MONTANA DEPARTMENT OF TRANSPORTATION

Montana Department of Transportation

2701 Prospect
PO box 201001
Helena MT 59620-1001

Christopher Dorrington,
Greg Gianforte, Governor

October 6, 2025

William Bergum
Montana Department of Environmental Quality
Petroleum Tank Cleanup Section
1225 Cedar Street
Helena, MT 59601

RE: Workplan for Groundwater Monitoring
Former Midtown Conoco Facility
Havre, MT
DEQ Facility ID #21-08022; Release #1936; TREADS ID 22346; Work Plan ID #35086

The Montana Department of Transportation (MDT) Environmental Services Bureau has developed this workplan to continue groundwater monitoring at the above referenced facility.

Introduction

The Montana Department of Transportation (MDT) provides this Groundwater Monitoring Work Plan for the Former Midtown Conoco Facility (Facility). The general scope of work to be conducted per this workplan includes four years of annual groundwater monitoring at all Facility monitoring wells, analysis of field and laboratory data associated with the sample collection, and reporting. This WP could be terminated early if contaminant concentrations are below RBSLs for two consecutive sampling events.

Site Location

The Facility is located at the southeastern corner of the intersection of 5th Avenue and US Hwy 2 (Figure 1). The address of the site is 500 1st Street, Havre Montana 59501. The legal description of the property is as follows: Havre Original Townsite, S08, T32 N, R16 E, Block 11, Lot 009, Lots 9&10 Less 366 Sq Ft for Hwy.

The Facility currently provides short term parking for businesses and the bus stop.

Background Information

In 1993, six underground storage tanks (USTs) were removed from the MTC facility. The six USTs consisted of 2 - 8,000 gallon gasoline tanks, 2 – 6,000 gallon gasoline tanks, 1 – 500 gallon heating oil tank, and 1 – 500 gallon waste oil tank. A petroleum release was reported to DEQ and an unknown quantity of petroleum contaminated soil was excavated from the former gasoline tank basin located in the southwest portion of the property.

In 1994, Patrick Construction excavated approximately 1,500 cubic yards of petroleum contaminated soil during multiple events from the tank basin and pump islands. Excavation was directed by a test pit and soil boring investigation conducted by Delta Engineering P.C. Four of five soil samples from the test pits exceeded DEQ standards. Excavation confirmation sample results seemed to indicate that petroleum contamination above the water table had been successfully removed; however, DEQ files indicated that contamination remained. DEQ requested a groundwater investigation in 1998.

In July 1999, DEQ installed a small diameter piezometer near the north dispenser island and collected soil and groundwater samples. The samples contained several petroleum hydrocarbon compounds that exceeded DEQ standards. This piezometer could not be located again after the initial sampling event.
In 2002 Delta conducted a remedial investigation (RI) at the facility consisting of six (6) soil borings, three of which were completed as 2-inch PVC monitoring wells (MW-1, MW-2, and MW-3). Soil samples from borings were submitted for laboratory analysis. Soil samples from two Delta RI borings (MW-2 and MW-3) at 17' below ground surface (bgs) indicated a weathered smear zone with concentrations slightly above risk-based screening levels (RBSLs) for total petroleum hydrocarbons (TPH) and volatile petroleum hydrocarbons (VPH) fractions near the former dispenser islands. The residual gasoline in the smear zone is highly weathered and relatively immobile, but likely represents a continuing source of localized groundwater contamination through slow dissolution of remaining VPH components.

In 2002 MDT conducted a Phase II Environmental Assessment (EA) along Highway 2 in Havre to determine whether reconstruction work of Highway 2 would encounter petroleum contamination. The Phase II EA was conducted in the Highway 2 right of way (ROW), and was completed independently of any work DEQ had required from various release sites. Two borings were drilled to 10' bgs within Highway 2 ROW to the north of the MTC utilizing a geoprobe. There was a slight hydrocarbon odor noted in one of the borings from 3.5'-4.0'. However, the photo-ionization detector (PID) heated headspace readings near this zone were 8.2 and 6.7 parts per million (ppm), so no soil sample was collected. The two geoprobe borings indicate that soil contamination did not extend underneath Hwy 2 from the Facility.

In July 2005, Delta installed two additional monitoring wells (MW-4 and MW-5) and conducted a groundwater sampling event. Four of the five monitoring wells contained dissolved petroleum compounds that exceeded DEQ standards. A second groundwater monitoring event was conducted in November 2005 with similar results.

In 2006, Delta conducted a feasibility study to evaluate in-situ chemical oxidation as a remedy for the remaining contamination at the Facility. This proposal was not accepted by DEQ.

During reconstruction of Highway 2 in 2008, a MDT subcontractor encountered an abandoned UST while auguring a boring for a new signal pole at the southeast corner of the intersection with 5th Avenue. On May 5th Olympus Technical Services removed (2) two 3,200-gallon capacity steel USTs from this location under a DEQ permit. Olympus collected excavation soil samples from beneath the tanks and from a 15-foot long

piping trench. Laboratory sample analysis did not detect petroleum hydrocarbons in any of the soil samples and the tank removal received closure from DEQ.

Prior to reconstruction of Highway 2, MDT submitted a work plan to replace the water supply lines and sanitary sewer lines running underneath Highway 2 with supply lines constructed out of ductile iron with nitrile gaskets. In addition, MDT proposed to construct trench plugs within the water/sewer and storm drain trenches to prevent migration of contamination along the utility corridors. DEQ indicated that utilities were not threatened based on January 2, 2007 letter from DEQ to MDT. DEQ did not recommend reimbursement for utility material upgrades nor the installation of trench blocks.

In January 2009, MDT purchased the Facility property from Mr. Scott Lind and assumed future environmental liability for Petroleum Release No. 1936.

In June 2009 MDT installed one additional monitoring well (MW-6) on the west side of property. MDT has completed nine groundwater monitoring events: June 2009, June 2011, September 2013, August 2015, May 2017, May 2019, April 2021, May 2023 and June 2025.

In 2023 MW-5 was abandoned by a certified well installation company. The well was abandoned due to extensive damage and was no longer needed in the monitoring well network.

The service station has not been operated since the UST removal in 1993. The USTs removed in 2008 were abandoned and had not been operated since the release had been discovered. There has been no new release at the facility since the discovery release 1993. Since no USTs were in operation, there were no permits, violations, leak detection methods, product inventory reconciliation records since the release was discovered. It is assumed the majority of the release is weathered gasoline and likely occurred from the tank system removed in 1993 and associated dispenser islands. There have not been any violation letters or enforcement actions at the facility since the release was discovered in 1993.

Objectives

The objective of this work plan is to monitor the groundwater contaminant levels to advance this Facility to site closure.

Scope of Work

The scope of work will consist of:

- Four annual groundwater sampling events.
    - One sampling event each year (2026-2029), during high groundwater conditions (April-June).
    - If contaminant concentrations are below RBSLs before the end of the WP, upon DEQ approval, the sampling can be terminated early.
- The monitoring will consist of depth to groundwater measurements, field parameter measurements and groundwater sampling of all Facility monitoring wells.
- Complete one Interim Data Submittal annually in 2026-2028.
- Complete one groundwater monitoring report in 2029, or upon DEQ approval to terminate early.

Work Plan Tasks

Groundwater Monitoring

Groundwater monitoring will be conducted annually during seasonally high groundwater conditions in 2026 through 2029. Groundwater samples will be collected from all Facility monitoring wells.

Monitoring well sampling will be conducted using low flow sampling methodologies in accordance with MTDEQ requirements. New disposable tubing will be used for each monitoring well. Groundwater quality parameter data (conductivity, pH, dissolved oxygen, temperature, ORP and turbidity) will be measured from all site wells sampled during each event using a flow through cell. Groundwater sample collection from each well will be completed following stabilization of groundwater quality parameters. Groundwater quality parameter, purge rate, and stabilization data for each well will be recorded in the field on individual well sampling forms. Depth to water measurements will be recorded from all the site wells during each groundwater monitoring event to provide an accurate potentiometric surface plot, flow direction, and gradient. Groundwater purge water will be disposed of on the impermeable asphalt parking lot surface. There is no permeable ground within the site boundaries, however, discharge on impermeable surface will not result in surface water discharge as the purge water will evaporate within the site boundaries.

The groundwater sampling QA/QC will be accomplished utilizing new disposable tubing for each well. The sampler will wear new nitrile gloves for collection of the sample. Groundwater samples will be collected upon groundwater parameter stabilization and placed in laboratory supplied sample bottles. Laboratory analysis results will be checked utilizing the Data Validation Summary Form.

Groundwater samples will be preserved in accordance with required laboratory methods, packed on ice, and delivered/sent to Energy in Helena, Montana under chain of custody. All groundwater samples collected will be submitted for VPH.

Interim Data Submittal

An Interim Data Submittal (IDS) will be completed following DEQ Interim Data Submittal Report guidance documents. The report will cover each annual monitoring event and include all applicable sections in the DEQ IDS guidance document.

Groundwater Monitoring Report

A Groundwater Monitoring Report will be completed following DEQ Groundwater Monitoring Report Guidance documents. The report will cover all monitoring events completed under this WP, discuss groundwater contaminant trends, and include recommendations for continuing the site towards closure.

Schedule, Cost and Reporting

MDT will sample all Facility monitoring wells annually, during typical high groundwater conditions from 2026 through 2029.

MDT will submit an IDS in December, annually, from 2026-2028.

MDT will submit a Groundwater Monitoring Report in September 2029, unless WP is terminated early.

MDT estimates the cost of the WP to be $11,960. The Groundwater Monitoring worksheet is included in this WP for reference.

If you require additional information or details regarding this Groundwater Monitoring Work Plan, please do not hesitate to call me at (406) 461-2193 or email at kgustafson@mt.gov.

Sincerely,

Kendall Gustafson
Montana Department of Transportation
Environmental Services Bureau

Figure 1: Site Overview

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Groundwater Monitoring and Sampling Unit Cost Worksheet

7/28/2022 | Cost Estimate Expl. | Work Plan Tasks | Unit Cost Worksheet | Help

Contractor Information

Company Name:	Montana Department of Transportation		
Address:	2701 Prospect Ave		
City, State, Zip:	Helena, MT 59620		
Cost Estimator/Print Name:	Kendall Gustafson	Phone:	406-461-2193
Signature:	Kendall Gustafson	Date:	8/25/2025

Project Information

Site Name:	Former Midtown Conoco	Facility ID#	21-08022
Address:	500 1st Ave	Release #	1936
City:	Havre	WP ID#	35086
		Treads ID#	

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Groundwater Monitoring and Sampling Summary Sheet

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Monitoring Well Details

	Total Number of Wells at Site
	Number of Fluid Level Measurements Only (2)
16	Number of Wells to be Monitored/Sampled (4-11)
	Average Well Casing Diameter (inches)
	Average Depth to Groundwater (ft)
	Average Depth of Wells (ft)

Sampling Method

☑	Low-Flow
	Low Yield Aquifer
	No Purge
☐	Other (please specify)

of Events - Monitoring/Sampling Interval

Estimated Start Date:

	Semi-Annual
4	Annual
	Bi-Annual
	Other

4 Total Events

Sampling Instrument

X	Peristaltic Pump
	Bladder Pump
☐	Submersible Pump
☐	Bailer
☐	Other (please specify)

16	< 25 ft total depth
	25 - 50 ft total depth
	50 - 75 ft total depth
	75 - 100 ft total depth
16	Total

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Groundwater Monitoring and Sampling Unit Cost Worksheet

Task	Events												Totals		
	1		2		3		4		5		6				
	Units	Unit Cost	Units	Unit Cost	Units	Unit Cost	Units	Unit Cost	Units	Unit Cost	Units	Unit Cost	Units	Unit Cost	Total Cost
Sampling Frequency	Annual		Annual		Annual		Annual								
Work Plan Type	GWM WP														
Work Plan Preparation	1	$720.00											1	$720.00 /work plan	$720.00
Project Management	2	$40.00	2	$40.00	2	$40.00	2	$40.00					8	$40.00 /hr	$320.00
Mobilization/Demobilization (1)	406	$0.75	406	$0.75	406	$0.75	406	$0.75					1624	$0.75 /mile	$1,218.00
Field Work															
Fluid Level Measurements (2)														/well	
Groundwater Monitoring Setup (3)														/day	
Groundwater Monitoring (<25ft total depth) - Peristaltic (4)	4	$220.00	4	$220.00	4	$220.00	4	$220.00					16	$220.00 /well	$3,520.00
Groundwater Monitoring (<25ft total depth) - Bladder (5)														/well	
Groundwater Monitoring (25-50ft total depth) - Bladder (5)														/well	
Groundwater Monitoring (50-75ft total depth) - Bladder (5)														/well	
Groundwater Monitoring (75-100ft total depth) - Bladder (5)														/well	
Groundwater Monitoring - No Purge (6)														/well	
Modifiers															
Groundwater Monitoring - Low Yield Modifier (7)														/well	
Groundwater Monitoring - IBI Modifier (8)														/well	
Groundwater Monitoring - Filters (9)														/filter/well	
Contaminated Purge Water - Offsite Disposal (10)														/each	
Duplicate Sample Modifier (11)														/each	
Other Services															
Other Service (please specify)														/each	
Other Service (please specify)														/each	
Lodging & Per Diem (Lodging - actual only)															
Lodging: # of people														/night	
Food: # of people 1	1	$44.10	1	$44.10	1	$44.10	1	$44.10					4	$44.10 /day	$176.40
(Breafast $8.25, Lunch $9.25, Dinner $16.00)															
Laboratory Analysis (12)	Annual		Annual		Annual		Annual								
Volatile Petroleum Hydrocarbons (VPH)	4	$121.60	4	$121.60	4	$121.60	4	$121.60					16	$121.60 /sample	$1,945.60
Extractable Petroleum Hydrocarbons (EPH)															
EPH "screen"														/sample	
EPH "fractions"														/sample	
Polycyclic Aromatic Hydrocarbons (PAHs)														/sample	
Lead Scavengers															
Ethylene dibromide (EDB)														/sample	
1,2-Dichloroethane (DCA)														/sample	
Drinking Water - EPA 524.2														/sample	
Intrinsic Biological Indicator Analyses (IBI)														/sample	
Other Analytical Methods														/sample	
Other Service (please specify)														/each	
PTRCB sampling fee (13) ($10.00 allowed)	4	$10.00	4	$10.00	4	$10.00	4	$10.00					16	$10.00 /sample	$160.00
Report Preparation															
Groundwater Monitoring Report - Type (14-15)	Interim Data Submittal		Interim Data Submittal		Interim Data Submittal		GWM Report								
Groundwater Monitoring Report - Base Cost (14)	1	$600.00	1	$600.00	1	$600.00	1	$2,100.00					4	$975.00 /report	$3,900.00
IBI Modifier (16)														/event	
Additional Wells Modifier (17)														/event	
Release Closure Plan (RCP) Preparation (18)															
Create RCP														/RCP-C	
Update RCP														/RCP-U	
														Monitoring & Sampling Subtotal:	**$11,960.00**

Additional Conditions/Comments/Costs:

Additional Costs Subtotal:	
Grand Total:	**$11,960.00**

If you require assistance, call 406-444-9710
Submit completed form with your Work Plan
Provide written comments to:
Petroleum Tank Release Compensation Board
PO Box 200902, Helena MT 59620-0902

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Cost Estimate Expl.

Work Plan Task List

Unit Cost Worksheet

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Task	Total Cost
Work Plan Preparation	$720.00
Project Management	$320.00
Mobilization/Demobilization (1)	$1,218.00
Fluid Level Measurements (2)	$0.00
Groundwater Monitoring (4-6)	$3,520.00
Miscellaneous (Groundwater Monitoring Modifiers) (7-11)	$0.00
Lodging & Per Diem (Lodging - actual only)	$176.40
Laboratory Analysis (12-13)	$2,105.60
Report Preparation (14-17)	$3,900.00
Release Closure Plan (RCP) Preparation (18)	$0.00
Other Services	
Miscellaneous ()	$0.00
Miscellaneous ()	$0.00
Monitoring & Sampling Subtotal:	**$11,960.00**
Additional Costs Subtotal:	**$0.00**
Grand Total:	**$11,960.00**

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Cost Estimate Explanations

(1) Mobilization/Demobilization: Includes all travel time, preparation time, and vehicle use costs (vehicle mileage) to transport equipment, materials, and personnel to and from the site location. More than one mobilization per event will require justification and pre-approval by the DEQ-PTCS and Board staffs. This item should be on a per mile unit rate.

(2) Fluid Level Measurements: Includes all costs (labor, equipment, materials, and well consumables) to measure fluid depth, collect other groundwater information from well, and decontaminate equipment. The well gauging costs should be on a per well basis and does not include purging and sampling of the well.

(3) Groundwater Monitoring Preparation/Setup/Cleanup: Includes all on-site labor costs to unload, setup, and calibrate monitoring equipment prior to initiation of groundwater monitoring activities, and all on-site labor costs to load and secure equipment and samples prior to leaving the site.

(4) Groundwater Monitoring - Peristaltic: Includes all costs (labor, equipment, materials, and well consumables) using a peristaltic pump to monitor, purge, sample groundwater, decontaminate equipment, take water level measurements, and handle contaminated purge water (DEQ understands this to mean disposal of groundwater to the ground surface according to the Disposal of Untreated Purge Water from Monitoring Wells flowchart dated 7/27/2015. If purge water must be containerized and/or treated in a different manner, additional scope and budget may be required.) Groundwater sampling to be conducted using a low-flow method. The cost should be on a per well basis.

(5) Groundwater Monitoring - Bladder: Includes all costs (labor, equipment, materials, and well consumables) using a bladder pump to monitor, purge, sample groundwater, decontaminate equipment, take water level measurements, and handle contaminated purge water (DEQ understands this to mean disposal of groundwater to the ground surface according to the Disposal of Untreated Purge Water from Monitoring Wells flowchart dated 7/27/2015. If purge water must be containerized and/or treated in a different manner, additional scope and budget may be required.) Groundwater sampling to be conducted using a low-flow method. The cost should be on a per well basis.

(6) Groundwater Monitoring – No Purge: Includes all costs (labor, equipment, materials, and well consumables) to monitor, sample groundwater, decontaminate equipment, and take water level measurements.The cost should be on a per well basis.

(7) Groundwater Monitoring – Low Yield Modifier: Includes all additional on-site labor costs associated with groundwater well purging, monitoring, and sampling of wells which are low yield / low production. Low yield is defined as a monitoring well that is not capable of adequate groundwater production at the median low-flow purging rate of 200 ml/min without exhibiting drawdown in excess of DEQ guidelines. The cost should be on a per well basis.

(8) Groundwater Monitoring – IBI Modifier: Includes all additional labor costs necessary for collection of groundwater samples for IBI analyses. The cost should be on a per well basis.

(9) Groundwater Monitoring - Filters: Includes the costs (materials) for the use of a filter during collection of groundwater samples for the analysis of dissolved metals. The cost should be presented on a per well basis.

(10) Contaminated Purge Water - Offsite Disposal: Includes the costs (labor, equipment, and materials) for containerizing, handling, shipping, and disposal or treatment of purge water that cannot be disposed of on the ground surface according to the Disposal of Untreated Purge Water from Monitoring Wells flowchart dated July 27, 2015. This cost should be presented on a per work plan basis.

(11) Duplicate Sample Modifier: Includes the costs (labor and materials) for the collection of a duplicate groundwater sample. The duplicate groundwater sample is to be collected using the same method (e.g., low-flow) and using the same sampling tool as the field groundwater sample. This cost should be on a per duplicate basis.

(12) Laboratory Analysis: Includes all laboratory costs for all wells, for duration of work plan. It is realized that some laboratory analyses will not be conducted for every event and that the well sampling frequency may change.

(13) PTRCB Sampling Fee: Includes all costs related to management of the sample including: sample container, cooler, packing, shipping, handling, sample preservation, and office related handling charges. The Sample is defined as the laboratory ID number on the laboratory invoice. Unusual cost can be reimbursed by presenting clear and convincing evidence to the board staff and receiving approval by the board staff prior to costs being incurred.

(14) Groundwater Monitoring Report Preparation – Base Cost: Includes all costs (labor and materials) for preparation of a base-level groundwater monitoring report. The base-level report documents one monitoring event, including monitoring and sampling of up to 10 sampling points (sum of total monitoring wells, tap samples, etc.), cumulative groundwater data tables, updated site figures showing well locations, a groundwater flow map, COC isocontour figures, analytical data, and completed data validation and summary form(s), and report submittal, including all office related costs, per report. (link to DEQ's reference guide that is currently in progress)

(15) Groundwater Monitoring Report Preparation – Interim Data Submittal: Includes all costs (labor and materials) for preparation of a base-level groundwater monitoring interim data submittal. The interim data submittal documents one monitoring event, including monitoring and sampling of up to 10 sampling points (sum of total monitoring wells, tap samples, etc.), cumulative groundwater data tables, a groundwater flow map, COC isocontour figures, well purging record, analytical data, and completed data validation and summary form(s), and report submitttal, including all office related costs, per report. (link to DEQ's reference guide that is currently in progress)

(16) Groundwater Monitoring Report Preparation – IBI Modifier: Includes all costs (labor and materials) for addition of IBI data tables, IBI data evaluation, and IBI data discussion sections to the base-level groundwater monitoring report. The cost should be presented on a per report basis. (link to DEQ's reference guide that is currently in progress)

(17) Groundwater Monitoring Report Preparation – Additional Wells Modifier: Includes all costs (labor and materials) for addition of monitoring and sampling data, data evaluation, and discussion sections to the base-level groundwater monitoring report for events including monitoring and sampling of more than 10 sampling points per event (sum of total monitoring wells, tap samples, etc. collected per event). The cost should be presented on a per report basis (only one of this modifier is allowed per report).

(18) Release Closure Plan (RCP) Preparation: Includes all costs (labor and materials) for preparation or updating of a DEQ PTCS RCP. The cost should be presented on a per report basis.

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Cost Estimate Expl. | Site Information | Site Information | Unit Cost Worksheet

Helpful Sites	Links
Petroleum Tank Release Compensation Board (PTRCB)	https://deq.mt.gov/cleanupandrec/programs/ptrcb
DEQ - Petroleum Tank Cleanup Section (DEQ-PTCS)	https://deq.mt.gov/cleanupandrec/Programs/petrocleanup
DEQ Guidance Documents	https://deq.mt.gov/cleanupandrec/Programs/petrocleanup#accordion1-collapse5
Groundwater Monitoring Work Plan and Report Guidance	https://deq.mt.gov/files/Land/LUST/Documents/downloadables/GWM_WP_Rpt-Guidance_24Mar21.pdf
Groundwater Sampling Guidance	https://deq.mt.gov/files/Land/LUST/Documents/downloadables/GWSamplingGuidance-FINAL.pdf
Purge Water Disposal Flowchart	https://deq.mt.gov/files/Land/LUST/Documents/downloadables/PurgeWater7_27_15.pdf
Data Validation Guidelines	https://deq.mt.gov/files/Land/LUST/Documents/downloadables/2018-01-26%20DV%20Guidance%20Checklist%20PDF%20Version%201.3.0%20Distributed.pdf
Data Validation Summary Form	https://deq.mt.gov/files/Land/LUST/Documents/TechGuidDocs/2018-01-26%20DV%20Guidance%20Checklist%20PDF%20Version%201.3.0%20Distributed.pdf

SOP – GW
Low Flow Purging and Sampling

Approved 10/6/2025

Purpose	Provide a standard operating procedure for purging and groundwater sampling utilizing low flow method completed with a peristaltic or bladder pump.
Scope	This SOP applies to all groundwater sampling events conducted by MDT Remediation and Assessment Section Scientists.
Task	**Instructions**
Pre-sampling activities	Determine the following information regarding pumps, site specific information, laboratory analysis, sample storage. • Determine which pump to use (peristaltic pumps have a maximum depth to water sample ability of 25 feet). Reference the WP for pump selection. • Monitoring well construction documents. Reference total depth and screen interval to determine pump/tubing depth placement. • Determine the pump/tubing depth placement based on COCs. Depending on the COCs different depths are best for capturing the target analytes. Refer to DEQ Guidance Documents for placement. • Order sample containers from accredited laboratory. • Determine if field filtering is required and grab filters as necessary.
Field Equipment	Gather all necessary field equipment to complete the sampling event. Typical equipment consists of pump, tubing, YSI, battery, miscellaneous equipment, laboratory sample bottles and coolers, ice, field notebook and sampling sheets, well cap opening supplies.
YSI Calibration	MDT utilizes a Xylem YSI ProDSS for collecting water quality parameters. The YSI needs to be calibrated before each sampling event, following the Xylem YSI ProDSS User Manual.
Water Level Measurements	Utilize a clean depth-to-water (DTW) measuring probe to determine water level in all monitoring wells being sampled in the WP. • Lower the DTW probe into the well casing slowly. • Once the DTW probe hits the top of the water column stop lowering. • Listen to the sound indicator to determine if free product is present. • Record the DTW to the nearest 0.01. • MDT utilizes a interface meter and will record LNAPL thickness if necessary. • Retract the probe and decontaminate the probe tip by washing with alconox solution and rinsing with water. If the WP indicates the need to submerge the probe to the bottom of the well or an interval within the water column, decontaminate the probe and measuring tape interval that will be in contact with the water column. Decontaminate by wiping and rising all affected pieces with alconox solution and rinsing with water. The initial water level measurements should generally be completed first thing during the sampling event. Utilizing past data, water level measurements will be collected from wells with lower detections before the worst-case wells.
Low Flow Purge and Sampling	Wear nitrile gloves for all sampling activities. Place tubing or pump at the required interval in the well (determined in the WP). Connect the pump tubing to a flow through cell associated with the YSI. Pump the initial ¼ -gallon without the YSI connected to avoid any potential uncharacteristic water flowing through the flow through cell. Collect the discharge from the YSI in a 5-gallon bucket. Estimate volume purged via amount present in bucket.

	Start the pump and adjust the speed to comply with low flow sampling criteria. Take YSI groundwater quality measurements every 3-5 minutes. The groundwater is ready for sampling after the YSI has indicated 3 consecutive readings within the following parameters: • Temperature within +/- 1 degree Celsius (°C). • pH within 0.1 pH units. • SC within 3% of the average. • ORP within 10 millivolt (mV) units. • DO within 10% of the average. • Turbidity within 10% of the average. Take notes and record measurements every 3-5 minutes. Once groundwater parameters have stabilized, the well is ready to be sampled. Disconnect the flow through cell from the tubing (YSI is no longer needed during sampling). Keeping the pump speed the same (or adjusting lower for VOC sample collection), collect the groundwater in laboratory supplied sample containers. The containers should be labeled and preserved according to lab instructions prior to sample collection. Labels will be recorded with sharpie pens, or if unavailable, ballpoint with clear tape placed over to prevent smearing. Once all samples have been collected place in the cooler on ice. MDT utilizes a 1 ¾" bladder pump for monitoring wells >2" with static water levels >25'. MDT will not collect samples near a running vehicle or other gas emitting sources. MDT will not sample wells with LNAPL. If required by DEQ, MDT will not utilize flow through cell with the YSI in a well with LNAPL prior to collecting sample. Turn off pump and remove tubing/pump from the well. Dispose of disposable equipment. Replace j-plug, ensure a good seal between the well monument lid, and secure the well monument lid to the well monument. Decontaminate the pump (bladder) by disassembling and washing with DI water. Utilize fresh bladder for each sample. Dispose of purge water according to the WP.
Sample Transport and Delivery	Transport the samples in the laboratory supplied cooler on ice. If samples are not delivered on the same day as collection the temperature blank must read below 4 degrees C. Complete the Chain of Custody (COC) as required by the laboratory and place with the samples.