



ENVIRONMENTAL PROTECTION DIVISION

Richard E. Dunn, Director

Land Protection Branch

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September 13, 2018

Southern States, LLC
c/o Pat Taylor, CFO
30 Georgia Avenue
Hampton, GA 30028

VIA EMAIL & REGULAR MAIL

Re: VRP Progress Reports #4, #5 and #6
Southern States Site, HSI 10141
Hampton, Henry County, GA

Ms. Taylor:

The Georgia Environmental Protection Division (EPD) has received and reviewed the Voluntary Remediation Program (VRP) Semi-Annual Progress Reports #4, #5 and #6. EPD provides the following comments:

1. EPD does not object to proceeding with plans for capping in the landfill area; however, any monitoring wells and injection wells in this area should be maintained. EPD notes that a permanent cap design (referenced in Progress Report #4 as something to be submitted to EPD) has not been received.
2. With the exception of the known PCB-impacted soils that exceed Type 1 RRS, which are located in the former landfill area, EPD concurs that the remaining PCB-impacted sediment and soil has been removed from the SED-3 and SED-4 locations. Confirmatory samples from both the sidewalls and bottoms of the excavated areas are in compliance with Type 1 RRS. However, previous EPD comments (April 2015 and December 2016) have recommended further sampling at the 12" interval since that was the maximum concentration range for SED-3 and SED-4. While additional sampling was performed in September 2015 between locations SED-2 and SED-3, it appears that this request has not been addressed near the former beaver pond near SED-4.
3. The ecological screening values (ESVs) and food uptake models for the benthic community and representative terrestrial and avian receptors are acceptable. However, EPD concurs with the decision to conduct an ecological risk assessment for sediments to determine remedial options for the exposed portion of Little Bear Creek. Furthermore, EPD disagrees with the treatment of non-detects as zero (i.e., assumption that all undetected Aroclors are absent) when summing the

Aroclor concentrations. Typically, this method is only used for those substances determined to not likely be present, which is not the case for this site with the positive detections for three of the Aroclors and the relatively high detection limits. It is recommended that all non-detect data be treated at one-half the detection limit since it is assuming that on average all values between the detection limit and zero could be present, and that the average value of non-detects could be as high as half the detection limit. Alternatively, if more than 50% of the data set are positive detections, statistical methods (Gerbert and Helsel) may be used to estimate concentrations below the detection limit. Based on this recommendation, the risk results (hazard estimates) and conclusions for the various ecological receptor groups may need to be re-evaluated.

4. The Type 4 groundwater RRS listed in Table A-2 of Progress Report #4 are acceptable for use at the site. However, the following regulated substances had the Type 3 groundwater RRS presented as the Type 4 groundwater RRS: chloroform, 1,1-dichloroethane, and 1,1,2-trichloroethane.
5. Section 1.2 of the SLERA states, "HSRA Type 1, 3, and 4 RRS for groundwater have been derived for delineation of groundwater impacts." It should be noted that while the greater of the Type 1 and 2 residential RRS may be applied as the delineation criteria for soil, groundwater must meet the requirements of O.C.G.A. § 12-8-108(1), which requires horizontal and vertical delineation of groundwater contamination to the default Type 1 residential groundwater RRS.
 - a. The plume is neither horizontally nor vertically delineated. To aid in compliance monitoring and modeling, EPD recommends the installation of a shallow and a deep delineation well between MW-17 and MW-18. Both wells should be located east of the former beaver pond and along the centerline of the plume.
6. Please double check and update contour line locations and shape to make sure they conform to associated concentrations. For example, in Progress Report 6 (Figure 6) TP-1 has a concentration of 1900 ug/l TCE, but it lies outside the 1000 ug/l contour line. Also, MW-39 (5800 ug/l) lies inside the 10,000 ug/l contour; although there are no concentrations of TCE that remain that high, and MW-9 (820 ug/l) should be located in proximity to the 1000 contour, not the 100. According to laboratory reports, MW-13 was below the detection limit for TCE; however, it appears on Figure 6 as 5.4 ug/l, which is actually the reported concentration of vinyl chloride for this well.
7. Please make sure that all quantified data (laboratory results, tabulated data, concentrations reported on figures) are consistent and in agreement with the source information.

8. The BIOCHLOR and 1D fate and transport models provided in the VRP Semiannual Progress Report #5 have several deficiencies which need to be addressed. The BIOCHLOR simulation assumes a "worst-case," having no biodegradation and a continuous source. These "worst-case" models cannot be adequately calibrated to field observations and produce inappropriate simulations of future conditions. Conclusions generated using these models typically depend on the length of the simulation and are unrealistic. The models should be revised and resubmitted incorporating the following modifications:
 - a. Biodegradation Demonstration: The Model Construction Assumptions section of Appendix C indicates that sufficient demonstrations were performed (e.g., treatability studies) to demonstrate ongoing anaerobic dechlorination. Please present these demonstrations along with the revised model. Also, the BIOCHLOR software includes interactive score sheets for evaluating conditions favorable for MNA. Include the completed score sheets with the data/sample locations used for the scoring and your conclusions regarding the suitability of the aquifer for biotransformation.
 - b. Model Area Figures: Please provide a plan figure identifying the model area showing the plume axis, downgradient wells, and source width. Also, submit a cross section showing the source thickness and screen interval of all wells included in the model.
 - c. Sensitivity Analysis: A sensitivity analysis should be included in the revised model narrative.
 - d. Parameter Estimation: To adequately calibrate the baseline model in the final submittal, several parameters used in the model need to be reevaluated or justified appropriately. At a minimum, the dispersivity and biodegradation rate values need to be modified to fit the field observations. These should be adjusted as follows:
 - i. The models apply a dispersivity value of 7.06. This corresponds to a plume length of 100 feet when using Biochlor Option 3 (modified Xu and Ekstein method). Report figures suggest that the plume is at least 368 feet long (distance from the source to MW-18), proving a much larger dispersivity value. Please revise this value or justify the dispersivity value in the subsequent model revision.
 - ii. Estimated biotransformation rates should be determined when calibrating the model by adjusting the rate constants until the BIOCHLOR concentration predictions adequately match the field data. Where possible, line fitting should include all downgradient detections outside the influence of remediation activities (i.e., MW-18).

- e. 1,1,2-TCA 1D Model – Please provide EPD with a copy of the model so that the 1D analytical solution can be verified. As a recommended alternative, BIOCHLOR model inputs can be manually modified to simulate any compound. Using BIOCHLOR to model 1,1,2-TCA transport would provide a consistent approach for all modeled compounds.
- f. Pre-remediation and Post-remediation Models: Several separate models were provided in the progress report. Once the parameters have been revised, EPD recommends submitting one pre-remediation model and one post-remediation model. The post-remediation model should incorporate all parameters from the calibrated and validated pre-remediation model.

The above listed comments must be addressed to EPD's satisfaction in order to demonstrate compliance with the provisions, purposes, standards and policies of the Act. Please address the above comments in the next scheduled Progress Report submittal due October 15, 2018. Should you have questions regarding this matter, please contact Ms. Nicole Vermillion at 404-232-7891.

Sincerely,



David Hayes
Unit Coordinator
Response and Remediation Program

c: John O. Schwaller, EMA, LLC (via email)
File: 248-0060 (VRP)