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Project Manager Bobbi Coleman
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March 23, 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 – February 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) is submitting the attached Monthly Status Update covering activities conducted in February 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
 - Surface Water Analytical Laboratory Reports

- o Groundwater Analytical Laboratory Reports

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File

Monthly Status Update
Plantation Pipe Line Company
Lewis Drive Remediation
Site ID #18693 “Kinder Morgan Belton Pipeline Release”
February 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. New turbidity was observed in Brown’s Creek associated with the replacement of the culvert under Lewis Road performed by Anderson County Roads and Bridges. This turbidity was noted and will be monitored. 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, 45 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, 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 February 6, 2018. Sixteen surface water samples were collected, at locations SW-01, SW-02, SW-03, SW-04, SW-05, SW-07, SW-08, SW-09, SW-10, SW-11, SW-12, SW-13, SW-14, FP-01, FP-02, and FP-03 (location SW-06 in Cupboard Creek was dry).
 - The following constituent was detected above its surface water standard:
 - 6.69 µg/L benzene at SW-02
 - 3.04 µg/L benzene at SW-04
 - 2.53 µg/L benzene at SW-12
 - Apart from these locations, no dissolved hydrocarbons were detected above their respective surface water standards in the remaining surface water samples. Analytical lab reports are attached.

Product Recovery

- During this reporting period, product recovery transitioned from vac truck to product-skimming canisters (skimmers) and petroleum-absorbent socks (socks). The last vacuum product recovery event was conducted on February 2, 2018. On February 13, 2018, skimmers and socks were deployed in locations that had measurable product in December 2017. During the sitewide gauging event on February 20 and 21, 2018, any location that had a skimmer or sock and the temporary wells (piezometers) that had a monitoring well near it were not gauged.
- Gauged depth to product and depth to water in recovery sumps/trenches/wells, piezometers, monitoring wells, and stream gauges on a routine basis. One location (TW-28 at 0.57 ft) exhibited measurable product thickness of 0.5 foot or greater during the sitewide February gauging event. All recovery features (recovery sumps, trenches, and wells) had product thicknesses less than 0.5 feet during the sitewide February 2018 gauging event. While the skimmers and socks were being deployed, two recovery features had product thicknesses greater than 0.5 feet: 0.70 feet at RS-05 and 0.65 at RW-04. All locations showing greater than 0.5 feet of product are 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 February 2018 are presented in Table 5. Groundwater elevation and product thicknesses for February 2018 are presented on Figure 1.
- The locations with the skimmers and socks and the amount of product recovered from each of these locations are listed in Table 6. Since February 13, 2018, 2.31 gallons of product has been recovered using the skimmers and socks. Of this quantity, 1.66 gallons (72% of the total) were recovered from recovery sump RS-05.
- Through the end of February 2018, approximately 222,976 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-15, MW-20, MW-25, 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 February 5 and 6, 2018, from 22 monitoring wells. Four monitoring wells were not sampled because of insufficient water in the well or 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 six monitoring wells ranging from 10.8 to 11,100 µg/L
 - Ethylbenzene – in one monitoring well at the concentration of 777 µg/L
 - Toluene – in one monitoring well at the concentration of 20,300 µg/L
 - 1,2-dichloroethane – two monitoring wells have 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 four monitoring wells ranging from 48.8 to 373 µg/L
 - Naphthalene – two monitoring wells have 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.
- Flows in the vertical sparging wells were maintained at approximately 10 standard cubic feet per minute (scfm) each during this period.
- Flows in the 3 horizontal wells in the Hayfield Zone were incrementally increased to approximately 0.70 scfm per foot of screen during this period.
- Maintained flows in the two stream aerators in Brown's Creek at a rate of 15 scfm each.

Regulatory Interaction

- Submitted *Free Product Recovery Plan Revision 4* to South Carolina Department of Health and Environmental Control (SCDHEC) on February 6, 2018.
- Submitted *Response to CAP and QAPP comments* to SCDHEC on February 9, 2018.
- Submitted *Fourth Quarter 2017 Monitoring Report (Oct 1 – Dec 31)* to SCDHEC on February 27, 2018.
- Submitted *Monthly Status Update for January 2018* to SCDHEC on February 28, 2018.
- Conducted internal stormwater pollution prevention plan (SWPPP) inspection on February 6, 2018.
- The Anderson County Stormwater Department performed a SWPPP inspection on February 23, 2018. No findings were noted.

Future Activities

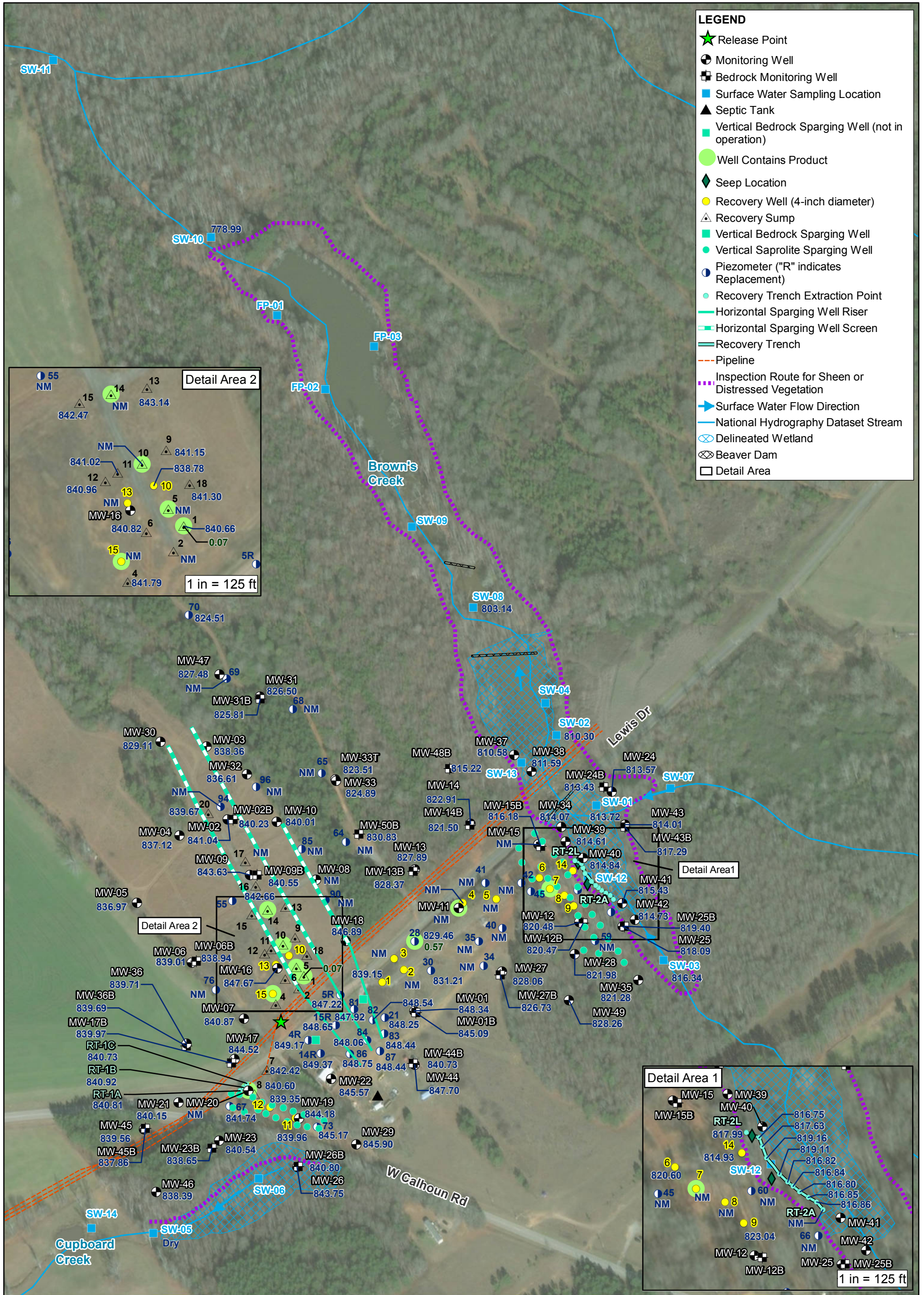
- In accordance with the *Sparging Operating Limits* letter to SCDHEC dated July 26, 2017:
 - Increase flow in the stream aerators to up to a maximum of 15 scfm each.
 - Increase flow in the vertical sparging wells up to a maximum of 15 scfm each.
 - Increase flow in the horizontal sparging wells up to a maximum of 0.75 scfm per foot of screen.
- Implement the bedrock sparging pilot study.
- Recover product 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.
- 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 March 2018.
- Install additional monitoring wells to expand the monitoring network north 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.

Cumulative Product Shipped from the Site

Date	Destination	Total Product (gal)	Date	Destination	Total Product (gal)
12/9/2014	PPL Greensboro	4,289	6/3/2015	Allied Energies	4,214
12/9/2014	PPL Greensboro	3,100	8/10/2015	Allied Energies	6,000
12/12/2014	PPL Greensboro	1,189	11/2/2015	Allied Energies	5,800
12/30/2014	Crystal Clean (FCC)	5,057	11/13/2015	Crystal Clean (FCC)	2,900
12/31/2014	Crystal Clean (FCC)	5,333	12/1/2015	Allied Energies	6,690
1/4/2015	Crystal Clean (FCC)	5,000	12/1/2015	Allied Energies	6,700
1/4/2015	Crystal Clean (FCC)	2,872	12/7/2015	Crystal Clean (FCC)	500
1/5/2015	Crystal Clean (FCC)	5,013	9/28/2016	Shamrock	495
1/6/2015	Crystal Clean (FCC)	4,800	10/17/2016	Shamrock	110
1/7/2015	Allied Energies	6,532	10/24/2016	Shamrock	85
1/7/2015	Allied Energies	6,425	10/31/2016	Shamrock	70
1/7/2015	Allied Energies	8,200	11/10/2016	Shamrock	168
1/9/2015	Allied Energies	6,482	1/18/2017	A&D Archdale, NC	3,758
1/9/2015	Allied Energies	7,825	3/3/2017	A&D Archdale, NC	460
1/12/2015	Allied Energies	6,540	3/8/2017	A&D Archdale, NC	500
1/12/2015	Allied Energies	6,467	3/15/2017	A&D Archdale, NC	4,189
1/13/2015	Allied Energies	6,732	4/3/2017	A&D Archdale, NC	458
1/13/2015	Allied Energies	6,595	4/19/2017	A&D Archdale, NC	927
1/15/2015	Allied Energies	6,500	4/19/2017	A&D Archdale, NC	747
1/22/2015	Allied Energies	5,791	5/22/2017	A&D Archdale, NC	50
1/23/2015	Allied Energies	5,450	6/7/2017	A&D Archdale, NC	658
1/27/2015	Allied Energies	5,791	6/29/2017	A&D Archdale, NC	695
1/27/2015	Allied Energies	5,557	8/25/2017	A&D Archdale, NC	566
1/27/2015	Allied Energies	6,043	9/8/2017	A&D Archdale, NC	99
1/28/2015	Allied Energies	4,411	1/8/2018	A&D Archdale, NC	6
2/5/2015	Allied Energies	5,513	2/28/2018	Remaining in poly tank	2.31
2/11/2015	Allied Energies	5,732		Total (gallons)	222,976
2/11/2015	Allied Energies	5,606		Total (barrels)	5,309
2/25/2015	Allied Energies	5,583			
3/4/2015	Allied Energies	4,000			
3/16/2015	Allied Energies	5,200			
6/3/2015	Allied Energies	6,500			

Notes:

- Gasoline and water are field-segregated using two 1,550-gallon poly tanks prior to off-site disposal.



826.73 Corrected Groundwater Elevation as of 2/21/2018 in feet above mean sea level
NM Not measured
0.57 Product Thickness in feet as of 2/21/2018

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"

