



Maryland

Department of the Environment

Wes Moore, Governor
Aruna Miller, Lt. Governor

Serena McIlwain, Secretary
Suzanne E. Dorsey, Deputy Secretary

June 30, 2023

Mr. Steve Stookey
Southern Maryland Oil, Inc
P.O. Box 2810
La Plata MD 20646

RE: REQUEST FOR MONITORING WELL INSTALLATION

Case #2013-0321-AA
Fort Meade Shell No. 550
2631 Annapolis Road, Hanover
Anne Arundel County, Maryland
Facility I.D. No. 4591

Dear Mr. Stookey:

The Maryland Department of the Environment's (Department) Oil Control Program (OCP) recently completed a review of the case file for the above-referenced property, including the *UST Closure Report of Findings* dated November 15, 2022, and the *Quarterly Status Report – November 2022* dated November 23, 2022, and submitted by ARM Group LLC. This case was opened on December 3, 2012, when the OCP received notification that a 10,000-gallon gasoline underground storage tank (UST) failed tightness testing. On-site monitoring wells were sampled and found to be in exceedance of MDE commercial groundwater standards for petroleum constituents, including benzene and methyl-tert-butyl-ether.

Through multiple mobilizations, a network of twelve monitoring wells (MWs) was installed to evaluate site conditions. The presence of light non-aqueous phase liquid (LNAPL) was first detected in April 2013 in well MW-9, followed by detections in wells MW-7 and MW-14 in November 2013. Routine enhanced fluid recovery (EFR) events were conducted to remove LNAPL from these monitoring wells as of March 28, 2017. The wells in the network were gauged and sampled quarterly until August 2021, when a biannual gauging and sampling schedule was approved. In April 2022, LNAPL was again detected at a thickness of 2.0 feet in MW-14.

On September 6, 2022, the OCP approved the abandonment of monitoring wells MW-7, MW-8, MW-9, and MW-10 in advance of planned UST removal activities and installation of two new UST systems. Monitoring wells MW-8 and MW-10 and drilled tank field wells TF-3 and TF-13 were abandoned on September 20, 2022, prior to the commencement of UST removal activities. MW-7 was initially retained and believed to be outside of the development footprint, but was subsequently lost following an excavation sidewall collapse, so the compromised well was completely removed using the on-site crane.

The three USTs were removed on September 28, 2022, under direct supervision of a Maryland-certified technician and in the presence of OCP personnel. No visible perforations were observed in the removed USTs or their associated piping. Field screening values obtained from the tank field using a photo-

ionization detector (PID) recorded a maximum of approximately 1,800 meter units in soils approximately 2 feet below the former Tank #1. In preparation for the new tank field, over excavation was conducted to expand the tank field footprint. A total of approximately 1,097.05 tons of impacted soil was removed for proper off-site disposal.

A total of 19 soil samples were collected to evaluate the presence/absence of residual petroleum impact: nine samples from the tank field at approximately 14 feet below ground surface (bgs), four dispenser samples collected between 4 and 6 feet bgs, and then five more tank field samples from the bottom of the tank field after over-excavation had been completed. The soil samples were analyzed for full-suite volatile organic compounds, including fuel oxygenates and naphthalene, using EPA Method 8260 and total petroleum hydrocarbons - diesel and gasoline range organics (TPH-DRO and TPH-GRO) using EPA Method 8015. All soil sampling results were either non-detect or below MDE's non-residential soil cleanup standards with the following exceptions: TPH-DRO were reported in samples NE-2, NC, and CC at concentrations ranging from 898 parts per million (ppm) to 5,140 ppm, which exceed the 620 ppm standard; TPH-GRO were reported in sample NE-2 at a concentration of 1,770 ppm which exceeds the 620 ppm standard; and, ethylbenzene was detected in sample NE-2 at a concentration of 34.9 ppm, which exceeds the 25.0 ppm standard. The OCP understands the site is served by a private drinking supply well but the vicinity is served by a combination of private and municipal water supplies.

Based upon our review, OCP requires installation of a minimum of two replacement monitoring wells to provide updated conditions of the groundwater at this site.

1. **By no later than September 15, 2023**, install two replacement monitoring wells. The wells must be installed as a minimum 4-inch diameter well and must be completed to a depth to allow at least 10 feet of screen above and below the static groundwater elevation. The wells should be installed at appropriate locations near those marked on the enclosed *Site Map* to augment the information obtained from the tank field monitoring pipes and the other nearby monitoring wells. All monitoring wells must be constructed / maintained in accordance with the specifications established in the *Maryland Environmental Assessment Technology* (MEAT) document.
2. Properly develop the newly installed monitoring wells. Well development methods must include active surging of the wells in addition to pumping/purging.
3. Continue **monthly** monitoring well gauging schedule. If gauging results document the presence of LNAPL at a thickness greater than 0.5 feet, LNAPL transmissivity testing will be required to determine transmissivity baseline values and to evaluate potential LNAPL recovery potential. Promptly notify OCP if an LNAPL thickness greater than 0.5 feet is observed, suspend LNAPL recovery to allow the LNAPL thickness to stabilize, and submit a Transmissivity Study Work Plan.
 - a. If any LNAPL is detected in a monitoring well, this detection must be reported to the OCP within two hours of detection.
 - b. Transmissivity testing must meet ASTM E2856-13 "Standard Guide for Estimation of LNAPL Transmissivity".
 - c. The Work Plan must be submitted to this office within 15 days of the discovery of a qualifying thickness of LNAPL in a monitoring well.

4. Continue **quarterly** sampling of all site monitoring wells that do not regularly exhibit LPH. All samples collected must be analyzed for full-suite VOCs, including fuel oxygenates and naphthalene, using EPA Method 8260 and TPH-DRO and TPH-GRO using EPA Method 8015B.
5. Continue to sample the on-site drinking water supply well on an **annual** basis during the March sampling event. All samples collected must be analyzed for full-suite VOCs, including fuel oxygenates, ethanol, and naphthalene, using EPA Method 524.2.
6. **No later than 45 days following a sampling event**, submit a *Quarterly Report* detailing the results of the quarterly sampling event. When submitting sampling reports include detailed data summary tables and scaled site maps showing actual sampling locations. Reports must include maps depicting groundwater surface contours and dissolved phase concentrations including **benzene, ethylbenzene, toluene, xylene, and methyl tertiary-butyl ether (MTBE)** concentrations. Please DO NOT present total BTEX or total VOCs on the maps. To enhance OCP's review of the data, present calculated Mann Kendall analysis for each well.
7. Upon receipt of four quarters of monitoring and sampling with the inclusion of data from the newly installed wells, the Oil Control Program will re-evaluate the status of this case.
8. When submitting the fourth Quarterly Report to this office please include an updated Mann-Kendall analysis and a risk evaluation as per the Maryland Environmental Assessment Technology 7 Risk Factors document.

The OCP will review the data and reserves the right to require additional site characterization and/or remedial action as is warranted by site-specific conditions. Notify the OCP case manager at least five (5) working days prior to conducting any site work. When submitting documentation, provide two hard copies and an electronic copy on a labeled compact disc (CD) or via email. If you have any questions, please contact Mr. Shane Rozelle at 410-537-4151 (shane.rozelle@maryland.gov) or me at 410-537-3499 (susan.bull@maryland.gov).

Sincerely,



Susan R. Bull, Division Chief
Remediation Division
Oil Control Program

Enclosure – Replacement Monitoring Well Map

cc: Mr. Doug Hamilton, Senior Geologist, ARM Group LLC
Mr. Don Curtian, Director, Environmental Health, Anne Arundel County Health Dept.
Ms. Ginger D. Klingelhofer-Ellis, Anne Arundel County Department of Public Works
Mr. Christopher H. Ralston, Program Manager, Oil Control Program

