Water & Environmental Technologies

480 East Park Street | Butte, Montana 59701
(406) 782-5220
info@waterenvtech.com
waterenvtech.com

Groundwater Monitoring Work Plan for the Former Roberts Big Sky Exxon

501 1st Street | Havre | Hill County | Montana
Facility ID 21-06480 (TID 22310) | Release 3280 | Work Plan 34854

Montana Department of Environmental Quality

Prepared for:
MDEQ—Petroleum Tank Cleanup Section
P.O. Box 200901
Helena, Montana 59620

Site Owner:
Lillian Christianson
1044 Warren Street
Thermopolis, Wyoming 82433

May 2024

Water & Environmental
TECHNOLOGIES

April 29, 2024

Lillian Christianson (Responsible Party)
hdclrc@yahoo.com
1044 Warren St.
Thermopolis, WY 82443

Subject: **Groundwater Montioring Work Plan for the petroleum release at the Former Roberts Big Sky Exxon, 501 1st Street, Havre, Hill County, Montana; Facility ID 21-06480, Release 3280, Work Plan 34854**

Dear Mrs. Christianson:

Water & Environmental Technologies (WET) presents this groundwater monitoring workplan (WP) and cost estimate for environmental consulting services at the former Roberts Big Sky Exxon (Facility). This WP was prepared in response to a Montana Department of Environmental Quality (DEQ) Workplan Request letter dated March 28, 2024 for the Petroleum Release at Former Roberts Big Sky Exxon, 501 1st Street, Havre, Hill County, Montana; Facility ID 21-06480, Release 3280, Work Plan 34854.

Sincerely,

Rachel Basnaw
Staff Engineer
Water & Environmental Technologies

Cc: Eric Krueger, DEQ Petroleum Cleanup Section (electronic)

TABLE OF CONTENTS

List of Figures

List of Appendices

1 FACILITY HISTORY / RELEASE BACKGROUND

The Facility was formerly a gas station with leaking fittings from underground storage tanks (USTs) and gasoline product dispensers (Release). Known previous cleanup actions performed include UST and soil excavation in 2000 with reported groundwater monitoring in 2000, 2015, and 2018 to 2023.

The Facility is currently an active restaurant on a floating slab foundation and almost entirely paved parking lot. Below the pavement is a shallow lens of road mix followed by sand to 25 feet below ground surface (ft bgs). The groundwater depth is approximately 10 – 12 ft bgs, flowing to the northeast in an unconfined aquifer. There are no known changes to the Facility since previous reporting in 2023.

2 OBJECTIVES OF GROUNDWATER MONITORING

DEQ's Workplan Request (WPR) letter includes continued annual groundwater monitoring for three years to track natural attenuation. Groundwater analytical results will be compared to human health standards (HHSs) and risk-based screening levels (RBSLs). If analytical results of sampling indicate that all concentrations of all analytes are below HHSs, the Release may be evaluated for closure.

Potential modifications to the WP include:

- The removal of well RBSE-1A from the sampling list if/when the three consecutive laboratory reported benzene concentrations are below the HHS;
- Discontinuing sampling before the last annual sampling event if/when samples collected from both wells during three consecutive events have laboratory reported benzene concentrations below the HSS.

WP modifications will only be made after reviewing sampling data and with the approval of the DEQ project manager.

3 MINIMUM WORK PLAN TASKS

3.1 PROJECT MANAGEMENT

WET personnel will provide Mrs. Christianson (Facility Owner) and DEQ's project manager any ongoing WP tasks and relevant results on an as-needed basis. Other duties associated with this task include scheduling field work, project reporting administration, monitoring the project budget and deliverables, and any submitted written agreed-upon WP modifications to complete the objectives.

3.2 MOBILIZATION

Three mobilizations are required for the three annual groundwater monitoring events. Although WET has an office location in Great Falls, personnel in that office are not typically available for monitoring; therefore mobilization will occur from the Butte office. Each mobilization will be approximately 550 miles roundtrip. If conditions change and Great Falls personnel become available, personnel will mobilize from there. The invoiced amount will reflect actual time/mileage. Loading/unloading time is included in the rate.

3.3 LODGING/PER DIEM

Due to the amount of travel required, two days of per diem and one night of lodging are required for each event.

3.4 WATER LEVEL MEASUREMENTS

During each of the three annual events WET will only collect depth to water and depth to product (if present) measurements from four of the six monitoring wells (RBSE-2R, RBSE-4R, RBSE-5, and SE-WELL).

3.5 GROUNDWATER MONITORING

WET will conduct three annual groundwater sampling events of two monitoring wells (RBSE-1A and RBSE-3), shown in **Figure 1**. Monitoring wells will be purged and sampled using a peristaltic pump and following procedures specified in this workplan, WET standard operating procedure (SOP)-08B: Groundwater Sampling – Low Flow Method, and DEQ's Groundwater Sampling Guidance (2018). Fluid levels will be measured with an oil-water interface meter prior to purging the well in accordance with WET SOP-05: Field Measurement of Groundwater and Light Non-Aqueous Phase Liquid Levels and recorded on the WET Groundwater Sampling Form in accordance with WET SOP-01: Field Logbook and Sampling Forms. Any monitoring well containing free product will not be sampled. SOPs are included as **Appendix A**.

Groundwater field parameters for each well will be measured by YSI® Professional Plus with Quatro cable multi-meter, Geotech or Hach turbidity meter, and a Geotech or Heron oil/water interface probe, in accordance with SOP-06: Measurement of Field Parameters. Field parameter measurements consist of recording initial depth to water, temperature, specific conductivity (SC), dissolved oxygen (DO), pH, oxidation reduction potential (ORP), turbidity, final depth to water, and volume during purging. Temperature and drawdown will be monitored but are not subject to stabilization criteria. Field parameter readings should be recorded every 3-5 minutes until three consecutive readings are within stabilization range. Once parameters stabilize according to the criteria in **Table 1**, a groundwater sample will be collected in laboratory-supplied bottles for laboratory analysis as described in Section3.5.1.

Table 1. Stabilization Parameters

Water Quality Parameter	Unit	Stabilization Range	Exception
pH	standard units (s.u.)	±0.1 s.u.	
Specific Conductance (SC)	microsiemens per centimeter (µS/cm)	±3%	
Dissolved Oxygen (DO)	milligrams per liter (mg/L)	±10%	<0.50 mg/L
Turbidity	nephelometric turbidity units (NTU)	±10%	<5 NTU
Oxidation/Reduction Potential (ORP)	millivolts (mV)	±10 mV	

Wells will be sampled using dedicated tubing for each well. The oil-water interface probe will be decontaminated between each site using a laboratory-grade detergent (e.g., Liquinox) and tap water mixture followed by a deionized water application/flush, as per SOP-02: Equipment Decontamination (**Appendix A**).

Following the DEQ disposal of untreated purge water from monitoring guidance dated July 15, 2015, the purge water originates from the shallowest aquifer, is not likely to result in an exceedance of soil screening levels, is not discharged to a surface water, and is not from a mine adit or long-term pumping test. Therefore, the purge water from the annual groundwater sampling events will be discharged to pervious Facility ground. All other generated investigation derived waste, such as personal protective equipment and single use items like peristaltic tubing, is anticipated to be disposed of in a local landfill.

3.5.1 QUALITY ASSURANCE/QUALITY CONTROL (QA/QC) SAMPLES

One field duplicate will be collected for each event and analyzed to assess field replication precision. The field duplicate sample will be collected by splitting a natural sample in the field. One field blank sample will be collected for each event and analyzed to assess potential environmental contamination factors. The field blank sample will be collected by pouring laboratory-grade deionized water in sample containers. A trip blank sample will accompany each cooler containing samples to be analyzed for volatile constituents. A trip blank is provided by the lab to assess any potential contamination introduced during the shipping and handling processes. These QA/QC samples will be submitted to Energy Laboratories and analyzed for the same constituents as the natural samples.

3.6 DATA VALIDATION SUMMARY FORMS

All laboratory analytical data will be validated using the WET Data Verification/Validation (DVV) Standard Operating Guidelines (SOG) (Organic and Inorganic Data Review sections), which reference United States Environmental Protection Agency National Functional Guidelines. The

DEQ Data Validation Summary Form (DVSF) will be used to summarize data validation and will be included in the report.

3.7 LABORATORY ANALYSIS

Groundwater samples will be submitted to Energy Laboratories in Helena, Montana for benzene, toluene, ethylbenzene, and xylene analysis by method SW 8260B.

4 SCHEDULE AND REPORTING

WET will implement this WP upon receiving written approval by DEQ. Notification for each event will also be sent to the Facility Owner and the DEQ Project Manager prior to activities.

WET personnel will provide an interim data submittal (IDS) to the DEQ Project Manager for each interim groundwater monitoring event. The IDS will include discussion, data tables, and figures described in the Groundwater Monitoring and Work Plan Guidance for Petroleum Releases.

Following completion of the final groundwater monitoring event, a Groundwater Monitoring Report (GMR)will be prepared. The GMR will include the following:

- All tables, text, figures, and appendices described in the Groundwater Monitoring and Work Plan Guidance for Petroleum Releases.
- The methods of groundwater monitoring, field forms, calibration data, laboratory data, DVSFs.
- Any deviations from the approved workplan.
- An updated release closure plan (RCP).
- An assessment of attenuation rates, recommendations, and conclusions for the Facility.

Assuming DEQ approval is received in time for collection of high groundwater samples in 2024, monitoring and reporting activities will be completed as follows:

- High GW event-May/June 2024
- IDS – 60 days after receipt of lab report
- High GW event-May/June 2025
- IDS – 60 days after receipt of lab report
- High GW event-May/June 2026
- IDS – 60 days after receipt of lab report
- GMR – 60 days after receipt of final lab report

In the event DEQ approval is not received in time for collection of high groundwater samples in 2024, monitoring and reporting activities will be completed as follows:

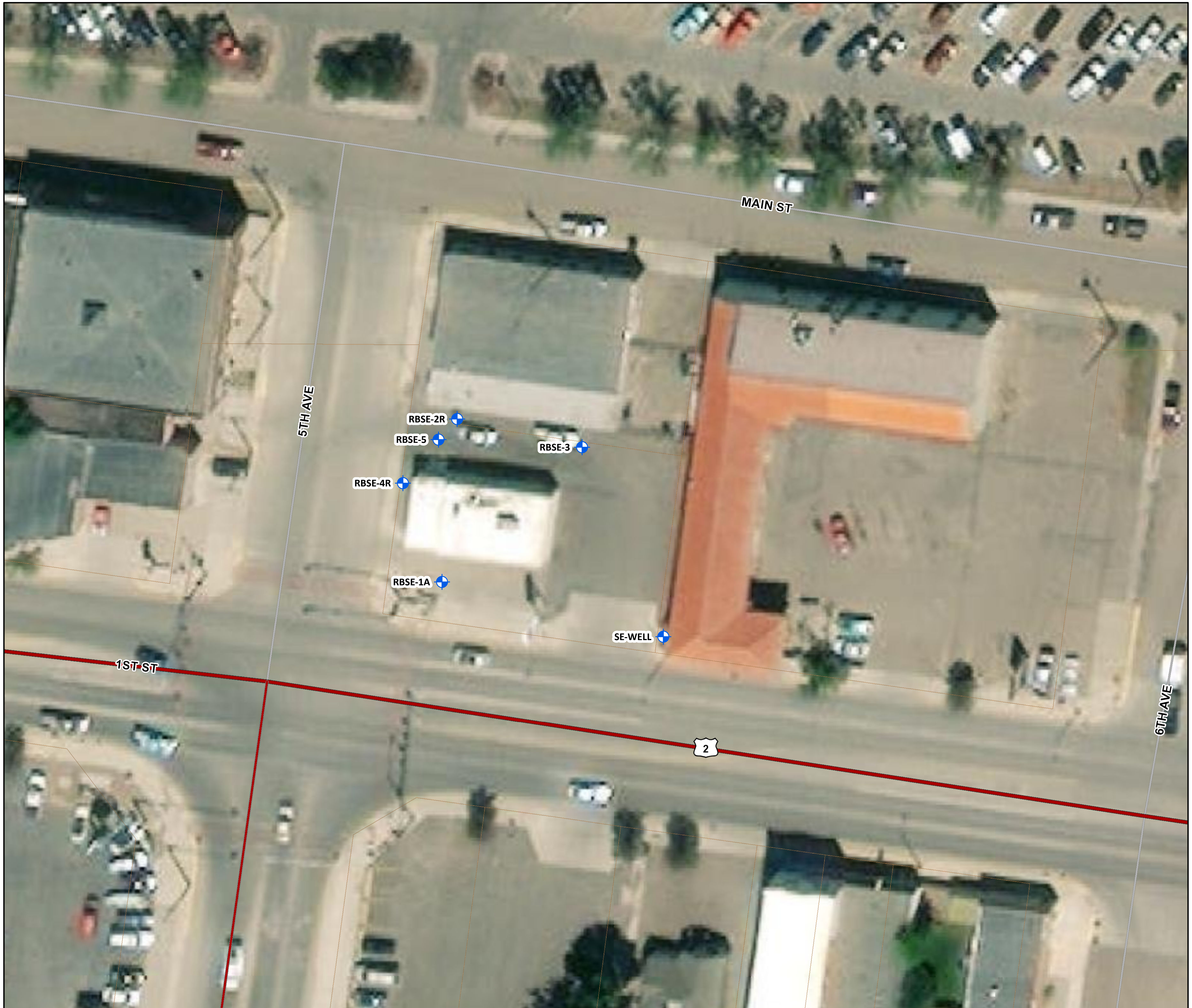
- High GW event-May/June 2025
- IDS – 60 days after receipt of lab report
- High GW event-May/June 2026
- IDS – 60 days after receipt of lab report
- High GW event-May/June 2027

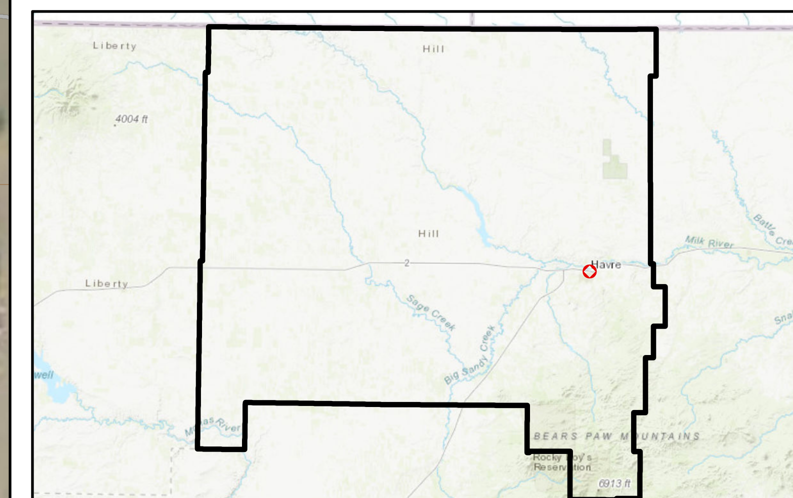
- IDS – 60 days after receipt of lab report
- GMR – 60 days after receipt of final lab report

Work effort level has been estimated using best professional judgement and typical scenarios related to work of this type. A detailed cost estimate for the required work is provided in **Appendix B**.

Figure I

Site Location





Legend

- Monitoring Well
- Parcels

N
W E
S

0 25 50 75 100 Feet

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SITE LOCATION

T32N, R16E, S08

Job#: CHRISTM01

Date: 6/1/2021

FIGURE 1

Path: M:\CHRISTM01\2020\SiteLocation\SiteLocation.aprx, Author: jhulla

Appendix A

WET SOPs

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SOP-1

FIELD LOGBOOK AND FORMS

All pertinent field investigation and sampling information will be recorded in a field logbook, field form, or a Daily Activity Log (DAL) during each day of the field effort and at each sample site. The field crew leader will be responsible for ensuring that sufficient detail is recorded in the field logbook or DAL. No general rules can specify the extent of information that must be entered in the field logbook or form. However, field logbooks, field forms, or DALs must contain sufficient information such that someone could reconstruct all field activities without relying on the memory of the field crew. All entries shall be made in indelible ink, weather conditions permitting. Each day's or site's entries will be initialed and dated at the end by the author.

At a minimum, entries on the field sheet or in field notebook must include:

- Project information and location
- Project and task number
- Date and applicable times
- Name(s) of field personnel
- Environmental, site, or weather conditions
- Safety briefing attendance
- Details of actual work effort, particularly any deviations from the field work plan or standard operating procedures
- Comments or observations regarding any unusual circumstances
- Any field measurements made (e.g., PID readings, pH, temperature)

For sampling efforts, specific details for each sample should be recorded using a standardized field form designed specifically for the sampling activity being conducted (e.g., low-flow groundwater monitoring, soil gas sampling). Sampling field forms contain fill-in-the-blank type information to ensure that all pertinent information will be recorded. In addition to the items listed above, the following information is recorded on field forms during sampling efforts:

- Sample identification
- Date and time samples were collected
- Sampling methods, particularly any deviations from field work plan or standard operating procedures
- Field data and measurements
- Containers used to collect samples
- Sample preparation (filtration, preservation)
- Analyses and methods requested
- Note any QA/QC samples collected (duplicates, blanks)

Strict custody procedures will be maintained with the field forms. Field forms must always remain with the field team while being used in the field. Upon completion of the field effort, the original field forms will be scanned and copied to the project folder. Original field forms will be filed in an appropriately secure manner.

SOP-2

EQUIPMENT DECONTAMINATION

INTRODUCTION

The purpose of this section is to describe general decontamination procedures for field equipment. Decontamination will be performed on all non-dedicated and non-disposable sampling equipment that may contact potentially contaminated media. Field personnel must wear disposable latex or nitrile gloves while decontaminating equipment at the project site and change gloves between every sample. Personnel must take every precaution to prevent contaminating themselves with the wash water and rinse water used in the decontamination process.

EQUIPMENT

- Liquinox (or equivalent laboratory-grade detergent)
- Sufficient volume of tap water
- Sufficient volume of deionized water
- Sufficient volume of methanol or pesticide-grade acetone for organics
- Sufficient volume of any other decontamination solutions specifically required by the project work plan.
- Necessary containers for each decontamination station (totes or tubs, graduated cylinders or similar tubes, spray bottles, etc.)
- Tarp or other platform to form barrier between decontamination stations and ground (if necessary)
- Applicable brushes (if necessary)
- Aluminum foil (for soil sampling devices)
- Latex or nitrile gloves
- Paper towels
- Garbage bags

PROCEDURES

The following should be done in order to complete thorough decontamination:

1. Set up the decontamination zone downwind from the sampling area to reduce the chances of windborne contamination.
2. Visually inspect sampling equipment for contamination; use brush to remove visible material.
3. The general decontamination sequence for field equipment includes washing with Liquinox (or equivalent laboratory-grade detergent), deionized water rinse, additional solution rinse specified by project work plan, and triple deionized water rinse.
4. Store equipment in clean containment or according to project work plan if not used immediately.
5. All disposable items (e.g., paper towels, latex gloves), as well as rinse and wash water generated during decontamination, should be disposed of in accordance with SOP-17 (Management of Investigation-Derived Waste).

SOP-5

FIELD MEASUREMENT OF GROUND-WATER LEVELS/LIGHT NON-AQUEOUS PHASE LIQUID LEVELS

INTRODUCTION

In general, groundwater levels (and LNAPL levels, if applicable) in wells will be measured prior to commencing development, purging, sampling, pumping tests, or other activities that disturb the fluid pressure relationships in the well. Measurements may be taken during such events for purposes other than determining static conditions and may also be taken to determine static conditions after such activities if an appropriate period has elapsed to allow steady-state conditions to return.

EQUIPMENT

- Electronic water level monitoring probe (for water levels only),
- Electronic multi-phase interface monitoring probe (for measuring water levels and LNAPL levels)
- Keys for well locks
- Tools to open well covers (e.g., socket wrench, spanner wrench, etc.)
- Watch or stopwatch
- Pens and field logbook or other appropriate field forms (e.g., groundwater purge and sample forms)
- Monitoring well construction data (for total depth and screen intervals of well)
- Personnel and equipment decontamination supplies (refer to SOP-2)

PROCEDURES

1. If more than one well will be measured, conduct measurements in the order of lowest to highest chemical concentrations previously detected in samples from the monitoring wells.
2. Allow the well to equilibrate by removing the protective cap and leaving the well open for a period before beginning taking measurements. Generally, removing all site well caps prior to collecting the first liquid level measurement provides sufficient time to reach equilibrium.
3. Examine the monitoring well for any structural damage, poorly fitting caps, and leaks into the inner casing. Record all well maintenance issues on the appropriate field sampling form or field log book.
4. If LNAPL is not present, use a pre-cleaned water level probe or equivalent to measure depth to water from the indicated survey mark on the well casing. If a mark is not present, measure from the top of the northern side of the well casing.
5. If LNAPL may be present, use a pre-cleaned, electric, multi-phase interface probe to mea sure depth of the LNAPL and depth to water. Record both measurements on the sam pling form or field logbook. Unless otherwise instructed, always measure depths to LNAPL layer and groundwater from the indicated survey mark. If a mark is not present, measure from the top of the northern side of the well casing.
6. Repeat measurements at least once by lifting the probe tape at least one foot out of the well, allowing the measurer to confirm the accurate foot, tenth-of-a-foot, and hundredth-of-a-foot mark on the tape.
7. Follow personnel and equipment decontamination procedures outlined in SOP-2.

SOP-6

MEASUREMENT OF FIELD PARAMETERS: Temperature, Dissolved Oxygen (DO), Specific Conductance, pH, Oxidation Reduction Potential, and Turbidity

INTRODUCTION

This guideline describes the procedures typically used to measure the temperature, DO, Specific Conductance (SC), pH, Oxidation Reduction Potential (ORP), also referred to as redox potential, and turbidity of ground- or surface water.

EQUIPMENT

- Multi-parameter water quality meter
- Flow-through cell or plastic cup
- Transport/calibration cup
- Probe sensor guard
- Operations manual
- Spare batteries
- Standard conductivity calibration solutions [447, 1413, 2074, 8974 microSiemens per centi meter (μS/cm)]
- pH buffers (4.00, 7.00, 10.00)
- ORP calibration solution
- Pens, field logbook, and/or appropriate field forms (e.g., groundwater purge and sample form)
- Personnel and equipment decontamination supplies

PROCEDURES

Calibrate multi-parameter water quality meter at the office prior to commencement of field activities to check instrument is in proper working order. At a minimum, calibrate before use each day (or more frequently as necessary) as indicated below. The initial daily calibration may be performed at the office (if located in proximity to the site), motel, or in the field.

1. Press the On/Off key. Check the battery charge indicator located at the bottom of the liquid crystal display (LCD) screen. Replace batteries if the battery charge indicator is low.
2. Calibrate the meters according to the manufacturer's instructions. *Note: The meter must be calibrated for each field parameter in accordance with the instructions in the operations manual at the beginning of each sampling day. Additional calibrations may be performed during the day if deemed necessary.*
3. If instruments were used in humid or wet environmental conditions, store them in the case open overnight for evaporation so that moisture and mold do not infiltrate sensitive parts.
4. Multi-parameter water quality meter use:
   a. Connect the probe sensor to the flow-through cell. If the flow cell is not used, make sure the probe sensor guard is installed.
   b. Begin passing water into the flow-through cell. If the flow-through cell is not used, place the probe module into a sample of the water or directly into the body of water being evaluated. Be sure to completely immerse all sensors into the water.
   c. Provide a constant flow of fresh water across the probe module to actuate readings.

   d. Observe the meter's LCD display and record the values on the groundwater purge and sample form or field logbook.
   e. Once purging is complete, remove the probe from the sample water and rinse the probes and flow-through cell with distilled water.
5. Place the probe sensor in the transport/calibration cup with 0.5-1 inch of 4.00 pH buffer for short-term/overnight storage for optimal calibration conditions the next day. Place the probe sensor in the transport/calibration cup with 0.5-1 inch of potable water for long-term storage. The transport/calibration cup should be sealed to prevent evaporation. *Note: Storing the probes in dry conditions will damage the sensors.*
6. Turbidity meter use:
   a. Fill a turbidity meter sample vial with water to the fill indication line. Cap the vial securely.
   b. Dry the outside of the sample vial. Line the arrow or alignment indication line on the vial with the arrow or alignment indication line on the turbidity meter. Push the vial all the way into the sample vial port. Ensure that the cap/cover is closed all the way.
   c. Ensure that the turbidity meter is on a level surface and will not be disturbed during the analysis process. Press the Read key. Do not disturb the turbidity meter or open the cap/cover during reading.
   d. Record the value provided. If the reading seems inaccurate, ensure that the sample vial is dry and does not have any streaking or staining and re-read the sample.

SOP-8B

GROUNDWATER SAMPLING—LOW FLOW METHOD

INTRODUCTION

These instructions are in general accordance with the United States Environmental Protection Agency (EPA) Region One Low-Stress (Low-Flow) Standard Operating Procedure (September 2017), and are applicable for using an adjustable rate submersible, peristaltic, or bladder pump with the pump's intake placed at the midpoint of a 10-foot or less well screen or an open interval. Field instruments are already calibrated. The equipment is set up according to the diagram at the end of these instructions.

EQUIPMENT

- Documentation Items:
  - Field sampling forms or field tablet with appropriate Survey123 sampling forms
  - Pens and indelible markers
- Sampling Items:
  - Sample bottle(s)
  - Preservative(s)
  - Coolers for sample bottle(s)
  - Ice for cooler(s)
  - Filter(s) (if required)
  - Laboratory-grade deionized (DI) water (for field blanks)
- Equipment/Instrumentation:
  - Water level or interface meter
  - Pump
  - Pump controller
  - Tubing (poly and silicone)
  - Appropriately sized t-splitter
  - Bailer(s) and rope
  - Multi-parameter meter (temperature, dissolved oxygen [DO], specific conductance [SC], pH, oxidation/reduction potential [ORP]) with low-flow cell
  - Turbidity meter
  - Graduated cup
- Power (if required)
  - Generator
  - Air compressor
  - Fuel
- Investigation-Derived Waste (IDW)
  - Sampling tote with elevated rack (if necessary)
  - Five-gallon bucket(s)
  - Purge water tank (if necessary)
  - 2L graduated cylinders (for decontamination)
  - Decontamination liquids (tap water, laboratory-grade detergent, distilled or DI water, acids, etc.)

All sampling equipment shall be inspected for damage and repaired, if necessary, prior to arriving on-site.

GENERAL PROCEDURES—PURGING

1. Review well installation information. Record well depth, length of screen or open interval, and depth to top of the well screen. Determine the pump's intake depth (e.g., mid-point of screen/ open interval).
2. On the day of sampling, check security of the well casing, perform any safety checks needed for the site, and set up the equipment.
3. Check well casing for a reference mark. If missing, make a reference mark on the northern side of the casing and notate in the field sampling form. Measure the water level (initial) to 0.01 ft. and record this information.
4. Measure product level, if present, and water level and record this information on the field sampling form. For wells of 2-inch diameter or less, the water level or interface meter will have to be removed from the well to install the pump, but then lowered back down the well after the pump is installed to monitor water level during the purge.
   a. If free product is present, the well is not to be sampled.
   b. If the water column is less than the length of the pump being used, or 12" if using a peristaltic pump, bailing the sample is the best option. See step 6c for bailing instructions.
5. Install the pump's intake to the appropriate depth (e.g., midpoint) of the well screen, which is often the midpoint of the screen interval for fully submerged well screens, or at the midpoint of the portion of screen penetrating the saturated zone for well screens straddling the water table.
   a. a. Attach the pump discharge line to the t-splitter.
   b. b. Attach tubing between the other side of the t-splitter to the lower stem of the multi-parameter meter low-flow cell.
   c. c. Attach tubing to the lower part of the t-splitter and either a valve end or a clamp on the end of the tubing. This is for turbidity readings, as they must be collected prior to entering the low-flow cell.
   d. d. Attach tubing from the upper stem of the multi-parameter meter low-flow cell and run it to a purge tank or bucket.
6. Start the pump and monitor the water level to assess if drawdown is occurring.
   a. a. Slow the rate if drawdown occurs until water level holds stable or is drawing down slowly enough that it will not exceed the 0.33 ft max or below the top of the well screen.
   b. b. If the rate cannot be lowered enough to avoid excess drawdown (>0.33 ft), then record this deviation in the sampling form. If the water level stabilizes after exceeding 0.33 ft, calculate the volume of water between the initial water level and the stabilized water level and purge at least that amount of water before collecting a sample.
   c. c. If the well runs dry or the water level gets to a point where the pump can no longer produce water, then a bailer can be used. Collect samples for containers in order of priority, and if enough water is left in the well, collect a sample for the multi-parameter storage cup for a single set of parameters.
   d. d. Once the water level is stable, record the pump settings and purge rate using a graduated cup and a timing device. *Note: Flow rate should not exceed 500 mL/min.*
7. After starting the pump, turn on the multi-parameter and turbidity meters and take readings every three to five minutes. Three consecutive readings must be within stabilization criteria before collecting a sample. Stabilization criteria may be set by the specific project, but otherwise, use the stabilization criteria defined in table 1 below.

Table 1. Stabilization Criteria

Parameter	Unit	Stabilization Criteria	Exception
Dissolved Oxygen (DO)	milligrams per liter (mg/L	10%	<0.50 mg/L
Oxidation/Reduction Potential (ORP)	millivolts (mV)	±10 mV	
pH	standard units (s.u.)	±0.1 s.u.	
Specific Conductance (SC)	microsiemens per centimeter (μS/cm)	3%	
Turbidity	nephelometric turbidity units (NTU)	10%	<5 NTU

If these parameters do not stabilize by 30 minutes since start of purge, collect the sample and note a deviation of non-stabilized parameters and list which ones in field documentation.

8. Once criteria is met to collect a sample, turn off the multi-parameter and turbidity meters and disconnect the pump discharge tubing from the t-splitter and begin collecting water in the sample containers in order of priority. Collect, preserve, close, and store samples as soon as possible and according to the analytical method(s). *Note: Make sure sample collection takes place over a containerized area (sampling tote or bucket) so that spills are captured.*
    a. If collecting samples for organic compounds, including petroleum hydrocarbons, ensure that all engines (vehicles, generators, etc.) operate 20 feet downwind of the sampling area. Engines will be shut down prior to opening sample collection containers. During sample collection, pumps and meters should be powered using the vehicle battery or a portable battery. Use of disposable gloves will be used whenever fueling generators, to eliminate the possibility of cross-contamination of samples.
    b. Volatiles and dissolved gas analysis samples should be collected first, followed by semi-volatile organic compounds, then inorganic parameters, as required by the sampling and analysis plan.
    c. Field duplicate samples should be collected in conjunction with the natural/original/parent sample.
    d. Field equipment rinse samples should be collected in the same manner as a natural sample, after the decontamination process.
    e. Field blank samples are collected by pouring laboratory-grade DI water into sampling containers.
9. Once samples are collected, acquire a final depth-to-water measurement, and turn off the pump. Record the total purged volume by calculating the time from pump start to stop with the purge rate. Remove the pump from the well and decontaminate the sampling equipment.

Low-Flow Setup Diagram