproof ink on a self-adhesive label. The label will also specify if the sample is field-filtered during collection or if preservatives are added. The following protocol will be used for assigning a unique sample ID:

- **Original Groundwater Samples**: Assign a sample ID that corresponds to the well location from which the sample was collected (e.g. a sample collected from MW02 will be given the sample ID MW02).
- **Blind Field Duplicates Samples** (described in ***Section 4.1.1***)**:** Assign a unique sample ID (e.g. MLT-01, MLT-02, MLT-03, etc.) that does not identify the well location from which the sample was collected. The original sample ID and blind field duplicate sample ID will be identified on the FSDS prepared for that sample location and will not be identified on the COC form provided to the analytical laboratory.
- **Field Blank Samples** (described in ***Section 4.1.2***): Water blanks and equipment/rinsate blanks will be given a sample ID that includes two letters identifying the type of sample collected (e.g. WB = water blank and EB = equipment blank) followed by the sample date (e.g. WB-031815 and EB-031815).

3.2.4 Sample Equipment Calibration

Water quality meters will be calibrated daily by field personnel prior to collecting groundwater samples. Equipment will be calibrated in accordance with the manufacturer's instructions. Calibration checks for all instruments will be documented on Water Quality Meter Calibration form (provided in ***Attachment 2***). At a mimimum, equipment will be calibrated at the beginning of each sampling day and any time an anomalous meter reading is observed. If an instrument cannot be calibrated, it will be removed from service and labeled for repair.

3.2.5 Groundwater Sampling Methods & Procedures

Four sampling methods (pneumatic pump, peristaltic pump, submersible pump, and bailer) will be used during each groundwater monitoring events. The procedures and rational for each groundwater sampling method are described below.

- **Pneumatic Pump:** For remediation wells connected to a MPE remediation system, groundwater samples will be collected using a dedicated downhole pneumatic pump. The pneumatic pump delivers a pulse of groundwater to the wellhead whenever the groundwater table rises above the pump intake. Groundwater samples will be collected from the pneumatic pump directly into laboratory-prepared sample containers using disposable polyethylene tubing.

- **Peristaltic Pump:** This sampling method will be used for monitoring wells installed in the Shallow and/or Shallow-Intermediate Intersect Zone with DTW levels less than 31 feet bgs (due to the inability of the pump to lift the water for sampling from greater depths). Purging and sampling with a peristaltic pump will be performed using disposable polyethylene tubing at approximate flow rates of 0.1 liters per minute (L/min) or less.

- **Submersible Pump:** This sampling method will be used for monitoring wells installed in the Intermediate, Deep, and/or Intermediate-Deep Intersect Zones with DTW levels greater than 31 feet bgs (in which case a peristaltic pump cannot be used for sampling). Submersible pumps will be used in wells that have insufficient groundwater recharge rates and/or insufficient water column heights. Purging and sampling with a submersible pump will be performed using disposable polyethylene tubing at flow rates ranging from 0.1 to 0.5 L/min. If the water table is above the top of the screen and, hence, the well screen is saturated, the intake tubing or the submersible pump will be placed in the middle of the screen (approximately). However, if the groundwater table is below the top of the screen and, hence, the well screen is not fully-saturated, the intake tubing or submersible pump will be placed near the middle of the water column.

- **Bailer:** The disposable polyethylene bailer sampling method will be the last selected method and will only be used under the following circumstances:
    - Historical analytical results indicate that elevated turbidity associated with bailing would not be likely to result in detectable concentrations of petroleum hydrocarbons in groundwater samples.
    - Historical water columns are less than five feet and recharge makes sampling with a submersible pump problematic.

Samples collected with a pneumatic, peristaltic, or submersible pump will be collected in accordance with low-flow protocols (EPA 2010a). When purging and sampling in accordance with low-flow protocols, field parameters will be monitored using a water quality meter equipped with a flow-through cell. One set of field parameters will be collected from the remediation wells sampled with a pneumatic pump. Field parameters (described in ***Section 3.2.5.1***) will be monitored and recorded on the Groundwater Purge and Sample Collection Form. Following purging and stabilization of the field parameters, groundwater samples will be collected from the pump outlet tubing located upstream of the flow-through cell and placed directly into laboratory-prepared sample containers.

Well purging and groundwater sampling with disposable bailers will require removal of at least three well volumes of groundwater from each monitoring well prior to sampling. If fewer than three well volumes are purged when attempting to collect groundwater samples, the wells will be allowed to recharge for several hours (or overnight) before sample collection is reattempted. Following well purging, samples will be collected from the bailer directly into laboratory-prepared sample containers.

Purge water generated during each sampling event will be placed in appropriately labeled 55-gallon steel drums and temporarily stored on the TOC Site for transfer to the remediation systems for treatment and permitted discharge to the sanitary sewer.

3.2.5.1 Field Parameters

One set of applicable field parameters will be collected from each sampling location. Field parameters will be monitored using a Quanda, YSI, or HF Scientific Turbidity water quality meter equipped with a flow-through cell during well purging and at the time of groundwater sampling. Use of a flow-through cell is not is not possible when sampling with a bailer. Field parameters and stabilization criteria that will be monitored and recorded are identified in the table provided in this section. Stabilization criteria will be met prior to sampling using three field readings recorded approximately five minutes apart.

Field Parameters & Stabilization Criteria

Field Parameter Type	Units	Stabilization Criteria
Water Level	**feet below top of casing (BTOC)**	**± 0.05**
Purge Rate	**L/min**	0.100-0.500
Temperature	**degrees Celsius (°C)**	**±3%**
Specific Conductance	**millisiemens per centimeter (mS/cm)**	**±3%**
Dissolved Oxygen	**milligrams per liter (mg/L)**	**±10% or ≤1.00 ±0.2**
pH	**standard unit (SU)**	**±0.1**
Oxidation-Reduction Potential (ORP)	**millivolts (mV)**	**±10**
Turbidity	**Nephelometric Turbidity Unit (NTU)**	**±10% or ≤10**

Data obtained from the field parameter measurements will be recorded on the Groundwater Purge and Sample Collection Form. Separate aliquots of water will be used for taking field measurements (i.e. sample containers for laboratory analysis will not be reopened). If the parameters have not stabilized after collecting three field readings or three well volumes, the field instruments will be checked to determine if they are operating correctly and are still calibrated. If needed, the instruments will be recalibrated.

3.2.6 Groundwater Sampling

Following purging and stabilization of the field parameters, groundwater samples will be collected from the pump outlet tubing located upstream of the flow-through cell or directly from the bailer, and placed directly into laboratory-prepared sample containers that have been pre-labeled by field staff (see ***Section 3.2.3***). Clean gloves will be worn by field personnel when collecting each sample to avoid cross-contamination. The groundwater samples will be discharged or poured slowly and carefully into the sample containers to minimize aeration. Groundwater samples collected for Volatile Organic Compound (VOC) analyses will be collected in vials and completely filled so no head space remains. Following groundwater collection, VOC sample containers will be checked for air bubbles. If air bubbles are observed, the container will be emptied and a new container will be used. Following collection, the groundwater samples will be stored in coolers or a refrigerator until transported to the analytical laboratory.

Purge water generated during the sampling event will be placed in 55-gallon steel drums that will be labeled and temporarily stored on the TOC Property for transfer to the remediation systems for treatment and permitted discharge to the sanitary sewer.

3.2.7 Sample Filtration

Groundwater samples collected for dissolved parameters (e.g. metals) will be field-filtered using a disposable in-line, 0.45 micron filter. The groundwater sample will be pumped through the filter attached directly to the discharge tubing of the groundwater pumping system (in accordance with low-flow sampling procedures) or a peristaltic pump and a section of Tygon (polyvinylchloride) tubing or other appropriate method may be used if the sample is first collected in a clean container (volume based sampling). The filter cartridge will be rinsed with an aliquot of sample prior to collection of sample in the containers or as recommended by the filter manufacturer. A new filter and tubing will be used for each sample. A note will be made on the sample label, Groundwater Purge and Sample Collection form, and COC form to indicate the sample has been field filtered.

3.2.8 Sample Documentation

The information listed below will be documented on the Groundwater Purge and Sample Collection form for each groundwater sample.

- Project Name/ID
- Sample location (well ID and property location)
- Sample ID (and duplicate sample ID [if applicable])
- Date and time of sample collection
- Sample method (i.e. bailer, submersible pump, peristaltic pump or pneumatic pump)
- Well information (i.e. diameter and well condition observations)
- Purging information (i.e. total well depth, DTW/DTP level measurement [obtained at time of sampling], well screen interval, casing volume, sampling depth [feet below top of casing {BTOC}, total purge volume, purging method, disposal method, etc.)
- Field parameter measurements (described in ***Section 3.2.5.1***)
- Sample container inventory (i.e. container type/volume, quantity, preservatives or filters [if applicable], and type of laboratory analysis requested)
- Make, model and serial number of field instruments
- Notable observations
- Field personnel name and signature

If required, other notable field observations will be documented on the Daily Field Report form, in a project-specific field notebook, and/or by taking photographs. Following completion of the sampling event, a quality assurance/quality control (QA/QC) review of the field records will be completed by the HydroCon Project Manager (or his/her designee). The original records will be placed in the project files maintained by HydroCon and an electronic copy of all field records will be provided to Stantec.

3.2.9 Sample Packaging, Preservation & Shipping

Samples will be packaged and transported in a manner that will protect the integrity of the sample and prevent detrimental effects due to the possible hazardous nature of the samples. Regulations for packaging, marking, labeling and shipping hazardous materials are promulgated by the U.S. Department of Transportation (DOT) 49 CFR 171 through 177. The sample containers will be carefully packaged to avoid breakage or cross contamination.

If required by the analytical method, groundwater samples will be placed on ice inside an insulated cooler (at an approximate cooler temperature of 4 °C [39.2 °F]) immediately after collection or in a refrigerator until packaged for transport to the laboratory. This approximate temperature will be maintained until delivery to the analytical laboratory.

3.2.10 Sample Custody

The primary objective of sample custody is to create an accurate record that can be used to trace the possession and handling of samples so their quality and integrity can be documented and maintained from collection until completion of all required analyses. Sample custody will be achieved by filling out a COC Form. The COC form is initially completed by field personnel collecting the sample, and thereafter signed by each individual accepting custody of the sample.

A sample will be considered to be in custody under the following conditions:

- field or laboratory personnel have the sample in physical possession;
- field or laboratory personnel have the sample in view;
- the sample is locked or secured in a locked container or otherwise sealed so that tampering is evident; and/or
- the sample is kept in a secured area that is restricted to authorized personnel only.

When samples are transferred to another entity, the personnel receiving the samples will sign the COC form and document the date and time of transfer. Laboratory personnel accepting custody will sign and document the date and time transfer on the COC Form. Laboratory personnel will also note any integrity issues on the COC form and will maintain sample security and custody through the analytical process.

The coolers in which the samples are packaged will be accompanied by the COC Form(s) identifying their contents. If coolers are shipped via commercial courier, the COC Form(s) will be sealed in plastic bags and placed inside the coolers and the coolers will be secured with custody seals.

3.2.11 Equipment Decontamination Procedures

Decontamination procedures for groundwater sampling equipment will be used to minimize the possibility of cross-contaminating samples. Sampling equipment that will be used to sample multiple locations will be cleaned between sampling locations and at the end of the sampling day. Sampling equipment that comes in contact with potentially contaminated material will be decontaminated before and after each use. Equipment cleaning methods will be recorded in the field records.

Steel surveyors' tape, electrical probes and other measuring tapes will be cleaned before and after each measurement location. Cleaning will be accomplished by washing off visible contamination with a laboratory-grade detergent/water solution and rinsing with clean, potable, municipal water followed by rinsing with distilled or deionized water. If equipment is potentially contaminated by LNAPL, it will be rinsed with a weak hexane solution or warm, soapy water before the final distilled or deionized water rinse. Extra decontamination will be performed after sampling wells in the vicinity of wells containing product (i.e. after sampling MW73 and MW74 [Shin/Choi Property] and MW104 [Herman Property]) and the wells with the most contamination will be sampled at the end of the sampling event after wells containing less or no contamination to minimize the potential for cross-contamination. After cleaning, equipment will be handled carefully to minimize contact with contaminants.

Sample bottles and bottle caps will be cleaned and prepared by the analytical laboratory (or their supplier) using standard EPA-approved protocols. Sample bottles and bottle caps will be protected from contamination between the time they are in the custody of the sampler(s) and the time of use.

4.0 QA/QC METHODS & PROCEDURES

The objective of the QA/QC procedures described below is to confirm that project data are of known and appropriate quality and integrity, and sufficient to support their intended use. QA/QC will be accomplished by collecting field QA/QC samples or measurements at specific well locations in the field or specific samples in the laboratory. The results of the QA/QC samples will be used to evaluate precision, accuracy, representativeness, completeness and comparability of the analytical results.

4.1 Field QA/QC Samples

4.1.1 Blind Field Duplicate Samples

Blind field duplicate samples will be collected during groundwater monitoring events and used to evaluate precision and accuracy and whether sample collection methods are reproducible. For every 10 groundwater samples collected, one duplicate sample will be collected, or one duplicate sample will be collected per day. The relative percent difference (RPD) between the original and duplicate sample result should be less than 20 percent. Duplicate samples will be collected from the same well location and at the same time as the original sample and placed in different bottles than the primary sample. The bottles will be labeled such that the laboratory cannot determine the sample location (i.e. well ID). Samples will be collected by alternately filling sample containers for both the original and corresponding duplicate sample to decrease variability between samples, except for samples collected for VOC analysis.

4.1.2 Field Blank Samples

Field blanks will be used to evaluate precision and accuracy. The QA/QC samples described below will be collected for all groundwater monitoring events.

- **Water Blanks:** A water blank sample will be collected in the field to evaluate the potential presence of contamination originating from sources not associated with sample collection procedures (e.g., water purchased by field personnel for collection of equipment/rinsate blanks or for decontamination of equipment). Each sample container is filled with deionized or distilled water in the field, preserved as required, and returned to the laboratory for analysis along with the other samples.Deionized water is provided by the analytical laboratory in new 5 gallon cube containers. One water blank is collected per batch.,. The water will be submitted to the laboratory with the groundwater samples collected on the same day as the blank was collected and documented on the same COC.

- **Equipment/Rinsate Blanks:** Following the last equipment decontamination of each sampling day, a deionized or distilled water rinse of the down hole equipment used to collect groundwater samples using submersible pumps on that sampling day will be collected, preserved as required, and returned to the laboratory for analysis along with the other samples. Equipment/rinsate samples will only be collected on days that a submersible pump was used. The equipment/rinsate blanks will be submitted to the laboratory with the groundwater samples collected on the same day as the blank was collected and documented on the same COC.

- **Trip Blanks:** Trip blanks are prepared by the laboratory to evaluate the presence of contamination (volatiles) during transit, from sample bottles, or from laboratory conditions. Each bottle is filled with deionized or distilled water in the laboratory, preserved as required, and returned to the laboratory for analysis in the same shipping container with groundwater samples that will require analysis for

volatile constituents. In general, one trip blank will be included in each shipping container. No analytes should be detected in the trip blank.

4.2 Laboratory QA/QC Samples

The following samples will be used to evaluate laboratory QA/QC:

- **Laboratory Method Blanks:** Laboratory method blanks are samples prepared in the laboratory to identify any potential contamination introduced within the laboratory and are used to evaluate representativeness of the sample result. One method blank will be analyzed per batch of 20 samples. Analytes should not be detected in the laboratory method blank(s).
- **Laboratory Matrix Spikes/Matrix Spike Duplicates:** Laboratory matrix spikes and matrix spike duplicates are used to evaluate potential matrix effects on sample analysis for inorganic parameters and laboratory accuracy and precision. One matrix spike and one matrix spike duplicate sample (generally run as a pair) will be included with analyses per batch of 20, (at a minimum of one per sampling event). The percent recoveries of target analytes from the matrix spike sample and the RPD for the matrix spike duplicate should be within the laboratory method requirements.
- **Laboratory Duplicates:** Laboratory duplicate samples are prepared by the laboratory to assess laboratory precision. One laboratory duplicate sample is analyzed per batch of 20 groundwater samples. The RPD between the original and duplicate sample should be within the laboratory method requirements.
- **Laboratory Control Samples:** A laboratory control sample is a sample of known analyte concentrations that is similar to the field sample matrix and is analyzed identically with the field samples in a sample batch. The laboratory control sample demonstrates that the analytical method and instrumentation are within specified control limits for acceptability. One laboratory control sample and one laboratory control sample duplicate (generally run as a pair) will be analyzed per batch of 20 samples (at a minimum of one per sampling event). The percent recoveries of analytes from the laboratory control sample should be within the laboratory method requirements. The laboratory control sample duplicate evaluates precision and the RPD should be within the laboratory method requirements.

4.3 Data Validation

Both field and laboratory QA/QC results will be evaluated to ensure sample integrity and data of known quality. Analytical reports from the laboratory will be accompanied by QA/QC results necessary to enable data reviewers to determine the quality of the data. The data validation process will identify QA/QC problems and potential limitations on the use of the data, if any. Results of samples that are outside of the laboratory or field QA/QC requirements will be marked with qualifiers (flags). Data validation will be conducted using the appropriate EPA guidelines for inorganics and organics (EPA 2008 and EPA 2010b). The QA/QC review will be completed by the Project Manager's designee and will include an evaluation of the following:

- COC Forms;
- laboratory data completeness;
- laboratory sample integrity and holding times;
- field and method duplicate samples;
- water and equipment/rinsate blank samples;
- laboratory duplicate and blank samples;
- laboratory accuracy and precision;
- field sampling and analysis precision;
- field comparability (e.g. similar site conditions, collection techniques, measurement procedures, and methods and reporting); and
- sample representativeness.

Copies of the evaluations conducted for the data validation will be maintained in Stantec's project files. Any data qualifiers applied to the data will be documented on the groundwater quality results tables attached to each groundwater monitoring report prepared by Stantec.

5.0 REFERENCES

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Tables

A-1 Groundwater Sampling Schedule – First Quarter/Annual Event

A-2 Groundwater Sampling Schedule – Second, Third and Fourth Quarter Events

Stantec Consulting Services Inc.
19101 36th Ave W, Ste. 203
Lynnwood, WA 98036
Phone: 425.877.4994

TABLE A-1
Groundwater Sampling Schedule - First Quarter/Annual Event
TOC Holdings Co. Facility #01-176
Mountlake Terrace, Washington

Table A-1 in v3 of the GWMP is no longer valid and is eplaced by

Well Information						Container Type & Quantity			Sample Method & Quantity[1]					Laboratory Analyses & Method				
Well ID	Property	Groundwater Zone	Current Well Use	Notes	Purge Water Estimate	40mL VOA	250mL HNO_3	500mL UN-P Amber	Pneumatic Pump	Peristaltic Pump	Submersible Pump	Bailer (2-inch)	Bailer (4-inch)	Gx + BTEX (NWTPH-Gx + EPA SW8021B/ SW8260C)	MTBE (EPA 8260C)	Dx + PAHs (NWTPH-Dx + EPA 8270D SIM)	Total + Dissolved Pb (EPA 200.8)	EDC + EDB (EPA SW8260C + EPA 2021B)
MW01	TOC	Shallow	Abandoned	Decommissioned 10/01/09	--	--	--	--										
MW02	TOC	Shallow	Monitoring Well	**QA/QC sample location**	1	6	0	0		2				2				
MW03	TOC	Shallow	Monitoring Well		1	3	0	0		1				1				
MW04	56th Ave ROW	Shallow	Monitoring Well		1	3	0	0		1				1				
MW05	242nd St ROW	Shallow	Monitoring Well		1	3	0	0		1				1				
MW06	TOC	Shallow	Monitoring Well		1	3	0	0		1				1				
MW07	TOC/Farmasonis	Intermediate	Abandoned	Decommissioned 11/29/04	--	--	--	--										
MW08	56th Ave W ROW	Shallow-Intermediate	Monitoring Well		1	3	0	0		1				1				
MW09*	TOC	Shallow-Intermediate	Monitoring Well	**QA/QC sample location**	16	6	0	0		2				2				
MW10*	TOC	Intermediate	Monitoring Well		1	3	0	0		1				1				
MW11	TOC	Intermediate	4" Remediation Well		0	3	0	0	1					1				
MW12	56th Ave ROW	Shallow	Monitoring Well		1	3	0	0		1				1				
MW13	56th Ave ROW	Intermediate	Monitoring Well		1	3	0	0				1		1				
MW14	TOC/Farmasonis	Intermediate	Abandoned	Decommissioned 11/29/04	--	--	--	--										
MW15*	TOC	Intermediate	Monitoring Well	*Do not sample if well contains sediment or biological buildup.*	1	3	0	0					1	1				
MW16	242nd St ROW	Intermediate-Deep	Monitoring Well		1	3	0	0				1		1				
MW17	TOC/Farmasonis	Intermediate	Abandoned	Decommissioned 11/29/04	--	--	--	--										
MW18	TOC	Shallow-Intermediate	4" Remediation Well		0	3	0	0	1					1				
MW19	TOC	Shallow	Monitoring Well		1	3	0	0		1				1				
MW20*	TOC	Intermediate	Monitoring Well	**QA/QC sample location**	1	8	0	2			2		2	2	2	2		
MW21*	TOC	Intermediate	Abandoned	Decommissioned 04/16/12	--	--	--	--										
MW22	TOC	Shallow-Intermediate	Monitoring Well		1	3	0	0		1				1				
MW23	TOC	Intermediate	Monitoring Well		1	3	0	0				1		1				
MW24	TOC	Shallow-Intermediate	4" Remediation Well		0	3	0	0	1					1				
MW25	TOC	Intermediate	Monitoring Well		1	3	0	0		1				1				
MW26	242nd St ROW	Deep	Monitoring Well		9	3	0	0				1		1				
MW27*	TOC	Shallow-Intermediate	2" Remediation Well		0	3	0	0	1					1				
MW28	TOC	Shallow-Intermediate	Monitoring	**QA/QC sample location**	2	6	0	0		1		1		2				
MW29	TOC	Shallow-Intermediate	2" Remediation Well		0	3	1	0	1					1			1	
MW30	TOC/Farmasonis	Deep	Monitoring		11	3	0	0			1			1				
MW31*	TOC/Farmasonis	Intermediate	2" Remediation Well		0	3	1	0	1					1			1	
MW32*	TOC	Intermediate	4" Remediation Well		0	3	1	0	1					1			1	
MW33*	TOC	Intermediate	Monitoring Well		2	3	0	0				1		1				

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TABLE A-1
Groundwater Sampling Schedule - First Quarter/Annual Event
TOC Holdings Co. Facility #01-176
Mountlake Terrace, Washington

Well Information						Container Type & Quantity			Sample Method & Quantity[1]					Laboratory Analyses & Method				
Well ID	Property	Groundwater Zone	Current Well Use	Notes	Purge Water Estimate	40mL VOA	250mL HNO_3	500mL UN-P Amber	Pneumatic Pump	Peristaltic Pump	Submersible Pump	Bailer (2-inch)	Bailer (4-inch)	Gx + BTEX (NWTPH-Gx + EPA SW8021B/ SW8260C)	MTBE (EPA 8260C)	Dx + PAHs (NWTPH-Dx + EPA 8270D SIM)	Total + Dissolved Pb (EPA 200.8)	EDC + EDB (EPA SW8260C + EPA 2021B)
MW34	TOC	Shallow	Monitoring Well		1	3	0	0		1				1				
MW35	TOC	Intermediate	Monitoring Well		1	3	1	0					1	1			1	
MW36	TOC	Intermediate	Monitoring Well		4	3	0	0					1	1				
MW37	TOC	Shallow-Intermediate	Monitoring Well		1	3	0	0		1				1				
MW38	242nd St ROW	Shallow-Intermediate	Monitoring Well		1	3	0	0		1				1				
MW39	TOC/Farmasonis	Deep	Monitoring Well		17	3	0	0			1			1				
MW40	TOC/Farmasonis	Deep	Monitoring Well		17	3	0	0			1			1				
MW41	TOC/Farmasonis	Intermediate	2" Remediation Well		0	3	1	0	1					1			1	
MW42	TOC/Farmasonis	Intermediate	Monitoring Well	well is typically dry	1	3	0	0				1		1				
MW43	56th Ave ROW	Shallow-Intermediate	Monitoring Well		1	3	0	0				1		1				
MW44	56th Ave ROW	Intermediate	Monitoring Well	well is typically dry	1	3	0	0				1		1				
MW45*	56th Ave ROW	Intermediate	Monitoring Well	well is typically dry	1	3	1	0				1		1			1	
MW46	56th Ave ROW	Intermediate	Monitoring Well		1	3	1	0				1		1			1	
MW47	56th Ave ROW	Intermediate	Monitoring Well	well is typically dry	1	3	1	0				1		1			1	
MW48*	56th Ave ROW	Intermediate	Monitoring Well		1	3	1	0				1		1			1	
MW49*	56th Ave ROW	Intermediate	Monitoring Well		1	3	0	0			1			1				
MW50*	56th Ave ROW	Intermediate	Monitoring Well		8	3	0	0					1	1				
MW51*	56th Ave ROW	Intermediate	Monitoring Well		8	3	0	0					1	1				
MW52*	56th Ave ROW	Intermediate	Monitoring Well		3	3	0	0					1	1				
MW53*	56th Ave ROW	Intermediate	Monitoring Well		21	3	0	0			1			1				
MW54	TOC/Farmasonis	Shallow	Monitoring Well		8	3	0	0		1				1				
MW55*	56th Ave ROW	Intermediate	Monitoring Well		1	3	0	0			1			1				
MW56*	TOC/Farmasonis	Intermediate	Monitoring Well		1	3	0	0			1			1				
MW57	TOC/Farmasonis	Intermediate	4" Remediation Well		0	3	0	0	1					1				
MW58*	TOC/Farmasonis	Intermediate	Monitoring Well		1	3	0	0			1			1				
MW59*	TOC/Farmasonis	Intermediate	Monitoring Well		1	3	0	0			1			1				
MW60*	56th Ave ROW	Intermediate	Monitoring Well		1	3	0	0			1			1				
MW61	56th Ave ROW	Shallow	Monitoring Well		1	3	0	0		1				1				
MW62	56th Ave ROW	Shallow	Monitoring Well		1	3	0	0		1				1				
MW63*	56th Ave ROW	Intermediate	Monitoring Well		2	3	0	0			1			1				
MW64	56th Ave ROW	Deep	Monitoring Well		20	3	0	0			1	1		1				
MW65*	Drake	Intermediate	Monitoring Well	**QA/QC sample location**	1	8	0	0			2			2	2			
MW66*	TOC/Farmasonis	Intermediate	Monitoring Well		18	4	0	1					1	1	1	1		
MW67	Drake	Shallow	Monitoring Well		1	4	0	0		1				1	1			

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TABLE A-1
Groundwater Sampling Schedule - First Quarter/Annual Event
TOC Holdings Co. Facility #01-176
Mountlake Terrace, Washington

Well Information						Container Type & Quantity			Sample Method & Quantity[1]					Laboratory Analyses & Method				
Well ID	Property	Groundwater Zone	Current Well Use	Notes	Purge Water Estimate	40mL VOA	250mL HNO_3	500mL UN-P Amber	Pneumatic Pump	Peristaltic Pump	Submersible Pump	Bailer (2-inch)	Bailer (4-inch)	Gx + BTEX (NWTPH-Gx + EPA SW8021B/ SW8260C)	MTBE (EPA 8260C)	Dx + PAHs (NWTPH-Dx + EPA 8270D SIM)	Total + Dissolved Pb (EPA 200.8)	EDC + EDB (EPA SW8260C + EPA 2021B)
MW68	Drake	Shallow	Monitoring Well		1	4	0	0		1				1	1			
MW69*	Drake	Intermediate	2" Remediation Well		0	4	0	1	1					1	1	1		
MW70*	Drake	Intermediate	2" Remediation Well		0	4	2	1	1					1	1	1	1	1
MW71	Shin/Choi	Shallow	Monitoring Well	*Do not sample if well contains product.*	1	4	2	1		1				1	1	1	1	1
MW72	Shin/Choi	Shallow	Monitoring Well	*Do not sample if well contains product.*	1	4	2	1		1				1	1	1	1	1
MW73	Shin/Choi	Intermediate	Monitoring Well	Extra decon.	1	4	2	1			1	1		1	1	1	1	1
MW74	Shin/Choi	Intermediate	Monitoring Well	Extra decon.	1	4	2	1			1	1		1	1	1	1	1
MW75	56th Ave ROW	Intermediate	Monitoring Well	Located in roadway and subject to Traffic Control Plan (WSDOT 2014).	1	3	0	0			1			1				
MW76	Drake	Intermediate	Monitoring Well		6	4	0	0			1			1	1			
MW77*	Drake	Intermediate	Monitoring Well		6	4	0	0				1		1	1			
MW78	Drake	Deep	Monitoring Well		20	4	0	0			1			1	1			
MW79	TOC/Farmasonis	Shallow	Monitoring Well		1	3	0	0		1				1				
MW80	TOC/Farmasonis	Shallow	Monitoring Well		1	3	0	0		1				1				
MW81	TOC/Farmasonis	Intermediate	Monitoring Well		1	3	0	0				1		1				
MW82	TOC/Farmasonis	Shallow-Intermediate	Monitoring Well		1	3	0	0		1		1		1				
MW83	TOC/Farmasonis	Shallow-Intermediate	Abandoned	Decommissioned 11/21/11	--	--	--	--										
MW84*	Drake	Intermediate	Monitoring Well		1	4	0	0			1			1	1			
MW85*	Drake	Intermediate	Monitoring Well		1	4	0	0			1			1	1			
MW86*	Drake	Intermediate	Monitoring Well	**QA/QC sample location**	1	8	4	2			2			2	2	2	2	2
MW87	Drake	Intermediate	Monitoring Well		7	4	0	0				1		1	1			
MW88	Drake	Shallow-Intermediate	Monitoring Well		1	3	0	0		1				1				
MW89*	Drake	Intermediate	Monitoring Well		1	4	0	0			1			1	1			
MW90	TOC	Intermediate	4" Remediation Well		0	3	1	0	1					1			1	
MW91	TOC	Intermediate	4" Remediation Well		0	4	1	1	1					1	1	1	1	
MW92	TOC/Farmasonis	Intermediate	4" Remediation Well		0	3	0	0	1					1				
MW93	TOC/Farmasonis	Intermediate	4" Remediation Well		0	3	0	0	1					1				
MW94	TOC/Farmasonis	Intermediate	4" Remediation Well		0	3	0	0	1					1				
MW95	Drake	Intermediate	4" Remediation Well	Pump turned off 04/30/15.	0	4	0	0	1					1	1			
MW96	Drake	Intermediate	4" Remediation Well		0	4	0	0	1					1	1			
MW97	Drake	Intermediate	4" Remediation Well		0	4	0	0	1					1	1			
MW98	Drake	Intermediate	4" Remediation Well		0	4	0	0	1					1	1			

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TABLE A-1
Groundwater Sampling Schedule - First Quarter/Annual Event
TOC Holdings Co. Facility #01-176
Mountlake Terrace, Washington

Well Information						Container Type & Quantity			Sample Method & Quantity[1]					Laboratory Analyses & Method				
Well ID	Property	Groundwater Zone	Current Well Use	Notes	Purge Water Estimate	40mL VOA	250mL HNO_3	500mL UN-P Amber	Pneumatic Pump	Peristaltic Pump	Submersible Pump	Bailer (2-inch)	Bailer (4-inch)	Gx + BTEX (NWTPH-Gx + EPA SW8021B/ SW8260C)	MTBE (EPA 8260C)	Dx + PAHs (NWTPH-Dx + EPA 8270D SIM)	Total + Dissolved Pb (EPA 200.8)	EDC + EDB (EPA SW8260C + EPA 2021B)
MW99	Drake	Intermediate	4" Remediation Well		0	4	0	0	1					1	1			
MW100	TOC/Farmasonis	Shallow-Intermediate	Monitoring Well		1	3	1	0		1				1			1	
MW101	Drake	Intermediate	4" Remediation Well		0	4	1	0	1					1	1		1	
MW102	Herman	Shallow	Monitoring Well	*Do not sample if well contains product.*	1	4	2	1		1				1	1	1	1	1
MW103	Herman	Intermediate	Monitoring Well		1	4	2	1				1		1	1	1	1	1
MW104	Herman	Shallow	Monitoring Well	**QA/QC sample location**	1	8	4	2		2				2	2	2	2	2
MW105	Herman	Intermediate	Monitoring Well		1	4	2	1				1		1	1	1	1	1
MW106	Herman	Shallow	Monitoring Well		1	4	2	1		1				1	1	1	1	1
MW107	Herman	Intermediate	Monitoring Well		1	4	2	1			1			1	1	1	1	1
MW108	Herman	Intermediate	Monitoring Well		2	4	2	1			1			1	1	1	1	1
MW109	Herman	Intermediate	Monitoring Well		2	4	2	1				1		1	1	1	1	1
				Subtotal	**268**	**368**	**45**	**21**	**22**	**34**	**28**	**23**	**9**	**110**	**38**	**21**	**29**	**16**
				Equipment/Rinsate Blank x4	**--**	**16**	**8**	**4**						**As needed/All**				
				Water Blank x2	**--**	**8**	**4**	**2**						**As needed/All**				
				Total	**268**	**392**	**57**	**27**	**22**	**34**	**28**	**23**	**9**	**110**	**38**	**21**	**29**	**16**
				No. of 55-Gallon Drums	**6**													

SAMPLE ID PROTOCOL:
Primary Sample: Well ID
QA/QC Sample: MLT-01, MLT-02, MLT-03, etc. (First three letters are "MLT" and are followed a two digit number that does not correspond to the well ID.)
Equipment/Rinsate Blank: EB-031815 (First two letters identify the sample type and are followed a six digit sampling date [e.g., mm/dd/yy].)
Water Blank: WB-031815 (First two letters identify the sample type and are followed a six digit sampling date [e.g., mm/dd/yy].)

NOTES:
*Well is sampled quarterly (per the requirements of the *Interim Redial Action Work Plan* attached to the Agreed Order).
[1] If the water column is less than five feet and recharge makes sampling with a submersible pump problematic, a bailer may be used to collect groundwater samples.

ACRONYMS:
BTEX = benzene, toluene, ethylbenzene and total xylenes
Dx = diesel- and motor oil-range petroleum hydrocarbons
EDB = ethylene dibromide (1,2-dibromoethane)
EDC = ethylene dichloride (1,2-dicholoroethane)
Gx = gasoline-range petroleum hydrocarbons
HNO_3 = nitric acid
mL = milliLiter
MTBE = methyl tertiary-butyl ether
PAH = polycyclic aromatic hydrocarbons
QA/QC = quality assurance / quality control
ROW = right-of-way
T/D Pb = total and dissolved lead
UN-P = unpreserved
VOA = volatile organic analysis

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TABLE A-2
Groundwater Sampling Schedule - Second, Third and Fourth Quarter Events
TOC Holdings Co. Facility #01-176
Mountlake Terrace, Washington

Well Information						Container Type & Quantity			Sample Method & Quantity[1]					Laboratory Analyses & Method				
Well ID	Property	Groundwater Zone	Current Well Use	Notes	Purge Water Estimate	40mL VOA	250mL HNO_3	500mL UN-P Amber	Pneumatic Pump	Peristaltic Pump	Submersible Pump	Bailer (2-inch)	Bailer (4-inch)	Gx + BTEX (NWTPH-Gx + EPA SW8021B/SW8260C)	MTBE (EPA 8260C)	Dx + PAHs (NWTPH-Dx + EPA 8270D SIM)	Total + Dissolved Pb (EPA 200.8)	EDC + EDB (EPA SW8260C + EPA 2021B)
MW01	TOC	Shallow	Abandoned	Decommissioned 10/01/09	--	--	--	--										
MW02	TOC	Shallow	Monitoring Well		NS	NS	NS	NS										
MW03	TOC	Shallow	Monitoring Well		NS	NS	NS	NS										
MW04	56th Ave ROW	Shallow	Monitoring Well		NS	NS	NS	NS										
MW05	242nd St ROW	Shallow	Monitoring Well		NS	NS	NS	NS										
MW06	TOC	Shallow	Monitoring Well		NS	NS	NS	NS										
MW07	TOC/Farmasonis	Intermediate	Abandoned	Decommissioned 11/29/04	--	--	--	--										
MW08	56th Ave W ROW	Shallow-Intermediate	Monitoring Well		NS	NS	NS	NS										
MW09*	TOC	Shallow-Intermediate	Monitoring Well	**QA/QC sample location**	16	6	0	0		2				2				
MW10*	TOC	Intermediate	Monitoring Well		1	3	0	0		1				1				
MW11	TOC	Intermediate	4" Remediation Well		NS	NS	NS	NS										
MW12	56th Ave ROW	Shallow	Monitoring Well		NS	NS	NS	NS										
MW13	56th Ave ROW	Intermediate	Monitoring Well		NS	NS	NS	NS										
MW14	TOC/Farmasonis	Intermediate	Abandoned	Decommissioned 11/29/04	--	--	--	--										
MW15*	TOC	Intermediate	Monitoring Well	*Do not sample if well contains sediment or biological buildup.*	1	3	0	0					1	1				
MW16	242nd St ROW	Intermediate-Deep	Monitoring Well		NS	NS	NS	NS										
MW17	TOC/Farmasonis	Intermediate	Abandoned	Decommissioned 11/29/04	--	--	--	--										
MW18	TOC	Shallow-Intermediate	4" Remediation Well		NS	NS	NS	NS										
MW19	TOC	Shallow	Monitoring Well		NS	NS	NS	NS										
MW20*	TOC	Intermediate	Monitoring Well	**QA/QC sample location**	1	8	0	2			2		2	2	2	2		
MW21*	TOC	Intermediate	Abandoned	Decommissioned 04/16/12	--	--	--	--										
MW22	TOC	Shallow-Intermediate	Monitoring Well		NS	NS	NS	NS										
MW23	TOC	Intermediate	Monitoring Well		NS	NS	NS	NS										
MW24	TOC	Shallow-Intermediate	4" Remediation Well		NS	NS	NS	NS										
MW25	TOC	Intermediate	Monitoring Well		NS	NS	NS	NS										
MW26	242nd St ROW	Deep	Monitoring Well		NS	NS	NS	NS										

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TABLE A-2
Groundwater Sampling Schedule - Second, Third and Fourth Quarter Events
TOC Holdings Co. Facility #01-176
Mountlake Terrace, Washington

Well Information						Container Type & Quantity			Sample Method & Quantity[1]					Laboratory Analyses & Method				
Well ID	Property	Groundwater Zone	Current Well Use	Notes	Purge Water Estimate	40mL VOA	250mL HNO_3	500mL UN-P Amber	Pneumatic Pump	Peristaltic Pump	Submersible Pump	Bailer (2-inch)	Bailer (4-inch)	Gx + BTEX (NWTPH-Gx + EPA SW8021B/SW8260C)	MTBE (EPA 8260C)	Dx + PAHs (NWTPH-Dx + EPA 8270D SIM)	Total + Dissolved Pb (EPA 200.8)	EDC + EDB (EPA SW8260C + EPA 2021B)
MW27*	TOC	Shallow-Intermediate	2" Remediation Well		0	3	0	0	1					1				
MW28	TOC	Shallow-Intermediate	Monitoring		NS	NS	NS	NS										
MW29	TOC	Shallow-Intermediate	2" Remediation Well		NS	NS	NS	NS										
MW30	TOC/Farmasonis	Deep	Monitoring		NS	NS	NS	NS										
MW31*	TOC/Farmasonis	Intermediate	2" Remediation Well		0	3	1	0	1					1			1	
MW32*	TOC	Intermediate	4" Remediation Well		0	3	1	0	1					1			1	
MW33*	TOC	Intermediate	Monitoring Well		2	3	0	0				1		1				
MW34	TOC	Shallow	Monitoring Well		NS	NS	NS	NS										
MW35	TOC	Intermediate	Monitoring Well		NS	NS	NS	NS										
MW36	TOC	Intermediate	Monitoring Well		NS	NS	NS	NS										
MW37	TOC	Shallow-Intermediate	Monitoring Well		NS	NS	NS	NS										
MW38	242nd St ROW	Shallow-Intermediate	Monitoring Well		NS	NS	NS	NS										
MW39	TOC/Farmasonis	Deep	Monitoring Well		NS	NS	NS	NS										
MW40	TOC/Farmasonis	Deep	Monitoring Well		NS	NS	NS	NS										
MW41	TOC/Farmasonis	Intermediate	2" Remediation Well		NS	NS	NS	NS										
MW42	TOC/Farmasonis	Intermediate	Monitoring Well		NS	NS	NS	NS										
MW43	56th Ave ROW	Shallow-Intermediate	Monitoring Well		NS	NS	NS	NS										
MW44	56th Ave ROW	Intermediate	Monitoring Well		NS	NS	NS	NS										
MW45*	56th Ave ROW	Intermediate	Monitoring Well	well is typically dry	1	3	1	0				1		1			1	
MW46	56th Ave ROW	Intermediate	Monitoring Well		NS	NS	NS	NS										
MW47	56th Ave ROW	Intermediate	Monitoring Well		NS	NS	NS	NS										
MW48*	56th Ave ROW	Intermediate	Monitoring Well		1	3	1	0				1		1			1	
MW49*	56th Ave ROW	Intermediate	Monitoring Well		1	3	0	0			1			1				
MW50*	56th Ave ROW	Intermediate	Monitoring Well		8	3	0	0					1	1				
MW51*	56th Ave ROW	Intermediate	Monitoring Well		8	3	0	0					1	1				
MW52*	56th Ave ROW	Intermediate	Monitoring Well		3	3	0	0					1	1				
MW53*	56th Ave ROW	Intermediate	Monitoring Well		21	3	0	0			1			1				

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TABLE A-2
Groundwater Sampling Schedule - Second, Third and Fourth Quarter Events
TOC Holdings Co. Facility #01-176
Mountlake Terrace, Washington

Well Information						Container Type & Quantity			Sample Method & Quantity[1]					Laboratory Analyses & Method				
Well ID	Property	Groundwater Zone	Current Well Use	Notes	Purge Water Estimate	40mL VOA	250mL HNO_3	500mL UN-P Amber	Pneumatic Pump	Peristaltic Pump	Submersible Pump	Bailer (2-inch)	Bailer (4-inch)	Gx + BTEX (NWTPH-Gx + EPA SW8021B/SW8260C)	MTBE (EPA 8260C)	Dx + PAHs (NWTPH-Dx + EPA 8270D SIM)	Total + Dissolved Pb (EPA 200.8)	EDC + EDB (EPA SW8260C + EPA 2021B)
MW54	TOC/Farmasonis	Shallow	Monitoring Well		8	3	0	0		1				1				
MW55*	56th Ave ROW	Intermediate	Monitoring Well		1	3	0	0			1			1				
MW56*	TOC/Farmasonis	Intermediate	Monitoring Well		1	3	0	0			1			1				
MW57	TOC/Farmasonis	Intermediate	4" Remediation Well		0	3	0	0	1					1				
MW58*	TOC/Farmasonis	Intermediate	Monitoring Well		1	3	0	0			1			1				
MW59*	TOC/Farmasonis	Intermediate	Monitoring Well		1	3	0	0			1			1				
MW60*	56th Ave ROW	Intermediate	Monitoring Well		1	3	0	0			1			1				
MW61	56th Ave ROW	Shallow	Monitoring Well		NS	NS	NS	NS										
MW62	56th Ave ROW	Shallow	Monitoring Well		NS	NS	NS	NS										
MW63*	56th Ave ROW	Intermediate	Monitoring Well		2	3	0	0			1			1				
MW64	56th Ave ROW	Deep	Monitoring Well		NS	NS	NS	NS										
MW65*	Drake	Intermediate	Monitoring Well	**QA/QC sample location**	1	8	0	0			2			2	2			
MW66*	TOC/Farmasonis	Intermediate	Monitoring Well		18	4	0	1					1	1	1	1		
MW67	Drake	Shallow	Monitoring Well		1	4	0	0		1				1	1			
MW68	Drake	Shallow	Monitoring Well		1	4	0	0		1				1	1			
MW69*	Drake	Intermediate	2" Remediation Well		0	4	0	1	1					1	1	1		
MW70*	Drake	Intermediate	2" Remediation Well		0	4	2	1	1					1	1	1	1	1
MW71	Shin/Choi	Shallow	Monitoring Well	*Do not sample if well contains product.*	1	4	2	1		1				1	1	1	1	1
MW72	Shin/Choi	Shallow	Monitoring Well	*Do not sample if well contains product.*	1	4	2	1		1				1	1	1	1	1
MW73	Shin/Choi	Intermediate	Monitoring Well	Extra decon.	1	4	2	1			1	1		1	1	1	1	1
MW74	Shin/Choi	Intermediate	Monitoring Well	Extra decon.	1	4	2	1			1	1		1	1	1	1	1
MW75	56th Ave ROW	Intermediate	Monitoring Well		NS	NS	NS	NS										
MW76	Drake	Intermediate	Monitoring Well		NS	NS	NS	NS										
MW77*	Drake	Intermediate	Monitoring Well		6	4	0	0			1	1		1	1			
MW78	Drake	Deep	Monitoring Well		NS	NS	NS	NS										
MW79	TOC/Farmasonis	Shallow	Monitoring Well		NS	NS	NS	NS										

Stantec Consulting Services Inc.
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TABLE A-2
Groundwater Sampling Schedule - Second, Third and Fourth Quarter Events
TOC Holdings Co. Facility #01-176
Mountlake Terrace, Washington

Well Information						Container Type & Quantity			Sample Method & Quantity[1]					Laboratory Analyses & Method				
Well ID	Property	Groundwater Zone	Current Well Use	Notes	Purge Water Estimate	40mL VOA	250mL HNO_3	500mL UN-P Amber	Pneumatic Pump	Peristaltic Pump	Submersible Pump	Bailer (2-inch)	Bailer (4-inch)	Gx + BTEX (NWTPH-Gx + EPA SW8021B/SW8260C)	MTBE (EPA 8260C)	Dx + PAHs (NWTPH-Dx + EPA 8270D SIM)	Total + Dissolved Pb (EPA 200.8)	EDC + EDB (EPA SW8260C + EPA 2021B)
MW80	TOC/Farmasonis	Shallow	Monitoring Well		NS	NS	NS	NS										
MW81	TOC/Farmasonis	Intermediate	Monitoring Well		NS	NS	NS	NS										
MW82	TOC/Farmasonis	Shallow-Intermediate	Monitoring Well		NS	NS	NS	NS										
MW83	TOC/Farmasonis	Shallow-Intermediate	Abandoned	Decommissioned 11/21/11	--	--	--	--										
MW84*	Drake	Intermediate	Monitoring Well		1	4	0	0			1			1	1			
MW85*	Drake	Intermediate	Monitoring Well		1	4	0	0			1			1	1			
MW86*	Drake	Intermediate	Monitoring Well	**QA/QC sample location**	1	8	4	2			2			2	2	2	2	2
MW87	Drake	Intermediate	Monitoring Well		NS	NS	NS	NS										
MW88	Drake	Shallow-Intermediate	Monitoring Well		NS	NS	NS	NS										
MW89*	Drake	Intermediate	Monitoring Well		1	4	0	0			1			1	1			
MW90	TOC	Intermediate	4" Remediation Well		NS	NS	NS	NS										
MW91	TOC	Intermediate	4" Remediation Well		NS	NS	NS	NS										
MW92	TOC/Farmasonis	Intermediate	4" Remediation Well		NS	NS	NS	NS										
MW93	TOC/Farmasonis	Intermediate	4" Remediation Well		NS	NS	NS	NS										
MW94	TOC/Farmasonis	Intermediate	4" Remediation Well		NS	NS	NS	NS										
MW95	Drake	Intermediate	4" Remediation Well	Pump turned off 04/30/15.	0	4	0	0	1					1	1			
MW96	Drake	Intermediate	4" Remediation Well		0	4	0	0	1					1	1			
MW97	Drake	Intermediate	4" Remediation Well		NS	NS	NS	NS										
MW98	Drake	Intermediate	4" Remediation Well		0	4	0	0	1					1	1			
MW99	Drake	Intermediate	4" Remediation Well		NS	NS	NS	NS										
MW100	TOC/Farmasonis	Shallow-Intermediate	Monitoring Well		NS	NS	NS	NS										
MW101	Drake	Intermediate	4" Remediation Well		NS	NS	NS	NS										
MW102	Herman	Shallow	Monitoring Well	*Do not sample if well contains product.*	1	4	2	1		1				1	1	1	1	1
MW103	Herman	Intermediate	Monitoring Well		1	4	2	1				1		1	1	1	1	1
MW104	Herman	Shallow	Monitoring Well	**QA/QC sample location**	1	8	4	2		2				2	2	2	2	2
MW105	Herman	Intermediate	Monitoring Well		1	4	2	1				1		1	1	1	1	1
MW106	Herman	Shallow	Monitoring Well		1	4	2	1		1				1	1	1	1	1

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TABLE A-2
Groundwater Sampling Schedule - Second, Third and Fourth Quarter Events
TOC Holdings Co. Facility #01-176
Mountlake Terrace, Washington

Well Information						Container Type & Quantity			Sample Method & Quantity[1]					Laboratory Analyses & Method				
Well ID	Property	Groundwater Zone	Current Well Use	Notes	Purge Water Estimate	40mL VOA	250mL HNO_3	500mL UN-P Amber	Pneumatic Pump	Peristaltic Pump	Submersible Pump	Bailer (2-inch)	Bailer (4-inch)	Gx + BTEX (NWTPH-Gx + EPA SW8021B/SW8260C)	MTBE (EPA 8260C)	Dx + PAHs (NWTPH-Dx + EPA 8270D SIM)	Total + Dissolved Pb (EPA 200.8)	EDC + EDB (EPA SW8260C + EPA 2021B)
MW107	Herman	Intermediate	Monitoring Well		1	4	2	1			1			1	1	1	1	1
MW108	Herman	Intermediate	Monitoring Well		2	4	2	1			1			1	1	1	1	1
MW109	Herman	Intermediate	Monitoring Well		2	4	2	1				1		1	1	1	1	1
				Subtotal	**124**	**193**	**36**	**20**	**9**	**12**	**22**	**9**	**7**	**54**	**31**	**20**	**20**	**16**
				Equipment/Rinsate Blank x4	**--**	**16**	**8**	**4**						**As needed/All**				
				Water Blank x2	**--**	**8**	**4**	**2**						**As needed/All**				
				Total	**124**	**217**	**48**	**26**	**9**	**12**	**22**	**9**	**7**	**54**	**31**	**20**	**20**	**16**
				No. of 55-Gallon Drums	**3**													

SAMPLE ID PROTOCOL:

Primary Samples: Well ID
QA/QC Samples: MLT-01, MLT-02, MLT-03, etc. (First three letters are "MLT" and are followed a two digit number that does not correspond to the well ID.)
Equipment/Rinsate Blank: EB-031815 (First two letters identify the sample type and are followed a six digit sampling date [e.g., mm/dd/yy].)
Water Blank: WB-031815 (First two letters identify the sample type and are followed a six digit sampling date [e.g., mm/dd/yy].)

NOTES:

*Well is sampled quarterly (per the requirements of the *Interim Redial Action Work Plan* attached to the Agreed Order).
[1] If the water column is less than five feet and recharge makes sampling with a submersible pump problematic, a bailer may be used to collect groundwater samples.

ACRONYMS:

BTEX = benzene, toluene, ethylbenzene and total xylenes
Dx = diesel- and motor oil-range petroleum hydrocarbons
EDB = ethylene dibromide (1,2-dibromoethane)
EDC = ethylene dichloride (1,2-dicholoroethane)
Gx = gasoline-range petroleum hydrocarbons
HNO_3 = nitric acid
mL = milliLiter
MTBE = methyl tertiary-butyl ether
NS = not sampled
PAH = polycyclic aromatic hydrocarbons
QA/QC = quality assurance / quality control
ROW = right-of-way
T/D-Pb = total and dissolved lead
UN-P = unpreserved
VOA = volatile organic analysis

SITE SPECIFIC HEALTH AND SAFETY PLAN

TOC MOUNTLAKE TERRACE 01-176

Date: May 27, 2015

Version 1.0

Prepared By:
HydroCon, LLC
510 Allen Street
Kelso, WA 98626

This Health & Safety Plan (HASP) has been prepared to meet the requirements of the Occupational Safety and Health Administration (OSHA) standards, 29 CFR Part 1910 and 29 CFR Part 1926, including the "Hazardous Waste Operations and Emergency Response" regulation (29 CFR §1910.120 and 29 CFR §1926.65) and other regulations that are referred to or cross referenced in these standards. Washington DOSH was also referred to during the creation of this document.

Although the aforementioned regulations were used to generate this plan, this plan does not substitute for any provisions of local, state or federal health & safety law.

If a change in conditions occurs, an addendum will be created and acknowledged by signature by all affected personnel.

Table of Contents

Site Safety Plan Acknowledgement iii
Introduction 1
Project Organization & Responsibilities 1
Site Characterization 3
Site background 3
Site Control 4
Hazard Analysis 5
Chemical Hazards 5
Physical Hazards 6
Environmental Monitoring 13
Personal Protective Equipment 14
Decontamination 15
Waste Storage and Disposal 17
Emergency Response Plan 17
Response to Fire 17
Response to Chemical Spill 18
Response to Heat Stress 18
Response to Medical Emergency 18
Emergency Contact List 19
Training 19
Medical Surveillance 20
Recordkeeping 21
Confined Space Procedures 21
Spill Prevention Control & Countermeasures Plan 21
Appendix A - Chemical Hazard Information 24
Appendix B – Hospital Map 26

Site Safety Plan Acknowledgement

I have reviewed the Site Safety Plan for the TOC Montlake Terrace project and understand the hazards presented on this project. I agree to follow the procedures outlined in this plan and to inform the Site Manager and/or the Contractor Safety Representative should any unsafe conditions be noted. I understand that failure to follow safety requirements can result in my removal from this project.

Name	Signature	Date	Organization

Introduction

This Health & Safety Plan (HASP) addresses worker exposure to potentially hazardous and/or contaminated substances expected to be encountered during site work.

Compliance with this plan is required of all on-site personnel, subcontractors, and associated third parties at any of the properties. All field personnel, subcontractors, and visitors will review the HASP prior to site work. Personnel who do not comply with safety requirements may be immediately dismissed from the site.

The contents of this HASP may be revised and/or amended should additional information become available regarding the hazards present at a site and/or should significant changes occur in the scope of work, operational procedures, or control measures. The HASP shall be implemented and/or revised by key personnel listed in the next section. All affected personnel will be informed of any changes. A copy of this HASP will be maintained onsite during work activities and will be available for inspection and review by any site or agency personnel.

Project Organization & Responsibilities

Project Manager	**Craig Hultgren**
Office	360.703.6079
Cell	360.431.6253
Site Manager	**Rob Honsberger**
Office	360.703.6079
Cell	206.856.6679
Site Safety Representative	**Larry Namba**
Office	N/A
Cell	360.846.3966
Health & Safety Director	**Brian Daltoso**
Office	360.703.6079
Cell	509.288.1443

These personnel are responsible for site safety and delegation of responsibilities for ensuring compliance with this HASP. In addition, the Site Manager will be responsible for implementing this plan and will serve as the site safety representative in the absence of the HydroCon Project Manager and Health & Safety Director.

Project Manager
The Project Manager (PM) is responsible for overall direction, coordination, technical consistency, and review of the entire project contract. In coordination with HydroCon's Health & Safety Director, the PM will emphasize the importance of safety and hold site personnel accountable for safe performance. The PM will enforce implementation and compliance with the HASP. Lastly, the PM will provide resources and support to the Site Manager for effective completion of duties.

Health & Safety Director
The Health & Safety Director is responsible for the overall health and safety of site work. They will emphasize the importance of safety and hold site personnel accountable for safe performance. In conjunction with the PM and other required personnel, they are responsible for revision of the HASP. They are also responsible for managing health and safety paperwork including daily tailgate meeting notes, incident reports, and for completing incident investigations. The Health & Safety Director may also complete unannounced site inspections at any time during the project.

Site Manager / Site Safety Representative
The Site Manager (SM) is charged with overall responsibility for the successful completion of field operations. The SM is responsible for the implementation and enforcement of the HASP. The SM may serve as the contractor safety representative in the absence of the PM and Health & Safety Director. SM responsibilities also include:

- Prepare and organize project activities onsite
- Review and approve site specific health and safety plans
- Provide operation / health and safety equipment for project operations
- Emphasize the importance of safety and hold site personnel accountable for safe job performance
- Ensure immediate correction of identified unsafe work condition and/or work practices
- Monitor and evaluate health and safety performance of project operations

Site Safety Representative
The Contractor Safety Representative (CSR) is the onsite health and safety representative and is present during field work activities. If the CSR must be absent from the site, the health and safety duties will be delegated to another responsible party at the site with appropriate qualifications. CSR responsibilities include:

- Maintain copies of HASP onsite during field activities
- Be on-site and present during hazardous and/or contaminated substance(s) work
- Implementation, enforcement, and monitoring of the HASP
- Conducting pre-construction training, pre-entry briefings, and other periodic training of all onsite personnel with regard to contents of the HASP and other safety requirements to be observed during construction
- Require that site personnel meet training, medical monitoring and field experience requirements

- Ensure personnel work in a safe manner
- Direct decontamination procedures
- Perform and/or coordinate site exposure monitoring requirements
- Maintain project health and safety records
- Investigate incidents, accidents, and near-misses as needed

Onsite Personnel

Onsite personnel responsibilities include:

- Understand and comply with the HASP and health and safety instructions given by the CSR or other competent authority
- Promptly report all incidents, accidents, and near-misses
- Immediately report any unsafe work conditions, practices and violation of the HASP to the SS or CSR.

Site Characterization

Site Address	24205 56th Avenue West, Montlake Terrace, WA
Field Activities	Quarterly groundwater monitoring
Potential Hazards	• Ergonomic hazards • Slips, trips, and falls • Temperature extremes • Traffic & moving equipment • Heavy equipment

Site background

TOC operated a retail gasoline station on the TOC Property between 1968 and 1990. The facility included three underground storage tanks (USTs), six fuel dispensers and associated product delivery lines. One 8,000-gallon and two 6,000-gallon USTs and ancillary equipment were removed from the TOC Property in 1991 and petroleum constituents including gasoline-range petroleum hydrocarbons (GRPH), benzene, and total xylenes were observed in soil and groundwater in excess of the applicable Model Toxics Control Act (MTCA) Method A Cleanup Levels. Between 1992 and March 2015, site investigations were conducted to determine the extent of petroleum contamination and 107 monitoring and remediation wells (six of which have been decommissioned) were installed in three groundwater zones on the TOC Site and three adjacent properties.

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 collected by SES confirmed gasoline-related contamination extended directly downgradient of the TOC Property to the south and west.

In accordance with the AO, a remedial investigation (RI) was initiated at the TOC Site and three MPE remediation systems (further discussed in Section 5.0) were installed between November 2011 and August 2012 to remediate residual petroleum-contaminated groundwater, soil vapor and LNAPL (if present) in the Intermediate Zone beneath and downgradient of the TOC Site. The MPE remediation systems are located within fenced enclosures on the TOC Property and TOC/Farmasonis Property and are served by remediation wells installed on the TOC, TOC/Farmasonis and Drake properties.

Available information regarding historical operations on the TOC/Farmasonis and Drake properties do not indicate the presence of USTs. Historical operations on the downgradient Herman and Shin/Choi properties indicate three USTs were removed from the Shin/Choi Property in 1991 and two USTs were removed from the Herman Property in 2001; however, five additional USTs may still exist on the Herman Property.

Site Control

Site work zones will be established as needed where contaminated media is known to exist or whenever field observations or screening tests show the possibility of contaminated materials. Work zone demarcation may include with the use of barricades, cones, warning tape, and/or other physical markers. If an area is located where pedestrian access is possible, temporary fencing will be considered.

Exclusion Zone
The Exclusion Zone (EZ) is the work zone which represents the area of highest contamination at the site and/or the area with the greatest risk of exposure to safety hazards. The outer border of the EZ will be identified with warning tape, barricades, and/or cones. No personnel or visitors will be allowed to enter the EZ without prior approval, without first reviewing this HASP, and must possess the appropriate training, medical review, and personal protective equipment (PPE).

Contamination Reduction Zone
The contamination reduction zone (CRZ) is the work zone which represents the transition area between the EZ and the support zone. The outer border of the CRZ will be delineated as necessary. Single use equipment, contaminated PPE, and trash will be left here for disposal.

Support Zone
The support zone (SZ) is the work zone just outside the CRZ which represents the clean areas established at the site. The medical station, equipment and supply station, and other support facilities will be located in the SZ. All breaks, lunches, and meetings take place in the SZ. Any visitors or site personnel who are not required to be in the EZ must remain in the SZ.

Site Communication
This area is served by the 911 Emergency Number System. 911 will be used for any serious medical emergencies. In addition, site communications are critical to allow for expedient communication of operational instructions and safety information. Cell phones will be carried by key personnel.

Site Security
Site security measures will be taken to prevent unauthorized access to the sites. When working hours conclude, all work areas will be protected to prevent public access. Any stockpiled contaminated material will be secured away from public access. Other measures will be taken as necessary to prevent unauthorized access and ensure the safety of individuals.

Pre-Entry Briefings
All personnel must review the HASP prior to beginning work on the site. Personnel will receive site hazard training before being allowed to work at the site in known areas of contamination. Briefings will include:

- Site hazards anticipated including health effects and hazards of contaminants
- Exposure monitoring program
- Site control procedures
- PPE requirements
- Decontamination measures
- Procedure for reporting unsafe conditions or unsafe work practices
- Procedures for reporting and injury, illness, or near-miss
- Emergency procedures
- Location and route to the nearest hospital
- Training requirements

Acknowledgement of this plan for general site testing is sufficient; however, should field work (drilling, remedial excavation, etc.) occur a daily tailgate meeting will be performed to document the day's work and potential hazards. All documented meetings will be returned to HydroCon's Health & Safety Director at the end of each work week.

Hazard Analysis

The information provided in this section is based on current data provided to HydroCon during the development of this plan. Hazards not anticipated may be encountered during site work. This section may be updated at any time to address these encounters.

Chemical Hazards

The following chemical hazards are a result of the highest known concentrations found at the project site for groundwater as reported in the 2014 quarters 2-4 and 2015 annual groundwater

monitoring events. Earlier historical groundwater and historical soil data were not currently available to HydroCon. Soil concentrations will be added when available.

Media: Groundwater

Analyte	Maximum Concentration (ug/L or ppm)
Gx	87,0
Diesel	5,900
Oil	1,700
Benzene	15,000
Toluene	6,700
Ethylbenzene	2,000
Xylenes	9,700
MTBE	680
EDB	1.8
EDC	N/A
Naphthalene	330
Total Lead	62.2

Please note that levels of each analyte will vary due to remediation activities.

A summary of the health effects, potential routes of entry and the OSHA 8-hour time-weighted average (TWA), permissible exposure limits (PELs) and/or ACGIH threshold limit values (TLV)s for the contaminants listed are summarized in the Appendix.

Physical Hazards

Physical hazards associated with the use of heavy equipment generally are the most significant hazards on site. Other physical hazards may be present on site. The remainder of this section will list other hazards that may be encountered during site work with a list of procedures to follow while onsite.

Working Alone

- Prior to entering the work site, personnel will assess risks of the tasks to be completed and will implement any measure to avoid or control risks.
- Personnel are only permitted to work alone if there is safe ingress/egress, all temporary access equipment, machinery and goods can be safety handled by one person, the use of non-hazardous chemicals/materials are present. In addition, all high risk tasks (confined space entry, work from heights, use of hazardous equipment, etc.) required additional personnel to be present.
- Personnel must be medically fit and suitable to work alone; consider the routine work and foreseeable emergencies which may impose additional physical and mental burdens on an individual.
- Personnel must be sufficiently experienced and competent in the tasks they are completing.
- Ensure personnel know when to stop work and seek advice from a supervisor.

- Supervision: Lone workers cannot be subject to constant supervision. Supervision can be carried out when checking the progress and quality of the work; it may take the form of periodic site visits combined with discussion in which health and safety issues are raised or pre-agreed intervals of regular contact using phones or email.

Emergencies: Lone workers should be capable of responding correctly to emergencies. Risk assessments should identify foreseeable events. Information about emergency procedures and danger areas should be provided to the lone worker based on the jobsite. All personnel should have access to first-aid materials suitable for treating minor injuries.

Underground Utilities

Underground utilities present a number of specialized problems. Utilities that need to be considered are:

- Natural gas – fire and explosive hazard
- Electrical – electrocution and fire hazard
- Water lines – excavation, erosion, unsafe working conditions
- Telephone – major disruption of local communication networks

Washington Dig Law:

- Prior to calling for a locate you must outline the area you intend to dig with white paint
- It is HydroCon's responsibility to maintain the locate marks for up to 45 days. After that time, HydroCon has to call for a new locate
- If digging within 100 feet of a transmission pipeline, HydroCon must notify the pipeline company of your intent
- No digging will take place until all known facilities are marked or HydroCon is provided information regarding underground facilities by the utility operator
- All damage to underground utilities must be reported to the Utilities Transportation Commission within 45 days of the incident

Vehicle Traffic

Vehicle and equipment traffic control procedures will be required due to the presence of vehicle and/or pedestrian traffic and will require the following precautions:

- Highly visible reflective safety vests will be worn by site personnel where exposure to vehicle or equipment traffic exists.
- Workers will be cautioned to look carefully where they walk to avoid vehicles and moving equipment and to maintain eye contact with heavy equipment operators.
- Use of traffic signs, barricades, flashers, delineators, traffic cones, caution tape, and/or flagmen around work areas with vehicle or equipment traffic (as needed).
- The SS and/or CSR will establish vehicle and equipment traffic patterns to be used. Traffic haul routes will be identified during daily safety meetings and will take into account times and locations of concern for vehicle, heavy equipment, and pedestrian traffic exposures in the work area.

- Vehicle and heavy equipment traffic control patterns, other control measures, and times of operation will be communicated to facility and other affected personnel.
- If the level of vehicle and equipment traffic warrants, the SS and/or CSR will:
  - Establish a written traffic control plan
  - Identify type of traffic concerns (i.e., vehicle, heavy equipment, pedestrian, etc.)
  - Identify specific locations of traffic concerns
  - Identify peak traffic exposure times
  - Designate quantity and placement of traffic control equipment, including use of traffic signs, barricades, flashers, delineators, cones, caution tape, and flagmen
  - Construct and/or designate protected walkways for pedestrians, as needed
  - Designate hours of work operation

Noise Exposure

The operation of heavy equipment and machinery at a site may generate excessive noise levels and will require:

- Hearing protection to be used by site personnel whenever noise exposures exceed 85 decibels on the A-weighted scale (dBA)
- Noise exposures in excess of 85 dBA will be assumed to be present whenever voices must be raised to be heard in normal conversation at three (3) feet apart and also whenever working in the immediate areas of operating heavy equipment, generators, compressors, and similar equipment.
- Personnel working in the immediate area of operating equipment will use hearing protection (e.g., foam ear plugs). Hearing protection shall have a corrected NRR rating capable of reducing noise levels in the ear to a maximum of 85 dBA.

Inclement Weather

In cases of inclement weather or other adverse environmental conditions (strong winds, rain, lightning, snow, hurricane, tornado, earthquake, etc.), the following safety instructions are required:

- Presence of strong winds will cause stoppage of affected work activities at elevated work locations (e.g., towers, roofs, ladders, scaffolds, platforms, etc.) and stoppage of use of equipment whose safe operation can be affected by high winds.
- Presence of heavy rain or snow will cause stoppage of affected work activities where the heavy rain or snow can create safety hazards due to limited visibility, wet work surfaces, slippery equipment controls, increased electrical hazards, cold stress, etc.
- Presence of lightning will cause stoppage of affected work activities where lightning presents an increased safety hazard of electrocution.
- Occurrence of a hurricane, tornado, or earthquake will require stoppage of affected work activities and evacuation of workers from excavations/trenches, confined spaces, and buildings of questionable stability.
- In case of work stoppage due to inclement weather conditions, work will not resume until an all clear signal has been communicated to affected personnel. In case of work stoppage

due to lightning, an all-clear will not be given until no lightning has appeared in the area for a period of ten (10) minutes.

Temperature Stress (Heat & Cold)

Heat Stress

If heat stress is a concern, the following heat stress precautions and prevention measures will be taken.

- Personnel will be made aware that heat stress can occur during periods of elevated ambient temperatures, moderate to heavy workloads, and when impermeable protective clothing is in use.
- Personnel will be informed regarding the various forms of heat stress (e.g., heat cramps, heat exhaustion, and heat stroke) and the symptoms of exposure.

Disorder	Symptoms	Signs	Cause	First Aid	Prevention
Heat Stroke	Chills, restlessness, irritability	Euphoria, red face, disorientation, hot/dry skin, erratic behavior, unconsciousness, convulsions, body temp ≥104°F	Excessive exposure, subnormal heat tolerance (genetic or acquired), drug/alcohol abuse	Immediate, aggressive effective cooling; transport to hospital	Self-determination of heat stress exposure; maintain a healthy life-style; acclimation; follow prevention methods below
Heat Exhaustion	Fatigue, weakness, blurred vision, dizziness, headache	High pulse rate, profuse sweating, low blood pressure, insecure gait, pale face, collapse, body temperature – normal to slightly increased	Dehydration (caused by sweating, diarrhea, vomiting), distribution of blood to the periphery, low level of acclimation, low level of fitness	Lie down flat on back in cool environment; drink water, loosen clothing	Drink water frequently; add salt to food; acclimation
Dehydration	No early symptoms, fatigue/weakness; dry mouth	Loss of work capacity, increased response time	Excessive fluid loss cause by sweating, illness (vomiting or diarrhea), alcohol consumption	Fluid and salt replacement	Drink water frequently; add salt to food
Heat Syncope	Blurred vision (gray out), fainting (brief	Brief fainting or near-fainting	Pooling of blood in the	Lie on back in cool	Flex leg muscles several

Disorder	Symptoms	Signs	Cause	First Aid	Prevention
	black out), normal temperature	behavior	legs and skin from prolonged static posture & heat exposure	environment; drink water	times before moving; stand or sit up slowing
Heat Cramps	Painful muscle cramps, especially in abdominal or fatigued muscles	Incapacitating pain in muscles	Electrolyte, imbalance caused by prolonged sweating without adequate fluid and salt intake	Rest in cool environment; drink salted water (0.5% salt solution); massage muscles	If hard physical work is part of the job, workers should add extra salt to food
Heat Rash	Itching skin, skin eruptions, reduced sweating	Skin eruptions	Prolonged, uninterrupted sweating, inadequate hygiene practices	Keep skin clean & dry; reduce heat exposure	Keep skin clean and periodically allow skin to dry

- Initial phases of work activity will be closely monitored to identify personnel who are more susceptible to heat exposure; it takes approximately 5 days to fully acclimate.
- Workers will be responsible for observing each other and themselves for development of heat stress symptoms.
- Personnel will be encouraged to drink generous amounts water and electrolyte replacement fluids (even if not thirsty) to prevent dehydration.
- Adequate shelter will be provided to protect personnel from direct sun exposure.
- Sufficient breaks will be provided so that personnel can remove impermeable protective clothing and cool down.
    - Personal protective equipment can increase the risk of heat stress. It is important to remove PPE while taking breaks. In addition, if employees should notify the site safety officer when PPE is causing them to overheat or feel uncomfortable.
- Work/rest regimens will be adjusted as required to avoid heat stress.
- Personnel are encouraged to wear cotton, non-synthetic clothing.

Heat Stress Monitoring

Heat stress monitoring will be conducted at times when elevated ambient temperatures, moderate to heavy workloads and impermeable protective clothing are being used (Note: Level D Protection will not require the use of impermeable protective clothing). Heat stress monitoring will be completed, as required by the SSO, when impermeable protective clothing is in use and ambient temperatures exceed 75°F. The frequency of monitoring will increase as the ambient temperature increases or if slow recovery rates are indicated. When ambient temperatures exceed 80°F, monitoring will be completed after each work period (approx. every 2 hours or as determined by the SSO/CIH).

Heat stress monitoring and establishment of work-rest regimens for heat stress prevention will be completed through physiological monitoring of workers. Physiological monitoring is completed by measuring the body temperature in degrees Fahrenheit (°F) with an ear thermometer set on an adult oral temperature setting.

Heart rate is measured by measuring the worker's radial pulse rate. Action levels for elevated body temperatures to be used are 99.6°F (for the SSO to observe/evaluate the condition of the individual) and 100.6°F (for removal of the individual from work involving heat exposure for the rest of the work day). Physiological monitoring for heat stress involves the following:

- Body temperature monitoring:
  - Complete baseline measurements at the start of work before entering the Exclusion Zone. Measure the body temperature (BT) using an ear thermometer.
  - Following the first work period, measure the BT as soon as possible in the rest period before drinking. If the BT exceeds 99.6°F (or the baseline by 1°F), reduce the next work cycle by one-third without changing the duration of the rest period.
  - Following the next work period, if the BT still exceeds 99.6°F (or the baseline by 1°F), then again shorten the following work cycle by one-third while keeping the length of the rest period the same.
  - Watch for signs and symptoms of heat stress throughout the work process. Pay strict attention to anyone whose body temperature exceeds 99.6°F (or 1-2°F above baseline) and contact the SSO for an evaluation of the individual. Do not permit a worker to wear semi-impermeable or impermeable garments when the BT exceeds 100.6°F. If the BT exceeds 100.6°F, immediately contact the SSO, remove the worker from the work area, remove protective clothing from the worker, and treat for heat exhaustion/heat stroke if symptoms are evident. If the BT exceeds 100.6°F, the worker must not be allowed to do work involving heat exposure for the rest of the work day.
- Heart rate monitoring:
  - Complete baseline measurements at the start of work before entering the Exclusion Zone. Measure the heart rate (HR) by counting the radial pulse for a 30 second period and multiply the value by two to determine the number of beats per minute (bpm).
  - Following the first work period, measure the HR as early as possible in the resting period. If the HR exceeds 110 bpm, then reduce the next work period by one-third while keeping the length of the rest period the same.
  - Following the next work period, if the HR still exceeds 110 bpm, then again shorten the following work cycle by one-third while keeping the length of the rest period the same.
  - Watch for signs and symptoms of heat stress throughout the work process. Contact the SSO for an evaluation when a worker's HR exceeds 110 bpm.

Cold Stress

Cold stress can occur upon exposure to cold environments where there is heat loss to the body, feet, hands, and/or head. Cold stress can occur from exposure to external elements including weather or as a result from falling into water.

- Personnel will be informed about the various forms of cold stress (e.g., hypothermia, frostbite, etc.) and the symptoms of exposure (Table reproduced from National Safety Council's Fundamentals of Industrial Hygiene, 4th Ed.)

Disorder	Symptoms	Signs	Causes	First Aid
Hypothermia	Chills, pain in extremities, fatigue or drowsiness	Euphoria, slow/ weak pulse, slurred speech, collapse, shivering, unconsciousness, body temperature <95°F	Excessive exposure, exhaustion or dehydration, subnormal tolerance (genetic or acquired)	Move to warm area and remove wet clothing; modest external warming (external heat packs, blankets, etc.); drink warm, sweet fluids if conscious; transport to hospital
Frostbite	Burning sensation at first, coldness, numbness, tingling	Skin color white or grayish, yellow to reddish, violet to black, blisters, response to touch depends on depth of freezing	Exposure to cold, vascular disease	Move to warm area and remove wet clothing; external warming (e.g. warm water); drink warm, sweet fluids if conscious; treat as a burn, do not rub affected area; transport to hospital
Frost-nip	Possible itching or pain	Skin turns white	Exposure to cold (above freezing)	Similar to frostbite
Trench Foot	Severe pain, tingling, itching	Edema, blisters, response to touch depends on depth of freezing	Exposure to cold (above freezing) and dampness	Similar to frostbite
Chilblain	Recurrent localized itching, painful inflammation	Swelling, sever spasms	Inadequate clothing, exposure to cold and dampness, vascular disease	Remove to warm area; consult physician
Raynaud's Disorder	Finger tingle, intermittent	Fingers blanch with cold exposure	Exposure to cold and vibration	Remove to warm area

- Cold stress can occur upon exposure to cold environments where there is heat loss to the body, feet, hands, and/or head. Primary cold stress injuries are hypothermia and frostbite. Cold can also adversely affect mental capabilities resulting in accidents or injuries. The body's initial response to cold is shivering, vasoconstriction, increased oxygen consumption, accelerated respiration and pulse, and increased heart output and blood pressure.
- Cold stress prevention measures include:

- Recognize cold stress conditions and exposure symptoms. Use personal protection by dressing for warmth, wind, and wet conditions. Wear layered clothing (i.e., wear thinner, lighter clothing next to the body with heavier clothing layered outside the inner clothing. Stay active as activity generates heat. Provide a warm break area when working in cold environments. Have first-aid equipment available.
- At temperatures lower than 25°F, do not permit continuous cold exposure to exposed skin.
- At temperatures lower than 45°F, wear warm clothing to include as needed: Boots; heavy socks (e.g., wool or polypropylene); mittens, insulated gloves; insulated head covers; thermal underwear; and insulated coveralls.
- Workers that get immersed in water or whose clothing becomes wet will be immediately provided with a change of clothing and be treated for hypothermia if symptoms become evident.

Environmental Monitoring

All monitoring will be determined on a case-by-case basis. Monitoring may be performed to determine personnel exposures to chemical contaminants and physical agents during various project activities. It will also be used to determine the level of PPE to be worn onsite.

Combustible Gases
Monitoring for combustible gases and oxygen deficiency is conducted where the presence of flammable vapors/gases or oxygen deficient/enriched atmospheres is suspected. Work is not permitted in areas where combustible gas concentrations exceed 10% LEL and where oxygen levels are below 19.5% or are above 23.5%. The combustible gas/oxygen indicator is calibrated before use to a known concentration of combustible gas in accordance with manufacturer instructions.

A combustible gas indicator/oxygen meter is used as a direct reading air monitoring instrument to detect flammable vapor and gas concentrations in percent of the lower explosive limit (LEL). Oxygen can be measured within a range of 0-25 %.

Total Petroleum Hydrocarbons (TPH) and Volatile Organic Compounds (VOCs)
A Photo-ionization Detector (PID) will be used during excavation activities to determine the presence of TPH and VOCs. Personnel will wear level D PPE during removal of these materials unless the PID indicates a sustained airborne concentration >15ppm.

Personal Protective Equipment

At a minimum all field crew and visitors will wear Level D Protection. Visitors should supply their own PPE; however, should they not have the appropriate gear, they are required to remain in their vehicle or go to a designated area to meet with the appropriate personnel.

The HydroCon contractor safety representative is charged with either increasing or reducing PPE as required.

Level D Protection
Level D Protection is worn when minimal protection is needed and activities are not likely to involve direct contact with contaminated materials. Level D protection consists of:

- Steel-toe work boots
- Gloves (nitrile)
- Orange safety vest
- Hardhat (may be removed while taking measurement, collecting samples, etc.)
- Safety glasses
- Ear protection (as needed)

Modified Level D Protection
Modified Level D Protection is used when some skin protection is desired to avoid accidental skin contact with contaminants. Modified Level D Protection consists of:

- Disposable coveralls (e.g. PVC, Kleenguard or Tyvek)
- Steel-toe work boots

- Chemical-resistant gloves (e.g. nitrile or PVC)
- Hardhat
- Respiratory protection – NIOSH approved dust mask or half-mask
- Safety vest
- Boot covers (PVC or latex)
- Safety glasses with side shields
- Goggles and/or face shield (as needed for liquid splash protection)
- Ear protection (as needed)

Level C Protection
Level C Protection may be required if the conditions are upgraded. Level C Protection consists of:

- Air-purifying respirator or powered air-purifying respirator with appropriate cartridge/filter (e.g. P-100 HEPA for dust exposure) and organic vapor for hydrocarbon exposures)
- Suit, chemical-resistant, disposable with hood (e.g. PVC, Kleenguard, or Tyvek)
- Boots, chemical-resistant, steel-toe/shank (e.g. PVC, neoprene or nitrile blend)
- Gloves, inner, chemical-resistant (e.g. nitrile or latex)
- Gloves, outer, chemical-resistant (e.g. nitrile or PVC)
- Hard hat
- Safe vest
- Boot covers (PVC or latex)
- Ear Protection (as needed)

PPE Maintenance
Personnel are responsible for the proper use of required PPE. Maintenance of reusable PPE (e.g. hardhats, safety glasses, boots, etc.) and respirators is the responsibility of each worker. Torn protective clothing or damaged PPE is prohibited and must be immediately repaired or replaced.

Decontamination

Eating, drinking, chewing gum, tobacco, or smoking in a contaminated zone is prohibited. These actions may occur in a personal vehicle or in a location that is considered outside the working area. Site personnel will wash prior to eating, drinking, and returning home.

The remainder of this section will outline decontamination procedures based on the level of protection used.

Level D Protection - Decontamination Procedures with Low Contamination

Station 1:	Equipment Drop	1. Deposit used equipment on sheet plastic or in container/plastic bag.
Station 2:	Outer Garment, Boots, and Gloves Wash and Rinse	2. Remove and dispose of Coveralls (if worn) and Outer Gloves in a lined plastic container (trash)
Station 3:	Field Wash	3. Wash hands and face thoroughly.

Modified Level D Protection - Decontamination Procedures

Station 1:	Equipment Drop	1. Deposit used equipment on sheet plastic or in container/plastic bag.
Station 2:	Outer Garment, Boots, and Gloves Wash and Rinse	2. Scrub outer boots, outer gloves, and suit with detergent/water solution. Rinse off with water.
Station 3:	Outer Boot and Glove Removal	3. Remove outer boots and gloves. Deposit in container with plastic liner.
Station 4:	Boots and Outer Garments Removal	4. Remove boots, suit, and inner gloves and deposit in container with plastic bag.
Station 5:	Field Wash	5. Wash hands and face thoroughly.

Level C Protection - Decontamination Procedures

Station 1:	Equipment Drop	1. Deposit used equipment on sheet plastic or in container/plastic bag.
Station 2:	Outer Garment, Boots, and Gloves Wash and Rinse	2. Scrub outer boots, outer gloves, and suit with detergent/water solution. Rinse off with water.
Station 3:	Outer Boot and Glove Removal	3. Remove outer boots and gloves. Deposit in container with plastic liner.
Station 4:	Cartridge or Mask Change-Out	4. Change-out cartridge or facepiece as needed, don new outer gloves and boot covers, tape at joints, and return to Exclusion Zone (Note: Last step in decon sequence for canister, cartridge, or mask change-out; continue decon sequence if entering Support Zone)

Station 5:	Boots, Gloves and Outer Garment Removal	5. Remove boots and suit and deposit in container with plastic bag.
Station 6:	Respirator Facepiece and Inner Gloves Removal	6. Remove respirator facepiece (avoid touching face with fingers) and deposit on sheet plastic or in plastic bag. Remove inner gloves.
Station 7:	Field Wash	7. Wash hands and face thoroughly.

Waste Storage and Disposal

Waste will be handled, stored and disposed accordingly. The appropriate level of PPE will be worn when handling waste materials. Waste of any kind will not remain on site at project completion unless pre-arranged with the project owner.

Emergency Response Plan

For major emergency events (e.g. large fires, gas line or electrical line breaks, etc.) personnel will be evacuated to a designated refuge area and local fire, police, and/or emergency medical services will be notified. The Site Manager, contractor safety representative, and/or project manager will work cooperatively to resolve emergency events.

All site personnel are required to immediately notify the site manager in the event of any type of emergency. Once notified, the Site Manager will contact any necessary emergency services. An emergency telephone list will be maintained at the site during all operations.

Emergency supplies that will be immediately available at the site will include:

- First aid kit
- Emergency eyewash supplies
- Supply of clean water
- Fire extinguisher

The remainder of this section will outline response procedure for various emergency situations.

Response to Fire

In the event of a fire, the following procedures will be implemented:

- Large fire (beyond immediate control of a small onsite fire extinguisher)
  - Personnel will immediately evacuate the work area and reassemble at a pre-determined safe location
  - Fire department will be called

- Site personnel will not re-enter the fire area and will wait for fire department arrival
- Small fire
  - Trained personnel will use an onsite fire extinguisher to put out the fire

Response to Chemical Spill

In the event of a chemical spill, the following procedures will be implemented:

- If containment can be done safety without exposure to personnel
  - Liquid chemical spills will be contained through prompt application of absorbents (e.g. absorbent boom, pads or solid absorbent) and placement of containment berms (or equivalent method)
  - Solid chemical spills will be contained initially by covering with sheet plastic (or equivalent method)
  - Spilled material will be collected in bags, drums, overpack drums, dump trucks or other suitable containers and disposed of as required
  - Necessary person will be contacted regarding the spill

Response to Heat Stress

In the event of a heat stress illness, the following procedures will be implemented:

- Heat Exhaustion
  - Move them to a cool shaded area to rest & stay with them
  - Loosen & remove heavy clothing
  - Give cool water to drink, about a cup every 15 minutes
  - Fan the person, spray with cool water, or apply a wet cloth to skin (back of neck)
  - Remove from hot environment work that day
  - Call 911 if they do not feel better in a few minutes
- Heat Stroke
  - CALL 911
  - Move them to a cool shaded area & stay with them
  - Lay the person down
  - Loosen & remove heavy clothing
  - Fan the person, spray with cool water, or wipe with a wet cloth or cover with a wet sheet
  - Place icepacks under the armpits and in the groin area

Response to Medical Emergency

In the event of a medical emergency, the following procedures will be implemented:

- All personnel will be notified and if necessary, will evacuate to a designated refuge area.
- The exposed or injured employee will be removed from immediate danger, first aid and/or CPR will be administered by a trained employee and the victim will be decontaminated according to methods determined by the CSR if it is safe to do so.
- Emergency services will be called and the following will be provided:
  - Name and location of person reporting
  - Location of accident or incident
  - Specific directions to the location

- Phone number from which the person is called
- Number of persons needing help
- What is currently being done for the victim(s)
- Name and affiliation of victim(s)
- Description of injuries
- Details of any chemical(s) involved
- Summary of the accident including suspected causes and time of occurrence
- Temporary control measures taken to minimize further risk

- The CSR will designate an individual to accompany or follow the victim to the emergency hospital to assist with any needs that arise and to report back regarding the victim(s) status.

A map to the nearest hospital can be found at the conclusion of this document.

Emergency Contact List

Contact	Number
Ambulance (emergency)	911
Fire Department (emergency)	911
Police (emergency)	911
HydroCon Main Office	360.703.6079
Project Manager – Craig Hultgren	360.703.6079 or 360.431.6253
Site Manager – Rob Honsberger	206.856.6679
Site Safety Representative – Larry Namba	360.846.3966
HydroCon Health & Safety Director – Brian Daltoso	360.703.6079

Training

Any required certifications or licenses required to complete a project will be kept on site for review by any personnel requesting proof.

HAZWOPER Training
All personnel working or present in the Exclusion Zone requiring chemical protective PPE must have completed hazardous waste operations (HAZWOPER) training as required by OSHA standard 29 CFR §1910.120. Required training includes:

- 40-hours of initial training and 3 days of supervised field experience applicable to the site
- 8 additional hours of training for managers/supervisors
- 8-hours of an annual refresher

Personnel working in the areas of known contamination will receive training for the on-site contaminants, exposure, and decontamination procedures.

First Aid & CPR
At least one site worker must be trained and certified in the application of emergency first aid and CPR.

Medical Surveillance

Medical surveillance under the HAZWOPER standard is not required for this project.

Exposure Incident Medical Examinations
A chemical exposure incident medical examination will be completed if a worker is exposed to chemicals (or if suspicious symptoms exist). The chemical exposure incident medical examination is mandatory and should be completed as soon as possible, but in no case later than 48 hours after the incident. The contractor safety representative and/or CIH (if applicable) will provide the treating physician with a list of suspected chemicals that the worker may have contacted, and additional information which may aid the physician. The worker will not be allowed back to work until a return to work notice has been issued by the examining physician.

Alcohol & Controlled Substances Testing Program
HydroCon is committed to maintaining its reputation for quality work and customer service by providing a healthy, safe, and alcohol & controlled substance free work environment. Employees shall not use, sell, manufacture, receive, distribute, conceal, possess, or be under the influence of any controlled substances, including medicinal & recreational marijuana, and/or alcohol during scheduled working hours. Working hours include all lunches and breaks. Employees will not engage in the aforementioned activities while on company or client property, jobsites, or while operating company, client, or personally owned or leased vehicles & equipment.

The alcohol & controlled substances program requires field personnel to complete pre-employment, random, reasonable suspicion, post-accident, and return to duty testing, as applicable.

The request to undergo a reasonable suspicion test will be based on specific, contemporaneous, articulable observation concerning the appearance, behavior, speech, or odor of the employee. A HydroCon employee whom has undergone reasonable suspicion training must be the one to make this determination. In the event that the employee is unsure, they should consult another trained employee.

The complete program is kept under separate cover and can be provided upon request.

Recordkeeping

In general, all health and safety related documented will be maintained onsite by the CSR. At project completion documents will be provided to the Health & Safety Director to file accordingly.

Health and safety records can include the following:

- Safety data sheets
- Training documentation, including licenses/certifications
- Tailgate meeting records
- Equipment inspection reports
- Hot work Permits
- Confined Space Permits
- Exposure monitoring records, employee notifications and data summaries
- Accident investigation records
- Operating manuals and/or instructions
- Other necessary documentation

Confined Space Procedures

It is not anticipated that confined spaces will be entered. However, if confined space must be entered the confined space program, under separate cover, must be followed.

Spill Prevention Control & Countermeasures Plan

HydroCon is committed to the prevention of discharges of hazardous substances, including fuels and lubricants, to navigable waters or the environment. The following section describes general procedure for spill prevention and countermeasures (SPCC). In the event of a discharge of oil, fuel, or chemicals into water, or onto land with the potential for entry into waters, containment and cleanup efforts shall begin immediately and be completed as soon as possible, taking precedence over normal work. Cleanup will include the proper disposal of all spilled material and used cleanup materials.

Spill Prevention & Response Procedures

Housekeeping

Housekeeping practices are designed to maintain a clean and orderly work environment. Areas where chemicals are used or stored must be maintained using good housekeeping and best

management practices. This includes, but is not limited to clean and organized storage, labeling, and secondary containment where necessary. Every effort will be made to prevent pollutants from entering the environment by accidental spill or release.

Storage

All chemicals, including hazardous materials will be properly identified, handled, and stored. Any underground or aboveground storage tanks will be designed and managed in accordance with applicable regulations, be identified as a potential pollution source, and have secondary containment, such as a berm or dike with an impervious surface. Chemical substances will be stored in the appropriate tanks and containers to minimize the potential for a spill. Whenever possible, all chemicals will be kept in closed containers and stored so they are not exposed to stormwater or other environmental influences.

All site personnel will be made aware of and properly instructed of all chemicals stored on site.

Discharge Prevention

HydroCon employees are trained to implement spill prevention practices for work with and around liquid sources. They will use common sense and rely on spill prevention practices at all times to minimize the potential for a release of liquids. The following practices will be followed:

- Keep container lids securely fastened at all times
- Do not leave portable sources unattended (outside)
- Return portable sources to their storage location after use
- Use pads, drip pans, and funnels when transferring petroleum products from a portable container
- Protect liquid sources from damage by moving equipment
- Keep dike valves closed at all times except when discharging clean stormwater from the diked area
- Contaminated water within the diked area and piping and dispenser sumps will be removed and disposed of by a licensed hazardous waste contractor
- Do not store oil sources near catch basins or floor drains
- Loading and unloading of petroleum products will be attended at all times

Emergency Communication

Proper communication measures must be in place and initiated in the event of a spill or release of materials. Communication procedures will be based on type and quantity of materials spilled. Given that HydroCon performs work on an array of job sites, cell phones will be the main source of communication to outside emergency personnel such as the police, fire department or local emergency response teams. In addition, cell phones will be used to notify other personnel on large job sites. Specific emergency communication and procedures will be documented in site specific health and safety plans.

Important Telephone Numbers

National Response Center	1.800.424.8802

Washington Emergency Response System 1.800258.5990

The following information should be provided:

- Where is the spill?
- What spilled?
- How much spilled?
- How concentrated is the spilled material?
- Who spilled the material?
- Is anyone cleaning up the spill?
- Are there resource damages (e.g. dead fish or oiled birds)?
- Who is reporting the spill?
- Contact information

In Washington, you may receive additional requests to complete paperwork relating to the spill/release from the Department of Ecology.

If a single spill greater than 1,000 gallons occurs, or two spills each greater than 42 gallons occur within any twelve (12) month period, in addition to the notification procedures above, HydroCon will provide written information to the EPA Regional Administrator as required by the federal SPCC rules. A copy of this information must be provided to the appropriate state agency.

Appendix A - Chemical Hazard Information			
COMPOUND	**EXPOSURE LIMITS**	**ROUTE OF EXPOSURE**	**HEALTH EFFECTS**
Benzene	DOSH PEL: 1ppm TWA 5ppm STEL AL: 0.5 ppm TWA NIOSH REL: 0.1 ppm TWA 1ppm STEL IDLH: 500 ppm FP: 12°F LEL: 1.2%	Inhalation, ingestion, skin absorption, eye contact	Irritation of eyes, skin, nose, respiratory system; dizziness; headache; nausea (carcinogen)
EDB (1,2-Dibromoethane, ethylene dibromide	OSHA PEL: 20 ppm TWA 30 ppm C 50 ppm (5 min max. peak)	Inhalation, skin absorption, ingestion, skin or eye contact	Irritation to eyes, skin, respiratory system; dermatitis with vesiculation; liver, heart, spleen, kidney damage; reproductive effects; potential occupational carcinogen
EDC (1,2-Dichloroethane, ethylene chloride)	OSHA PEL: 50 ppm TWA 100 ppm C 200 ppm (5 min max. peak)	Inhalation, ingestion, skin absorption, skin or eye contact	Irritation to eyes, corneal opacity; central nervous system depression; nausea, vomiting; dermatitis; liver, kidney, cardiovascular system damage; potential occupational carcinogen
Ethylbenzene	DOSH PEL: 100 ppm TWA 125 ppm STEL NIOSH REL: 50 ppm TWA 100 ppm STEL IDLH: 700 ppm FP: 55°F LEL: 0.8%	Inhalation, ingestion, skin or eye contact	Irritation of eyes, skin nose, respiratory system; dizziness; headache; drowsiness; unsteady gait; defatting; inflammation of skin; possible liver injury; reproductive effects
Lead	OSHA PEL: 0.050 mg/m^3 TWA NIOSH REL: 0.050 mg/m^3 TWA	Inhalation, ingestion, skin or eye contact	Lassitude, insomnia; facial pallor; anorexia, weight loss, malnutrition; constipation, abdominal pain, colic; anemia; gingival lead line; tremor; paralysis wrist, ankles; encephalopathy; kidney disease; irritation to eyes; hypertension
MTBE (Methyl tertiary butyl ether)	ACGIH: 40 ppm TWA	Inhalation, ingestion, skin contact	Nose, throat irritation; headache, nausea, dizziness; mental confusion
Naphthalene	DOSH PEL: 10 ppm TWA 15 ppm STEL NIOSH REL: 10 ppm TWA 15 ppm STEL	Inhalation, ingestion, skin absorption, eye contact	Eye irritation, headache, confusion, excitement, malaise, nausea, vomiting, abdominal pain, irritable bladder, profuse sweating, jaundice, blood in urine, renal shutdown, inflammation of skin

	IDLH: 250 ppm LEL: 0.9%		
Toluene	OSHA PEL: 200 ppm TWA 300 ppm C 500 ppm 10 min. max. peak NIOSH REL: 100 ppm TWA	Inhalation, skin absorption, ingestion, skin or eye contact	Eye irritation, nose irritation; lassitude, confusion, euphoria, dizziness, headache; dilated pupils, lacrimation; anxiety, muscle fatigue, insomnia; paresthesia; dermatitis; liver, kidney damage
TPH as Diesel (petroleum distillates as a surrogate)	DOSH PEL: 100 ppm TWA 150 ppm STEL OSHA PEL: 500 ppm TWA NIOSH REL: 86 ppm TWA 444 ppm STEL IDLH: 1,100 ppm FP: -40 to -86°F LEL: 1.1%	Inhalation, ingestion, skin or eye contact	Irritation of eyes, nose, throat; dizziness; drowsiness; headache; nausea; dry cracked skin; inflammation of lungs
TPH as Gasoline	DOSH PEL: 300 ppm TWA 500 ppm STEL FP: -45°F LEL: 1.4%	Inhalation, ingestion, skin absorption, skin or eye contact	Irritation of eyes, skin, and mucous membranes; inflammation of skin and lungs; headache; weakness; exhaustion; blurred vision; dizziness, slurred speech; confusion; convulsions; possible liver and kidney damage; potential occupational carcinogen
Xylenes	DOSH PEL: 100 ppm TWA 150 ppm STEL NIOSH REL: 100 ppm TWA 150 ppm STEL IDLH: 900 ppm FP: 81-90°F LEL: 0.9-1.1%	Inhalation, ingestion, skin absorption, skin or eye contact	Irritation eyes, skin, nose, throat; dizziness, excitement, drowsiness, incoordination, staggering gait; corneal cell debris; anorexia, nausea, vomiting, abdominal pain; inflammation of skin

LEGEND:

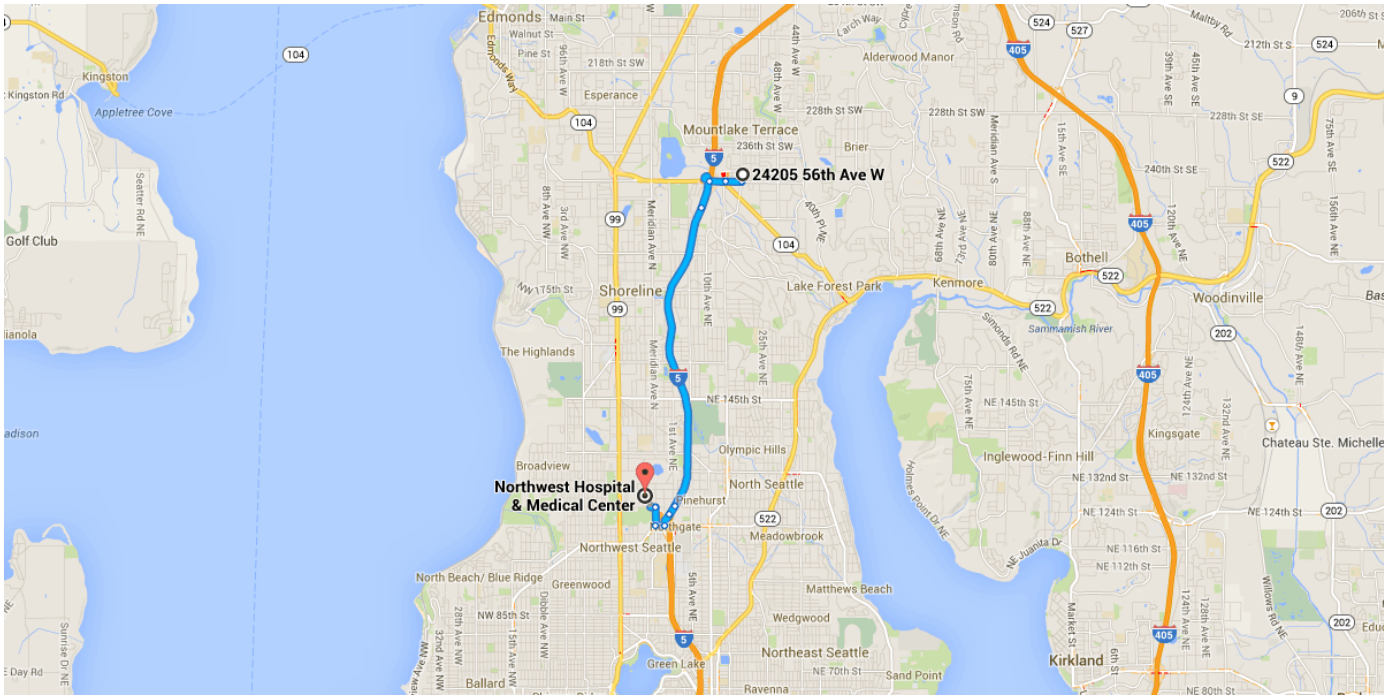
$\mu g/m^3$:	Micrograms per cubic meter of air
mg/m^3:	Milligrams per cubic meter of air
AL:	Occupational Safety and Health Administration (OSHA) 8-hour TWA Action Level
C:	Ceiling Limit
FP:	Freezing point
IDLH:	Immediately Dangerous to Life and Health
NIOSH:	National Institutes for Occupational Safety and Health
PEL:	OSHA 8-hour TWA Permissible Exposure Limit
REL:	Recommended exposure level
STEL:	Short-term exposure limit
TLV-TWA:	American Conference of Governmental Industrial Hygienists (ACGIH) 8-hour TWA Threshold Limit Value (TLV)
TLV-STEL:	ACGIH 15-minute Short-Term Exposure Limit (STEL)
TWA:	Time Weighted Average

Appendix B – Hospital Map

Google

Drive 6.3 mi, 9 min

Directions from **24205 56th Ave W** to **Northwest Hospital & Medical Center**



24205 56th Ave W

Mountlake Terrace, WA 98043

Get on **I-5 S** in Shoreline

1.2 mi / 3 min

1. Head **south** on **56th Ave W** toward **244th St SW**

0.1 mi

2. Turn **right** onto **244th St SW**

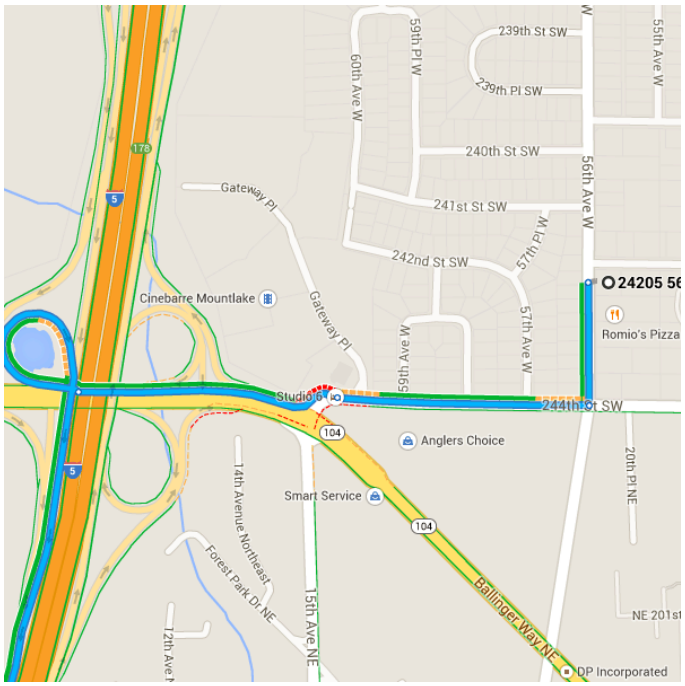
0.2 mi

3. Slight **right** onto **NE 205th St**

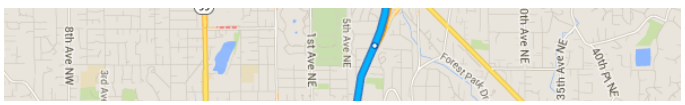
0.2 mi

4. Take the ramp to **I-5 S/Seattle**

0.6 mi



Follow **I-5 S** to **N Northgate Way** in Seattle.



Take exit **173** from **I-5 S**

5. Merge onto **I-5 S**

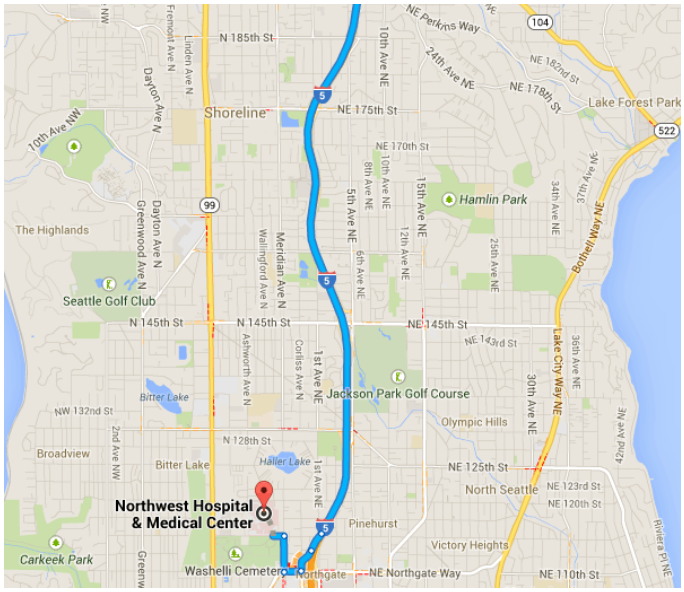
4.3 mi

6. Take exit **173** for **Northgate Way** toward **1st Ave NE**

0.1 mi

7. Keep **right** at the fork, follow signs for **Northgate Way W**

0.2 mi



Take **Meridian Ave N** to **N 115th St**

0.4 mi / 1 min

8. Turn **right** onto **N Northgate Way**

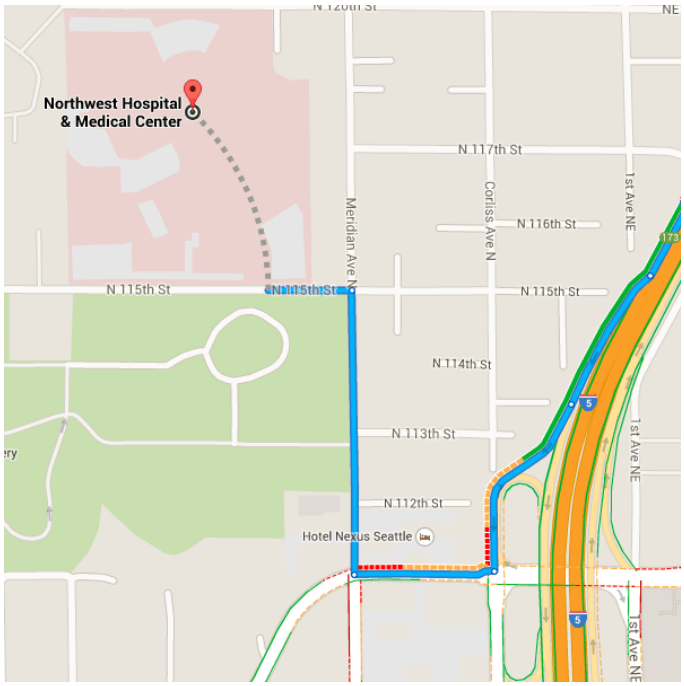
0.1 mi

9. Turn **right** onto **Meridian Ave N**

0.3 mi

10. Turn **left** onto **N 115th St**

387 ft



Northwest Hospital & Medical Center

1550 N 115th St, Seattle, WA 98133

These directions are for planning purposes only. You may find that construction projects, traffic, weather, or other events may cause conditions to differ from the map results, and you should plan your route accordingly. You must obey all signs or notices regarding your route.

Field Forms

Daily Field Report Form

Groundwater Purge and Sample Collection Form

Groundwater Data Information Form

Water Quality Meter Calibration Form

Daily Tailgate Meeting Form

Chain-of-Custody Form

DAILY FIELD REPORT

HydroCon	Project Name: 01-176 Montlake Terrace	Hydrocon Job Number:
		Date:
360.703.6079/Fax 360.703.6086 510 Allen Street, Suite B; Kelso, WA 98626	Client:	Page: Of
Prepared By (Print & Signiture):	Location:	Arrival:
		Departure:
Purpose:	Weather:	Permit:

GROUNDWATER PURGE AND SAMPLE COLLECTION

Well I.D. Number:_____

Project Name (Number): TOC Mountlake Terrace (01-176) Sample I.D.:_____ Time:_____
Hydrocon Project Number:_____ Field Duplicate I.D.:_____ Time:_____
Date:_____ Personnel:_____ Signature:_____

WELL INFORMATION

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

PURGING INFORMATION

Total well depth:_____ft Bottom: ☐ Hard ☐ Soft ☐ Not measured Screen Interval(s):_____
Depth to product:_____ft
Depth to water:_____ft Intake Depth (BTOC):_____ Begin Purging Well:_____
Casing volume:_____ft (H_2O) X _____gal/ft = _____gal. X 3 =_____gal.
Volume Conversion Factors: 3/4"=0.02 gal/ft 1"=0.04 gal/ft 2"=0.16 gal/ft 4"=0.65 gal/ft 6"= 1.47 gal/ft

PURGING/DISPOSAL METHOD

Pump type ☐ Peristaltic ☐ Centrifugal ☐ Pneumatic ☐ Submersible ☐ Other _____
Bailer type:_____ Water Disposal: ☐ Drummed ☐ Remediation System ☐ Other _____

FIELD PARAMETERS

Odor and/or Sheen:_____

Time	Water Level (BTOC)	Purge Rate (L/min) (0.100-0.500)	Temp. (°C) (±3%)	Sp. Cond. (mS/cm) (±3%)	Dissolved Oxygen (±10% or ≤1.00 ±0.2)	pH (SU) (±0.1)	ORP (mV)	Turbidity (NTU) (± 10% or ≤10)

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

SAMPLE INFORMATION

Container Type	Bottle Count	Preservative	Field Filtered?	Analysis Requested (Circle Appropriate Analysis)
40 ml VOA	6 /12 /18	HCl	No 0.45 0.10	NWTPH–GX / BTEX (8260C), MTBE, EDC / EDB (8011M)
500 ml AGB	2	None	No 0.45 0.10	NWTPH-Dx / PAH
500 ml Poly	1	HNO_3	No 0.45 0.10	Total Pb
500 ml Poly	1	HNO_3	No 0.45 0.10	Dissolved Pb
			No 0.45 0.10	

Sampling Comments:_____
Sample Equipment: WL- 4891/5623 Interface-4369;Quanta-Qd04317/QT02215YSI-4891/14L100436 HF Sc. Turb-200612141
Submersible- Manu.: Model: Serial:

Groundwater Data Information
TOC Mountlake Terrace (01-176)
24205 56th Avenue West
Mountlake Terrace, Washington 98043
System-On

Field Personnel:_____ Date Measured:_____

Date Opened:_____ Meter Serial Number(s): WL -4891/5623

Interface-4369

Well Details				Measured Depths (Ft BTOC)			Historical Information		Additional Information	
Well ID	Diameter (Inches)	Screen Interval (Ft BGS)	Property	Time	DTP	DTW	DTP/DTW System On (4/3/14)	Total Depth (3/17/15)	Top Of Pump (BTOC)	Comments
MW01	ABANDONED									
MW02	4	5.0-20.0	TOC				10.66	18.70	+	
MW03	4	5.0-20.0	TOC				11.61	17.60	+	
MW04	4	4.0-19.0	TOC-ROW				10.87	18.70	+	
MW05	4	5.0-15.0	TOC/ 242nd ST ROW				10.73	14.90	+	
MW06	4	5.0-15.0	TOC				9.18	15.30	+	
MW07	ABANDONED									
MW08	2	5.0-38.0	TOC-ROW				23.32	38.20	+	
MW09	4	5.0-40.0	TOC				27.43	38.90	+	
MW10	4	20.0-40.0	TOC				Dry	38.30	+	Well dia. =4", screen tapers = 2"
MW11	4	20.0-40.0	TOC				33	39.50	33.63	
MW12	4	5.0-18.0	Romio/56th Ave ROW				9.60	17.80	+	
MW13	2	21.0-41.0	Romio/56th Ave ROW				Dry	41.46	+	
MW14	ABANDONED									
MW15	4	24.0-44.0	TOC				29.40	41.90	37.03	
MW16	2	22.0-47.0	TOC/242nd ST ROW				Dry	47.70	+	
MW17	ABANDONED									
MW18	4	24.0-39.0	TOC				Dry	39.30	27.85	
MW19	2	10.0-21.0	TOC				12.11	20.20	+	Screen dia. Taper?
MW20	4	26.0-41.0	TOC				36.3	40.10	+	
MW21	ABANDONED									
MW22	4	15.0-40.0	TOC				29.41	36.10	+	
MW23	2	25.0-40.0	TOC				38.56	39.50	+	
MW24	4	15.0-40.0	TOC				Dry	39.60	31.75	
MW25	4	15.0-40.0	TOC				32.82	38.70	+	

HydroCon

Groundwater Data Information
TOC Mountlake Terrace (01-176)
24205 56th Avenue West
Mountlake Terrace, Washington 98043
System On

Date:_____

Well Details				Measured Depths (Ft BTOC)			Historical Information		Additional Information	
Well ID	Diameter (Inches)	Screen Interval (Ft BGS)	Property	Time	DTP	DTW	DTP/DTW System On (4/3/14)	Total Depth (3/17/15)	Top Of Pump (BTOC)	Comments
MW26	2	43.0-65.0	TOC/ 242nd ST ROW				47.77	61.70	+	
MW27	2	14.0-29.0	TOC				NM	27.20	+	
MW28	2	10.0-30.0	TOC				28.5	30.00	+	
MW29	2	11.0-30.0	TOC				NM	29.10	+	
MW30	2	53.0-68.0	TOC				41.29	61.60	+	
MW31	2	29.0-39.0	Romio's				NM	38.80	+	
MW32	4	15.0-35.0	TOC				28.95	34.10	29.37	
MW33	2	24.0-34.0	TOC				33.98	34.60	+	
MW34	4	6.0-16.0	TOC				9.26	15.90	+	
MW35	4	29.5-39.5	TOC				39.64	39.80	+	
MW36	4	28.0-43.0	TOC				42.41	43.70	+	
MW37	4	15.5-35.5	TOC				15.91	34.30	+	
MW38	2	14.0-34.0	TOC/ 242nd ST ROW				18.44	33.90	+	
MW39	2	63.0-73.0	Romio's				41.19	74.00	+	
MW40	2	64.0-74.0	Romio's				41.34	74.00	+	
MW41	2	31.0-41.0	Romio's				NM	40.30	+	
MW42	2	31.0-41.0	Romio's				Dry	39.90	+	
MW43	4	17.5-37.5	Romio/56th Ave ROW				34.72	37.60	+	
MW44	2	28.3-38.3	Drake/56th Ave ROW				Dry	38.70	+	
MW45	2	28.5-38.5	Romio/56th Ave ROW				Dry	39.70	+	
MW46	4	32.7-42.7	Romio/56th Ave ROW				43.4	43.40	+	
MW47	4	31.4-41.4	Drake/56th Ave ROW				Dry	41.70	+	
MW48	2	36.1-46.1	Drake/56th Ave ROW				42.19	46.30	+	
MW49	2	39.1-49.1	Romio/56th Ave ROW				44.74	49.40	+	
MW50	4	27.3-37.3	TOC/56th Ave ROW				35.88	37.70	+	
MW51	4	36.3-46.3	Herman/56th Ave ROW				41.88	46.60	+	
MW52	4	33.1-43.1	Drake/56th Ave ROW				43.45	43.80	+	
MW53	4	43.9-53.9	TOC/56th Ave ROW				44.00	54.20	+	

HydroCon

Groundwater Data Information
TOC Mountlake Terrace (01-176)
24205 56th Avenue West
Mountlake Terrace, Washington 98043
System On

Date:_____

Well Details				Measured Depths (Ft BTOC)			Historical Information		Additional Information	
Well ID	Diameter (Inches)	Screen Interval (Ft BGS)	Property	Time	DTP	DTW	DTP/DTW System On (4/3/14)	Total Depth (3/17/15)	Top Of Pump (BTOC)	Comments
MW54	4	6.7-16.7	Romio's				10.53	16.80	+	
MW55	4	38.5-48.5	Drake/56th Ave ROW				43.78	48.70	+	
MW56	4	43.0-53.0	Romio's				44.55	52.60	+	
MW57	4	38.8-48.8	Romio's				NM	48.80	44.00	
MW58	4	39.3-49.3	Romio's				44.89	48.40	+	
MW59	4	41.7-51.7	Romio's				45.14	52.50	+	
MW60	4	42.5-52.5	Romio/56th Ave ROW				44.87	53.30	+	
MW61	4	8.2-18.2	Romio/56th Ave ROW				8.38	18.50	+	
MW62	4	6.8-16.8	TOC/56th Ave ROW				9.56	17.10	+	
MW63	2	41.9-51.9	Drake/56th Ave ROW				42.68	52.00	+	
MW64	4	64.1-74.1	Drake/56th Ave ROW				41.19	74.40	+	
MW65	2	41.9-51.9	Drake				41.82	48.30	+	
MW66	4	39.5-49.5	Romio's				43.78	50.00	+	
MW67	4	14.4-24.4	Drake				12.34	24.90	+	
MW68	4	13.8-23.8	Drake				11.65	24.10	+	
MW69	2	37.3-47.3	Drake				NM	47.30	+	
MW70	2	38.0-48.0	Drake				NM	48.00	+	
MW71	**2**	**7.7-17.9**	**Shin/Choi**				**11.91/12.16**	**17.70**	**+**	***Prod.***
MW72	**2**	**12.5-22.5**	**Shin/Choi**				**14.67/14.96**	**22.50**	**+**	***Prod.***
MW73	2	32.6-42.6	Shin/Choi				38.90	43.30	+	
MW74	2	29.2-39.2	Shin/Choi				39.10	39.38	+	
MW75	2	39.6-49.6	Drake/56th Ave ROW				43.91	49.50	+	Gauged only in Q1 Annual event
MW76	2	38.1-48.1	Drake				40.57	48.20	+	
MW77	2	37.6-47.6	Drake				39.73	47.50	+	
MW78	2	64.8-74.8	Drake				36.72	74.80	+	
MW79	2	6.9-16.9	Romio's				10.5	17.40	+	
MW80	2	19.5-29.5	Romio's				11.58	29.90	+	
MW81	2	40.1-50.1	Romio's				44.14	49.90	+	

HydroCon

Groundwater Data Information
TOC Mountlake Terrace (01-176)
24205 56th Avenue West
Mountlake Terrace, Washington 98043
System On

Date:_____

Well Details				Measured Depths (Ft BTOC)			Historical Information		Additional Information	
Well ID	Diameter (Inches)	Screen Interval (Ft BGS)	Property	Time	DTP	DTW	DTP/DTW System On (4/3/14)	Total Depth (3/17/15)	Top Of Pump (BTOC)	Comments
MW82	2	19.7-29.7	Romio's				28.96	29.90	+	
MW83	A B A N D O N E D									
MW84	4	39.2-48.9	Drake				NM	49.30	+	
MW85	2	37.4-47.1	Drake				40.95	47.50	+	
MW86	2	35.4-45.1	Drake				42.41	44.80	+	
MW87	2	38.3-48.0	Drake				39.26	48.50	+	
MW88	2	19.5-29.5	Drake				12.00	29.70	+	
MW89	2	39.6-49.3	Drake				44.00	49.60	+	
MW90	4	19.8-39.8	TOC				34.94	40.20	35.55	
MW91	4	19.0-39.0	TOC				32.6	39.40	33.30	
MW92	4	39.4-49.4	Romio's				44.80	49.80	45.10	
MW93	4	36.1-46.1	Romio's				42.15	46.50	42.29	
MW94	4	39.1-49.1	Romio's				Dry	49.50	40.44	
MW95	4	42.1-52.1	Drake				45.55	52.50	47.16	
MW96	4	44.0-54.0	Drake				Dry	54.40	47.50	
MW97	4	38.0-48.0	Drake				Dry	48.40	42.77	
MW98	4	38.4-48.4	Drake				NM	48.80	46.65	
MW99	4	37.9-47.9	Drake				Dry	48.30	38.55	
MW100	2	19.4-29.4	Romio's				13.94	29.70	+	
MW101	4	39.8-49.8	Drake				Dry	50.20	42.35	
MW102	**2**	**7.0-17.0**	**Herman**				**14.78/16.26**	**25.00**	**+**	***Prod.***
MW103	2	37.0-47.0	Herman				43.55	46.70	+	
MW104	**2**	**8.5-18.5**	**Herman**				**10.31**	**18.80**	**+**	***Prod.***
MW105	2	32.0-42.0	Herman				Dry	42.70	+	
MW106	2	12.0-22.0	Herman				9.02	22.90	+	
MW107	2	43.0-53.0	Herman				39.89	53.30	+	
MW108	2	34.3-44.3	Herman				N/A	44.09	+	
MW109	2	31.0-41.0	Herman				N/A	40.99	+	

NOTES

RED = Possible product present
BGS = below ground surface
BTOC = below top of casing (ft)
DTW= depth to water
DTP = depth to product
ft = feet
MW = monitoring well
N/A = not available
NM = not measured
ROW= right-of-way
- = Not present

List of Properties

TOC = 24205 56th Avenue West, Mountlake Terrace WA
Romios = TOC/Farmasonis = 24225 56th Avenue West, Mountlake Terrace WA
Drake = 24309 56th Avenue West, Mountlake Terrace WA
Herman = 24311 56th Avenue West, Mountlake Terrace WA
Shin/Choi = 24325 56th Avenue West, Mountlake Terrace WA
242nd St ROW = portion of right-of-way adjacent to TOC Property
56th Ave ROW = portion of right-of-way adjacent to TOC, TOC/Farmasonis & Drake properties

Groundwater Data Information
TOC Mountlake Terrace (01-176)
24205 56th Avenue West
Mountlake Terrace, Washington 98043
System Off

Field Personnel:_____ Date Measured:_____
Date Opened:_____ Meter Serial Number(s): WL -4891/5623
Date System Turned Off:_____ Interface-4369

Well Details				Measured Depths (Ft BTOC)			Historical Information		Additional Information	
Well ID	**Diameter (Inches)**	**Screen Interval (Ft BGS)**	**Property**	**Time**	**DTP**	**DTW**	**DTP/DTW System Off** (3/24/14)	**Total Depth** (3/17/15)	**Top Of Pump (BTOC)**	**Comments**
MW01	**ABANDONED**									
MW02	4	5.0-20.0	TOC				10.83	18.70	+	
MW03	4	5.0-20.0	TOC				11.00	17.60	+	
MW04	4	4.0-19.0	TOC-ROW				11.51	18.70	+	
MW05	4	5.0-15.0	TOC/ 242nd ST ROW				11.50	14.90	+	
MW06	4	5.0-15.0	TOC				8.68	15.30	+	
MW07	**ABANDONED**									
MW08	2	5.0-38.0	TOC-ROW				17.49	38.20	+	
MW09	4	5.0-40.0	TOC				22.44	38.90	+	
MW10	4	20.0-40.0	TOC				30.78	38.30	+	Screen dia. tapers = 2"
MW11	4	20.0-40.0	TOC				21.31	39.50	33.63	
MW12	4	5.0-18.0	Romio/56th Ave ROW				10.00	17.80	+	
MW13	2	21.0-41.0	Romio/56th Ave ROW				Dry	41.46	+	
MW14	**ABANDONED**									
MW15	4	24.0-44.0	TOC				36.70	41.90	37.03	
MW16	2	22.0-47.0	TOC/242nd ST ROW				Dry	47.70	+	
MW17	**ABANDONED**									
MW18	4	24.0-39.0	TOC				Dry	39.30	27.85	
MW19	2	10.0-21.0	TOC				12.09	20.20	+	Screen dia. Taper?
MW20	4	26.0-41.0	TOC				33.03	40.10	+	
MW21	**ABANDONED**									
MW22	4	15.0-40.0	TOC				27.92	36.10	+	
MW23	2	25.0-40.0	TOC				38.86	39.50	+	
MW24	4	15.0-40.0	TOC				14.10	39.60	31.75	
MW25	4	15.0-40.0	TOC				27.64	38.70	+	

HydroCon

Groundwater Data Information
TOC Mountlake Terrace (01-176)
24205 56th Avenue West
Mountlake Terrace, Washington 98043
System Off

Date:_____

Well Details				Measured Depths (Ft BTOC)			Historical Information		Additional Information	
Well ID	**Diameter (Inches)**	**Screen Interval (Ft BGS)**	**Property**	**Time**	**DTP**	**DTW**	**DTP/DTW System Off** (3/24/14)	**Total Depth** (3/17/15)	**Top Of Pump (BTOC)**	**Comments**
MW26	2	43.0-65.0	TOC/ 242nd ST ROW				48.36	61.70	+	
MW27	2	14.0-29.0	TOC				NM	27.20	+	
MW28	2	10.0-30.0	TOC				26.99	30.00	+	
MW29	2	11.0-30.0	TOC				NM	29.10	+	
MW30	2	53.0-68.0	TOC				41.15	61.60	+	
MW31	2	29.0-39.0	Romio's				NM	38.80	+	
MW32	4	15.0-35.0	TOC				21.03	34.10	29.37	
MW33	2	24.0-34.0	TOC				34.51	34.60	+	
MW34	4	6.0-16.0	TOC				8.78	15.90	+	
MW35	4	29.5-39.5	TOC				39.36	39.80	+	
MW36	4	28.0-43.0	TOC				42.28	43.70	+	
MW37	4	15.5-35.5	TOC				14.97	34.30	+	
MW38	2	14.0-34.0	TOC/ 242nd ST ROW				16.15	33.90	+	
MW39	2	63.0-73.0	Romio's				41.00	74.00	+	
MW40	2	64.0-74.0	Romio's				41.22	74.00	+	
MW41	2	31.0-41.0	Romio's				NM	40.30	+	
MW42	2	31.0-41.0	Romio's				Dry	39.90	+	
MW43	4	17.5-37.5	Romio/56th Ave ROW				34.71	37.60	+	
MW44	2	28.3-38.3	Drake/56th Ave ROW				Dry	38.70	+	
MW45	2	28.5-38.5	Romio/56th Ave ROW				Dry	39.70	+	
MW46	4	32.7-42.7	Romio/56th Ave ROW				Dry	43.40	+	
MW47	4	31.4-41.4	Drake/56th Ave ROW				44.63	41.70	+	
MW48	2	36.1-46.1	Drake/56th Ave ROW				42.51	46.30	+	
MW49	2	39.1-49.1	Romio/56th Ave ROW				42.97	49.40	+	
MW50	4	27.3-37.3	TOC/56th Ave ROW				35.72	37.70	+	
MW51	4	36.3-46.3	Herman/56th Ave ROW				41.27	46.60	+	
MW52	4	33.1-43.1	Drake/56th Ave ROW				43.30	43.80	+	
MW53	4	43.9-53.9	TOC/56th Ave ROW				43.81	54.20	+	

HydroCon

Groundwater Data Information
TOC Mountlake Terrace (01-176)
24205 56th Avenue West
Mountlake Terrace, Washington 98043
System Off

Date:_____

Well Details				Measured Depths (Ft BTOC)			Historical Information		Additional Information	
Well ID	**Diameter (Inches)**	**Screen Interval (Ft BGS)**	**Property**	**Time**	**DTP**	**DTW**	**DTP/DTW System Off** (3/24/14)	**Total Depth** (3/17/15)	**Top Of Pump (BTOC)**	**Comments**
MW54	4	6.7-16.7	Romio's				10.92	16.80	+	
MW55	4	38.5-48.5	Drake/56th Ave ROW				43.63	48.70	+	
MW56	4	43.0-53.0	Romio's				44.00	52.60	+	
MW57	4	38.8-48.8	Romio's				Dry	48.80	44.00	
MW58	4	39.3-49.3	Romio's				44.15	48.40	+	
MW59	4	41.7-51.7	Romio's				42.12	52.50	+	
MW60	4	42.5-52.5	Romio/56th Ave ROW				43.88	53.30	+	
MW61	4	8.2-18.2	Romio/56th Ave ROW				8.29	18.50	+	
MW62	4	6.8-16.8	TOC/56th Ave ROW				9.72	17.10	+	
MW63	2	41.9-51.9	Drake/56th Ave ROW				42.69	52.00	+	
MW64	4	64.1-74.1	Drake/56th Ave ROW				41.06	74.40	+	
MW65	2	41.9-51.9	Drake				41.19	48.30	+	
MW66	4	39.5-49.5	Romio's				42.3	50.00	+	
MW67	4	14.4-24.4	Drake				13.05	24.90	+	
MW68	4	13.8-23.8	Drake				12.42	24.10	+	
MW69	2	37.3-47.3	Drake				Dry	47.30	+	
MW70	2	38.0-48.0	Drake				NM	48.00	+	
MW71	**2**	**7.7-17.9**	**Shin/Choi**				**12.70**	**17.70**	**+**	***Prod.***
MW72	**2**	**12.5-22.5**	**Shin/Choi**				**15.69**	**22.50**	**+**	***Prod.***
MW73	2	32.6-42.6	Shin/Choi				38.60	43.30	+	
MW74	2	29.2-39.2	Shin/Choi				39.10	39.38	+	
MW75	2	39.6-49.6	Drake/56th Ave ROW				NM	49.50	+	Gauged only in Q1 Annual event
MW76	2	38.1-48.1	Drake				39.01	48.20	+	
MW77	2	37.6-47.6	Drake				38.54	47.50	+	
MW78	2	64.8-74.8	Drake				36.33	74.80	+	
MW79	2	6.9-16.9	Romio's				10.53	17.40	+	
MW80	2	19.5-29.5	Romio's				11.7	29.90	+	
MW81	2	40.1-50.1	Romio's				42.45	49.90	+	

HydroCon

Groundwater Data Information
TOC Mountlake Terrace (01-176)
24205 56th Avenue West
Mountlake Terrace, Washington 98043
System Off

Date:_____

Well Details				Measured Depths (Ft BTOC)			Historical Information		Additional Information	
Well ID	Diameter (Inches)	Screen Interval (Ft BGS)	Property	Time	DTP	DTW	DTP/DTW System Off (3/24/14)	Total Depth (3/17/15)	Top Of Pump (BTOC)	Comments
MW82	2	19.7-29.7	Romio's				26.3	29.90	+	
MW83	ABANDONED									
MW84	4	39.2-48.9	Drake				NM	49.30	+	
MW85	2	37.4-47.1	Drake				39.87	47.50	+	
MW86	2	35.4-45.1	Drake				41.22	44.80	+	
MW87	2	38.3-48.0	Drake				38.17	48.50	+	
MW88	2	19.5-29.5	Drake				18.54	29.70	+	
MW89	2	39.6-49.3	Drake				42.07	49.60	+	
MW90	4	19.8-39.8	TOC				23.19	40.20	35.55	
MW91	4	19.0-39.0	TOC				22.64	39.40	33.30	
MW92	4	39.4-49.4	Romio's				44.30	49.80	45.10	
MW93	4	36.1-46.1	Romio's				Dry	46.50	42.29	
MW94	4	39.1-49.1	Romio's				Dry	49.50	40.44	
MW95	4	42.1-52.1	Drake				43.35	52.50	47.16	
MW96	4	44.0-54.0	Drake				43.25	54.40	47.50	
MW97	4	38.0-48.0	Drake				42.35	48.40	42.77	
MW98	4	38.4-48.4	Drake				42.46	48.80	46.65	
MW99	4	37.9-47.9	Drake				Dry	48.30	38.55	
MW100	2	19.4-29.4	Romio's				14.05	29.70	+	
MW101	4	39.8-49.8	Drake				40.36	50.20	42.35	
MW102	**2**	**7.0-17.0**	**Herman**				**15.29**	**25.00**	**+**	***Prod.***
MW103	2	37.0-47.0	Herman				43.27	46.70	+	
MW104	**2**	**8.5-18.5**	**Herman**				**10.84**	**18.80**	**+**	***Prod.***
MW105	2	32.0-42.0	Herman				42.26	42.70	+	
MW106	2	12.0-22.0	Herman				8.64	22.90	+	
MW107	2	43.0-53.0	Herman				39.16	53.30	+	
MW108	2	34.3-44.3	Herman				-	44.09	+	
MW109	2	31.0-41.0	Herman				-	40.99	+	

NOTES

RED = Possible product present
BGS = below ground surface
BTOC = below top of casing (ft)
DTW= depth to water
DTP = depth to product
ft = feet
MW = monitoring well
N/A = not available
NM = not measured
ROW= right-of-way
- = Not present

List of Properties

TOC = 24205 56th Avenue West, Mountlake Terrace WA
Romios = TOC/Farmasonis = 24225 56th Avenue West, Mountlake Terrace WA
Drake = 24309 56th Avenue West, Mountlake Terrace WA
Herman = 24311 56th Avenue West, Mountlake Terrace WA
Shin/Choi = 24325 56th Avenue West, Mountlake Terrace WA
242nd St ROW = portion of right-of-way adjacent to TOC Property
56th Ave ROW = portion of right-of-way adjacent to TOC, TOC/Farmasonis & Drake properties

WATER QUALITY METER

CALIBRATION

Site Name:_____ Project #:_____ Calibration Date:_____

Site #: _____ Calibration Time:_____

Weather:_____ Temperature: _____

_____ Barometric Pressure: _____

Personnel:_____ Water Quality Meter

Calibration Location: Site Office Other_____ Make/Model: _____

Serial #: _____

Parameter	1st Standard	Initial Reading	Final Reading	2nd Standard	Initial Reading	Final Reading
Temperature (°C)	-----			-----		
Sp. Conductivity (mS/cm)	53.0			4.49		
Dissolved Oxygen (mg/L)/ %	-----	-----	-----	-----		
pH (SU)	6.86			4.00		
ORP (mV)	-----	-----	-----	240		
Turbidity (NTU)	40.0			0.0		

Notes: Quanta meters are calibrated beginning with a Level Two solution followed by the Auto-Cal solution.

Be aware of the procedure for calibrating the dissolved oxygen probe (each meter is different).

Temperature extremes will alter the calibration standards and the results.

Calibration Comments:_____

_____

_____

_____

Daily Tailgate Meeting

501 Allen St Suite B
Kelso, WA, 98626
Phone:
360-703-6079 Fax:
360-703-6086

Return all completed forms to the Health & Safety Director at the end of each job week.
REPORT ALL INCIDENTS, INJURIES & NEAR MISSES IMMEDIATELY TO AT: 360-703-6079

INFORMATION

Project #:	**Date:**
Conducted By:	**Phone:**

Near Miss / Incident: Were there near-misses or incidents during yesterday's work? ❑ YES ❑ NO
If yes, was the project manager notified and was a report completed? ❑ YES ❑ NO

Daily Site Inspection Completed by Project Superintendent / Foreman: ❑ YES ❑ NO Initials:

SITE HAZARDS

❑ Fall Exposure	❑ Trenching/Excavating	❑ Lifting	❑ Material Handling
❑ Electrical	❑ Lockout/Tagout	❑ Ladders/Scaffolds	❑ Housekeeping
❑ Aerial Lifts	❑ Cranes/Rigging	❑ Confined Space	❑ Power Tools
❑ PPE	❑ Demolition	❑ Chemicals	❑ Heat Exposure/Cold Weather
❑ Hospital Route	❑ Heavy Equipment	❑ Shoring	❑ Traffic Control

TOPICS DISCUSSED

EQUIPMENT ONSITE

Equipment	In Use	Stand-By	Equipment	In Use	Stand-By	Equipment	In Use	Stand-By

MINIMUM PPE TO BE WORN ON ALL AEC JOB SITES

Hard Hat | Safety Glasses | Hi-Viz Clothing | Gloves | Safety Boots | Hearing Protection

By signing below, I acknowledge the topics discussed and agree to immediately report any hazards and incidents

Print Name	Sign Name	Company

HydroCon

Sampler's Name:
Project Name: TOC Holdings Company
Facility Number: 01-176 Montlake Terrace
Facility Address:
PO Number:
EDD Requested: EIM DataConcourse

Requested Turn Around Time

[x] Standard 10 business days
[ ] Rush

Rush Charges Authorized by:

Sample Disposal: 30 days Return Will Call

Report to: Rebekah Brooks & Kim Vik
cc: Craig Hultrgren
cc: Allison Greiner
Stantec Consulting Services, Inc.
19101 36th Avenue West Suite 203
Lynnwood WA 98036-5759

kim.vik@stantec.com
CraigH@hydroconllc.net
allisongreiner@eurekaprojectsolutions.net

Additional Comments:

							ANALYSES REQUESTED											
	Sample ID	Lab ID	Date Sampled	Time Sampled	Matrix	# of containers	TPH-Gx	8260C BTEX	8260C MTBE	8260C EDC	8011M EDB	TPH-Dx	8270SIM PAHs	200.8 Pb, Total	200.8 Pb, Diss FF			Notes
1																		
2																		
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		
11																		

	Signature	Print Name	Time	Date
Relinquished by:				
Received by:				
Relinquished by:				
Received by:				

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

ATTACHMENTS