



November 13, 2020
HA008454-001

Mr. David Lloyd, Township Supervisor
West Cornwall Township
73 South Zinns Road
Lebanon, PA 17042

Subject: Comment Letter in Regards to the August 31, 2020 Draft Remedial Investigation Report Prepared by Aquaterra Technologies, Inc. for the Property Identified as the Cornwall Pump Station Located at 370 Horseshoe Pike, West Cornwall Township, Lebanon County, Pennsylvania

Dear Mr. Lloyd:

Penn Environmental & Remediation, Inc. (Penn E&R) has reviewed the August 31, 2020 document titled *Draft Remedial Investigation Report* (draft RIR or Report) for the property commonly identified as the Cornwall Pump Station located at 370 Horseshoe Pike, West Cornwall Township, Lebanon County, Pennsylvania (the Site). The draft RIR was prepared by Aquaterra Technologies, Inc. (Aquaterra) and submitted to West Cornwall Township in general accordance with the Public Involvement Plan (PIP). Aquaterra and the responsible party/ies provided the draft RIR for review and comment as a proactive measure to receive the Township's input, ahead of the official RIR submittal to the Pennsylvania Department of Environmental Protection (PADEP or Department).

EXECUTIVE SUMMARY

At the request of West Cornwall Township, Penn E&R completed a technical review and analysis of Aquaterra's draft RIR in order to support the Township and its Public Involvement Committee (PIC) during their participation in the Site's PIP.

The Site consists of the Cornwall Pump Station (CPS) property, located at 370 Horseshoe Pike (PA Route 322), the Weaver farm properties north and south of Route 322, and the property at 22 Spangler Road. The CPS property is a former petroleum products pipeline pump station and is currently used for natural gas liquids (NGLs). The Site has a long history of environmental investigations and remediation activities that were primarily implemented following the initial detection of petroleum odors in a potable water supply well in 1991. It should be noted, the CPS property is located within the southeastern section of the former "Sunoco Quentin Terminal property" which was a larger site that also stored various petroleum products and has its own remediation history. It is our general understanding that the PADEP considers the Terminal to have been successfully remediated and closed, and the CPS property as having the only open environmental release that is currently being addressed.

Following a review of the draft RIR, Penn E&R provides the general recommendations listed below for West Cornwall Township to pursue. As presented below, Penn E&R is recommending that additional information/clarification from Aquaterra be requested regarding three categories: impacted ground water, impacted soil and vapor investigation, as follows.

- In regards to ground water, the existence of a “deeper” ground water system and the contamination found at deeper levels in the subsurface has not been fully evaluated. Penn E&R recommends that the full characterization of the deeper aquifer be implemented (i.e., installation and sampling of additional deep monitoring wells) as we understand it had been previously planned. In addition, Penn E&R recommends further evaluation of the current and projected (future) plume boundaries for ground water impacts above residential cleanup values. Current impacted plume boundaries should be remapped, and projected future plume boundaries should also be provided.
- In regards to soils, Penn E&R questions why an exploratory soil boring investigation program was not implemented along the pipeline right-of-way (ROW).
- In regards to vapor, Penn E&R recommends that Aquaterra complete an additional vapor intrusion (VI) analysis of the current and projected plume boundaries to confirm that VI from impacted ground water is not an open pathway that should be addressed further.
- In addition, Penn E&R recommends that West Cornwall Township pursue further clarification on the potential areas of concern (AOCs), as well as request that Aquaterra further develop a thorough Conceptual Site Model (CSM) for contaminant sources, contaminant transport and impacts to receptors, and identify “anecdotal information” that suggested past releases.
- Penn E&R also questions why analysis of the PADEP’s leaded gasoline (LG) shortlist was not completed throughout the Site, given that use of leaded fuels was not banned by the United States Environmental Protection Agency (USEPA or EPA) until 1996 as part of the Clean Air Act and the pipelines date back to 1931.

References to select passages of the draft RIR, as well as Penn E&R’s commentary, is provided below.

COMMENTS

Penn E&R provides the following specific comments and questions regarding the draft RIR in accordance with the provisions of the Pennsylvania’s Land Recycling and Environmental Remediation Standards Act (Act 2):

Evaluation of Deep Ground Water Impacts

1. *“Evergreen’s next phase of the fieldwork will likely include the installation of several deep wells. For example, MWs 50, 52, 53, 55, and 56 are proposed to be installed to depths of between approximately 250 and 500 feet.”* – draft RIR Appendix (page 2134 of PDF)
 - a. The majority of monitoring and recovery wells installed at the Site were completed at depths of less than 100 feet below ground surface (bgs). A review of analytical results for ground water samples collected from deeper supply wells (22 Spangler Road – 250 feet bgs and MW-16 – 425 feet bgs) reveals historic PADEP unleaded gasoline (UG) shortlist impacts. Based on the Site geology and hydrogeology, there is potential for two ground water systems. Based on the limited number of wells installed at this depth interval, the deep ground water flow direction (contours) cannot be fully evaluated. Penn E&R reviewed Aquaterra’s draft response comments to a July 12, 2018 letter prepared by Mr. Doug Lorenzen and Ms. Pamela Bishop which indicated that Evergreen’s next phase of fieldwork would likely include the installation of several deep wells. Aquaterra stated that the proposed monitoring wells MW-50, MW-52, MW-53, MW-55, and MW-56 were to be installed between approximately 250 and 500 feet bgs; however, as part of the fieldwork documented in the draft RIR, only two of the five monitoring wells listed were installed at a deeper depth interval (MW-52 – 324 feet bgs and MW-56 – 324

feet bgs). The existence of a “deeper” ground water system and the contamination found at deeper depths has not been fully evaluated. Penn E&R recommends that the full characterization of the deeper aquifer be implemented as we understand it had been previously planned. As such, additional deeper monitoring wells should be installed and sampled.

2. *“In May 2012, Aquaterra witnessed and documented the attempted installation of a replacement potable well at the Weaver Farm property located at 323 Horseshoe Pike, north of Route 322... drilling continued to approximately 275 feet, when petroleum odors were noted...Because of low yield and concerns of potential cross contamination associated with difficulty in establishing a proper seal from shallower water bearing zones, the temporary casings were removed and the borehole was abandoned.”* – Section 3.1 (page 9 of report)
 - a. Two rounds of grab ground water samples were collected from this replacement well that was subsequently abandoned. PADEP UG shortlist impacts were identified at concentrations exceeding PADEP Act 2 residential, used-aquifer statewide health standard (SHS) medium-specific concentrations (MSCs). Penn E&R questions why this replacement well was not incorporated into the monitoring program to provide further evaluation of the deeper water bearing zone. As indicated above, the existence of a “deeper” ground water system and the contamination found at deeper depths has not been fully evaluated. Penn E&R recommends that the full characterization of the deeper aquifer be implemented as we understand it had been previously planned. As such, additional deeper monitoring wells should be installed and sampled.
 - b. In addition, the draft text does not specifically state that the grab ground water samples were only analyzed for the PADEP’s UG shortlist; however, based on the listed parameters identified in the replacement well, Penn E&R has assumed the well was analyzed for the PADEP’s UG shortlist. As previously indicated, the use of leaded fuels was not banned by the EPA until 1996 and the pipelines date back to 1931. Penn E&R questions why analysis of the PADEP’s LG shortlist was not completed throughout the Site. Penn E&R recommends Aquaterra provide commentary on how the PADEP shortlist was selected for analysis (UG vs. LG).

Conceptual Site Model

3. *“The areal extent of the residual dissolved-phased hydrocarbon plume is well defined and the current plume exhibits the characteristic stability or decreasing concentration trend typically associated with historical petroleum hydrocarbon releases, where the primary source has been remediated (i.e., SPH removal). Because groundwater occurs at depth within the bedrock, there are no known underground utilities at the site that can act as preferential flow paths for COC transport. Thus, in the absence of a continuous or new source, decreases in the magnitude of dissolved-phase impact to local groundwater will likely continue as natural attenuation processes exert a greater influence on the overall plume. In the Beck Creek AOC, which represents a groundwater discharge area, the water quality impacts detected in shallow groundwater and in surface water, have not impacted water quality within the Beck Creek channel, and preliminary modeling indicates the potential for additional impact to Beck Creek is of no concern (section 6.2). These impacts will also attenuate with time.”* – Section 4.4 (page 47)
 - a. As indicated above, Penn E&R recommends further evaluation of the current plume boundary. The existing (CSM), included as Figure 11 with the draft RIR, depicts a “residual plume area”; however, the residual plume area does not appear to contain all of the current contaminants of concern (COC) exceedances of PADEP Act 2 residential, used-aquifer SHS MSCs. For example, the recent benzene exceedances in MW-57, MW-58 and the 22 Spangler Road supply well summarized on Figure 8 are not accounted for in the Figure 11 plume boundary.

Evaluation of Soil Impacts

7. The following selections summarizing soil investigations completed at the Site were obtained from Sections 3.0 and 4.0 of the draft RIR:
- a. Anecdotal AOC (eastern portion of the Site): *“On 2 and 3 May 2007, Aquaterra geologist supervised a soil boring investigation at the CPS site at the eastern section of the CPS property within the pipeline ROW, where anecdotal information suggested a historical pipeline leak may have occurred...Twenty-three soil samples were collected from the thirteen soil borings, one from shallow boring SB 6 and two each from the remaining, deeper borings, for laboratory analyses for the PADEP short-list of regulated compounds for unleaded gasoline sites in effect at that time...None of the target analytes were reported at concentrations above method detection limits.”* – Section 3.1.1 (page 10 and 11)
 - b. Spangler Road AOC:
 - i. *“Two pre-excavation soil samples, six waste characterization soil samples, and eight excavation area characterization soil samples collected by GES between 11 September and 11 October 2017 were reported as containing below method detection/quantitation limits...”* – Section 4.2.1 (page 24)
 - ii. *Between 16 and 19 October 2017, GES collected twelve post-excavation soil samples...from the sidewalls or bottom of the excavated trench for analysis of UG parameters... All target analytes...were reported BDL/BQL or at concentrations that are two or more orders of magnitude below the residential, used-aquifer SHS MSCs for all twelve post-excavation soil samples.”* – Section 4.2.1 (page 25)
 - c. Beck Creek AOC:
 - i. *“To further investigate the soil and water quality at this area, on 19 December 2018 six soil samples were collected from approximately 3-inches bgs at locations that were selected for the installation of temporary wells (TWs 1-6) for laboratory analyses of UG/LG parameters... All COCs were reported BQL and/or at concentrations that are below the residential, used-aquifer SHS MSCs.”* – Section 4.3.11 (page 41)
 - ii. *“On 23 September 2009, iron-stained soil was observed at two locations on the west bank of Beck Creek, labeled WB-1 and WB-2, and soil samples were collected for laboratory analyses of PA UG parameters... None of the target analytes were reported above method quantitation limits for these two soil samples.”* – Section 4.3.11 (page 42)
 - d. The extent of soil sampling completed at the Site is summarized above. Based on Penn E&R’s review of the draft RIR and associated Appendix, the pipeline ROW has not been investigated Site-wide. As summarized in the draft RIR, there are no specifically documented petroleum releases at the pump station property. Penn E&R questions why an exploratory soil boring investigation program was not implemented along the entire pipeline ROW. Aquaterra cannot conclude that there are no unknown/unaddressed impacts to soils in areas of the pipeline ROW since they have not been properly investigated.
 - e. As previously indicated, the use of leaded fuels was not banned by the EPA until 1996 and the pipelines date back to 1931, yet an analysis of the PADEP’s LG shortlist was not completed throughout the Site. Penn E&R recommends Aquaterra provide commentary on how the PADEP shortlist was determined for analysis (UG vs. LG).

Evaluation of Vapor Encroachment Concern

8. The following selections summarizing VI evaluations completed for the Site were obtained from Sections 5.0 of the draft RIR:
- a. Soils: “...VI is not of concern for petroleum hydrocarbons, if an inhabited building is located 30 feet or more horizontally from a potential VI source. For non-petroleum products, such as MTBE, the horizontal proximity distance is 100 feet. At this site, there are no inhabited buildings within 100 feet of the soil-boring investigated area, at the Beck Creek AOC, or at the Spangler Road pipeline ROW AOC and VI is not of concern for the COCs in soil.” – Section 5.2.2 (page 50)
 - b. Ground Water: “With the exception of the area along Beck Creek, including the Beck Creek AOC and the Spangler Road pipeline ROW, depth to groundwater has been greater than approximately 10 feet and depth to bedrock outside the Beck Creek flood plain area has been greater than 8 feet, with a few exceptions: QT supply well, MWs 14, 18, 26, 27 and 52. There are no inhabited buildings within 100 feet horizontally of the QT supply well and MWs 14, 27 and 52. It is presented in Tables 1-B and 1-C, that none of the COCs were reported above method quantitation limits for groundwater samples retrieved from MWs 18 and 26 during any of the March 2019-March 2020 sampling events. Based on the vertical and horizontal proximity distances and the absence of detected COC concentrations in MWs 18 and 26, VI is not of concern for the dissolved petroleum compounds at this site. There is no vertical proximity distance for non-petroleum compounds, such as MTBE, EDB and EDC...EDC was not reported above method detection/quantitation limits for groundwater samples retrieved from all wells and EDB was reported above method detection/quantitation limits only for groundwater samples from MW 49 and RWs 2 and 5. These wells are located more than 100 feet from any inhabited building and the horizontal proximity distance applies. Dissolved MTBE was reported at concentrations that are less than 1/10th of the residential GW VI screening value of 630 µg/l for groundwater samples from all wells, and VI is not of concern.” – Section 5.2.2 (page 51)
 - c. According to the Land Recycling Program Technical Guidance Manual (Section IV: Vapor Intrusion), last updated January 19, 2019, a proximity distance should be applied between the building and soil or ground water screening value exceedances. In addition, the use of proximity distances should also account for future plume migration as determined in a fate-and-transport analysis. Aquaterra utilized proximity distances from sample locations (i.e. monitoring wells), rather than from the current or projected plume boundary. Penn E&R recommends that Aquaterra complete an additional VI analysis of the plume to confirm that VI from impacted ground water is not an open pathway.
 - d. Penn E&R recommends Aquaterra include figures depicting the approximate contour of the PADEP VI ground water screening value for each COC as well as the horizontal proximity distances from each existing structure located on-Site. This (providing a map for each COC) would serve as supporting evidence for the VI evaluation.
 - e. Due to the toxicity of benzene, one of the primary COCs at the Site, and the residential setting of the Site, Penn E&R recommends that Aquaterra evaluate benzene as a non-petroleum substance due to its toxicity which would make its proximity distances more stringent. This would be a key factor as Aquaterra further evaluates and reports on the VI exposure pathway in this RIR and in the future.

Potential Areas of Concern & Site-wide Parameter Evaluation

9. “There are no specifically documented petroleum releases at the pump station property; however, anecdotal information suggests a release occurred from the pipeline near the eastern property boundary.” – Section 3.1 (page 8)
- a. Aquaterra references “anecdotal information” throughout the draft RIR that reportedly suggests a release occurred near the eastern property boundary; however, this “anecdotal information” is never defined or sourced. Penn E&R recommends further clarification of the “anecdotal information” and how the suggested release location was determined. However, based on Penn E&R review of the draft RIR, as many as six potential areas of concern were identified and are discussed below:
 - i. 1991 – Environmental investigations initiated in 1991 following the detection of petroleum odors in the potable water supply well at the Weaver farm property (FW-1), east of the CPS property. – *Section 1.0 (page 1)*
 - ii. 1996 – Subsequent to an accidental release of a product sheen to Beck Creek from the pump-and-treat remediation system, GES (who was contracted to provide environmental consulting services at the time) upgraded the remediation system to include total fluids recovery pumps and an oil/water separator to capture separate phase hydrocarbons. – *Section 3.2.2 (page 16)*
 1. Note – The location of the product sheen observed in Beck Creek was not identified. Based on available information in the Report, Penn E&R infers the sheen was observed at the discharge point depicted approximately 30 feet from the edge of the creek in the 2007 Soil Boring Location Map (included in Appendix C).
 - iii. 2007 – There are no specifically documented petroleum releases at the pump station property; however, “anecdotal information” suggests a release occurred from the pipeline near the eastern property boundary. – *Section 3.0 (page 8)*
 - iv. 2012 – In May 2012, Aquaterra witnessed and documented the attempted installation of a replacement potable well at the Weaver Farm property located at 323 Horseshoe Pike, north of Route 322. This property had initially used supply wells that are now referenced as MW-16 and MW-17, but had been connected to FW-1. Petroleum odors were encountered at a depth of 275 feet bgs, a grab ground water sample was collected, and the casings were removed and the borehole abandoned. – *Section 3.1 (page 9 and 10)*
 - v. 2017 – Petroleum impacted soil and ground water was encountered during the installation of the ME 2 natural gas liquids pipeline. This is identified as the Spangler Road pipeline ROW excavation AOC. – *Section 4.0 (page 19)*
 - vi. 2018/2019 – In November 2018, Aquaterra collected a grab ground water sample from ponded surface water at the edge of the field next to a vegetated area west of Beck Creek, north of 323 Horseshoe Pike, for analysis of UG shortlist parameters. The ponded surface water exhibited rust-colored iron staining and a multi-colored bacterial sheen that broke into small platelets when disturbed. In addition, in September 2019, iron-stained soil was observed at two locations on the west bank of Beck Creek and soil samples were subsequently collected. – *Section 4.3.11 (page 41 and 42)*

10. *“Throughout their operation, various types of petroleum products, such as leaded and unleaded gasoline, No. 2 fuel oil (heating oil), diesel fuel, and kerosene, were transported through these pipelines.”* – Section 2.2 (page 4 of report)
- a. Laboratory analysis of separate-phase petroleum hydrocarbon (SPH) samples collected from remediation system recovery wells identified the SPH primarily as a mixture of gasoline and diesel/No. 2 fuel oil. As previously indicated, the use of leaded fuels was not banned by the EPA until 1996 as part of the Clean Air Act. The majority of soil and ground water samples collected throughout the Site were analyzed for the PADEP’s UG shortlist. While the PADEP’s UG shortlist covers the PADEP’s diesel fuel/fuel oil No. 2 shortlist (as well as the PADEP’s kerosene/fuel oil No. 1 shortlist parameters), it does not cover the PADEP’s LG. The analytes 1,2-dichloroethane, 1,2-dibromoethane, and lead are included in the PADEP’s LG shortlist and not the PADEP’s UG shortlist. As such, media that were only analyzed for the PADEP’s UG shortlist were not fully evaluated for LG parameters. As the use of leaded fuels was not banned by the EPA until 1996 and the pipelines date back to 1931, Penn E&R questions why analysis of the PADEP’s LG shortlist was not completed throughout the Site. In addition, due to the broad range of petroleum liquid fuels originally maintained in the aboveground tanks located at the former Sunoco Quentin Terminal property, Penn E&R recommends the PADEP’s LG shortlist parameters be considered throughout the Site.

Proposed Remediation

11. *“The following environmental site work is recommended...”* – Section 7.0 (page 59 and 60)
- a. In the final section of the draft RIR (conclusions and recommendations), Aquaterra includes a list of recommended environmental site work. It should be clarified whether or not this constitutes their “Cleanup Plan” for the Site and surrounding area. Recommendations include the following:
 - i. Conduct a comprehensive, semi-annual liquid level gauging and ground water, supply well, spring and surface water sampling program with analyses for UG shortlist parameters (proposed for 3-5 years, until the ground water sample laboratory analytical data confirm a continued decrease in dissolved COC concentration and further reduction of the residual dissolved COC plume extent);
 - ii. Conduct a quarterly liquid level gauging and ground water monitoring program with analysis for UG shortlist parameters at the Beck Creek AOC;
 - iii. Maintain the point-of-entry treatment (POET) system at 22 Spangler Road;
 - iv. Maintain the POET system at the two chicken house facilities at the Weaver farms north and south of Route 322; and,
 - v. Monitor future property use at the CPS property, the Weaver farm properties north and south of Route 322 and the farm property to the east of Spangler Road for potential land development and supply well installation (any supply wells that are installed at those properties need to be sampled for UG/LG shortlist parameters prior to use).
 - b. The Cleanup Plan can be submitted as a separate document or as part of this RIR. The title of the report will have to be modified and additional review fees by the Department are required. If the Cleanup Plan will be submitted as a standalone document, then this should be noted within the RIR. Either way, the Cleanup Plan document will require additional information to detail the cleanup process.

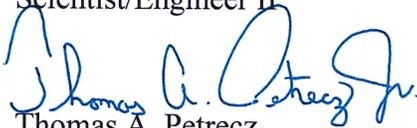
12. "Groundwater used for agricultural purposes, such as for the Weaver poultry operations, is also treated, and such treatment will be maintained by Evergreen for the foreseeable future." – Section 5.2.1 (page 50 of report)
- a. Aquaterra notes that the potential exposure pathway for ground water used in potable purposes in the area with residual dissolved COC concentrations above the PADEP Act 2 residential, used-aquifer SHS MSCs will be eliminated by treating the affected water supply (such as at the 22 Spangler Road residence). The POET system at the 22 Spangler Road residence will reportedly be maintained until attainment of the PADEP Act 2 residential SHS MSCs for a used aquifer is demonstrated. POET systems will also be maintained with the chicken house supply wells (designated CH-1 and CH-2) associated with the Weaver poultry operations, north of Route 322. Aquaterra indicated that ground water used for agricultural purposes will be treated for the "foreseeable future". Residual dissolved COC concentrations above the PADEP Act 2 residential, used-aquifer SHS MSCs have not been reported in CH-2 since the December 2017 sampling event according to Figure 8; however, MTBE concentrations specifically are still fluctuating. The term "foreseeable future" should be quantified within this report. Also, Penn E&R questions whether influent/effluent samples are still being collected and analyzed in an effort to monitor residual dissolved COC concentrations in the chicken house wells.
 - i. Note: We offer the following question for Aquaterra - How does the Food and Drug Administration and the United States Department of Agriculture handle (regulate?) residual dissolved COC concentrations in a supply well that is used for agricultural purposes? We recommend that this question be adequately addressed to the Township PIC.

Should you have any questions regarding this comment letter, or if you require any additional information, please do not hesitate to contact us. Penn E&R appreciates the opportunity to be of service and we look forward to the successful completion of this project.

Sincerely,
PENN ENVIRONMENTAL & REMEDIATION, INC.



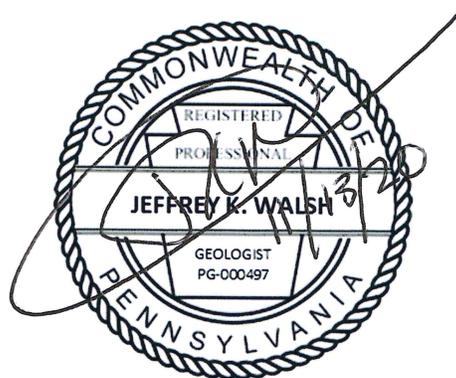
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