



REPORT COMMENTS

C. David Brown
8 Nov 2016

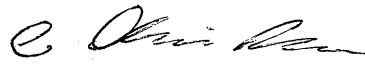
Site: Philadelphia Refinery AOI 1 3144 Passyunk Avenue Philadelphia, PA 19145		eFACTS Facility ID: 778374	Tank Facility ID: 51-19781
		Incident ID: <i>multiple</i>	NIR Date: 17 Nov 2014
Municipality: Philadelphia	County: Philadelphia	Location: 39.9164°N, 75.1933°W	

Comments on AOI 1 “Remedial Investigation Report” dated 5 Aug 2016, prepared by Stantec Consulting 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.

1. The groundwater characterization reporting did not include DSCP sampling data, in particular for wells on the CSX and Steen properties. Benzene is elevated in both areas (e.g., > 20,000 µg/L at Steen). MTBE also exceeds in this area, at shallow and deep levels, at < 100 µg/L. Recent (2016) data is available at DEP’s office. Data in this area is particularly pertinent to the groundwater modeling. The DSCP petroleum is not known to contain MTBE, and the presence of MTBE east of 26th Street suggests migration from the refinery.
2. A December 2009 Aquiver, Inc. “data summary report” for an investigation of the area around AOI 1 and DSCP included relevant data that was not described or referenced in the RIR.
3. Has there been a source investigation at the former Arco gas station property at 26th Street and Hartranft Street? Does Evergreen view groundwater contamination on that property as originating from the refinery or the UST system at the Arco facility? Who owns the Arco property, and who has the environmental liability for it? Should the groundwater plume be delineated southeast of the intersection of 26th and Hartranft Streets? Are monitoring wells to the southeast needed to calibrate the fate-and-transport model?
4. In Figure 5-8 Stantec contoured the differential groundwater elevations using data from well pairs screened in the water table and deep aquifers. The figure indicates a large negative head differential, implying upward flow, along the 26th Street sewer around the Pollack Street sewer intersection. This appears to be almost entirely an artifact of the contouring, as there are no well pairs with such large head differentials (–2’). Also, the contours do not match some of the data (e.g., S-389D, S-390D). I suggest you remake the figure to show only the differential elevations at each location rather than contours.

5. The low areas along 26th Street in Figure 5-8 appear to be a consequence of lower heads in the unconfined aquifer wells rather than higher potentials in deeper aquifer wells. So the apparent upward vertical gradient there may not reflect an influence of the 26th Street sewer line on the lower aquifer. (Compare Figures 5-6 and 5-7.)
6. A remedial investigation report must include a determination of “the present and future extent and fate of contaminants” [§250.408(a)]. DEP recognizes that Evergreen is preparing a site-wide fate-and-transport analysis that will satisfy this requirement with a future report.
7. Stantec stated that the aquifer is not used in the vicinity of the refinery, but this was not documented in the report [§250.404(c)]. Previous reports may have included this information; if so, they should be cited. A future report should include a current survey for supply wells and an assessment of aquifer use.
8. As LNAPL is present near the property boundary southeast of Tank 121, benzene is substantially elevated in groundwater there, and there is significant offsite groundwater contamination to the east (Steen property), Evergreen should evaluate the need for resuming remedial actions in this area.
9. Testing and stability analyses of LNAPL indicated that it is mobile and may continue to migrate in most wells. This emphasizes the importance of continuing to monitor the well network, particularly at property boundaries and offsite, and to maintain (or establish) hydraulic control where appropriate.
10. From the description of the 26th Street North recovery system (Appendix F), it was unclear if the entire system is now winterized or only part of it. Please clarify.
11. Based on notations in past reports, there may have been a groundwater recovery system adjacent to the Pollack Street sewer (e.g., RW-110–112, S-46, S-162). Please explain if there was LNAPL/groundwater recovery from those wells with the history of operation. (If there were any other historic remedial systems in AOI 1, other than those described in Appendix F of the RIR, include information on them as well.)
12. The Sep 1993 GES report “Groundwater assessment, Jackson Street Sewer, Pollack Street Sewer, and 26th Street Sewer” was not referenced in the RIR. Figure 6 in that document shows the base of the sewer at ~20' below grade, whereas the RIR indicated a ~15' depth. The circa 1919 plan in IST (1998, Appendix F) also shows a ~20' depth to the southwest of Tank 178.
13. Does groundwater infiltrate into the Pollack sewer within AOI 1? Explain how this is understood. If there is infiltration of contaminated groundwater, even if intermittent, then it must be accounted for in the assessment of impacts to the Schuylkill River [§250.406].

14. In the vapor intrusion evaluation portion of the report (Section 7) Stantec compares the indoor air sample results to DEP's forthcoming screening values. They justified using the nonresidential Statewide health standard screening values with the understanding that VI is the only potentially complete exposure pathway for the Inline Blender Building. This is not entirely consistent with DEP's VI guidance. As soil and groundwater will attain site-specific standards, site-specific standard VI screening values should be used. These may include either one-tenth of the Statewide health standard screening values or appropriately selected EPA RSL-based screening values (i.e., at a cancer risk of 10^{-5} and a hazard quotient of 0.1).
15. The maximum indoor air concentration of 1,2,4-TMB in the Inline Blender Building sampling was $6.6 \mu\text{g}/\text{m}^3$. This exceeds the site-specific standard VI screening value of $3.1 \mu\text{g}/\text{m}^3$. This result indicates that an inhalation risk assessment is required, with submittal of an Act 2 risk assessment report (which may be combined with the cleanup plan). Consider using EPA's VISL Calculator for this purpose. One alternative would be to utilize occupational criteria (OSHA PELs) with a covenant.
16. Potential vapor intrusion at the Steen and other offsite properties was not addressed in the report.
17. The cross section (Figure 5-1) indicates that a "muddy sand" might be correlative with the PRM Middle Clay (e.g., at S-388D and S-389D). Do Evergreen and Stantec believe the muddy sand unit was deposited at the same time as the Middle Clay, in a somewhat different environment? Or that it reflects a reworking of the PRM deposits by some later erosional event? Is the muddy sand likely to act as an aquitard, like the Middle Clay, or is it relatively permeable and able to exchange groundwater between the shallow and deep aquifers?

	11/8/16
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