SOP S-4

STANDARD OPERATING PROCEDURE FOR GROUNDWATER SAMPLING AT THE WEST KINGSTON TOWN DUMP/ URI DISPOSAL AREA SITE

Woodard & Curran, Inc.

WATER SAMPLING PROCEDURES

Review requirements for groundwater sample containers and preservatives in project SAP and QAPP

Equipment needed:

- Monitoring wells will be sampled with adjustable rate peristaltic or submersible pumps and tubing.
- Water level measuring device
- Flow measurement supplies
- Sample preservatives
- Personal protective clothing and equipment as required in the site-specific HASP
- Photoionization Detector
- Horiba (multi-meter) or separate individual meters may also be used: Temperature, specific conductance and pH/ORP meter, dissolved oxygen (DO) meter, and turbidimeter as required by the QAPP.
- Appropriate sample containers (some will be pre-preserved) and labels.
- Field logbook
- Cooler with ice
- Flow cell

Sampling Procedure

The steps listed below will be followed when collecting and preserving groundwater samples.

1. Purge the well until field parameters (conductivity, DO, pH and turbidity) have stabilized. Measurements of temperature and ORP/Eh will not be used as indicators of stabilization. Utilize low-flow sampling protocol.
2. If pumping rate is greater than 0.1 L/min, lower to 0.05 L/min for the sampling of VOCs.
3. Fill each 40 ml VOA vial with groundwater taking care not to let it over flow and lose preservative. During the first sampling event, VOA sample pH will be checked, and subsequent sampling events will use this data for preservation. During the first sampling event, an extra VOA vial will be collected and the pH will be measured to ensure that it is <2. Add more preservative if needed to new unused vials and fill with groundwater. Retest an extra vial as before, and add more

preservative if needed. Repeat procedure until target of pH <2 is reached. For subsequent sampling events, VOAs vials will be pre-preserved based on this data.

4. For VOAs, place cap with Teflon septum on each vial as filled. Turn the VOA vial upside down and check for air bubbles. Tap the bottom of the VOA vials to dislodge any bubbles that may have formed around the cap or sides. If bubbles are present, remove cap and fill VOA vial with additional sample water to completely vial. Reconfirm that there are no bubbles in vial.
5. If a VOA sample appears to effervesce (or entrained gas bubbles in the pump effluent) during collection into a pre-preserved (with HCl) container, the sample will be discarded. A new sample will be collected in an unpreserved container and the holdtime will be reduced from 14 days to seven days.
6. Fill sample containers for other analytes, and seal sample containers.
7. Place labeled sample container(s) into a sample cooler with ice. A small plastic temperature blank will be filled with water and placed in the cooler with the samples. The temperature of the samples will be determined at the laboratory by measuring the temperature of the temperature blank. The sample temperature should be a maximum of 4 degrees Celsius (°C).
8. Record samples (e.g., sample ID, location, method, etc.) in the field logbook.
9. Complete chain of custody and include in sample shipment.

QA/QC

QA/QC procedures are outlined in the Sampling procedures discussed above. Duplicates, blanks, and spikes have been incorporated into the QAPP to assess potential for sampling, shipping, and laboratory impacts on data quality.

References

USEPA Low-Flow Ground Water Sampling Procedure; EPA/540/5-95/504, 1996.