GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

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April 12, 2018

VIA U.S. MAIL AND EMAIL

Legion Industries, Inc.
c/o Mr. Charles A. Brown
373 Huntsville Road
Dallas, PA 18612

Subject: Voluntary Remediation Program Compliance Status Report and Progress Reports 2 – 6
Legion Industries (HSI 10614)
370 Mills Road
Waynesboro, Burke County, Georgia

Dear Mr. Brown:

The Georgia Environmental Protection Division (EPD) has reviewed the Compliance Status Report (CSR) dated January 25, 2016 and Progress Reports 2 – 6 for the referenced site. These documents were submitted pursuant to the Georgia Voluntary Remediation Program (VRP) Act. EPD has the following comments:

1. EPD comments in this letter are focused on the information presented in the CSR as opposed to individual progress reports. However, as a point of information, EPD notes that the groundwater modeling output presented in Progress Report 4 was for a different site.
2. Some of the information presented in the CSR does not support the certification of soil compliance with Type 3 or 4 Risk Reductions Standards (RRS):
    a. In Table 9-1 – Risk Reduction Standards for Soil, the highest remaining concentration listed for Gamma-BHC is 1.3 mg/kg, which exceeds both the Type 3 and 4 RRS.
    b. According to Figures 9 and 11, several regulated substances were detected above Type 3 and 4 RRS in sample DP3-3' near the eastern edge of the interior excavation. Figure 9 shows duplicate samples as having been collected at both DP2-3' and DP3-3' with identical results (although DP2-3' DUP also lists results for trichloroethene, cis-1,2-dichloroethene, and toluene in the "metals" category). However, a review of the analytical data reports indicates that a duplicate sample was collected at DP2-3' and not at DP3-3'. While the interior excavation activities appear to have extended slightly beyond and to the east of sample DP3-3', there is no accompanying confirmation sample along the sidewall of the excavation to verify that post-excavation concentrations were below applicable RRS. Therefore, an additional confirmation sample is necessary mid-way between soil confirmation sample locations DP-6 and DP-7 to adequately document that no regulated substances remain above applicable RRS.
3. The following comments pertain to CSR Section 3.0 Conceptual Site Model:

a. In Section 3.2.2 Aquifer, a discussion of the three hydrologic zones (i.e., shallow, intermediate, and deep) should be presented for clarity along with a discussion of which monitoring wells are designated to evaluate which zones.

b. Please clarify the survey methods used to establish elevations for all monitoring wells and piezometers.

c. Section 3.2.3 Hydraulic Conductivity discusses methods utilized for conducting in-situ conductivity tests using the slug-test procedures described by Bouwer and Rice (1976, 1989), as well as the resulting average hydraulic conductivity values (shallow and deep) based on the slug-test results. Further, it is stated that slug tests were conducted on wells MW-1, MW-2, and MW-3 (shallow wells), as well as wells MW-4 and MW-12 (deep wells). However, MW-2 appears to be screened in a potentially separate hydrogeologic unit from that of MW-1 and MW-3 and is designated as an intermediate well on Table 8. Therefore, it may not be appropriate to average hydraulic conductivity values obtained from MW-2 with hydraulic conductivity values from MW-1 and MW-3. Please provide a list of all input data, justification of the data, and show all calculations for the determination of average hydraulic conductivity (shallow at 4.82×10^{-4} cm/sec and deep at 4.4×10^{-4} cm/sec) at the site.

d. Section 3.2.4 Groundwater Flow discusses the determination of the horizontal gradient, as well as the groundwater flow calculations based on gradient determination. It is stated that "The horizontal groundwater gradient measured between MW-5 in the southern portion of the site and MW-9 in the northern portion of the site is approximately 1.06%." Based on the June 2015 Potentiometric Surface Map (Figure 6), it does not appear appropriate to measure horizontal gradient between MW-5 and MW-9 because the distance between the two wells cannot be measured along the groundwater flow path direction. Rather, it appears more appropriate to measure horizontal gradient between MW-13 and MW-3 (or MW-15 and MW-3). Please revise horizontal gradient calculations accordingly and include gradient calculations as part of the revised text, or as an appendix to the revised report. Please also utilize revised gradient and groundwater flow information as part of revised BIOCHLOR modeling activities.

e. Section 3.2.5 Vertical Hydraulic Gradient discusses the determination of the vertical hydraulic gradient at the site; however, calculations of vertical gradient were not provided. Please include vertical gradient calculations as part of the revised text, or as an appendix to the revised report.

4. On Pages 13 and 14 of Section 4.2 Regulated Substances Released From The Source, it appears that cis-1,2-dichloroethene is incorrectly listed as cis-1,2-dichlorobenzene as a substance identified in both soil and groundwater at the site. Additionally, on Page 14, the list of substances identified in groundwater should be updated to include the following: 1,3-dichlorobenzene and naphthalene.

5. On Page 18 of Section 5.3.2 2010 Assessment, it is stated in the second full paragraph that "Low concentrations of the metals barium, chromium and lead were also detected in each boring at concentrations consistent with Piedmont soils and two on-site background

samples." EPD believes the correct reference to the physiographic province should be the Coastal Plain rather than Piedmont.

6. In Section 9.1 Soil Criteria, it is stated that "A total of 27 HSRA-regulated constituents were detected in soil during AMEC Foster Wheeler's assessment." Based on EPD's review, the correct number of constituents identified in soil is 28.

7. Comments related to Tables and Figures:

   a. On Table 9-2 – Risk Reduction Standards for Groundwater Shallow Zone and Table 9-3 – Risk Reduction Standards for Groundwater Intermediate Zone (Pages 41 & 42, respectively) in Section 9.2 Groundwater Criteria, the referenced units at the bottom of the tables are incorrectly listed as µg/kg, but should be µg/L.

   b. On Tables 9-2 and 9-3, the most recent maximum groundwater concentrations of each substance at the site and the corresponding monitoring well should be listed for comparison to RRS.

   c. Table 7 – Cumulative Summary of Groundwater Testing Results. The non-residential RRS at the top left portion of the table are incorrectly referenced as mg/L, but should be µg/L. On the 2nd through 6th pages of Table 7, the legend is only partially visible.

   d. Table 8 - Well Construction and Water Level Data. Please add information as to how the wells were surveyed (i.e., by a Georgia-registered land surveyor, by AMEC personnel, etc.) and what datum the elevation survey was relative to (i.e., NVGD, MSL, arbitrary, etc.).

   e. Figure 3 - Monitoring Well Locations. PZ-4, PZ-5, and MW-8 are depicted in red type font, which according to the legend indicates that the piezometer and/or monitoring well was destroyed. However, according to Table 8 - Well Construction and Water Level Data, piezometers PZ-5 and PZ-6 are denoted as having been destroyed. Please verify which piezometers were destroyed and revise Table 8 and Figure 3 accordingly. There is no monitoring well symbol for MW-16 on Figure 3.

   f. Figure 6 - Potentiometric Surface Map Shallow Depth June 2, 2015. Multiple monitoring well symbols are depicted for MW-17; an extra monitoring well symbol (3 shown) is depicted in the MW-14/MW-15 well cluster; and there is no monitoring well symbol for MW-16. The same comments as in 7e regarding which piezometers have been destroyed also apply to this figure.

   g. Figure 7 - Potentiometric Surface Map Intermediate Depth June 2, 2015. There is no monitoring well symbol for MW-16. A water table elevation is depicted on Figure 7 for PZ-6, yet PZ-6 is referenced as having been destroyed according to Table 8. The same comments as in 7e regarding which piezometers have been destroyed also apply to this figure.

   h. Figure 8 - 2001/2010 Soil Test Results. DP3-3' DUP should be DP2-3' DUP.

   i. Figure 9 - Soil Testing Results Used for Delineation. DP3-3' DUP should be deleted from the figure.

j. Figure 10 - Cumulative Summary of Groundwater Testing Results. Call-out box lines for MW-4 and MW-18 are pointing to the wrong wells.

8. Appendix F – Contaminant Isopleth Maps. Isopleth maps are only provided for a limited number of constituents (i.e., TCE, cis-1,2-DCE, and VC) for shallow and intermediate groundwater. However, multiple additional constituents have been identified in groundwater (both VOCs and pesticides). Therefore, isopleth maps should be developed/provided for all regulated constituents identified in groundwater. The following was noted for the isopleth maps provided in Appendix F:

   a. Trichloroethene Isopleth Map Shallow Aquifer - MW-6 should be labeled as (1.0) and MW-19 should be listed as (<25).

   b. Trichloroethene Isopleth Map Intermediate Aquifer - Please re-contour the MCL line inside (to the west) of MW-2 as the concentration is listed as (2.0) which is less than the MCL of 5.0. The MCL line should also be dashed where inferred along the northern, eastern, and western margins.

   c. 1,2-Dichloroethene Isopleth Map Shallow Aquifer - MW-13 should be labeled as (1,030) rather than (7,280) and re-contoured as appropriate.

   d. Vinyl Chloride Isopleth Map Shallow Aquifer - MW-1 should be labeled as (13.9) rather than (13); MW-15 should be labeled as (4.1) rather than (<1.0); re-contour as appropriate.

9. The following information is needed for the groundwater fate and transport model:

   a. Groundwater conditions should be evaluated at multiple locations using methods consistent with the United States Environmental Protection Agency (USEPA) Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Ground Water (1998) to confirm that conditions are favorable for biotransformation. The BIOCHLOR software includes interactive score sheets for using this protocol. Completed score sheets should be provided along with the sample locations used for scoring and your conclusions regarding the suitability of the aquifer for biotransformation.

   b. Please provide a summary table of all model input and calibration parameters for the model simulations, including hydraulic conductivity, hydraulic gradient, effective porosity, dispersion coefficients, fractional organic carbon, in-plume decay rates, source decay rates, source concentrations, and source dimensions, along with their respective sources and/or bibliographical references.

   c. A discussion of the source concentration and time of release should be provided.

   d. Figures and cross-sections necessary to justify model input parameters should be submitted. Point of demonstration wells and the points of exposure should be indicated on maps along with plume centerlines.

   e. The hydraulic gradient value used for fate and transport modeling should be an average of historical gradient data collected at the site. Conductivity and gradient inputs need to be evaluated for the centerline of the plume across the entire site.

   f. Data input and output worksheets for calibration and validation runs should be provided.

g. A sensitivity analysis for input parameters should be provided.

10. The Risk Reduction Standards presented in Tables 9-1, 9-2, and 9-3 are acceptable for use at the site, with the following exceptions:
    a. The groundwater Type 1 – 4 RRS for 1,4-dichlorobenzene should be 75, 5.7, 75, and 7.3 µg/L, respectively.
    b. The groundwater Type 1 – 4 RRS for 1,1,2-trichloroethane should be 5, 0.12, 5, and 0.58 µg/L, respectively.
    c. The groundwater Type 2 and 4 RRS for cis-1,2-dichloroethene should be 31 and 204 µg/L, respectively.
    d. The groundwater Type 2 and 4 RRS for trichloroethene should be 1.0 and 5.2 µg/L, respectively.
    e. The groundwater Type 2 and 4 RRS for beta-BHC should be 4.7 and 16 µg/L, respectively.
    f. The groundwater Type 1 and 3 RRS for toxaphene should be 3 µg/L.
    g. Groundwater RRS for 1,3-dichlorobenzene should be added to Tables 9-2 and 9-3.
11. Groundwater contamination has not been delineated in accordance with the VRP Act. An additional downgradient monitoring well is needed near the northern property boundary. Further delineation is also needed north and east of MW-17 and MW-2. Please provide an update on the status of access to the Synergy Group property. While the documentation in Appendix H shows that Helena Chemical Company denied access to their property, there is no documentation that Synergy Group has denied access.
12. Sub-slab sampling should be conducted to evaluate the vapor intrusion pathway due to the shallow groundwater depths and volatile organic compound impacts in the vadose zone.

The above comments must be addressed to EPD's satisfaction in order to demonstrate compliance with the provisions, purposes, standards, and policies of the VRP Act. A response to these comments along with a Revised CSR is due by October 15, 2018. If you have any questions, please contact Will Lucas at 404-656-3851.

Sincerely,

David Hayes
Unit Coordinator
Response and Remediation Program

c: Chuck Ferry, Wood (via email)
Steve Foley, Wood (via email)

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