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May 29, 2018

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Ms. Bobbi Coleman
South Carolina Department of Health and Environmental Control (SCDHEC)
Assessment Section, UST Management Division
Bureau of Land and Waste Management
2600 Bull Street
Columbia, SC 29201

Subject: **Lewis Drive – April 2018 Monthly Status Update**
Plantation Pipe Line Company
Belton, South Carolina
Site ID #18693, “Kinder Morgan Belton Pipeline Release”

Dear Ms. Coleman,

On behalf of Plantation Pipe Line Company (Plantation), CH2M HILL Engineers, Inc. (CH2M now Jacobs) is submitting the attached Monthly Status Update covering activities conducted in April 2018 at the Lewis Drive site. If you have any questions or concerns, please call me at 919-760-1777, Mr. Scott Powell/CH2M at 678-530-4457, or Mr. Jerry Aycock/Plantation at 770-751-4165.

Regards,
CH2M HILL Engineers, Inc.

William M. Waldron, P.E.
Program Manager

Attachments:

- Monthly Status Update including:
 - Figure 1 – Groundwater and Surface Water Elevation and Product Thickness Map
 - Table 1 – Field Observations
 - Table 2 – Stream Gauge Construction Information
 - Table 3 – Analytical Results for Surface Water
 - Table 4 – Well Construction Information
 - Table 5 – Groundwater Elevation and Product Thickness Data
 - Table 6 – Product Skimmer Recovery Results
 - Table 7 – Analytical Results for Groundwater
 - Field Logbooks and Gauging Sheets
 - Surface Water Analytical Laboratory Report

- o Groundwater Analytical Laboratory Report

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File

Monthly Status Update
Plantation Pipe Line Company
Lewis Drive Remediation
Site ID #18693 “Kinder Morgan Belton Pipeline Release”
April 2018

Surface Water

- Routinely inspected Brown’s Creek and the wetland area south of West Calhoun Road adjacent to Cupboard Creek for hydrocarbon sheen, odor, or distressed vegetation. No new signs of distressed vegetation, hydrocarbon sheen, or odor were noted at Brown’s Creek or the wetland area south of West Calhoun Road adjacent to Cupboard Creek. The route of inspection is indicated on Figure 1. A summary of the field observations is provided in Table 1.
- Stream elevations from staff gauges are tabulated in Table 2 and are shown along with groundwater elevations on Figure 1.
- To date, 47 surface water sampling events have been performed and samples during each event were analyzed for benzene, ethylbenzene, toluene, xylenes, and naphthalene (see Table 3). Starting in February 2018 (event 46), methyl tertiary butyl ether (MTBE) was added to the analyte list for the surface water samples.
- During this reporting period, surface water samples were collected on April 6, 2018. Fifteen surface water samples were collected, at locations SW-01, SW-02, SW-03, SW-04, SW-07, SW-08, SW-09, SW-10, SW-11, SW-12, SW-13, SW-14, FP-01, FP-02, and FP-03 (locations SW-05 and SW-06 in Cupboard Creek were dry). Field documents can be found in Attachment A.
 - The following constituent was detected above its surface water standard:
 - SW-02 – benzene at 2.23 µg/L (standard = 2.2 µg/L).
 - Apart from this location, no dissolved hydrocarbons were detected above their respective surface water standards in the remaining surface water samples. Analytical lab report is attached.

Product Recovery

- Gauged depth to product and depth to water in recovery sumps/trenches/wells, piezometers, monitoring wells, and stream gauges on a monthly basis. Three locations (MW-16, MW-18, and RW-04) exhibited measurable product thickness of 0.5 foot or greater during the sitewide April gauging event. The greatest product thickness measured from a recovery feature (recovery sumps, trenches, and wells) was 0.58 feet, at RW-04. The greatest product thickness measured from a non-recovery feature (piezometers, monitoring wells, and stream gauges) was 4.40 feet, at MW-18. All locations showing measurable product thicknesses are more than 150 feet away from surface water bodies at the site and have limited influence from the air sparging remediation system. Construction information for recovery and non-recovery features is presented in Table 4. Groundwater elevation and product thickness data for April 2018 are presented in Table 5. Groundwater elevation and product thicknesses for April 2018 are presented on Figure 1.
- The locations with the product skimming canisters (skimmers) and petroleum absorbent socks (socks) and the amount of product recovered from each of these locations are listed in Table 6. In April, 1.29 gallons were recovered at the site. Since February 13, 2018, 7.04 gallons of product have been recovered using the skimmers and socks. Of this quantity, 3.91 gallons (55% of the total) were recovered from recovery sump RS-05.
- Through the end of April 2018, approximately 222,981 gallons (5,309 barrels) of product have been collected.

Groundwater

- Operated and recorded data from six continuous water level data loggers (In Situ Rugged Troll 100) in MW-02, MW-12, MW-25, MW-29, MW-39, and MW-40, and two barometric pressure loggers in MW-01 and MW-10 during the month.
- Collected monthly groundwater samples in accordance with the Corrective Action Plan and Addendum. The analytical lab reports are attached and results are summarized in Table 7.
 - During this reporting period, groundwater samples were collected (or attempted) on April 6, 2018, from 22 monitoring wells. Two monitoring wells were not sampled because of the presence of

product. Samples were analyzed for benzene, ethylbenzene, toluene, total xylenes, 1,2-dichloroethane, MTBE, and naphthalene.

- The following constituents were detected above their respective groundwater standards:
 - Benzene – in samples from seven monitoring wells ranging from 16.1 to 6,710 µg/L.
 - Toluene – in one monitoring well with a concentration of 8,350 µg/L.
 - 1,2-dichloroethane – one monitoring well has a laboratory reporting/quantitation limit greater than the screening level so it cannot be determined if the analyte was absent or present.
 - MTBE – in samples from five monitoring wells ranging from 67.6 to 423 µg/L.
 - Naphthalene – one monitoring well has a laboratory reporting/quantitation limit greater than the screening level so it cannot be determined if the analyte was absent or present.
 - Apart from these locations, no dissolved hydrocarbons were detected above their respective groundwater standards in the remaining groundwater samples.

Remedial System Operation

- Continued sparging via vertical well curtains in the Brown's Creek Protection Zone and Cupboard Creek Protection Zone, and sparging via horizontal wells in the Hayfield Zone.
- After downtime for a week in March, the air sparging system was restored to full operation (100% uptime) for the month of April.
- Flows in the vertical sparging wells were incrementally increased to 10 standard cubic feet per minute (scfm) by the end of April 2018. Flows in the 3 horizontal wells in the Hayfield Zone were incrementally increased to approximately 0.70 scfm per foot of screen by the end of April 2018. Flows in the 2 stream aerators in Brown's Creek were maintained at 15 scfm each in April 2018.

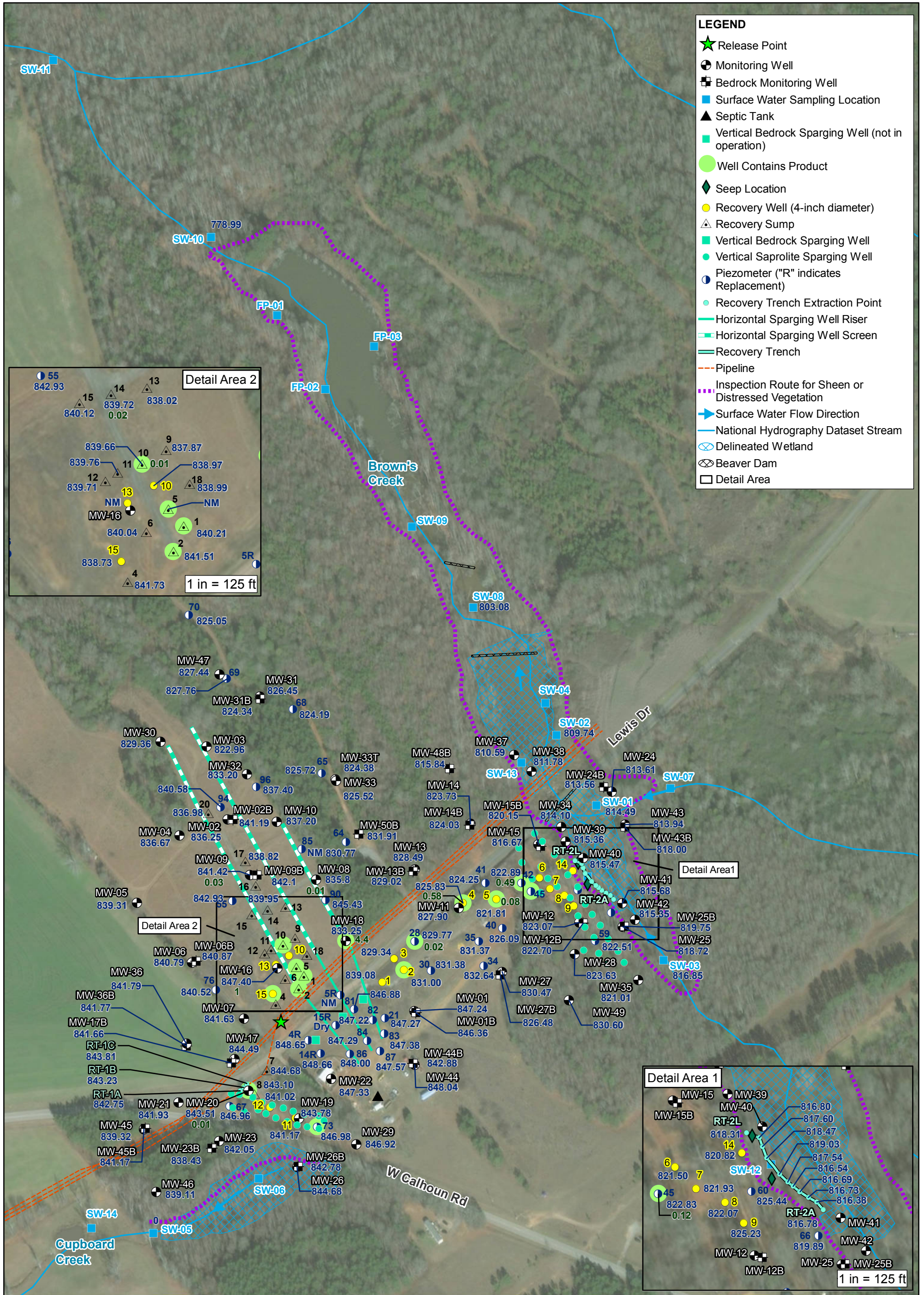
Regulatory Interaction

- Submitted *Monthly Status Update for March 2018* to SCDHEC on April 18, 2018.
- Submitted *Request to Pump Select Monitoring Wells* to SCDHEC on April 27, 2018.
- Conducted internal stormwater pollution prevention plan (SWPPP) inspection on April 11, 2018.
- The Anderson County Stormwater Department performed a SWPPP inspection on April 19, 2018. No findings were noted.

Future Activities

- In accordance with the *Sparging Operating Limits* letter to SCDHEC dated July 26, 2017:
 - Increase flow in the stream aerators to up to a maximum of 15 scfm each.
 - Increase flow in the vertical sparging wells up to a maximum of 15 scfm each.
 - Increase flow in the horizontal sparging wells up to a maximum of 0.75 scfm per foot of screen.
- Expand the Brown's Creek air sparging network southwest toward MW-11 and expand the Cupboard Creek air sparging network northwest beyond MW-17.
- Recover product monthly using skimmers and socks from select product recovery sumps, trenches, and wells. Collect liquids in two on-site 1,550-gallon poly tanks for eventual off-site disposal.
- Move skimmers from MW-08 and RW-08 to MW-18 and RW-10, respectively. Recovery from MW-08 has been low (0.001 gallons) and the product thickness has not been greater than 0.01 feet since December 2017. While MW-18 has shown an increase in product thickness since December 2017 from no measurable product to 4.40 feet. No product has been recovered from RW-08 and decreased product thickness trends have been noted. While RW-10 has shown an increase in product thickness. The relocation of these skimmers will increase the likelihood of better product recovery from the site.
- Gauge recovery sumps/trenches/wells, piezometers, monitoring wells, and stream gauges monthly for depth to groundwater and free product thickness.
- Conduct groundwater monitoring and reporting monthly.
- Continue routine visual inspections of Brown's Creek and Cupboard Creek.
- Conduct monthly surface water sampling at 17 established locations along Brown's Creek and Cupboard Creek in May 2018.
- Install additional monitoring wells to expand the monitoring network north and west of MW-30 and upgradient of MW-38.

- Abandon 1-inch diameter wells (piezometers) because the existing 2-inch monitoring well network is now sufficient for groundwater elevation and product thickness measurements. The piezometers are now redundant and cannot be used for product removal.
- Continue coordination with landowners and legal counsel on an as-needed basis.



821.70 Corrected Groundwater Elevation as of 4/5/2018 in feet above mean sea level
0.60 Product Thickness in feet as of 4/5/2018

Base Map Sources:
 *ESRI World Imagery Layer, 2017
 *United States Geological Survey (USGS)
 National Hydrography Dataset (NHD)

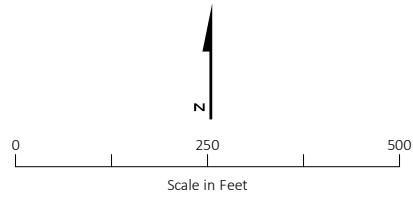


Figure 1. Groundwater and Surface Water Elevation and Product Thickness Map
 Lewis Drive Remediation Site
 Belton, South Carolina
 Site ID #18693 "Kinder Morgan Belton Pipeline Release"

Table 1. Field Observation Log

| Date | Inspect Wetlands South of Calhoun Road (Any odor, sheen or distressed vegetation? Describe.) | Inspect Brown's Creek Upstream and Downstream of the Culvert Under Lewis Drive (Any odor, sheen or distressed vegetation? Describe.) |
|----------|---|---|
| 4/6/2018 | No odors, sheens, or distressed vegetation observed in wetlands South of Calhoun Road. | No odors, sheens or distressed vegetation observed in wetlands either upstream or downstream of Culvert under Lewis Drive. |

Notes:
ID = identification