pennsylvania DEPARTMENT OF ENVIRONMENTAL PROTECTION	**REPORT COMMENTS** C. David Brown 4 May 2017	**Commonwealth of Pennsylvania** **Department of Environmental Protection** **Southeast Regional Office** **Environmental Cleanup and Brownfields**

Site: **Philadelphia Refinery AOI 5** 3144 West Passyunk Avenue Philadelphia, PA 19145		eFACTS Facility ID: 748141	Tank Facility ID: 51-11554, 51-36558
		Incident ID: *multiple*	NIR Date: 14 Dec 2016
Municipality: Philadelphia	County: Philadelphia		Location: 39.8980°N, 75.2041°W

PA DEP and U.S. EPA comments on AOI 5 "Remedial Investigation Report" dated 16 Jan 2017, prepared by Langan Engineering and Environmental Services, Inc. on behalf of Evergreen Resources Group, LLC, for the former Sunoco Philadelphia Refinery, currently the Philadelphia Energy Solutions Refining and Marketing, LLC facility.

Soil

1. Why was no soil investigation performed in the area of the former tank fields north and west of the warehouse buildings (just south of wells A-13 and A-14)? These tanks may have been the source of the heavy distillate LNAPL plume found there, but possible unsaturated zone soil impacts are unknown because of the lack of data [§250.408(b)].

2. Has Evergreen identified any non-tank releases in AOI 5 and investigated possible soil impacts? Two incidents in DEP's records (and there may be more) that appear to have occurred in AOI 5 are:
   • 4/18/2007 release of ~2000 gal of heavy gas oil at Girard Point Berths #8–10
   • 3/8/2012 release of ~109 gal of gas oil at the Girard Point Blending & Shipping Dock.

3. On 2/11/2014 DEP received a document titled "Work Plan for Remedial Excavation Activities, AOI 5" describing excavations in several locations in AOI 5. The work was proposed for Feb–Mar 2014. There is no mention of this remediation in the RIR. Was it performed? If so, please provide detailed information on dates, locations, depths, quantities, disposition, and post-excavation sampling.

4. Please provide the analytical data for the butane rail area soil sampling [§250.408(c)].

5. The RIR refers to an "approximate limit of disturbance" for PES's butane rail loading facility (Figure 3). In a meeting on 4/23/2014 Evergreen indicated that soil in that area would be excavated, but that is not stated in the RIR. Was soil in the "limit of disturbance" excavated? If so, provide information on the excavation, including depth, volume, and disposition. If the entire "limit of disturbance" was not excavated, provide a map of the actual excavated area(s).

6. Two exceedences of benzo(a)pyrene were identified in shallow soil. EPA issued a new IRIS toxicological review of benzo(a)pyrene in Jan 2017. Evergreen might consider calculating a site-specific numerical value for benzo(a)pyrene or performing a risk assessment using the updated toxicological information.

7. Seven exceedences of cumene in soil at the eastern tank farm were listed in the report. DEP's direct contact MSCs for cumene are limited by the residual saturation value of 10,000 mg/kg [§250.305(b)]. Evergreen obtained analytical results exceeding this threshold, up to 33,000 mg/kg. Further evaluation or remedial action is required for these exceedences through the storage tanks corrective action process (Ch. 245). The SCR/RACR for these tanks is presently under review.

8. The RIR should provide information on which substances exceed soil-to-groundwater MSCs and where those exceedences occur [§250.408(d)].

Groundwater

9. In Section 4.0, on quality assurance and quality control, the report refers to "exceptions listed above" (p. 38). No exceptions are listed; please explain.

10. Well A-139 was not included in the fate and transport or discussion in the RIR text. An apparent trend increase of lead is noted in the data and Figure 10. A discussion of this information should be included in the report.

11. In 2013 lead was identified in deep wells A-19D and A-21D where previously it was non-detect. Please provide a discussion of this change.

12. Page 52, first sentence, states groundwater has been delineated within AOI 5. Delineation is typically to a selected standard. It may be more appropriate to say groundwater has been characterized within AOI 5.

13. Langan concluded that LNAPL is "stable and relatively immobile." However, compared to other recent reports submitted by Evergreen, there is little discussion and supporting information for this statement. The Dec 2011 RIR included an LNAPL analysis using the API model (Appendix G). But there has been no evaluation of LNAPL transmissivity or a lines-of-evidence assessment, for instance. The 2011 modeling did not include the No. 9 Berth LNAPL plume. DEP requests further evaluation and discussion of the LNAPL stability conclusions.

14. When was the No. 9 Berth total fluids recovery system installed?

Inhalation Pathway

15. Please document conditions at the time of air sampling, including indoor and outdoor temperatures, weather conditions (e.g., wind, precipitation, barometric pressure changes), and building characteristics (HVAC operation, ventilation, etc.).

16. Indoor air samples were not collected in some occupied buildings. For instance, Warehouses No. 1 and 2 are labeled as occupied in Figure 11, and Appendix B denotes the Lube Oil Building, the GP Scale House, and the No. 1 Pump House as current use areas. Indoor air samples were not obtained for any of those buildings. Evergreen should provide a table listing all enclosed structures intended for human occupancy in AOI 5. For each building an explanation should be provided of how the vapor intrusion pathway is being evaluated [§250.404].

17. As noted in the report, some reporting levels in the indoor air sample analyses exceeded applicable screening values. If Evergreen will be using risk-based screening values rather than occupational criteria (PELs), then those exceedences will need to be addressed.

18. The results of the outdoor air testing were presented in Section 5.9 and Table 9. However, there was no discussion of those results. They were not compared to occupational criteria in the table. Evergreen should interpret the results and discuss if they will be screened, used in a risk assessment, or addressed through compliance with occupational criteria.

19. For future outdoor air sampling, DEP recommends the collection of a sample at an upwind location for context.

Exposure Pathways

20. There were four exceedences of the direct contact MSC for benzene in subsurface soil (~2–6′) in the eastern tank farm. Langan indicated in Section 11.0 (p. 64) that the exposure pathway is incomplete for these exceedences because PES's excavation permitting and PPE procedures would protect workers from exposures. However, the benzene direct contact standards are based on inhalation exposures for outdoor receptors (even without an excavation). A risk assessment or remedial action is required to attain the site-specific standard [§250.404]. Further evaluation or remedial action is required for these exceedences through the storage tanks corrective action process (Ch. 245). The SCR/RACR for these tanks is presently under review.

21. The Pennsylvania Fish and Boat Commission identified the eastern red-bellied turtle as a species of concern in the vicinity of AOI 5. Because there is a potentially complete exposure pathway for a threatened species, an ecological risk assessment is required [§250.402(d)].

Tables, Figures, and Appendices

22. What were the sample depths for the butane rail facility soil samples (Table 6)?

23. In Table 8, 26 $\mu g/m^3$ is presented as the "RSL" for trimethylbenzenes. However, this is not EPA's published RSL, but rather a calculated value using the Sep 2016 IRIS RfC value. EPA will presumably post a new RSL in the near future. Exceedences of vapor intrusion screening values should generally be addressed through a risk assessment.

24. Several screening values in Table 8 are incorrect. For example, the benzene screening value based on EPA's RSLs is 13 $\mu g/m^3$, not 16 $\mu g/m^3$. Screening values must be the lower of the cancer and non-cancer values. (See DEP's vapor intrusion training materials.)

25. Figure 10 appears to have several misidentified wells. Wells showing groundwater samples with no exceedances between 2014–2016 are to be identified by a green well icon. Example wells that are misidentified (either with exceedances or no data from 2014–2016) include A-19D, A-21D, WP-4A, A-159, and PZ-2. This figure should be corrected.

26. Please explain how the PaGWIS search (Appendix C) was performed. (A radius search does not generally include all wells in the database because many wells do not have latitude/longitude coordinates.)

27. I could not find laboratory reports for the Nov 2016 indoor air sampling in Appendix E [§250.408(c)].

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