

Response to PADEP Comments
Received May 4, 2017
AOI 5 RIR
PES Refining Complex

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)].

When the initial site characterization activities were performed in AOI 5 as part of the PA One Cleanup Program (February and August 2007), this area was covered by the former tank berms and no soil sampling was completed. Subsequently, PES redeveloped this area to as part of the butane rail unloading system. Prior to development of the rail unloading system, Stantec collected soil samples from portions of the former tank farm area as shown in Figure 3. The results of these samples are summarized in Tables 4 through 6 and Figures 8 and 9.

Also, the previous investigative methodology for the 2007 SCR and 2011 SCR/RIR/CUP, prior to August 2012, soil was only investigated within the surface (0 to 2 feet below ground surface). Since, an extensive well network was installed within the area of A-13 and A-14 that exhibited a large LNAPL plume so the process of surface of subsurface soil sampling in this area was no longer considered.

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.

In response to this comment, Evergreen again reviewed internal release files for the AOI-5 area of Girard Point. While numerous releases were identified, they consisted of small quantities ranging from <1 gallon to 126 gallons (average of approximately 8 gallons). These included valve/flange drips, sewer backups, and many releases directly to the river. Most appeared to be minor and had immediate response actions, and would be difficult to identify the exact location based on limited information. Based on the quantities, limited location information, and existing network of borings and wells in AOI-5, Evergreen did not feel additional investigation was needed.

The only document found relating to the 4/18/2007 release referenced above is attached. There were no indications of documentation referencing a 3/8/2012 release (or any date

Response to PADEP Comments
Received May 4, 2017
AOI 5 RIR
PES Refining Complex

near that timeframe). Evergreen would appreciate any documents that DEP has relating to the referenced incidents.

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.

Yes, most of the proposed remedial excavation activities described in the referenced work plan were performed in March of 2014. The requested information was to be summarized and submitted as part of the Complex-wide Cleanup Plan. However, the information is attached, as requested, but is not summarized. This information will be included in the Complex-wide Cleanup Plan. Soil disposal documentation from the remediation excavation activities is also attached.

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

The analytical data is attached on CD.

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).

Evergreen contacted PES to request as-built drawings along with excavation information. PES informed Evergreen that they did not possess any such figures or information.

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.

Langan is currently preparing a Human Health Risk Assessment for the PES Refining Complex. Evergreen is considering calculating a site specific numerical value for

Response to PADEP Comments
Received May 4, 2017
AOI 5 RIR
PES Refining Complex

benzo(a)pyrene that will consider the new toxicological information from the EPA 2017 review.

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.

Remediation of surface and subsurface soils in this area through excavation is being considered by Evergreen. Results of the Outdoor Worker Ambient Air sample data, obtained near the Eastern Tank Farm (outdoor worker ambient air sample AOI5-AA-16-002), are below occupational screening levels (the NIOSH RELs, and the ACGIH TLVs) for ambient air inhalation. The exceedances will be considered as part of the Human Health Risk Assessment Report that will be prepared by Langan. Evergreen will either assess the presence/absence of LNAPL or account for the exceedance in the exposure assessment.

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

Updated soil results tables from the RIR (Table 4 - Summary of Surface Soil Sample Analytical Results and Table 5 - Summary of Subsurface Soil Sample Analytical Results) that include the PADEP soil-to-groundwater MSCs are attached.

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.

This sentence contained a typographical error. The sentence should state "All samples were properly preserved and were extracted/prepared, and analyzed within sample hold times with the exceptions noted in Appendix H".

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.

Response to PADEP Comments
Received May 4, 2017
AOI 5 RIR
PES Refining Complex

Historically lead was not detected in monitoring well A-139 (ND in 2007). Since first detected in June 2014 at a concentration of 2.6 µg/L, lead concentrations have increased linearly with the highest concentration of 94.6 µg/L detected in May 2015. The increasing lead concentrations at monitoring well A-139 do not appear to be associated with any LNAPL plumes, known releases, or identified source areas. Surface and subsurface soil samples from monitoring well A-139 were below standards for lead. The lead in groundwater is delineated downgradient with monitoring wells A-3 and A-140 and there are no receptors for groundwater downgradient of A-139. Evergreen will continue to monitor lead detected in groundwater at monitoring well A-139 to evaluate the cause of increasing concentrations and assess the potential for an off-site source.

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.

Historically lead was not detected or detected at a concentration of less than 1 µg/L in lower aquifer monitoring wells A-19D and A-21D (2011 through 2012 at A-19D, and 2006 through 2012 at A-21D). During the March 2013 lower aquifer groundwater sampling event, lead was detected a concentrations of 7.2 µg/L and 7.6 µg/L at monitoring wells A-19D and A-21D, respectively. A-21D will be evaluated as part of the Complex-wide Groundwater Model. Evergreen will continue to monitor the detected lead exceedances at monitoring A-19D and A-21D to evaluate the apparent increase in lead at these monitoring wells.

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.

Evergreen acknowledges this comment.

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.

Response to PADEP Comments
Received May 4, 2017
AOI 5 RIR
PES Refining Complex

Attached are trend graph PDFs, a PDF of "Figure 11 - Apparent LNAPL Thickness" from the 2007 AOI 5 SCR, and a PDF of "Figure 11 - Apparent LNAPL Thickness" from the 2011 AOI 5 SCR/RIR/CUP.

The LNAPL trend graphs (Figures G-1 through G-9) are for select AOI-5 monitoring wells consisting of A-7, A-14, A-22, A-46, A-166, RWBH-2, SW-1, WP-A, and WP9-8. The hydrograph displayed in Figure G-6 for recovery well RWBH-2 displays a recent increase in apparent LNAPL thickness and Evergreen had informed PES of this observation.

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

The installation date of the Number 9 Berth total fluids recovery system is not known, however; gauging data for the system recovery wells dates back to 1997. Also, boring logs state that RWBH-1 and RWBH-2 were installed in 1996.

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.).

Available field note sheets regarding indoor and outdoor air samples are attached.

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].

Please note that the Appendix B figure in the RIR displays the #1 Pump House location (green) in the wrong location and this is the same building as the Lube Oil Pump House (yellow), which is no longer there. The GP Scale House and Lube Oil Building are not occupied structures.

Response to PADEP Comments
Received May 4, 2017
AOI 5 RIR
PES Refining Complex

Please also note that AOI-5 RIR air figure #11: The Pump House #2 is not an occupied structure nor intended for human occupation and should not be called out on the figure. Through additional investigation of buildings in AOI-5, it was determined that Building 138 (former Incinerator Control House) is not under positive pressure and does not have permanent occupants, but is still used by PES personnel. This building will be sampled in a future event.

Below is a table with building descriptions with the status of each building and whether it was previously sampled for indoor air or if it will be sampled in the future.

Building #/Description	Occupied	Sampled	Notes
Warehouse 1 (Bldg 1/2)	Y	N	Open air building - no windows or doors
BLDG-620 (Warehouse 2)	Y	N	Open air building (warehouse/garage doors)
034A/B Blending & Shipping Double Trailer w/ Skirt	Y	Y	
BLDG-138	Y	N	Should be sampled in future event
501 Wharf Dock Office 1st Floor	Y	Y	
517 Blending & Shipping Bulk Oil Dept Office	Y	Y	
526 Wharf Dock Office 1st Floor	Y	Y	
526 Wharf Dock Office 2nd Floor	Y	Y	
612 GP 2Dock Office	Y	Y	
625 Control Room (Canteen & Locker Bldg)	Y	Y	
627 Pump House #2	N	N	
645 Scale House and Pit	N	N	
727 App B "Lube Oil Bldg"	N	N	

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.

Langan is preparing a Human Health Risk Assessment for the PES Refining Complex. Reporting limit exceedances of applicable screening values will be addressed in the HHRA as discussed in Section 11.0 "Conclusions and Recommendations", page 66, of the RIR.

Response to PADEP Comments
Received May 4, 2017
AOI 5 RIR
PES Refining Complex

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.

The results of the outdoor air samples will be discussed in the Human Health Risk Assessment for the PES Refining Complex. Table 9 has been updated with the applicable ACGIH TLVs and NIOSH RELs and is also attached. Concentrations of constituents in outdoor air are below the applicable ACGIH TLVs and NIOSH RELs for all analytes.

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

Evergreen acknowledges this comment.

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.

Langan is preparing a Human Health Risk Assessment for the PES Refining Complex. PADEP has previously agreed that subsurface soil exposure will not be evaluated for construction worker and on-site worker exposures due to adherence to activity-specific safe work plans. Inhalation exposure to constituents in ambient air has been evaluated through collection of ambient air samples at AOI-5. The data indicate benzene is present at low levels in ambient air, two orders of magnitude below applicable industrial hygiene standards.

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)].

Response to PADEP Comments
Received May 4, 2017
AOI 5 RIR
PES Refining Complex

An ecological risk assessment is not necessary because, in the initial Pennsylvania Fish and Boat Commission reply letter (dated July 15, 2013), the agency stated in the first page, fourth paragraph, first sentence that "However, if wetlands or water bodies are not to be disturbed in any way by the proposed activity, and provided that best management practices are employed and strict erosion and sedimentation measures are maintained, I do not foresee any adverse impacts to eastern redbelly turtle or any other rare or protected species under Pennsylvania Fish and Boat Commission jurisdiction." Disturbance of wetlands and water bodies is not a factor in AOI 5, as there is no habitat for the eastern red belly turtle (no wetlands or water bodies) that exist within the boundaries of AOI 5. The letter dated July 15, 2013, from the Pennsylvania Fish and Boat Commission and the updated response letter dated April 2, 2015, confirming the commission's original recommendation are attached.

Tables, Figures, and Appendices

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

The butane rail line soil sample depths are listed in Tables 4 and 5 of the RIR.

23. In Table 8, 26 ug/m³ 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.

Langan is preparing a Human Health Risk Assessment for the PES Refining Complex that will address the vapor intrusion pathway.

24. Several screening values in Table 8 are incorrect. For example, the benzene screening value based on EPA's RSLs is 13 ug/m³, not 16 ug/m³. Screening values must be the lower of the cancer and non-cancer values. (See DEP's vapor intrusion training materials.)

Table 8 has been revised and is attached. None of the indoor air samples exhibited benzene exceedances of the EPA industrial RSL at a target cancer risk of 1E-05 and hazard quotient of 0.1(13 ug/m³). There are eight indoor air samples that exhibited benzene exceedances of the EPA industrial RSL at a target cancer risk of 1E-06 and hazard quotient of 0.1(1.6 ug/m³).

Response to PADEP Comments
Received May 4, 2017
AOI 5 RIR
PES Refining Complex

Also, indoor air sample AOI5-AI-16-006 exhibits exceedances of the 1,2,4-trimethylbenzene screening value of 3.1 ug/m³ for both the EPA industrial RSL at a target cancer risk of 1E-05 and hazard quotient of 0.1 and the EPA industrial RSL at a target cancer risk of 1E-06 and hazard quotient of 0.1.

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.

The orange monitoring well designation represents monitoring wells that have exhibited a groundwater exceedance from 2014 to 2016. The monitoring wells A-19D, A-21D, WP-4A, A-159, and PZ-2 referenced in the comment had previous exceedances but were not sampled between 2014 to 2016. These monitoring wells have been given a separate designation along with monitoring wells A-119, A-138, and WP-B that also had previous exceedances but were not sampled between 2014 and 2016. Figure 10 has been revised and is attached.

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.)

The PaGWIS search queried all of the database wells within a 2 mile radius from the center of the PES Refining Complex. Then a one mile distance was utilized to capture the database wells from the PES Refining Complex boundary. As part of the Complex-wide Cleanup Plan, within any areas of known offsite groundwater plume migration additional efforts will be made to identify any potable wells in that area.

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

An indoor air sampling event was not conducted in November 2016. There was an indoor air sampling event conducted by GHD in March 2016. The laboratory data report for the March 2016 sampling event is attached on CD.

2

Report #

339

(To be filled in by Env. Dept.)

SUNOCO, INC. Philadelphia Refinery

Date 18-AprTime 1:00 PM

RELEASE INCIDENT REPORT

This report must be completed for all spills or releases on or off company property. The Refinery Shift Superintendent or the Environmental Department must be contacted to make the determination of notification to government agencies.

Department _____		Release Location <u>#8 and #10 Berth</u>	
Material Spilled/Released <u>Oil</u>		Spill/Release Amount <u>unknown at this time</u>	
Amount Recovered <u>to be determined</u>			
Receiving Medium: Soil _____		Air _____ Paving _____	
Concrete _____		Groundwater _____ Surface Water <u>xxx</u>	
Is this spill/release a CERCLA/SARA reportable quantity?		Yes _____ No <u>xxx</u>	
Spill/release confined to Sun property?		Yes _____ No <u>xxx</u>	
Injuries or Medical Attention Required?		Yes _____ No <u>xxx</u>	
If yes, describe _____			

Source (Describe)		Tank # _____ Unit _____ Pump _____	
Vessel/Barge _____		Process Equipment _____	
Describe how release occurred, was discovered, remedial action taken, disposal method of recovered material, and any other additional comments.			
<u>unknown spill at GP wharf hard boom deployed, being cleaned up, amount to be determined later</u>			
<u>OSRO en route, dark oil contained, small amount of sheen outside containment, source yet to be</u>			
<u>identified.</u>			

Agency	Telephone	Name of Person Reported To	Time & Date Reported	Name of Person Making Report
National Response Center	1-800-424-8802	Belmas	1:30 4/18/2007	Muche
U.S.C.G. (local)	215-271-4800	PO Bowes	1:43 PM 4/18/2007	Muche
A.M.S. Day M-F Weekends & Evening Fax	215-685-7572 215-686-4514 215-685-7593			
EPA Region III	215-814-9016			
PaDEP Primary-Norristown Harrisburg	1-484-250-5900 1-717-787-4343	Andrew Sinclair	1:35 PM 4/18/2007	Muche
NJ DEP (SARA)	1-877-927-6337			
State Emergency Response Commission (SARA)	1-800-424-7362			
City of Phila. Local Emerg. Planning Comm. (SARA)	215-686-1141			
Delaware County Local Emerg. Planning Comm. (SARA)	610-565-6500			
PA Fish & Boat Commission	717-626-0228	Burkhalter	1:54 PM 18-Apr	Muche
Other:				

No Agency Notified _____

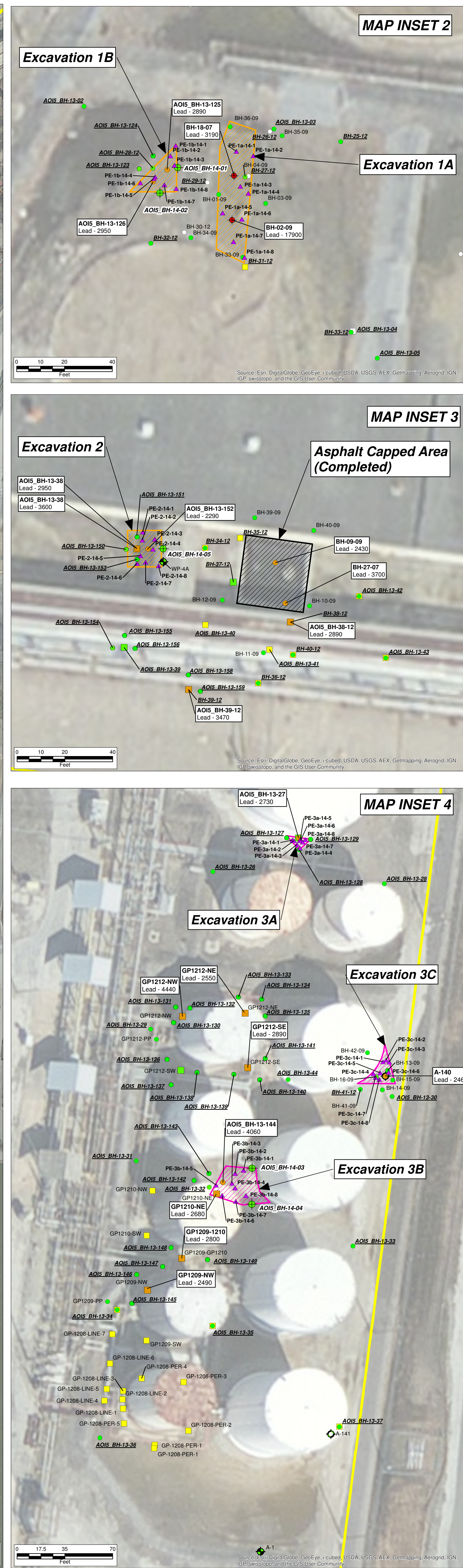
Name of witness to spill Willis Houston Company _____

Address: _____
(if non-company person)

Report prepared by Bob Muche Date 4/18/7

COPY OF THIS REPORT MUST BE RECEIVED IN ENVIRONMENTAL ENGINEERING WITHIN 2 HOURS OF A RELEASE/SPILL. IN THE EVENT OF CERCLA/SARA REPORTABLE QUANTITY RELEASE ENVIRONMENTAL SHOULD BE NOTIFIED BY PHONE IMMEDIATELY, WITH A FOLLOW UP WRITTEN REPORT. FAX TO ENVIRONMENTAL ENGINEERING @ 339-2657.

3



Legend

- Shallow Soil Boring Location with No Exceedance of Site Specific Standard for Lead
- Deep Soil Boring Location with No Exceedance of Site Specific Standard for Lead
- Proposed Shallow Soil Boring Location with No Sample (Due to Groundwater)
- Proposed Deep Soil Boring Location with No Sample (Due to Groundwater)
- Shallow Soil Boring Location with Exceedance of the Site Specific Standard for Lead (2,240 mg/kg)
- Deep Soil Boring Location with Exceedance of the Site Specific Standard for Lead (2,240 mg/kg)
- Soil Boring Location With Observed Leaded Tank Bottom Material
- Soil Boring Location With Documented Leaded Tank Bottom Material
- ▲ Proposed Post Excavation Sample Locations
- ◆ Proposed Shallow Soil Boring Location
- BH-01-07 Soil Boring Completed Prior to 2012 RIR Addendum
- BH-01-12 Soil Boring Completed As Part of 2012/2013 RIR Addendum
- ◆ Shallow Monitoring Well Sampled
- ◆ Shallow Recovery Well Sampled
- ◆ Shallow Monitoring Well Location
- ◆ Deep Monitoring Well Location
- ◆ Shallow Recovery Well Location
- ◆ Damaged/Abandoned/Unable to Locate
- Sheet Pile Wall
- Solid Waste Management Unit (SWMU)
- Proposed Temporary Soil Stockpile Area
- AOI Boundary

Selected Remedy Key

- Areas 1A, 1B, 2 and 4 - Excavation Area
- Asphalt Capped Area (Completed)
- Area 3A,3B & 3C - Excavation and Stone Backfill Area

Revised Site-Specific Standard
Lead - 2,240 mg/kg

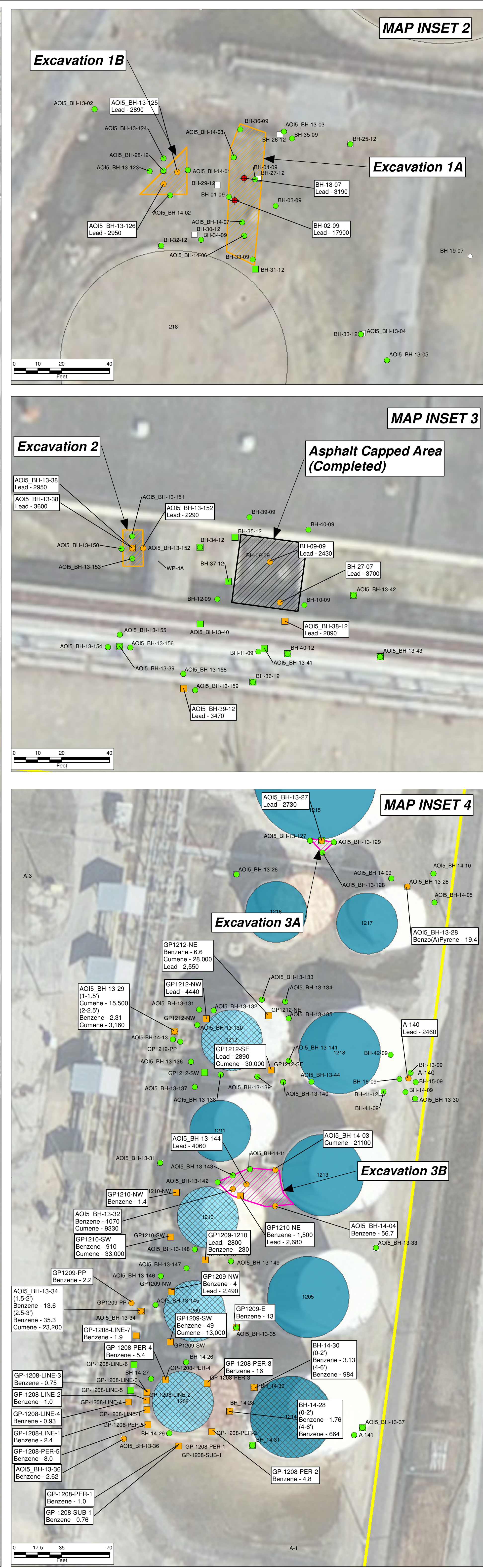
Notes:

- Boundary of SWMUs and sheet pile wall referenced from RCRA Facility Investigation Chevron Refinery Vol 1, Dames and Moore, 11-24-93.
- Aerial basemap is provided through Langan's Esri ArcGIS software licensing and ArcGIS online. Source of aerial imagery is Microsoft, 3/19/2011 (Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, GeoMapping, AeroGRID, IGN, IGP, swisstopo, and the GIS User Community).
- Historic soil sample locations referenced in the Aboveground Storage Tank Closure Assessment Report for GP 1209, 1210, and 1212 (Stanley, April 18, 2012), and the Aboveground Storage Tank GP-1208 Closure in Place Sampling Activities Report (Secor, Sept. 12, 2007).

Figure 1: Summary of Proposed Excavation Activities for AOI-5 PES Facility Philadelphia, Pennsylvania

Sunoco, Inc. (R&M)
PES Facility
3144 Passunk Avenue
Philadelphia, PA, 19145

SCALE: See Map
DATE: March 15, 2014
CDD BY: M
JRM



Legend

- Surface Soil Boring Location with No Exceedance of Site-wide MSCs
- Subsurface Soil Boring Location with No Exceedance of Site-wide MSCs
- Proposed Surface Soil Boring Location with No Sample (Due to Groundwater)
- Proposed Subsurface Soil Boring Location with No Sample (Due to Groundwater)
- Surface Soil Boring Location with Exceedance of the Site-wide MSCs
- Subsurface Soil Boring Location with Exceedance of the Site-wide MSCs
- Soil Boring Location With Observed Leaded Tank Bottom Material
- Soil Boring Location With Documented Leaded Tank Bottom Material
- PES Butane Rail Surface Soil Sample Location
- PES Butane Rail Sub-Surface Soil Sample Location

BH-01-07 Soil Boring

- Closed in Place
- Active Tank With Open Incident
- Removed Tank With Open Incident
- Tank Currently Out of Service
- Tank In Service
- Removed Tank

— Sheet Pile Wall

- Solid Waste Management Unit (SWMU)
- AOI Boundary

Selected Remedy Key

- Areas 1A, 1B, 2 and 4 - Excavation Area
- Asphalt Capped Area (Completed)
- Area 3A & 3B - Excavation and Stone Backfill Area

Site-Specific Standard
Lead - 2,240 mg/kg

Notes:

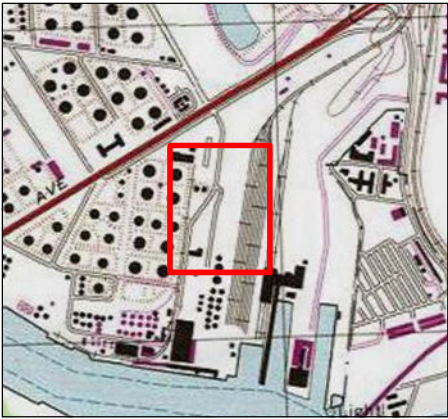
1. Boundary of SWMUs and sheet pile wall referenced from RCRA Facility Investigation Chevron Refinery Vol 1, Dames and Moore, 11-24-93.
2. Aerial basemap is provided through Lantier's Esri ArcGIS software (Imagery and ArcGIS online). Source of aerial imagery is Microsoft, 3/19/2011 (Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community).
3. Historic soil sample locations referenced in the Aboveground Storage Tank Closure Assessment Report for GP 1209, 1210, and 1212 (Alta/ACSM Land Title Survey, prepared for Sunoco Inc. (RAS), Sept. 12, 2007).
4. Area of Interest boundaries referenced from 2011 ALTA/ACSM Land Title Survey, prepared for Sunoco Inc. (RAS).
5. Butane rail sample locations provided by Stantec.
6. All results are displayed in milligrams per kilogram (mg/kg).

Figure 13: Summary of Selected Remedial Alternatives:
Engineering Controls
AOI-5 Remedial Investigation Report
PES Philadelphia Refinery
Philadelphia, Pennsylvania

Evergreen Resources
Management Operations
2 Righter Parkway, Suite 200
Wilmington, DE 19803

CS&E: Sam Mays
DATE: Jan 08, 2015
CIB: By: KAT
CIB: By: KAT
(PREF: 10/15/15)

4



- Legend**
- APPROXIMATE LOCATION OF SOIL BORING ADVANCED TO 1 FT BELOW GROUND SURFACE (BGS) (SOIL SAMPLE AT 1 FT BGS)
 - APPROXIMATE LOCATION OF SOIL BORING ADVANCED TO 2.5 FT BELOW GROUND SURFACE (BGS) (SOIL SAMPLE AT 2.5 FT BGS)
 - ⊗ ABANDONED / DESTROYED WELL
 - SHALLOW MONITORING WELL
 - NEW ACCESS/BYPASS ROAD (PROPOSED)
 - - - APPROXIMATE NEW LIMIT OF DISTURBANCE (AUGUST 2014)
 - SWALE CENTERLINE AND FLOW DIRECTION (PROPOSED)
 - - - APPROXIMATE LIMIT OF DISTURBANCE (FEBRUARY 2014)

Notes

1. Coordinate System: NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet
2. Sources: Stantec, Philadelphia Energy Solutions
3. Service Layer Credits: Copyright© 2013 National Geographic Society, i-cubed
Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data.

0 110 220 Feet
1:1,320 (At Original document size of 11x17)

Stantec **PHILADELPHIA ENERGY SOLUTIONS**

Project Location
City of Philadelphia,
Pennsylvania

Client/Project
PHILADELPHIA ENERGY SOLUTIONS
PHILADELPHIA REFINERY COMPLEX
GIRARD POINT BUTANE RAIL PROJECT
3144 PASSYUNK AVENUE, PHILADELPHIA, PA 19145

Figure No.
1

Title
**GIRARD POINT BUTANE RAIL
SOIL SAMPLING LOCATIONS MAP**

213402269
Prepared by GWC on 9/25/2014
Technical Review by JLM on 9/25/2014
Independent Review by JKD on 9/25/2014

Table 2
Composite Sample and Field Data Summary
Philadelphia Energy Solutions Refining and Marketing LLC
Girard Point Butane Rail Soil Sampling

Section Name and Size	Composite Sample ID	Boring Location ID	Grab Sample PID Reading (ppm)	Grab Sample ID for VOC analysis
PECO 1000 cubic yards	GPBR_003C_08-20-2014(PECO)	PECO 1	0.0	NA
		PECO 2	0.0	NA
		PECO 3	0.0	NA
		PECO 4	0.0	NA
	GPBR_004C_08-20-2014(PECO)	PECO 5	0.0	NA
		PECO 6	2.0	GPBR_001G_08-20-2014 (PECO6)
		PECO 7	0.0	NA
		PECO 8	1.0	GPBR_002G_08-20-2014 (PECO8) GPBR_006G_08-20-2014 (PECO8) ¹
	GPBR_005C_08-20-2014(PECO) ²	PECO 9 ²	0.0	NA
		PECO 10 ²	0.0	NA
		PECO 11 ²	0.0	NA
		PECO 12 ²	0.0	NA
A 3000 cubic yards	GPBR_011C_08-21-2014(PH3A)	A-1	0.0	NA
		A-2	0.0	NA
		A-3	0.0	GPBR_008G_08-21-2014 (PH3A-3)
		A-4	0.0	NA
	GPBR_012C_08-21-2014(PH3A)	A-5	0.0	NA
		A-6	0.0	NA
		A-7	0.0	GPBR_009G_08-21-2014 (PH3A-7)
		A-8	0.0	NA
	GPBR_013C_08-21-2014(PH3A)	A-9	0.0	NA
		A-10	0.0	NA
		A-11	0.0	GPBR_010G_08-21-2014 (PH3A-11)
		A-12	0.0	NA
B 3000 cubic yards	GPBR_017C_08-21-2014(PH3B)	B-1	1.0	NA
		B-2	0.0	NA
		B-3	1.0	GPBR_014G_08-21-2014 (PH3B-3)
		B-4	0.0	NA
	GPBR_018C_08-21-2014(PH3B)	B-5	1.0	GPBR_015G_08-21-2014 (PH3B-5)
		B-6	0.0	NA
		B-7	0.0	NA
		B-8	3.0	GPBR_016G_08-21-2014 (PH3B-8)
	GPBR_019C_08-21-2014(PH3B)	B-9	0.0	NA
		B-10	0.0	NA
		B-11	0.0	NA
		B-12	0.0	NA

Notes:

Gray highlighting indicates boring location identification and associated PID measurement for each of the three highest PID concentrations per section and the grab sample identification for laboratory VOC analysis.

PID: Photo Ionization Detector

ppm: parts per million

VOC: Volatile Organic Compounds

NA: not applicable

Notes:

1. Grab sample GPBR_006G_08-20-2014 (PECO8) was collected from boring PECO 8 for analysis for VOC waste characterization parameters. A five point composite sample, GPBR_007C_08-20-2014 (PECO) was collected from borings PECO 2, PECO 4, PECO 6, PECO 9, and PECO 12 for additional waste characterization analyses.

2. Boring locations PECO 9, PECO 10, PECO 11, and PECO 12 were completed at the request of PECO for characterization of soils in the roadway footprint. A composite sample, GPBR_005C_08-20-2014(PECO), was collected from soil from these borings, as requested.

bore_id	x_coord*	y_coord*	sys_loc_code	sys_sample_code
A-1	2683619.422	216533.693	GPBR_08212014_A1	
A-2	2683684.714	216522.312	GPBR_08212014_A2	
A-3	2683761.388	216544.476	GPBR_08212014_A3	GPBR_008G_08-21-2014(PH3A-3)
A-4	2683778.160	216595.991	GPBR_08212014_A4	
A-5	2683794.932	216643.313	GPBR_08212014_A5	
A-6	2683809.308	216685.842	GPBR_08212014_A6	
A-7	2683830.274	216743.947	GPBR_08212014_A7	GPBR_009G_08-21-2014(PH3A-7)
A-8	2683841.655	216775.694	GPBR_08212014_A8	
A-9	2683857.230	216817.026	GPBR_08212014_A9	
A-10	2683872.804	216864.348	GPBR_08212014_A10	
A-11	2683885.383	216900.289	GPBR_08212014_A11	GPBR_010G_08-21-2014(PH3A-11)
A-12	2683901.556	216946.413	GPBR_08212014_A12	
B-1	2683561.045	216747.159	GPBR_08212014_B1	
B-2	2683486.442	216644.531	GPBR_08212014_B2	
B-3	2683511.310	216470.852	GPBR_08212014_B3	GPBR_014G_08-21-2014(PH3B-3)
B-4	2683503.021	216430.195	GPBR_08212014_B4	
B-5	2683478.942	216365.855	GPBR_08212014_B5	GPBR_015G_08-21-2014(PH3B-5)
B-6	2683424.865	216346.119	GPBR_08212014_B6	
B-7	2683488.811	216325.594	GPBR_08212014_B7	
B-8	2683370.393	216272.701	GPBR_08212014_B8	GPBR_016G_08-21-2014(PH3B-8)
B-9	2683433.549	216265.201	GPBR_08212014_B9	
B-10	2683484.863	216252.569	GPBR_08212014_B10	
B-11	2683578.018	216216.255	GPBR_08212014_B11	
B-12	2683583.939	216254.543	GPBR_08212014_B12	
PECO 1	2683658.394	216933.863	GPBR_08212014_PECO1	
PECO 2	2683663.279	216967.020	GPBR_08212014_PECO2	
PECO 3	2683676.304	217011.229	GPBR_08212014_PECO3	
PECO 4	2683694.067	217066.096	GPBR_08212014_PECO4	
PECO 5	2683719.329	217081.095	GPBR_08212014_PECO5	
PECO 6	2683756.434	217079.517	GPBR_08212014_PECO6	GPBR_001G_08-20-2014(PECO6)
PECO 7	2683779.328	217076.359	GPBR_08212014_PECO7	
PECO 8	2683796.695	217069.253	GPBR_08212014_PECO8	GPBR_002G_08-20-2014(PECO8)
PECO 9	2683816.431	217084.253	GPBR_08212014_PECO9	
PECO 10	2683790.774	217096.490	GPBR_08212014_PECO10	
PECO 11	2683754.460	217100.437	GPBR_08212014_PECO11	
PECO 12	2683675.120	217106.752	GPBR_08212014_PECO12	

*Coordinates are PA State Plane NAD83 feet

Table 2
Composite Sample and Field Data Summary
Philadelphia Energy Solutions Refining and Marketing LLC
Girard Point Butane Terminal Soil Reuse Assessment

Section Number	Composite Sample ID	Boring Location ID	Grab Sample PID Reading (ppm)	Grab Sample ID for VOC analysis
1	GPBT_031C_03-12-2014 (STF1)	1-1	17	GPBT_031G_03-12-2014 (STF1-1)
		1-2	0	NA
		1-3	4	GPBT_032G_03-12-2014 (STF1-3)
		1-4	0	NA
	GPBT_032C_03-12-2014 (STF1)	1-5	0	NA
		1-6	0	NA
		1-7	0	NA
		1-8	0	NA
	GPBT_033C_03-12-2014 (STF1)	1-9	0	NA
		1-10	0	NA
		1-11	0	NA
		1-12	6	GPBT_033G_03-12-2014 (STF1-12)
2	GPBT_001C_03-06-2014(STF2)	2-1	0	NA
		2-2	44	NA
		2-3	67	GPBT_001G_03-06-2014(STF2-3)
		2-4	58	NA
	GPBT_002C_03-06-2014(STF2)	2-5	20	NA
		2-6	60	NA
		2-7	82	GPBT_002G_03-06-2014(STF2-7)
		2-8	20	NA
	GPBT_003C_03-06-2014(STF2)	2-9	22	NA
		2-10	4	NA
		2-11	40	NA
		2-12	125	GPBT_003G_03-06-2014(STF2-12)
3	GPBT_004C_03-06-2014(STF3)	3-1	8	NA
		3-2	4	NA
		3-3	7	NA
		3-4	299	GPBT_004G_03-06-2014(STF3-4)
	GPBT_005C_03-06-2014(STF3)	3-5	35	NA
		3-6	298	GPBT_005G_03-06-2014(STF3-6)
		3-7	13	NA
		3-8	134	GPBT_006G_03-06-2014(ST3-8)
	GPBT_006C_03-06-2014(STF3)	3-9	2	NA
		3-10	53	NA
		3-11	38	NA
		3-12	0	NA
4	GPBT_007C_03-07-2014(STF4)	4-1	0	NA
		4-2	70	NA
		4-3	0	NA
		4-5	166	NA
	GPBT_008C_03-07-2014(STF4)	4-4	272	GPBT_007G_03-07-2014(STF4-4)
		4-6	142	NA
		4-7	341	GPBT_008G_03-07-2014(STF4-7)
		4-8	7	NA
	GPBT_009C_03-07-2014(STF4)	4-9	5	NA
		4-10	174	GPBT_009G_03-07-2014(STF4-10)
		4-11	9	NA
		4-12	1	NA

Table 2
Composite Sample and Field Data Summary
Philadelphia Energy Solutions Refining and Marketing LLC
Girard Point Butane Terminal Soil Reuse Assessment

Section Number	Composite Sample ID	Boring Location ID	Grab Sample PID Reading (ppm)	Grab Sample ID for VOC analysis
5	GPBT_010C_03-07-2014(STF5)	5-1	1	GPBT_010G_03-07-2014(STF5-1)
		5-2	0	NA
		5-3	0	NA
		5-4	0	NA
	GPBT_011C_03-07-2014(STF5)	5-5	0	NA
		5-6	2	GPBT_011G_03-07-2014(STF5-6)
		5-7	0	NA
		5-8	1	GPBT_012G_03-07-2014(STF5-8)
	GPBT_012C_03-07-2014(STF5)	5-9	0	NA
		5-10	0	NA
		5-11	0	NA
		5-12	0	NA
6	GPBT_013C_03-10-2014(STF6)	6-1	0	NA
		6-2	0	NA
		6-7	0	NA
		6-12	3	GPBT_015G_03-10-2014(STF6-12)
	GPBT_014C_03-10-2014(STF6)	6-3	0	GPBT_013G_03-10-2014(STF6-3)
		6-4	0	NA
		6-5	0	NA
		6-6	0	NA
	GPBT_015C_03-10-2014(STF6)	6-8	0	NA
		6-9	1	GPBT_014G_03-10-2014(STF6-9)
		6-10	0	NA
		6-11	0	NA
7	GPBT_016C_03-10-2014(STF7)	7-1	0	NA
		7-2	0	NA
		7-3	0	NA
		7-12	2	GPBT_018G_03-10-2014(STF7-12)
	GPBT_017C_03-10-2014(STF7)	7-4	0	GPBT_016G_03-10-2014(STF7-4)
		7-5	0	NA
		7-6	0	NA
		7-7	0	NA
	GPBT_018C_03-10-2014(STF7)	7-8	0	GPBT_017G_03-10-2014(STF7-8)
		7-9	0	NA
		7-10	0	NA
		7-11	0	NA
8	GPBT_028C_03-11-2014(STF 8)	8-1	2	NA
		8-2	1	NA
		8-3	8	NA
		8-4	38	GPBT_025G_03-11-2014(STF 8-4)
	GPBT_029C_03-11-2014(STF 8)	8-5	55	GPBT_026G_03-11-2014(STF 8-5)
		8-6	23	NA
		8-7	5	NA
		8-8	69	GPBT_027G_03-11-2014(STF 8-8)
	GPBT_030C_03-11-2014(STF 8)	8-9	34	NA
		8-10	27	NA
		8-11	27	NA
		8-12	16	NA

Table 2
Composite Sample and Field Data Summary
Philadelphia Energy Solutions Refining and Marketing LLC
Girard Point Butane Terminal Soil Reuse Assessment

Section Number	Composite Sample ID	Boring Location ID	Grab Sample PID Reading (ppm)	Grab Sample ID for VOC analysis
9	GPBT_022C_03-11-2014(STF 9)	9-1	28	GPBT_019G_03-11-2014(STF 9-1)
		9-2	8	NA
		9-3	1	NA
		9-4	12	GPBT_020G_03-11-2014(STF 9-4)
	GPBT_023C_03-11-2014(STF 9)	9-5	2	NA
		9-6	1	NA
		9-7	3	NA
		9-8	9	GPBT_021G_03-11-2014(STF 9-8)
	GPBT_024C_03-11-2014(STF 9)	9-9	2	NA
		9-10	2	NA
		9-11	1	NA
		9-12	7	NA
10	GPBT_034C_03-12-2014 (STF10)	10-1	103	GPBT_034G_03-12-2014 (STF10-1)
		10-2	65	NA
		10-3	72	GPBT_035G_03-12-2014 (STF10-3)
		10-5	57	NA
	GPBT_035C_03-12-2014 (STF10)	10-4	17	NA
		10-6	73	GPBT_036G_03-12-2014 (STF10-6)
		10-7	18	NA
		10-8	6	NA
	GPBT_036C_03-12-2014 (STF10)	10-9	6	NA
		10-10	3	NA
		10-11	0	NA
		10-12	0	NA

Notes:

Gray highlighting indicates boring location identification and associated PID measurement for each of the three highest PID concentrations per section and the grab sample identification for laboratory VOC analysis.

PID: Photo Ionization Detector

ppm: parts per million

VOC: Volatile Organic Compounds

NA: not applicable

8

Table 4
Summary of Surface Soil Sample Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Surface Soil Direct Contact MSC ¹	PADEP Non-Residential Soil to Groundwater MSC ²	Location ID	A-139				A-140				A-142				A-143				A-151				A 152			
				Sample ID	A-139_071207_1.5-2.0				A-140_071207_1.5-2.0				A-142_1.5-2.0				A-143_0712_1.5-2.0				A-151_071207_1.5-2.0				A-152_071207_1.5-2.0			
				Sample Date	7/12/2007				7/12/2007				7/12/2007				7/12/2007				7/12/2007				7/12/2007			
				Sample Depth (ft bgs)	1.5-2				1.5-2				1.5-2				1.5-2				1.5-2				1.5-2			
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF
Volatile Organic Compounds																												
1,2,4-Trimethylbenzene	95-63-6	560	35	mg/kg	NA				NA				NA				NA				NA				NA			
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	3.7	0.005	mg/kg	NA				NA				NA				NA				NA				NA			
1,2-Dichloroethane	107-06-2	86	0.5	mg/kg	ND	U	0.0053		ND	U	0.0038		NA				ND	U	0.0035		ND	U	0.0035		ND	U	0.0031	
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	NA				NA				NA				NA				NA				NA			
Benzene	71-43-2	290	0.5	mg/kg	ND	U	0.0053		ND	U	0.0038		NA				ND	U	0.0035		0.036		0.0035		ND	U	0.0031	
Ethylbenzene	100-41-4	890	70	mg/kg	ND	U	0.0053		ND	U	0.0038		NA				ND	U	0.0035		ND	U	0.0035		ND	U	0.0031	
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	ND	U	0.0053		ND	U	0.0038		NA				ND	U	0.0035		ND	U	0.0035		ND	U	0.0031	
Methyl Tert-Butyl Ether	1634-04-4	8,600	2	mg/kg	ND	U	0.0053		ND	U	0.0038		NA				ND	U	0.0035		ND	U	0.0035		ND	U	0.0031	
Toluene	108-88-3	10,000	100	mg/kg	ND	U	0.0053		ND	U	0.0038		NA				ND	U	0.0035		0.0056		0.0035		ND	U	0.0031	
Xylenes, Total (Dimethylbenzene)	1330-20-7	8,000	1,000	mg/kg	ND	U	0.011		ND	U	0.0075		NA				ND	U	0.0071		0.0086		0.007		ND	U	0.0063	
Semi-Volatile Organic Compounds																												
Anthracene	120-12-7	190,000	350	mg/kg	NA				NA				NA				NA				NA				NA			
Benzo(A)Anthracene	56-55-3	130	430	mg/kg	ND	U	0.85		5.1		2		NA				ND	U	0.38		ND	U	1.9		ND	U	1.9	
Benzo(A)Pyrene	50-32-8	12	46	mg/kg	ND	U	0.85		6.1		2		NA				ND	U	0.38		ND	U	1.9		ND	U	1.9	
Benzo(B)Fluoranthene	205-99-2	76	170	mg/kg	0.93		0.85		6.1		2		NA				ND	U	0.38		ND	U	1.9		ND	U	1.9	
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	ND	U	0.85		ND	U	2		NA				ND	U	0.38		ND	U	1.9		ND	U	1.9	
Chrysene	218-01-9	760	230	mg/kg	ND	U	0.85		5.2		2		NA				ND	U	0.38		ND	U	1.9		ND	U	1.9	
Fluorene	86-73-7	130,000	3,800	mg/kg	ND	U	0.85		ND	U	2		NA				ND	U	0.38		ND	U	1.9		ND	U	1.9	
Naphthalene**	91-20-3	760	25	mg/kg	ND	U	0.0053		ND	U	0.0038		NA				ND	U	0.0035		ND	U	0.0035		ND	U	0.0031	
Phenanthrene	85-01-8	190,000	10,000	mg/kg	ND	U	0.85		7.2		2		NA				ND	U	0.38		ND	U	1.9		ND	U	1.9	
Pyrene	129-00-0	96,000	2,200	mg/kg	0.92		0.85		11		2		NA				ND	U	0.38		ND	U	1.9		ND	U	1.9	
Metals																												
Lead*	7439-92-1	2,240	450	mg/kg	191		0.61		2460		0.64		377		0.57		446		0.58		112		0.65		110		0.57	

Notes:
CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA - Not Analyzed
ft bgs - feet below ground surface
*Site Specific Standard for lead is 2,240 mg/kg
¹PADEP Non-Residential Direct Contact MSC for surface soils (0-2 feet below ground surface) (last updated August 27, 2016).
² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (last updated August 27, 2016).

**Naphthalene was analyzed either as a semi volatile organic compound (analytical method SW8270C SIM) or volatile organic compound (analytical method SW8260B or SW8021B). Naphthalene results are presented on this table as semi-volatile organic compounds. In the event that both methods were used for one sample, the lower of the two detection limits was used.

Qualifiers:
U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
E - Compound was over the calibration range
D- Indicates a dilution

Exceedance Summary:

10

Reported result exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC or the site-specific standard for lead.

10

Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC.

10

DL exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC.

Table 4
Summary of Surface Soil Sample Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Surface Soil Direct Contact MSC ¹	PADEP Non-Residential Soil to Groundwater MSC ²	Location ID	A-140				A-141				A-144				A-150				A-153				A-155			
				Sample ID	A-140				A-141				A-144				A-150				A-153				A-155			
				Sample Date	4/6/2009				4/6/2009				4/6/2009				4/7/2009				4/8/2009				4/7/2009			
				Sample Depth (ft bgs)	0.5-2				0.5-2				0-2				0-2				0-2				0-2			
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF
Volatile Organic Compounds																												
1,2,4-Trimethylbenzene	95-63-6	560	35	mg/kg	NA				NA				NA				NA				NA				NA			
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	3.7	0.005	mg/kg	ND	U	0.24	42.81	ND	U	0.28	46.82	ND	U	0.27	40.72	ND	U	0.33	54.23	ND	U	0.38	64.43	ND	U	0.26	43.71
1,2-Dichloroethane	107-06-2	86	0.5	mg/kg	ND	U	0.24	42.81	ND	U	0.28	46.82	ND	U	0.27	40.72	ND	U	0.33	54.23	ND	U	0.38	64.43	ND	U	0.26	43.71
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	NA				NA				NA				NA				NA				NA			
Benzene	71-43-2	290	0.5	mg/kg	ND	U	0.24	42.81	ND	U	0.28	46.82	ND	U	0.27	40.72	4.9		0.33	54.23	ND	U	0.38	64.43	0.52		0.26	43.71
Ethylbenzene	100-41-4	890	70	mg/kg	ND	U	0.24	42.81	ND	U	0.28	46.82	ND	U	0.27	40.72	3.3		0.33	54.23	ND	U	0.38	64.43	0.71		0.26	43.71
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	ND	U	0.24	42.81	ND	U	0.28	46.82	ND	U	0.27	40.72	1.2		0.33	54.23	ND	U	0.38	64.43	7.2		0.26	43.71
Methyl Tert-Butyl Ether	1634-04-4	8,600	2	mg/kg	ND	U	0.24	42.81	ND	U	0.28	46.82	ND	U	0.27	40.72	ND	U	0.33	54.23	ND	U	0.38	64.43	ND	U	0.26	43.71
Toluene	108-88-3	10,000	100	mg/kg	ND	U	0.24	42.81	ND	U	0.28	46.82	ND	U	0.27	40.72	6.9		0.33	54.23	ND	U	0.38	64.43	1		0.26	43.71
Xylenes, Total (Dimethylbenzene)	1330-20-7	8,000	1,000	mg/kg	ND	U	0.24	42.81	ND	U	0.28	46.82	ND	U	0.27	40.72	12		0.33	54.23	0.43		0.38	64.43	2.3		0.26	43.71
Semi-Volatile Organic Compounds																												
Anthracene	120-12-7	190,000	350	mg/kg	0.87		0.19	1	0.38		0.2	1	ND	U	0.22	1	0.28		0.2	1	0.28		0.2	1	5.7		2	10
Benzo(A)Anthracene	56-55-3	130	430	mg/kg	2.3		0.19	1	1		0.2	1	0.43		0.22	1	ND	U	0.2	1	0.75		0.2	1	3.5		2	10
Benzo(A)Pyrene	50-32-8	12	46	mg/kg	1.9		0.19	1	0.95		0.2	1	0.56		0.22	1	ND	U	0.2	1	0.65		0.2	1	3.1		2	10
Benzo(B)Fluoranthene	205-99-2	76	170	mg/kg	2.6		0.19	1	1.2		0.2	1	0.75		0.22	1	ND	U	0.2	1	0.99		0.2	1	3.2		2	10
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	1.1		0.19	1	0.66		0.2	1	0.45		0.22	1	ND	U	0.2	1	0.43		0.2	1	ND	U	2	10
Chrysene	218-01-9	760	230	mg/kg	2.2		0.19	1	1.1		0.2	1	0.49		0.22	1	ND	U	0.2	1	0.77		0.2	1	4.8		2	10
Fluorene	86-73-7	130,000	3,800	mg/kg	0.42		0.19	1	ND	U	0.2	1	ND	U	0.22	1	0.34		0.2	1	ND	U	0.2	1	19		2	10
Naphthalene**	91-20-3	760	25	mg/kg	ND	U	0.19	1	ND	U	0.2	1	ND	U	0.22	1	ND	U	0.2	1	0.28		0.2	1	ND	U	2	10
Phenanthrene	85-01-8	190,000	10,000	mg/kg	3.8		0.19	1	1.5		0.2	1	0.53		0.22	1	0.33		0.2	1	1.3		0.2	1	31		2	10
Pyrene	129-00-0	96,000	2,200	mg/kg	3.9		0.19	1	1.8		0.2	1	0.52		0.22	1	0.33		0.2	1	1.1		0.2	1	6.5		2	10
Metals																												
Lead*	7439-92-1	2,240	450	mg/kg	316		1.14	10	660		2.4	20	156		1.28	10	190		1.19	10	37.4		1.14	10	446		1.19	10

Notes:
CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA - Not Analyzed
ft bgs - feet below ground surface
*Site Specific Standard for lead is 2,240 mg/kg

¹PADEP Non-Residential Direct Contact MSC for surface soils (0-2 feet below ground surface) (last updated August 27, 2016).

² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (last updated August 27, 2016).

**Naphthalene was analyzed either as a semi volatile organic compound (analytical method SW8270C SIM) or volatile organic compound (analytical method SW8260B or SW8021B). Naphthalene results are presented on this table as semi-volatile organic compounds. In the event that both methods were used for one sample, the lower of the two detection limits was used.

Qualifiers:
U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
E - Compound was over the calibration range
D- Indicates a dilution

Exceedance Summary:

10

Reported result exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC or the site-specific standard for lead.

10

Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC.

10

DL exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC.

Table 4
Summary of Surface Soil Sample Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Surface Soil Direct Contact MSC ¹	PADEP Non-Residential Soil to Groundwater MSC ²	Location ID	A-156				A-159				A-160				A-161				A-169				A-170			
				Sample ID	A-156-2'				A-159_2'				A-160_2'				A-161-0-1'				PH-AOI5 A-169_0-2_06172014				A-170_0-2'			
				Sample Date	11/9/2012				11/1/2012				11/2/2012				11/9/2012				6/17/2014				6/24/2014			
				Sample Depth (ft bgs)	1-2				1-2				1-2				0-1				0-2				0-2			
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF
Volatile Organic Compounds																												
1,2,4-Trimethylbenzene	95-63-6	560	35	mg/kg	ND	U	0.58	1	1.9		0.89	1	0.466	J	0.74	1	0.001	J	0.0068	1	ND	U	0.002	1	ND	U	0.0019	1
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	3.7	0.005	mg/kg	ND	U	0.12	1	ND	U	0.36	1	ND	U	0.29	1	ND	U	0.0014	1	ND	U	0.0029	1	ND	U	0.0027	1
1,2-Dichloroethane	107-06-2	86	0.5	mg/kg	ND	U	0.12	1	ND	U	0.36	1	ND	U	0.29	1	ND	U	0.0014	1	ND	U	0.00099	1	ND	U	0.00096	1
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	ND	U	0.58	1	2.74		0.89	1	ND	U	0.74	1	0.00053	J	0.0068	1	ND	U	0.002	1	ND	U	0.0019	1
Benzene	71-43-2	290	0.5	mg/kg	0.228		0.12	1	0.266		0.089	1	0.273		0.074	1	0.00034	J	0.0014	1	ND	U	0.0005	1	ND	U	0.00048	1
Ethylbenzene	100-41-4	890	70	mg/kg	ND	U	0.12	1	0.538		0.36	1	0.464		0.29	1	ND	U	0.0014	1	ND	U	0.00099	1	ND	U	0.00096	1
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	6.63		0.58	1	1.27		0.89	1	2.84		0.74	1	0.0008	J	0.0068	1	ND	U	0.005	1	ND	U	0.0048	1
Methyl Tert-Butyl Ether	1634-04-4	8,600	2	mg/kg	ND	U	0.12	1	ND	U	0.36	1	ND	U	0.29	1	ND	U	0.0014	1	ND	U	0.00099	1	ND	U	0.00096	1
Toluene	108-88-3	10,000	100	mg/kg	0.267		0.12	1	0.951		0.89	1	0.46	J	0.74	1	0.00041	J	0.0014	1	ND	U	0.00099	1	ND	U	0.00096	1
Xylenes, Total (Dimethylbenzene)	1330-20-7	8,000	1,000	mg/kg	0.662		0.12	1	2.35		0.36	1	1.3		0.29	1	0.00092	J	0.0014	1	ND	U	0.00099	1	ND	U	0.00096	1
Semi-Volatile Organic Compounds																												
Anthracene	120-12-7	190,000	350	mg/kg	0.279		0.033	1	ND	U	0.69	5	0.134		0.12	1	0.603		0.21	5	0.0682		0.036	1	0.0875		0.035	1
Benzo(A)Anthracene	56-55-3	130	430	mg/kg	0.589		0.033	1	0.618	J	0.69	5	0.1	J	0.12	1	0.627		0.21	5	0.129		0.036	1	0.59		0.035	1
Benzo(A)Pyrene	50-32-8	12	46	mg/kg	0.559		0.033	1	0.376	J	0.69	5	0.0764	J	0.12	1	2.39		0.21	5	0.164		0.036	1	0.653		0.035	1
Benzo(B)Fluoranthene	205-99-2	76	170	mg/kg	0.53		0.033	1	0.783		0.69	5	0.118	J	0.12	1	1.82		0.21	5	0.188		0.036	1	0.783		0.035	1
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	0.389		0.033	1	0.275	J	0.69	5	0.0597	J	0.12	1	1.95		0.21	5	0.276		0.036	1	0.55		0.035	1
Chrysene	218-01-9	760	230	mg/kg	0.69		0.033	1	0.871		0.69	5	0.108	J	0.12	1	3.85		0.21	5	0.161		0.036	1	0.697		0.035	1
Fluorene	86-73-7	130,000	3,800	mg/kg	0.365		0.033	1	ND	U	0.69	5	0.334		0.12	1	0.259		0.21	5	0.0223	J	0.036	1	0.0183	J	0.035	1
Naphthalene**	91-20-3	760	25	mg/kg	NA				1.69		0.69	5	0.105	J	0.12	1	NA				0.0173	J	0.036	1	0.0178	J	0.035	1
Phenanthrene	85-01-8	190,000	10,000	mg/kg	1.13		0.033	1	0.836		0.69	5	0.783		0.12	1	0.554		0.21	5	0.179		0.036	1	0.337		0.035	1
Pyrene	129-00-0	96,000	2,200	mg/kg	0.909		0.033	1	3.16		0.69	5	0.24		0.12	1	5.02		0.21	5	0.227		0.036	1	1.04		0.035	1
Metals																												
Lead*	7439-92-1	2,240	450	mg/kg	204		2.4	1	158		1.3	1	163		1.1	1	1380		2.7	1	402		2	1	97.2		2.1	1

Notes:
CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA - Not Analyzed
ft bgs - feet below ground surface
*Site Specific Standard for lead is 2,240 mg/kg

¹PADEP Non-Residential Direct Contact MSC for surface soils (0-2 feet below ground surface) (last updated August 27, 2016).

² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (last updated August 27, 2016).

**Naphthalene was analyzed either as a semi volatile organic compound (analytical method SW8270C SIM) or volatile organic compound (analytical method SW8260B or SW8021B). Naphthalene results are presented on this table as semi-volatile organic compounds. In the event that both methods were used for one sample, the lower of the two detection limits was used.

Qualifiers:
U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
E - Compound was over the calibration range
D- Indicates a dilution

Exceedance Summary:	
10	Reported result exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC or the site-specific standard for lead.
1010	Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC.
	DL exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC.

Table 4
Summary of Surface Soil Sample Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Surface Soil Direct Contact MSC ¹	PADEP Non-Residential Soil to Groundwater MSC ²	Location ID Sample ID Sample Date Sample Depth (ft bgs) Unit	A-171				A-172				A-173				A-185				A-186				BH-04-07			
					A-171 0-2'				PH-AOI5_A-172_0-2_06172014				A-173 0-2'				A-185 0-2'				A-186 0-2'				BH-04-07_1-2			
					6/25/2014				6/17/2014				6/25/2014				6/24/2014				6/27/2014				7/13/2007			
					0-2				0-2				0-2				0-2				0-2				1-2			
					Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF
Volatile Organic Compounds																												
1,2,4-Trimethylbenzene	95-63-6	560	35	mg/kg	ND	U	0.0021	1	0.647		0.29	1	0.00078	J	0.0026	1	ND	U	0.0021	1	0.0014	J	0.003	1	NA			
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	3.7	0.005	mg/kg	ND	U	0.0033	1	ND	U	0.0036	1	ND	U	0.0032	1	ND	U	0.0028	1	ND	U	0.0041	1	NA			
1,2-Dichloroethane	107-06-2	86	0.5	mg/kg	ND	U	0.0011	1	ND	U	0.14	1	ND	U	0.0013	1	ND	U	0.001	1	ND	U	0.0015	1	NA			
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	ND	U	0.0021	1	0.189	J	0.29	1	0.00042	J	0.0026	1	ND	U	0.0021	1	0.00081	J	0.003	1	NA			
Benzene	71-43-2	290	0.5	mg/kg	ND	U	0.00053	1	0.237		0.072	1	ND	U	0.00065	1	ND	U	0.00052	1	ND	U	0.00075	1	NA			
Ethylbenzene	100-41-4	890	70	mg/kg	ND	U	0.0011	1	0.11	J	0.14	1	ND	U	0.0013	1	ND	U	0.001	1	ND	U	0.0015	1	NA			
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	ND	U	0.0053	1	0.175	J	0.72	1	ND	U	0.0065	1	ND	U	0.0052	1	ND	U	0.0075	1	NA			
Methyl Tert-Butyl Ether	1634-04-4	8,600	2	mg/kg	ND	U	0.0011	1	ND	U	0.14	1	ND	U	0.0013	1	ND	U	0.001	1	ND	U	0.0015	1	NA			
Toluene	108-88-3	10,000	100	mg/kg	ND	U	0.0011	1	1.04		0.14	1	ND	U	0.0013	1	ND	U	0.001	1	ND	U	0.0015	1	NA			
Xylenes, Total (Dimethylbenzene)	1330-20-7	8,000	1,000	mg/kg	ND	U	0.0011	1	0.673		0.14	1	0.0008	J	0.0013	1	ND	U	0.001	1	ND	U	0.0015	1	NA			
Semi-Volatile Organic Compounds																												
Anthracene	120-12-7	190,000	350	mg/kg	0.412		0.042	1	0.0205	J	0.048	1	0.0346	J	0.041	1	0.0739		0.037	1	0.505		0.055	1	NA			
Benzo(A)Anthracene	56-55-3	130	430	mg/kg	0.476		0.042	1	0.0296	J	0.048	1	0.0552		0.041	1	0.203		0.037	1	0.974		0.055	1	NA			
Benzo(A)Pyrene	50-32-8	12	46	mg/kg	0.46		0.042	1	0.0352	J	0.048	1	0.059		0.041	1	0.266		0.037	1	1.03		0.055	1	NA			
Benzo(B)Fluoranthene	205-99-2	76	170	mg/kg	0.537		0.042	1	0.0408	J	0.048	1	0.0631		0.041	1	0.386		0.037	1	1.14		0.055	1	NA			
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	0.733		0.042	1	0.0383	J	0.048	1	0.0459		0.041	1	0.25		0.037	1	0.756		0.055	1	NA			
Chrysene	218-01-9	760	230	mg/kg	0.474		0.042	1	0.0738		0.048	1	0.0697		0.041	1	0.224		0.037	1	0.914		0.055	1	NA			
Fluorene	86-73-7	130,000	3,800	mg/kg	0.0338	J	0.042	1	0.06		0.048	1	0.055		0.041	1	ND	U	0.037	1	0.205		0.055	1	NA			
Naphthalene**	91-20-3	760	25	mg/kg	0.125		0.042	1	0.0536		0.048	1	ND	U	0.041	1	ND	U	0.037	1	0.221		0.055	1	NA			
Phenanthrene	85-01-8	190,000	10,000	mg/kg	0.271		0.042	1	0.0665		0.048	1	0.177		0.041	1	0.0651		0.037	1	1.49		0.055	1	NA			
Pyrene	129-00-0	96,000	2,200	mg/kg	0.514		0.042	1	0.0473	J	0.048	1	0.0958		0.041	1	0.285		0.037	1	1.97		0.055	1	NA			
Metals																												
Lead*	7439-92-1	2,240	450	mg/kg	229		2.4	1	86		2	1	196		2.3	1	92.2		2	1	37.1		3.3	1	203		0.58	

Notes:
CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA - Not Analyzed
ft bgs - feet below ground surface
*Site Specific Standard for lead is 2,240 mg/kg

¹PADEP Non-Residential Direct Contact MSC for surface soils (0-2 feet below ground surface) (last updated August 27, 2016).

² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (last updated August 27, 2016).

**Naphthalene was analyzed either as a semi volatile organic compound (analytical method SW8270C SIM) or volatile organic compound (analytical method SW8260B or SW8021B). Naphthalene results are presented on this table as semi-volatile organic compounds. In the event that both methods were used for one sample, the lower of the two detection limits was used.

Qualifiers:
U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
E - Compound was over the calibration range
D- Indicates a dilution

Exceedance Summary:

10	Reported result exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC or the site-specific standard for lead.
10	Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC.
10	DL exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC.

Table 4
Summary of Surface Soil Sample Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Surface Soil Direct Contact MSC ¹	PADEP Non-Residential Soil to Groundwater MSC ²	Location ID	BH-05-07				BH-06-07				BH-07-07				BH-08-07				BH-13-07				BH-18-07			
				Sample ID	BH-05-07_1-2				BH-06-07_0.5-1.0				BH-07-07_1-2				BH-08-07_75-2				BH-13-07_0.5-1.0				BH-18-07_1.0-2.0			
				Sample Date	7/12/2007				4/4/2007				7/13/2007				7/13/2007				4/4/2007				4/4/2007			
				Sample Depth (ft bgs)	1-2				0.5-1				1-2				0.75-2				0.5-1				1-2			
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF
Volatile Organic Compounds																												
1,2,4-Trimethylbenzene	95-63-6	560	35	mg/kg	NA				NA				NA				NA				NA				NA			
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	3.7	0.005	mg/kg	NA				NA				NA				NA				NA				NA			
1,2-Dichloroethane	107-06-2	86	0.5	mg/kg	NA				NA				NA				NA				NA				NA			
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	NA				NA				NA				NA				NA				NA			
Benzene	71-43-2	290	0.5	mg/kg	NA				NA				NA				NA				NA				NA			
Ethylbenzene	100-41-4	890	70	mg/kg	NA				NA				NA				NA				NA				NA			
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	NA				NA				NA				NA				NA				NA			
Methyl Tert-Butyl Ether	1634-04-4	8,600	2	mg/kg	NA				NA				NA				NA				NA				NA			
Toluene	108-88-3	10,000	100	mg/kg	NA				NA				NA				NA				NA				NA			
Xylenes, Total (Dimethylbenzene)	1330-20-7	8,000	1,000	mg/kg	NA				NA				NA				NA				NA				NA			
Semi-Volatile Organic Compounds																												
Anthracene	120-12-7	190,000	350	mg/kg	NA				NA				NA				NA				NA				NA			
Benzo(A)Anthracene	56-55-3	130	430	mg/kg	NA				NA				NA				NA				NA				NA			
Benzo(A)Pyrene	50-32-8	12	46	mg/kg	NA				NA				NA				NA				NA				NA			
Benzo(B)Fluoranthene	205-99-2	76	170	mg/kg	NA				NA				NA				NA				NA				NA			
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	NA				NA				NA				NA				NA				NA			
Chrysene	218-01-9	760	230	mg/kg	NA				NA				NA				NA				NA				NA			
Fluorene	86-73-7	130,000	3,800	mg/kg	NA				NA				NA				NA				NA				NA			
Naphthalene**	91-20-3	760	25	mg/kg	NA				NA				NA				NA				NA				NA			
Phenanthrene	85-01-8	190,000	10,000	mg/kg	NA				NA				NA				NA				NA				NA			
Pyrene	129-00-0	96,000	2,200	mg/kg	NA				NA				NA				NA				NA				NA			
Metals																												
Lead*	7439-92-1	2,240	450	mg/kg	316		0.78		373		0.63		1250		0.71		506		0.64		310		0.62		3190		0.99	

Notes:
CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA - Not Analyzed
ft bgs - feet below ground surface
*Site Specific Standard for lead is 2,240 mg/kg

¹PADEP Non-Residential Direct Contact MSC for surface soils (0-2 feet below ground surface) (last updated August 27, 2016).

² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (last updated August 27, 2016).

**Naphthalene was analyzed either as a semi volatile organic compound (analytical method SW8270C SIM) or volatile organic compound (analytical method SW8260B or SW8021B). Naphthalene results are presented on this table as semi-volatile organic compounds. In the event that both methods were used for one sample, the lower of the two detection limits was used.

Qualifiers:
U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
E - Compound was over the calibration range
D- Indicates a dilution

Exceedance Summary:

10

Reported result exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC or the site-specific standard for lead.

10

Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC.

10

DL exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC.

Table 4
Summary of Surface Soil Sample Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Surface Soil Direct Contact MSC ¹	PADEP Non-Residential Soil to Groundwater MSC ²	Location ID	BH-20-07				BH-21-07				BH-23-07				BH-24-07				BH-25-07				BH-26-07			
				Sample ID	BH-20-07_0.75-2.0				BH-21-07_1.75-2				BH-23-07_0-0.5				BH-24-07_1.5-2				BH-25-07_1-2				BH-26-07_1-2			
				Sample Date	7/11/2007				4/4/2007				7/11/2007				4/4/2004				7/11/2007				7/11/2007			
				Sample Depth (ft bgs)	0.75-2				1.75-2				0-0.5				1.5-2				1-2				1-2			
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF
Volatile Organic Compounds																												
1,2,4-Trimethylbenzene	95-63-6	560	35	mg/kg	NA				NA				NA				NA				NA				NA			
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	3.7	0.005	mg/kg	NA				NA				NA				NA				NA				NA			
1,2-Dichloroethane	107-06-2	86	0.5	mg/kg	NA				NA				NA				NA				NA				NA			
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	NA				NA				NA				NA				NA				NA			
Benzene	71-43-2	290	0.5	mg/kg	NA				NA				NA				NA				NA				NA			
Ethylbenzene	100-41-4	890	70	mg/kg	NA				NA				NA				NA				NA				NA			
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	NA				NA				NA				NA				NA				NA			
Methyl Tert-Butyl Ether	1634-04-4	8,600	2	mg/kg	NA				NA				NA				NA				NA				NA			
Toluene	108-88-3	10,000	100	mg/kg	NA				NA				NA				NA				NA				NA			
Xylenes, Total (Dimethylbenzene)	1330-20-7	8,000	1,000	mg/kg	NA				NA				NA				NA				NA				NA			
Semi-Volatile Organic Compounds																												
Anthracene	120-12-7	190,000	350	mg/kg	NA				NA				NA				NA				NA				NA			
Benzo(A)Anthracene	56-55-3	130	430	mg/kg	NA				NA				NA				NA				NA				NA			
Benzo(A)Pyrene	50-32-8	12	46	mg/kg	NA				NA				NA				NA				NA				NA			
Benzo(B)Fluoranthene	205-99-2	76	170	mg/kg	NA				NA				NA				NA				NA				NA			
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	NA				NA				NA				NA				NA				NA			
Chrysene	218-01-9	760	230	mg/kg	NA				NA				NA				NA				NA				NA			
Fluorene	86-73-7	130,000	3,800	mg/kg	NA				NA				NA				NA				NA				NA			
Naphthalene**	91-20-3	760	25	mg/kg	NA				NA				NA				NA				NA				NA			
Phenanthrene	85-01-8	190,000	10,000	mg/kg	NA				NA				NA				NA				NA				NA			
Pyrene	129-00-0	96,000	2,200	mg/kg	NA				NA				NA				NA				NA				NA			
Metals																												
Lead*	7439-92-1	2,240	450	mg/kg	21.7		0.58		26.7		0.59		1920		0.69		152		0.64		103		0.6		41.7		0.56	

Notes:
CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA - Not Analyzed
ft bgs - feet below ground surface
*Site Specific Standard for lead is 2,240 mg/kg

¹PADEP Non-Residential Direct Contact MSC for surface soils (0-2 feet below ground surface) (last updated August 27, 2016).

² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (last updated August 27, 2016).

**Naphthalene was analyzed either as a semi volatile organic compound (analytical method SW8270C SIM) or volatile organic compound (analytical method SW8260B or SW8021B). Naphthalene results are presented on this table as semi-volatile organic compounds. In the event that both methods were used for one sample, the lower of the two detection limits was used.

Qualifiers:
U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
E - Compound was over the calibration range
D- Indicates a dilution

Exceedance Summary:

10

Reported result exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC or the site-specific standard for lead.

10

Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC.

10

DL exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC.

Table 4
Summary of Surface Soil Sample Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Surface Soil Direct Contact MSC ¹	PADEP Non-Residential Soil to Groundwater MSC ²	Location ID	BH-27-07				BH-01-09				BH-02-09				BH-03-09				BH-04-09				BH-05-09			
				Sample ID	BH-27-07_1.5-2.0				BH-01-09				BH-02-09				BH-03-09				BH-04-09				BH-05-09			
				Sample Date	7/12/2007				4/7/2009				4/7/2009				4/7/2009				4/7/2009				4/8/2009			
				Sample Depth (ft bgs)	1.5-2				0-2				0-1.5				0-2				0-2				0-2			
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF
Volatile Organic Compounds																												
1,2,4-Trimethylbenzene	95-63-6	560	35	mg/kg	NA				NA				NA				NA				NA				NA			
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	3.7	0.005	mg/kg	NA				NA				NA				NA				NA				NA			
1,2-Dichloroethane	107-06-2	86	0.5	mg/kg	NA				NA				NA				NA				NA				NA			
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	NA				NA				NA				NA				NA				NA			
Benzene	71-43-2	290	0.5	mg/kg	NA				NA				NA				NA				NA				NA			
Ethylbenzene	100-41-4	890	70	mg/kg	NA				NA				NA				NA				NA				NA			
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	NA				NA				NA				NA				NA				NA			
Methyl Tert-Butyl Ether	1634-04-4	8,600	2	mg/kg	NA				NA				NA				NA				NA				NA			
Toluene	108-88-3	10,000	100	mg/kg	NA				NA				NA				NA				NA				NA			
Xylenes, Total (Dimethylbenzene)	1330-20-7	8,000	1,000	mg/kg	NA				NA				NA				NA				NA				NA			
Semi-Volatile Organic Compounds																												
Anthracene	120-12-7	190,000	350	mg/kg	NA				NA				NA				NA				NA				NA			
Benzo(A)Anthracene	56-55-3	130	430	mg/kg	NA				NA				NA				NA				NA				NA			
Benzo(A)Pyrene	50-32-8	12	46	mg/kg	NA				NA				NA				NA				NA				NA			
Benzo(B)Fluoranthene	205-99-2	76	170	mg/kg	NA				NA				NA				NA				NA				NA			
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	NA				NA				NA				NA				NA				NA			
Chrysene	218-01-9	760	230	mg/kg	NA				NA				NA				NA				NA				NA			
Fluorene	86-73-7	130,000	3,800	mg/kg	NA				NA				NA				NA				NA				NA			
Naphthalene**	91-20-3	760	25	mg/kg	NA				NA				NA				NA				NA				NA			
Phenanthrene	85-01-8	190,000	10,000	mg/kg	NA				NA				NA				NA				NA				NA			
Pyrene	129-00-0	96,000	2,200	mg/kg	NA				NA				NA				NA				NA				NA			
Metals																												
Lead*	7439-92-1	2,240	450	mg/kg	3700		0.59		494		1.58	10	17900		68.7	500	316		1.79	10	1810		8.17	50	449		1.38	10

Notes:
CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA - Not Analyzed
ft bgs - feet below ground surface
*Site Specific Standard for lead is 2,240 mg/kg
¹PADEP Non-Residential Direct Contact MSC for surface soils (0-2 feet below ground surface) (last updated August 27, 2016).
² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (last updated August 27, 2016).

**Naphthalene was analyzed either as a semi volatile organic compound (analytical method SW8270C SIM) or volatile organic compound (analytical method SW8260B or SW8021B). Naphthalene results are presented on this table as semi-volatile organic compounds. In the event that both methods were used for one sample, the lower of the two detection limits was used.

Qualifiers:
U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
E - Compound was over the calibration range
D- Indicates a dilution

Exceedance Summary:

10

Reported result exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC or the site-specific standard for lead.

10

Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC.

10

DL exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC.

Table 4
Summary of Surface Soil Sample Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Surface Soil Direct Contact MSC ¹	PADEP Non-Residential Soil to Groundwater MSC ²	Location ID	BH-06-09				BH-07-09				BH-08-09_AOI5				BH-09-09				BH-10-09				BH-11-09			
				Sample ID	BH-06-09				BH-07-09				BH-08-09_AOI5				BH-09-09				BH-10-09				BH-11-09			
				Sample Date	4/8/2009				4/7/2009				4/7/2009				4/7/2009				4/6/2009				4/7/2009			
				Sample Depth (ft bgs)	0-2				0-2				0-2				0-2				0-2				0-2			
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF
Volatile Organic Compounds																												
1,2,4-Trimethylbenzene	95-63-6	560	35	mg/kg	NA				NA				NA				NA				NA				NA			
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	3.7	0.005	mg/kg	NA				NA				NA				NA				NA				NA			
1,2-Dichloroethane	107-06-2	86	0.5	mg/kg	NA				NA				NA				NA				NA				NA			
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	NA				NA				NA				NA				NA				NA			
Benzene	71-43-2	290	0.5	mg/kg	NA				NA				NA				NA				NA				NA			
Ethylbenzene	100-41-4	890	70	mg/kg	NA				NA				NA				NA				NA				NA			
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	NA				NA				NA				NA				NA				NA			
Methyl Tert-Butyl Ether	1634-04-4	8,600	2	mg/kg	NA				NA				NA				NA				NA				NA			
Toluene	108-88-3	10,000	100	mg/kg	NA				NA				NA				NA				NA				NA			
Xylenes, Total (Dimethylbenzene)	1330-20-7	8,000	1,000	mg/kg	NA				NA				NA				NA				NA				NA			
Semi-Volatile Organic Compounds																												
Anthracene	120-12-7	190,000	350	mg/kg	NA				NA				NA				NA				NA				NA			
Benzo(A)Anthracene	56-55-3	130	430	mg/kg	NA				NA				NA				NA				NA				NA			
Benzo(A)Pyrene	50-32-8	12	46	mg/kg	NA				NA				NA				NA				NA				NA			
Benzo(B)Fluoranthene	205-99-2	76	170	mg/kg	NA				NA				NA				NA				NA				NA			
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	NA				NA				NA				NA				NA				NA			
Chrysene	218-01-9	760	230	mg/kg	NA				NA				NA				NA				NA				NA			
Fluorene	86-73-7	130,000	3,800	mg/kg	NA				NA				NA				NA				NA				NA			
Naphthalene**	91-20-3	760	25	mg/kg	NA				NA				NA				NA				NA				NA			
Phenanthrene	85-01-8	190,000	10,000	mg/kg	NA				NA				NA				NA				NA				NA			
Pyrene	129-00-0	96,000	2,200	mg/kg	NA				NA				NA				NA				NA				NA			
Metals																												
Lead*	7439-92-1	2,240	450	mg/kg	407		1.32	10	748		2.43	20	563		1.23	10	2430		13.7	100	441		1.16	10	613		2.36	20

Notes:
CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA - Not Analyzed
ft bgs - feet below ground surface
*Site Specific Standard for lead is 2,240 mg/kg
¹PADEP Non-Residential Direct Contact MSC for surface soils (0-2 feet below ground surface) (last updated August 27, 2016).
² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (last updated August 27, 2016).

**Naphthalene was analyzed either as a semi volatile organic compound (analytical method SW8270C SIM) or volatile organic compound (analytical method SW8260B or SW8021B). Naphthalene results are presented on this table as semi-volatile organic compounds. In the event that both methods were used for one sample, the lower of the two detection limits was used.

Qualifiers:
U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
E - Compound was over the calibration range
D- Indicates a dilution

Exceedance Summary:

10

Reported result exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC or the site-specific standard for lead.

10

Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC.

10

DL exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC.

Table 4
Summary of Surface Soil Sample Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Surface Soil Direct Contact MSC ¹	PADEP Non-Residential Soil to Groundwater MSC ²	Location ID	BH-12-09				BH-13-09				BH-14-09				BH-15-09				BH-16-09				BH-17-09			
				Sample ID	BH-12-09				BH-13-09				BH-14-09				BH-15-09				BH-16-09				BH-17-09			
				Sample Date	4/6/2009				4/6/2009				4/6/2009				4/6/2009				4/6/2009				4/8/2009			
				Sample Depth (ft bgs)	0-2				1-2				1-2				0.5-2				0-2				0-2			
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF
Volatile Organic Compounds																												
1,2,4-Trimethylbenzene	95-63-6	560	35	mg/kg	NA				NA				NA				NA				NA				NA			
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	3.7	0.005	mg/kg	NA				NA				NA				NA				NA				NA			
1,2-Dichloroethane	107-06-2	86	0.5	mg/kg	NA				NA				NA				NA				NA				NA			
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	NA				NA				NA				NA				NA				NA			
Benzene	71-43-2	290	0.5	mg/kg	NA				NA				NA				NA				NA				NA			
Ethylbenzene	100-41-4	890	70	mg/kg	NA				NA				NA				NA				NA				NA			
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	NA				NA				NA				NA				NA				NA			
Methyl Tert-Butyl Ether	1634-04-4	8,600	2	mg/kg	NA				NA				NA				NA				NA				NA			
Toluene	108-88-3	10,000	100	mg/kg	NA				NA				NA				NA				NA				NA			
Xylenes, Total (Dimethylbenzene)	1330-20-7	8,000	1,000	mg/kg	NA				NA				NA				NA				NA				NA			
Semi-Volatile Organic Compounds																												
Anthracene	120-12-7	190,000	350	mg/kg	NA				NA				NA				NA				NA				NA			
Benzo(A)Anthracene	56-55-3	130	430	mg/kg	NA				NA				NA				NA				NA				NA			
Benzo(A)Pyrene	50-32-8	12	46	mg/kg	NA				NA				NA				NA				NA				NA			
Benzo(B)Fluoranthene	205-99-2	76	170	mg/kg	NA				NA				NA				NA				NA				NA			
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	NA				NA				NA				NA				NA				NA			
Chrysene	218-01-9	760	230	mg/kg	NA				NA				NA				NA				NA				NA			
Fluorene	86-73-7	130,000	3,800	mg/kg	NA				NA				NA				NA				NA				NA			
Naphthalene**	91-20-3	760	25	mg/kg	NA				NA				NA				NA				NA				NA			
Phenanthrene	85-01-8	190,000	10,000	mg/kg	NA				NA				NA				NA				NA				NA			
Pyrene	129-00-0	96,000	2,200	mg/kg	NA				NA				NA				NA				NA				NA			
Metals																												
Lead*	7439-92-1	2,240	450	mg/kg	806		2.46	20	298		1.11	10	285		1.2	10	323		1.13	10	2030		6.13	50	790		2.45	20

Notes:
CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA - Not Analyzed
ft bgs - feet below ground surface
*Site Specific Standard for lead is 2,240 mg/kg

¹PADEP Non-Residential Direct Contact MSC for surface soils (0-2 feet below ground surface) (last updated August 27, 2016).

² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (last updated August 27, 2016).

**Naphthalene was analyzed either as a semi volatile organic compound (analytical method SW8270C SIM) or volatile organic compound (analytical method SW8260B or SW8021B). Naphthalene results are presented on this table as semi-volatile organic compounds. In the event that both methods were used for one sample, the lower of the two detection limits was used.

Qualifiers:
U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
E - Compound was over the calibration range
D- Indicates a dilution

Exceedance Summary:

10

Reported result exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC or the site-specific standard for lead.

10

Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC.

10

DL exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC.

Table 4
Summary of Surface Soil Sample Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Surface Soil Direct Contact MSC ¹	PADEP Non-Residential Soil to Groundwater MSC ²	Location ID	BH-18-07				BH-18-09				BH-19-09				BH-20-09				BH-21-09				BH-22-09			
				Sample ID	BH-18-07_0.5-1				BH-18-09				BH-19-09				BH-20-09				BH-21-09				BH-22-09			
				Sample Date	4/4/2007				4/8/2009				4/8/2009				4/8/2009				6/8/2009				6/8/2009			
				Sample Depth (ft bgs)	0.5-1				0-2				0-2				0-2				0-2				0-2			
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF
Volatile Organic Compounds																												
1,2,4-Trimethylbenzene	95-63-6	560	35	mg/kg	NA				NA				NA				NA				NA				NA			
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	3.7	0.005	mg/kg	NA				NA				NA				NA				NA				NA			
1,2-Dichloroethane	107-06-2	86	0.5	mg/kg	NA				NA				NA				NA				NA				NA			
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	NA				NA				NA				NA				NA				NA			
Benzene	71-43-2	290	0.5	mg/kg	NA				NA				NA				NA				NA				NA			
Ethylbenzene	100-41-4	890	70	mg/kg	NA				NA				NA				NA				NA				NA			
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	NA				NA				NA				NA				NA				NA			
Methyl Tert-Butyl Ether	1634-04-4	8,600	2	mg/kg	NA				NA				NA				NA				NA				NA			
Toluene	108-88-3	10,000	100	mg/kg	NA				NA				NA				NA				NA				NA			
Xylenes, Total (Dimethylbenzene)	1330-20-7	8,000	1,000	mg/kg	NA				NA				NA				NA				NA				NA			
Semi-Volatile Organic Compounds																												
Anthracene	120-12-7	190,000	350	mg/kg	NA				NA				NA				NA				NA				NA			
Benzo(A)Anthracene	56-55-3	130	430	mg/kg	NA				NA				NA				NA				NA				NA			
Benzo(A)Pyrene	50-32-8	12	46	mg/kg	NA				NA				NA				NA				NA				NA			
Benzo(B)Fluoranthene	205-99-2	76	170	mg/kg	NA				NA				NA				NA				NA				NA			
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	NA				NA				NA				NA				NA				NA			
Chrysene	218-01-9	760	230	mg/kg	NA				NA				NA				NA				NA				NA			
Fluorene	86-73-7	130,000	3,800	mg/kg	NA				NA				NA				NA				NA				NA			
Naphthalene**	91-20-3	760	25	mg/kg	NA				NA				NA				NA				NA				NA			
Phenanthrene	85-01-8	190,000	10,000	mg/kg	NA				NA				NA				NA				NA				NA			
Pyrene	129-00-0	96,000	2,200	mg/kg	NA				NA				NA				NA				NA				NA			
Metals																												
Lead*	7439-92-1	2,240	450	mg/kg	373		0.63	1	327		1.46	10	228		1.28	10	453		1.35	10	1210		6.57	50	1780		13	100

Notes:
CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA - Not Analyzed
ft bgs - feet below ground surface
*Site Specific Standard for lead is 2,240 mg/kg

¹PADEP Non-Residential Direct Contact MSC for surface soils (0-2 feet below ground surface) (last updated August 27, 2016).

² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (last updated August 27, 2016).

**Naphthalene was analyzed either as a semi volatile organic compound (analytical method SW8270C SIM) or volatile organic compound (analytical method SW8260B or SW8021B). Naphthalene results are presented on this table as semi-volatile organic compounds. In the event that both methods were used for one sample, the lower of the two detection limits was used.

Qualifiers:
U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
E - Compound was over the calibration range
D- Indicates a dilution

Exceedance Summary:

10

Reported result exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC or the site-specific standard for lead.

10

Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC.

10

DL exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC.

Table 4
Summary of Surface Soil Sample Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Surface Soil Direct Contact MSC ¹	PADEP Non-Residential Soil to Groundwater MSC ²	Location ID	BH-23-09				BH-24-09				BH-25-09				BH-26-09				BH-33-09				BH-34-09			
				Sample ID	BH-23-09				BH-24-09				BH-25-09				BH-26-09				BH-33-09				BH-34-09			
				Sample Date	6/8/2009				6/8/2009				4/7/2009				4/7/2009				7/9/2009				7/9/2009			
				Sample Depth (ft bgs)	0-2				0-2				0-2				0-2				0-2				0-2			
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF
Volatile Organic Compounds																												
1,2,4-Trimethylbenzene	95-63-6	560	35	mg/kg	NA				NA				NA				NA				NA				NA			
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	3.7	0.005	mg/kg	NA				NA				ND	U	0.36	51.23	ND	U	0.29	47.35	NA				NA			
1,2-Dichloroethane	107-06-2	86	0.5	mg/kg	NA				NA				ND	U	0.36	51.23	ND	U	0.29	47.35	NA				NA			
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	NA				NA				NA				NA				NA				NA			
Benzene	71-43-2	290	0.5	mg/kg	NA				NA				ND	U	0.36	51.23	ND	U	0.29	47.35	NA				NA			
Ethylbenzene	100-41-4	890	70	mg/kg	NA				NA				ND	U	0.36	51.23	ND	U	0.29	47.35	NA				NA			
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	NA				NA				ND	U	0.36	51.23	ND	U	0.29	47.35	NA				NA			
Methyl Tert-Butyl Ether	1634-04-4	8,600	2	mg/kg	NA				NA				ND	U	0.36	51.23	ND	U	0.29	47.35	NA				NA			
Toluene	108-88-3	10,000	100	mg/kg	NA				NA				ND	U	0.36	51.23	ND	U	0.29	47.35	NA				NA			
Xylenes, Total (Dimethylbenzene)	1330-20-7	8,000	1,000	mg/kg	NA				NA				ND	U	0.36	51.23	ND	U	0.29	47.35	NA				NA			
Semi-Volatile Organic Compounds																												
Anthracene	120-12-7	190,000	350	mg/kg	NA				NA				0.42		0.23	1	ND	U	0.2	1	NA				NA			
Benzo(A)Anthracene	56-55-3	130	430	mg/kg	NA				NA				0.79		0.23	1	ND	U	0.2	1	NA				NA			
Benzo(A)Pyrene	50-32-8	12	46	mg/kg	NA				NA				0.81		0.23	1	ND	U	0.2	1	NA				NA			
Benzo(B)Fluoranthene	205-99-2	76	170	mg/kg	NA				NA				1		0.23	1	ND	U	0.2	1	NA				NA			
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	NA				NA				0.53		0.23	1	ND	U	0.2	1	NA				NA			
Chrysene	218-01-9	760	230	mg/kg	NA				NA				0.85		0.23	1	0.25		0.2	1	NA				NA			
Fluorene	86-73-7	130,000	3,800	mg/kg	NA				NA				0.34		0.23	1	ND	U	0.2	1	NA				NA			
Naphthalene**	91-20-3	760	25	mg/kg	NA				NA				0.25		0.23	1	ND	U	0.2	1	NA				NA			
Phenanthrene	85-01-8	190,000	10,000	mg/kg	NA				NA				1.1		0.23	1	0.44		0.2	1	NA				NA			
Pyrene	129-00-0	96,000	2,200	mg/kg	NA				NA				1.3		0.23	1	0.27		0.2	1	NA				NA			
Metals																												
Lead*	7439-92-1	2,240	450	mg/kg	1220		7.5	50	1100		6.17	50	1100		2.76	20	102		1.17	10	790		2.75	20	485		1.4	10

Notes:
CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA - Not Analyzed
ft bgs - feet below ground surface
*Site Specific Standard for lead is 2,240 mg/kg

¹PADEP Non-Residential Direct Contact MSC for surface soils (0-2 feet below ground surface) (last updated August 27, 2016).

² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (last updated August 27, 2016).

**Naphthalene was analyzed either as a semi volatile organic compound (analytical method SW8270C SIM) or volatile organic compound (analytical method SW8260B or SW8021B). Naphthalene results are presented on this table as semi-volatile organic compounds. In the event that both methods were used for one sample, the lower of the two detection limits was used.

Qualifiers:
U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
E - Compound was over the calibration range
D- Indicates a dilution

Exceedance Summary:

10

Reported result exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC or the site-specific standard for lead.

10

Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC.

10

DL exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC.

Table 4
Summary of Surface Soil Sample Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Surface Soil Direct Contact MSC ¹	PADEP Non-Residential Soil to Groundwater MSC ²	Location ID	BH-35-09				BH-36-09				BH-37-09				BH-38-09				BH-39-09				BH-40-09			
				Sample ID	BH-35-09				BH-36-09				BH-37-09				BH-38-09				BH-39-09				BH-40-09			
				Sample Date	7/9/2009				7/9/2009				7/9/2009				7/9/2009				7/9/2009				7/9/2009			
				Sample Depth (ft bgs)	0-2				0-2				0-2				0-2				0-2				0-2			
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF
Volatile Organic Compounds																												
1,2,4-Trimethylbenzene	95-63-6	560	35	mg/kg	NA				NA				NA				NA				NA				NA			
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	3.7	0.005	mg/kg	NA				NA				NA				NA				NA				NA			
1,2-Dichloroethane	107-06-2	86	0.5	mg/kg	NA				NA				NA				NA				NA				NA			
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	NA				NA				NA				NA				NA				NA			
Benzene	71-43-2	290	0.5	mg/kg	NA				NA				NA				NA				NA				NA			
Ethylbenzene	100-41-4	890	70	mg/kg	NA				NA				NA				NA				NA				NA			
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	NA				NA				NA				NA				NA				NA			
Methyl Tert-Butyl Ether	1634-04-4	8,600	2	mg/kg	NA				NA				NA				NA				NA				NA			
Toluene	108-88-3	10,000	100	mg/kg	NA				NA				NA				NA				NA				NA			
Xylenes, Total (Dimethylbenzene)	1330-20-7	8,000	1,000	mg/kg	NA				NA				NA				NA				NA				NA			
Semi-Volatile Organic Compounds																												
Anthracene	120-12-7	190,000	350	mg/kg	NA				NA				NA				NA				NA				NA			
Benzo(A)Anthracene	56-55-3	130	430	mg/kg	NA				NA				NA				NA				NA				NA			
Benzo(A)Pyrene	50-32-8	12	46	mg/kg	NA				NA				NA				NA				NA				NA			
Benzo(B)Fluoranthene	205-99-2	76	170	mg/kg	NA				NA				NA				NA				NA				NA			
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	NA				NA				NA				NA				NA				NA			
Chrysene	218-01-9	760	230	mg/kg	NA				NA				NA				NA				NA				NA			
Fluorene	86-73-7	130,000	3,800	mg/kg	NA				NA				NA				NA				NA				NA			
Naphthalene**	91-20-3	760	25	mg/kg	NA				NA				NA				NA				NA				NA			
Phenanthrene	85-01-8	190,000	10,000	mg/kg	NA				NA				NA				NA				NA				NA			
Pyrene	129-00-0	96,000	2,200	mg/kg	NA				NA				NA				NA				NA				NA			
Metals																												
Lead*	7439-92-1	2,240	450	mg/kg	772		2.62	20	374		1.46	10	1310		2.97	25	36.8		2.35	20	1050		2.29	20	219		1.06	10

Notes:
CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA - Not Analyzed
ft bgs - feet below ground surface
*Site Specific Standard for lead is 2,240 mg/kg

¹PADEP Non-Residential Direct Contact MSC for surface soils (0-2 feet below ground surface) (last updated August 27, 2016).

² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (last updated August 27, 2016).

**Naphthalene was analyzed either as a semi volatile organic compound (analytical method SW8270C SIM) or volatile organic compound (analytical method SW8260B or SW8021B). Naphthalene results are presented on this table as semi-volatile organic compounds. In the event that both methods were used for one sample, the lower of the two detection limits was used.

Qualifiers:
U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
E - Compound was over the calibration range
D- Indicates a dilution

Exceedance Summary:

10

Reported result exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC or the site-specific standard for lead.

10

Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC.

10

DL exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC.

Table 4
Summary of Surface Soil Sample Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Surface Soil Direct Contact MSC ¹	PADEP Non-Residential Soil to Groundwater MSC ²	Location ID	BH-41-09				BH-42-09				BH-43-09				BH-44-09				BH-45-09				BH-46-09			
				Sample ID	BH-41-09				BH-42-09				BH-43-09				BH-44-09				BH-45-09				BH-46-09			
				Sample Date	7/9/2009				7/9/2009				7/9/2009				7/9/2009				7/9/2009				7/9/2009			
				Sample Depth (ft bgs)	0-2				0-2				0-2				0-2				0-2				0-2			
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF
Volatile Organic Compounds																												
1,2,4-Trimethylbenzene	95-63-6	560	35	mg/kg	NA				NA				NA				NA				NA				NA			
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	3.7	0.005	mg/kg	NA				NA				NA				NA				NA				NA			
1,2-Dichloroethane	107-06-2	86	0.5	mg/kg	NA				NA				NA				NA				NA				NA			
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	NA				NA				NA				NA				NA				NA			
Benzene	71-43-2	290	0.5	mg/kg	NA				NA				ND	U	0.006	0.99	ND	U	0.29	51.55	ND	U	0.3	51.65	ND	U	0.006	0.96
Ethylbenzene	100-41-4	890	70	mg/kg	NA				NA				NA				NA				NA				NA			
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	NA				NA				NA				NA				NA				NA			
Methyl Tert-Butyl Ether	1634-04-4	8,600	2	mg/kg	NA				NA				NA				NA				NA				NA			
Toluene	108-88-3	10,000	100	mg/kg	NA				NA				NA				NA				NA				NA			
Xylenes, Total (Dimethylbenzene)	1330-20-7	8,000	1,000	mg/kg	NA				NA				NA				NA				NA				NA			
Semi-Volatile Organic Compounds																												
Anthracene	120-12-7	190,000	350	mg/kg	NA				NA				NA				NA				NA				NA			
Benzo(A)Anthracene	56-55-3	130	430	mg/kg	NA				NA				NA				NA				NA				NA			
Benzo(A)Pyrene	50-32-8	12	46	mg/kg	NA				NA				NA				NA				NA				NA			
Benzo(B)Fluoranthene	205-99-2	76	170	mg/kg	NA				NA				NA				NA				NA				NA			
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	NA				NA				NA				NA				NA				NA			
Chrysene	218-01-9	760	230	mg/kg	NA				NA				NA				NA				NA				NA			
Fluorene	86-73-7	130,000	3,800	mg/kg	NA				NA				NA				NA				NA				NA			
Naphthalene**	91-20-3	760	25	mg/kg	NA				NA				NA				NA				NA				NA			
Phenanthrene	85-01-8	190,000	10,000	mg/kg	NA				NA				NA				NA				NA				NA			
Pyrene	129-00-0	96,000	2,200	mg/kg	NA				NA				NA				NA				NA				NA			
Metals																												
Lead*	7439-92-1	2,240	450	mg/kg	387		1.08	10	183		1.1	10	NA				NA				NA				NA			

Notes:
CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA - Not Analyzed
ft bgs - feet below ground surface
*Site Specific Standard for lead is 2,240 mg/kg

¹PADEP Non-Residential Direct Contact MSC for surface soils (0-2 feet below ground surface) (last updated August 27, 2016).

² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (last updated August 27, 2016).

**Naphthalene was analyzed either as a semi volatile organic compound (analytical method SW8270C SIM) or volatile organic compound (analytical method SW8260B or SW8021B). Naphthalene results are presented on this table as semi-volatile organic compounds. In the event that both methods were used for one sample, the lower of the two detection limits was used.

Qualifiers:
U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
E - Compound was over the calibration range
D- Indicates a dilution

Exceedance Summary:

10

Reported result exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC or the site-specific standard for lead.

10

Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC.

10

DL exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC.

Table 4
Summary of Surface Soil Sample Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Surface Soil Direct Contact MSC ¹	PADEP Non-Residential Soil to Groundwater MSC ²	Location ID	AOI5 BH-14-12				AOI5 BH-17-12				AOI5 BH-19-12				AOI5 BH-21-12				AOI5 BH-23-12				AOI5 BH-25-12			
				Sample ID	AOI5_BH-14-12				BH-17-12_5-1				BH-19-12_5-1				BH-21-12_5-1				BH-23-12_5-1				BH-25-12_5-1			
				Sample Date	3/18/2014				8/6/2012				8/6/2012				8/6/2012				8/9/2012				8/8/2012			
				Sample Depth (ft bgs)	0-2				0.5-1				0.5-1				0.5-1				0.5-1				0.5-1			
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF
Volatile Organic Compounds																												
1,2,4-Trimethylbenzene	95-63-6	560	35	mg/kg	ND	U	0.0047	1	ND	U	0.001	0.95	ND	U	0.001	0.86	ND	U	0.001	1.05	ND	U	0.001	0.91	ND	U	0.005	0.72
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	3.7	0.005	mg/kg	ND	U	0.0027	1	ND	U	0.001	0.95	ND	U	0.001	0.86	ND	U	0.001	1.05	ND	U	0.001	0.91	ND	U	0.005	0.72
1,2-Dichloroethane	107-06-2	86	0.5	mg/kg	ND	U	0.00094	1	ND	U	0.001	0.95	ND	U	0.001	0.86	ND	U	0.001	1.05	ND	U	0.001	0.91	ND	U	0.005	0.72
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	ND	U	0.0047	1	ND	U	0.001	0.95	ND	U	0.001	0.86	ND	U	0.001	1.05	ND	U	0.001	0.91	ND	U	0.005	0.72
Benzene	71-43-2	290	0.5	mg/kg	ND	U	0.00094	1	0.002	J	0.0006	0.95	0.007		0.0006	0.86	0.002	J	0.0007	1.05	0.005	J	0.0006	0.91	ND	U	0.005	0.72
Ethylbenzene	100-41-4	890	70	mg/kg	ND	U	0.00094	1	ND	U	0.001	0.95	ND	U	0.001	0.86	ND	U	0.001	1.05	ND	U	0.001	0.91	ND	U	0.005	0.72
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	ND	U	0.0047	1	0.001	J	0.001	0.95	ND	U	0.001	0.86	ND	U	0.001	1.05	ND	U	0.001	0.91	ND	U	0.005	0.72
Methyl Tert-Butyl Ether	1634-04-4	8,600	2	mg/kg	ND	U	0.00094	1	ND	U	0.0006	0.95	ND	U	0.0006	0.86	ND	U	0.0007	1.05	ND	U	0.0006	0.91	ND	U	0.005	0.72
Toluene	108-88-3	10,000	100	mg/kg	ND	U	0.00094	1	0.002	J	0.001	0.95	0.005	J	0.001	0.86	0.003	J	0.001	1.05	0.004	J	0.001	0.91	ND	U	0.005	0.72
Xylenes, Total (Dimethylbenzene)	1330-20-7	8,000	1,000	mg/kg	ND	U	0.00094	1	ND	U	0.001	0.95	ND	U	0.001	0.86	ND	U	0.001	1.05	ND	U	0.001	0.91	ND	U	0.005	0.72
Semi-Volatile Organic Compounds																												
Anthracene	120-12-7	190,000	350	mg/kg	0.0485	J	0.062	2	0.026	J	0.012	1	0.48		0.047	10	0.75		0.042	10	0.14		0.021	5	ND	U	0.38	5
Benzo(A)Anthracene	56-55-3	130	430	mg/kg	0.175		0.062	2	0.17		0.012	1	2		0.047	10	1.5		0.042	10	0.36		0.021	5	ND	U	0.38	5
Benzo(A)Pyrene	50-32-8	12	46	mg/kg	0.181		0.062	2	0.19		0.012	1	2.3		0.047	10	1.5		0.042	10	0.4		0.021	5	ND	U	0.38	5
Benzo(B)Fluoranthene	205-99-2	76	170	mg/kg	0.235		0.062	2	0.29		0.012	1	2.6		0.047	10	1.6		0.042	10	0.53		0.021	5	ND	U	0.38	5
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	0.143		0.062	2	0.14		0.012	1	1.8		0.047	10	1.3		0.042	10	0.35		0.021	5	0.4		0.38	5
Chrysene	218-01-9	760	230	mg/kg	0.221		0.062	2	0.23		0.012	1	2.1		0.047	10	1.6		0.042	10	0.38		0.021	5	ND	U	0.38	5
Fluorene	86-73-7	130,000	3,800	mg/kg	ND	U	0.062	2	ND	U	0.012	1	0.16	J	0.047	10	0.25		0.042	10	0.045	J	0.021	5	ND	U	0.38	5
Naphthalene**	91-20-3	760	25	mg/kg	ND	U	0.062	2	0.027	J	0.012	1	1		0.047	10	3.3		0.042	10	0.53		0.021	5	0.57		0.38	5
Phenanthrene	85-01-8	190,000	10,000	mg/kg	0.129		0.062	2	0.15		0.012	1	2		0.047	10	1.6		0.042	10	0.44		0.021	5	ND	U	0.38	5
Pyrene	129-00-0	96,000	2,200	mg/kg	0.355		0.062	2	0.33		0.012	1	3.5		0.047	10	1.6		0.042	10	0.57		0.021	5	ND	U	0.38	5
Metals																												
Lead*	7439-92-1	2,240	450	mg/kg	99.9		2.2	1	158		0.0252	5	876		0.119	20	121		0.0272	5	905		0.105	20	186		0.728	5

Notes:
CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA - Not Analyzed
ft bgs - feet below ground surface
*Site Specific Standard for lead is 2,240 mg/kg

¹PADEP Non-Residential Direct Contact MSC for surface soils (0-2 feet below ground surface) (last updated August 27, 2016).

² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (last updated August 27, 2016).

**Naphthalene was analyzed either as a semi volatile organic compound (analytical method SW8270C SIM) or volatile organic compound (analytical method SW8260B or SW8021B). Naphthalene results are presented on this table as semi-volatile organic compounds. In the event that both methods were used for one sample, the lower of the two detection limits was used.

Qualifiers:
U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
E - Compound was over the calibration range
D- Indicates a dilution

Exceedance Summary:

10

Reported result exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC or the site-specific standard for lead.

10

Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC.

10

DL exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC.

Table 4
Summary of Surface Soil Sample Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Surface Soil Direct Contact MSC ¹	PADEP Non-Residential Soil to Groundwater MSC ²	Location ID	AOI5 BH-28-12				AOI5 BH-32-12				AOI5 BH-33-12				AOI5 BH-34-12				AOI5 BH-36-12				AOI5 BH-40-12			
				Sample ID	BH-28-12_0-5				BH-32-12_5-1				BH-33-12_5-1				BH-34-12_5-1				BH-36-12_5-1				BH-40-12_5-1			
				Sample Date	8/8/2012				8/8/2012				8/8/2012				8/7/2012				8/7/2012				8/7/2012			
				Sample Depth (ft bgs)	0-0.5				0.5-1				0.5-1				0.5-1				0.5-1				0.5-1			
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF
Volatile Organic Compounds																												
1,2,4-Trimethylbenzene	95-63-6	560	35	mg/kg	ND	U	0.002	0.95	0.4	J	0.095	71.49	ND	U	0.002	0.99	ND	U	0.005	0.86	ND	U	0.005	0.75	ND	U	0.001	0.9
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	3.7	0.005	mg/kg	ND	U	0.002	0.95	ND	U	0.095	71.49	ND	U	0.002	0.99	ND	U	0.005	0.86	ND	U	0.005	0.75	ND	U	0.001	0.9
1,2-Dichloroethane	107-06-2	86	0.5	mg/kg	ND	U	0.002	0.95	ND	U	0.095	71.49	ND	U	0.002	0.99	ND	U	0.005	0.86	ND	U	0.005	0.75	ND	U	0.001	0.9
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	ND	U	0.002	0.95	0.27	J	0.095	71.49	ND	U	0.002	0.99	ND	U	0.005	0.86	ND	U	0.005	0.75	ND	U	0.001	0.9
Benzene	71-43-2	290	0.5	mg/kg	0.006	J	0.0008	0.95	ND	U	0.048	71.49	ND	U	0.0009	0.99	ND	U	0.005	0.86	0.015		0.005	0.75	0.011		0.0006	0.9
Ethylbenzene	100-41-4	890	70	mg/kg	ND	U	0.002	0.95	ND	U	0.095	71.49	ND	U	0.002	0.99	ND	U	0.005	0.86	ND	U	0.005	0.75	ND	U	0.001	0.9
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	ND	U	0.002	0.95	0.22	J	0.095	71.49	ND	U	0.002	0.99	ND	U	0.005	0.86	ND	U	0.005	0.75	0.002	J	0.001	0.9
Methyl Tert-Butyl Ether	1634-04-4	8,600	2	mg/kg	ND	U	0.0008	0.95	ND	U	0.048	71.49	ND	U	0.0009	0.99	ND	U	0.005	0.86	ND	U	0.005	0.75	ND	U	0.0006	0.9
Toluene	108-88-3	10,000	100	mg/kg	0.016		0.002	0.95	ND	U	0.095	71.49	0.002	J	0.002	0.99	ND	U	0.005	0.86	0.005		0.005	0.75	0.005	J	0.001	0.9
Xylenes, Total (Dimethylbenzene)	1330-20-7	8,000	1,000	mg/kg	0.002	J	0.002	0.95	ND	U	0.095	71.49	ND	U	0.002	0.99	ND	U	0.005	0.86	ND	U	0.005	0.75	0.002	J	0.001	0.9
Semi-Volatile Organic Compounds																												
Anthracene	120-12-7	190,000	350	mg/kg	0.14	J	0.08	5	2.1		0.044	5	2.5		0.029	5	0.18		0.018	1	ND	U	0.21	10	0.25		0.042	10
Benzo(A)Anthracene	56-55-3	130	430	mg/kg	0.32	J	0.08	5	1.6		0.044	5	1.7		0.029	5	0.34		0.018	1	ND	U	0.21	10	0.78		0.042	10
Benzo(A)Pyrene	50-32-8	12	46	mg/kg	0.43		0.08	5	1.4		0.044	5	3.5		0.029	5	0.27		0.018	1	ND	U	0.21	10	0.79		0.042	10
Benzo(B)Fluoranthene	205-99-2	76	170	mg/kg	0.61		0.08	5	1.3		0.044	5	3.8		0.029	5	0.31		0.018	1	0.22		0.21	10	1.1		0.042	10
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	0.51		0.08	5	1		0.044	5	4.9		0.029	5	0.22		0.018	1	0.23		0.21	10	0.72		0.042	10
Chrysene	218-01-9	760	230	mg/kg	0.4	J	0.08	5	3.1		0.044	5	2.4		0.029	5	0.31		0.018	1	ND	U	0.21	10	0.89		0.042	10
Fluorene	86-73-7	130,000	3,800	mg/kg	ND	U	0.08	5	3.5		0.044	5	1.1		0.029	5	0.026		0.018	1	ND	U	0.21	10	0.09	J	0.042	10
Naphthalene**	91-20-3	760	25	mg/kg	0.47		0.08	5	3		0.044	5	19		0.029	5	0.056		0.018	1	ND	U	0.21	10	0.47		0.042	10
Phenanthrene	85-01-8	190,000	10,000	mg/kg	0.48		0.08	5	9.3		0.044	5	3.8		0.029	5	0.69		0.018	1	ND	U	0.21	10	0.85		0.042	10
Pyrene	129-00-0	96,000	2,200	mg/kg	0.49		0.08	5	3.5		0.044	5	1.9		0.029	5	0.52		0.018	1	0.26		0.21	10	1.2		0.042	10
Metals																												
Lead*	7439-92-1	2,240	450	mg/kg	1760		0.349	50	232		0.0293	5	545		0.0746	10	77.8		0.207	2	493		2.44	20	1360		0.276	50

Notes:
CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA - Not Analyzed
ft bgs - feet below ground surface
*Site Specific Standard for lead is 2,240 mg/kg

¹PADEP Non-Residential Direct Contact MSC for surface soils (0-2 feet below ground surface) (last updated August 27, 2016).

² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (last updated August 27, 2016).

**Naphthalene was analyzed either as a semi volatile organic compound (analytical method SW8270C SIM) or volatile organic compound (analytical method SW8260B or SW8021B). Naphthalene results are presented on this table as semi-volatile organic compounds. In the event that both methods were used for one sample, the lower of the two detection limits was used.

Qualifiers:
U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
E - Compound was over the calibration range
D- Indicates a dilution

Exceedance Summary:

10

Reported result exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC or the site-specific standard for lead.

10

Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC.

10

DL exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC.

Table 4
Summary of Surface Soil Sample Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Surface Soil Direct Contact MSC ¹	PADEP Non-Residential Soil to Groundwater MSC ²	Location ID	AOI5_BH-13-01				AOI5-BH-13-02				AOI5-BH-13-03				AOI5-BH-13-05				AOI5-BH-13-06				AOI5_BH-13-08			
				Sample ID	AOI5_BH-13-01_1.5-2_031213				AOI5-BH-13-02_0-5				AOI5-BH-13-03_0-5				AOI5-BH-13-05_0-5				AOI5-BH-13-06_0-.25				AOI5_BH-13-08_1.5-2_031113			
				Sample Date	3/12/2013				3/1/2013				3/1/2013				3/1/2013				3/1/2013							
				Sample Depth (ft bgs)	1.5-2				0-0.5				0-0.5				0-0.5				0-0.25				1.5-2			
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF
Volatile Organic Compounds																												
1,2,4-Trimethylbenzene	95-63-6	560	35	mg/kg	ND	U	0.0039	1	ND	U	0.0048	1	ND	U	0.0045	1	ND	U	0.0063	1	ND	U	0.0046	1	ND	U	0.0044	1
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	3.7	0.005	mg/kg	ND	U	0.00078	1	ND	U	0.00096	1	ND	U	0.0009	1	ND	U	0.0013	1	ND	U	0.00091	1	ND	U	0.00087	1
1,2-Dichloroethane	107-06-2	86	0.5	mg/kg	ND	U	0.00078	1	ND	U	0.00096	1	ND	U	0.0009	1	ND	U	0.0013	1	ND	U	0.00091	1	ND	U	0.00087	1
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	ND	U	0.0039	1	ND	U	0.0048	1	ND	U	0.0045	1	ND	U	0.0063	1	ND	U	0.0046	1	ND	U	0.0044	1
Benzene	71-43-2	290	0.5	mg/kg	ND	U	0.00078	1	ND	U	0.00096	1	ND	U	0.0009	1	ND	U	0.0013	1	ND	U	0.00091	1	ND	U	0.00087	1
Ethylbenzene	100-41-4	890	70	mg/kg	ND	U	0.00078	1	ND	U	0.00096	1	ND	U	0.0009	1	ND	U	0.0013	1	ND	U	0.00091	1	ND	U	0.00087	1
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	ND	U	0.0039	1	ND	U	0.0048	1	ND	U	0.0045	1	ND	U	0.0063	1	ND	U	0.0046	1	ND	U	0.0044	1
Methyl Tert-Butyl Ether	1634-04-4	8,600	2	mg/kg	ND	U	0.00078	1	ND	U	0.00096	1	ND	U	0.0009	1	ND	U	0.0013	1	ND	U	0.00091	1	ND	U	0.00087	1
Toluene	108-88-3	10,000	100	mg/kg	ND	U	0.00078	1	ND	U	0.00096	1	ND	U	0.0009	1	ND	U	0.0013	1	ND	U	0.00091	1	ND	U	0.00087	1
Xylenes, Total (Dimethylbenzene)	1330-20-7	8,000	1,000	mg/kg	ND	U	0.00078	1	ND	U	0.00096	1	ND	U	0.0009	1	ND	U	0.0013	1	ND	U	0.00091	1	ND	U	0.00087	1
Semi-Volatile Organic Compounds																												
Anthracene	120-12-7	190,000	350	mg/kg	0.0813		0.033	1	0.0282	J	0.043	1	0.0539		0.04	1	0.195		0.046	1	0.0298	J	0.039	1	ND	U	0.032	1
Benzo(A)Anthracene	56-55-3	130	430	mg/kg	0.2		0.033	1	0.182		0.043	1	0.0683		0.04	1	0.247		0.046	1	0.121		0.039	1	ND	U	0.032	1
Benzo(A)Pyrene	50-32-8	12	46	mg/kg	0.213		0.033	1	0.207		0.043	1	0.0791		0.04	1	0.303		0.046	1	0.143		0.039	1	ND	U	0.032	1
Benzo(B)Fluoranthene	205-99-2	76	170	mg/kg	0.273		0.033	1	0.264		0.043	1	0.168		0.04	1	0.363		0.046	1	0.179		0.039	1	ND	U	0.032	1
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	0.191		0.033	1	0.26		0.043	1	0.112		0.04	1	0.391		0.046	1	0.127		0.039	1	ND	U	0.032	1
Chrysene	218-01-9	760	230	mg/kg	0.216		0.033	1	0.184		0.043	1	0.114		0.04	1	0.308		0.046	1	0.139		0.039	1	ND	U	0.032	1
Fluorene	86-73-7	130,000	3,800	mg/kg	ND	U	0.033	1	ND	U	0.043	1	ND	U	0.04	1	ND	U	0.046	1	ND	U	0.039	1	ND	U	0.032	1
Naphthalene**	91-20-3	760	25	mg/kg	ND	U	0.033	1	ND	U	0.043	1	ND	U	0.04	1	0.0607		0.046	1	0.0187	J	0.039	1	ND	U	0.032	1
Phenanthrene	85-01-8	190,000	10,000	mg/kg	0.192		0.033	1	0.0377	J	0.043	1	0.045		0.04	1	0.166		0.046	1	0.0862		0.039	1	ND	U	0.032	1
Pyrene	129-00-0	96,000	2,200	mg/kg	0.264		0.033	1	0.188		0.043	1	0.124		0.04	1	0.309		0.046	1	0.171		0.039	1	ND	U	0.032	1
Metals																												
Lead*	7439-92-1	2,240	450	mg/kg	331		2.4	1	137		2.6	1	168		2.4	1	1020		2.9	1	485		7.4	3	15.7		2.4	1

Notes:
CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA - Not Analyzed
ft bgs - feet below ground surface
*Site Specific Standard for lead is 2,240 mg/kg

¹PADEP Non-Residential Direct Contact MSC for surface soils (0-2 feet below ground surface) (last updated August 27, 2016).

² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (last updated August 27, 2016).

**Naphthalene was analyzed either as a semi volatile organic compound (analytical method SW8270C SIM) or volatile organic compound (analytical method SW8260B or SW8021B). Naphthalene results are presented on this table as semi-volatile organic compounds. In the event that both methods were used for one sample, the lower of the two detection limits was used.

Qualifiers:
U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
E - Compound was over the calibration range
D- Indicates a dilution

Exceedance Summary:

10	Reported result exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC or the site-specific standard for lead.
10	Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC.
10	DL exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC.

Table 4
Summary of Surface Soil Sample Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Surface Soil Direct Contact MSC ¹	PADEP Non-Residential Soil to Groundwater MSC ²	Location ID	AOI5-BH-13-11				AOI5-BH-13-13				AOI5 BH-13-15				AOI5 BH-13-16				AOI5 BH-13-17				AOI5-BH-13-18			
				Sample ID	A015-BH-13-11_0-.25				A015-BH-13-13_0-.25				AOI5 BH-13-15_1.5-2_031113				AOI5 BH-13-16_1.5-2_031113				AOI5 BH-13-17_1.5-2_031113				A015-BH-13-18_0-.25			
				Sample Date	3/1/2013				3/1/2013				3/11/2013				3/11/2013				3/11/2013				3/1/2013			
				Sample Depth (ft bgs)	0-0.25				0-0.25				1.5-2				1.5-2				1.5-2				0-0.25			
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF
Volatile Organic Compounds																												
1,2,4-Trimethylbenzene	95-63-6	560	35	mg/kg	ND	U	0.0051	1	ND	U	0.0045	1	ND	U	0.0045	1	ND	U	0.56	1	ND	U	0.0058	1	ND	U	0.0056	1
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	3.7	0.005	mg/kg	ND	U	0.001	1	ND	U	0.0009	1	ND	U	0.0009	1	ND	U	0.11	1	ND	U	0.0012	1	ND	U	0.0011	1
1,2-Dichloroethane	107-06-2	86	0.5	mg/kg	ND	U	0.001	1	ND	U	0.0009	1	ND	U	0.0009	1	ND	U	0.11	1	ND	U	0.0012	1	ND	U	0.0011	1
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	ND	U	0.0051	1	ND	U	0.0045	1	ND	U	0.0045	1	ND	U	0.56	1	ND	U	0.0058	1	ND	U	0.0056	1
Benzene	71-43-2	290	0.5	mg/kg	ND	U	0.001	1	ND	U	0.0009	1	ND	U	0.0009	1	0.183		0.11	1	ND	U	0.0012	1	ND	U	0.0011	1
Ethylbenzene	100-41-4	890	70	mg/kg	ND	U	0.001	1	ND	U	0.0009	1	ND	U	0.0009	1	ND	U	0.11	1	ND	U	0.0012	1	ND	U	0.0011	1
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	ND	U	0.0051	1	ND	U	0.0045	1	ND	U	0.0045	1	ND	U	0.56	1	ND	U	0.0058	1	ND	U	0.0056	1
Methyl Tert-Butyl Ether	1634-04-4	8,600	2	mg/kg	ND	U	0.001	1	ND	U	0.0009	1	ND	U	0.0009	1	ND	U	0.11	1	ND	U	0.0012	1	ND	U	0.0011	1
Toluene	108-88-3	10,000	100	mg/kg	ND	U	0.001	1	ND	U	0.0009	1	ND	U	0.0009	1	0.366		0.11	1	ND	U	0.0012	1	ND	U	0.0011	1
Xylenes, Total (Dimethylbenzene)	1330-20-7	8,000	1,000	mg/kg	ND	U	0.001	1	ND	U	0.0009	1	ND	U	0.0009	1	0.294		0.11	1	ND	U	0.0012	1	ND	U	0.0011	1
Semi-Volatile Organic Compounds																												
Anthracene	120-12-7	190,000	350	mg/kg	0.895		0.04	1	0.07		0.04	1	0.108		0.031	1	0.691		0.035	1	0.127		0.034	1	0.0834		0.044	1
Benzo(A)Anthracene	56-55-3	130	430	mg/kg	3.47		0.04	1	0.377		0.04	1	0.242		0.031	1	2.15		0.035	1	0.354		0.034	1	0.359		0.044	1
Benzo(A)Pyrene	50-32-8	12	46	mg/kg	4.13		0.2	5	0.453		0.04	1	0.236		0.031	1	2.38		0.035	1	0.354		0.034	1	0.452		0.044	1
Benzo(B)Fluoranthene	205-99-2	76	170	mg/kg	4.63		0.2	5	0.537		0.04	1	0.272		0.031	1	2.51		0.035	1	0.431		0.034	1	0.49		0.044	1
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	3.53		0.04	1	0.358		0.04	1	0.173		0.031	1	1.49		0.035	1	0.298		0.034	1	0.325		0.044	1
Chrysene	218-01-9	760	230	mg/kg	3.41		0.04	1	0.443		0.04	1	0.236		0.031	1	2.12		0.035	1	0.443		0.034	1	0.387		0.044	1
Fluorene	86-73-7	130,000	3,800	mg/kg	0.178		0.04	1	0.0162	J	0.04	1	0.0418		0.031	1	0.224		0.035	1	ND	U	0.034	1	ND	U	0.044	1
Naphthalene**	91-20-3	760	25	mg/kg	0.0841		0.04	1	0.0212	J	0.04	1	ND	U	0.031	1	0.338		0.035	1	0.0656		0.034	1	0.0546		0.044	1
Phenanthrene	85-01-8	190,000	10,000	mg/kg	3.4		0.04	1	0.282		0.04	1	0.367		0.031	1	1.49		0.035	1	0.363		0.034	1	0.16		0.044	1
Pyrene	129-00-0	96,000	2,200	mg/kg	7.7		0.2	5	0.691		0.04	1	0.45		0.031	1	2.21		0.035	1	0.492		0.034	1	0.389		0.044	1
Metals																												
Lead*	7439-92-1	2,240	450	mg/kg	239		5.3	2	1310		2.4	1	28.6		2.3	1	349		2	1	783		2.3	1	420		2.7	1

Notes:
CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA - Not Analyzed
ft bgs - feet below ground surface
*Site Specific Standard for lead is 2,240 mg/kg

¹PADEP Non-Residential Direct Contact MSC for surface soils (0-2 feet below ground surface) (last updated August 27, 2016).

² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (last updated August 27, 2016).

**Naphthalene was analyzed either as a semi volatile organic compound (analytical method SW8270C SIM) or volatile organic compound (analytical method SW8260B or SW8021B). Naphthalene results are presented on this table as semi-volatile organic compounds. In the event that both methods were used for one sample, the lower of the two detection limits was used.

Qualifiers:
U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
E - Compound was over the calibration range
D- Indicates a dilution

Exceedance Summary:

10	Reported result exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC or the site-specific standard for lead.
10	Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC.
10	DL exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC.

Table 4
Summary of Surface Soil Sample Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Surface Soil Direct Contact MSC ¹	PADEP Non-Residential Soil to Groundwater MSC ²	Location ID	AOI5-BH-13-19				AOI5 BH-13-22				AOI5 BH-13-25				AOI5 BH-13-26				AOI5-BH-13-27				AOI5 BH-13-28			
				Sample ID	AOI5-BH-13-19_5-1				AOI5 BH-13-22_1.5-2_030813				AOI5 BH-13-25_1.5-2_030813				AOI5 BH-13-26_1.5-2_030813				AOI5 BH-13-27_1.5-2_30713				AOI5 BH-13-28_1.5-2_30713			
				Sample Date	3/1/2013				3/8/2013				3/8/2013				3/8/2013				3/7/2013				3/7/2013			
				Sample Depth (ft bgs)	0.5-1				1.5-2				1-1.5				1.5-2				1.5-2				1.5-2			
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF
Volatile Organic Compounds																												
1,2,4-Trimethylbenzene	95-63-6	560	35	mg/kg	ND	U	0.0051	1	ND	U	0.0056	1	ND	U	0.54	1	ND	U	0.0048	1	ND	U	0.8	1	ND	U	0.006	1
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	3.7	0.005	mg/kg	ND	U	0.001	1	ND	U	0.0011	1	ND	U	0.11	1	ND	U	0.00097	1	ND	U	0.16	1	ND	U	0.0012	1
1,2-Dichloroethane	107-06-2	86	0.5	mg/kg	ND	U	0.001	1	ND	U	0.0011	1	ND	U	0.11	1	ND	U	0.00097	1	ND	U	0.16	1	ND	U	0.0012	1
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	ND	U	0.0051	1	ND	U	0.0056	1	ND	U	0.54	1	ND	U	0.0048	1	ND	U	0.8	1	ND	U	0.006	1
Benzene	71-43-2	290	0.5	mg/kg	ND	U	0.001	1	0.0012		0.0011	1	0.906		0.11	1	ND	U	0.00097	1	12.4		0.16	1	0.0012		0.0012	1
Ethylbenzene	100-41-4	890	70	mg/kg	ND	U	0.001	1	ND	U	0.0011	1	0.964		0.11	1	ND	U	0.00097	1	ND	U	0.16	1	ND	U	0.0012	1
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	ND	U	0.0051	1	ND	U	0.0056	1	3.15		0.54	1	ND	U	0.0048	1	62.4		4	1	ND	U	0.006	1
Methyl Tert-Butyl Ether	1634-04-4	8,600	2	mg/kg	ND	U	0.001	1	ND	U	0.0011	1	ND	U	0.11	1	ND	U	0.00097	1	ND	U	0.16	1	ND	U	0.0012	1
Toluene	108-88-3	10,000	100	mg/kg	ND	U	0.001	1	0.0016		0.0011	1	0.953		0.11	1	ND	U	0.00097	1	ND	U	0.16	1	ND	U	0.0012	1
Xylenes, Total (Dimethylbenzene)	1330-20-7	8,000	1,000	mg/kg	ND	U	0.001	1	ND	U	0.0011	1	2.02		0.11	1	ND	U	0.00097	1	ND	U	0.16	1	ND	U	0.0012	1
Semi-Volatile Organic Compounds																												
Anthracene	120-12-7	190,000	350	mg/kg	0.232		0.041	1	3.23		0.19	5	2.5		0.19	5	1.13		0.042	1	0.318		0.045	1	12.6	E	0.041	1
Benzo(A)Anthracene	56-55-3	130	430	mg/kg	0.92		0.041	1	1.54		0.19	5	1.12		0.19	5	3.2		0.042	1	1.4		0.045	1	21.9	E	0.041	1
Benzo(A)Pyrene	50-32-8	12	46	mg/kg	1.08		0.041	1	1.41		0.19	5	1.05		0.19	5	3.05		0.042	1	1.48		0.045	1	19.4	E	0.041	1
Benzo(B)Fluoranthene	205-99-2	76	170	mg/kg	1.22		0.041	1	2.39		0.19	5	1.22		0.19	5	3.85		0.042	1	1.29		0.045	1	26.9	E	0.041	1
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	0.678		0.041	1	1.03		0.19	5	0.685		0.19	5	2.02		0.042	1	1.53		0.045	1	12.7	E	0.041	1
Chrysene	218-01-9	760	230	mg/kg	0.924		0.041	1	2.11		0.19	5	1.47		0.19	5	3.31		0.042	1	1.54		0.045	1	20.6	E	0.041	1
Fluorene	86-73-7	130,000	3,800	mg/kg	ND	U	0.041	1	5.99		0.19	5	6.13		0.19	5	0.48		0.042	1	0.107		0.045	1	6.4	E	0.041	1
Naphthalene**	91-20-3	760	25	mg/kg	0.0809		0.041	1	ND	U	0.19	5	ND	U	0.19	5	0.426		0.042	1	0.125		0.045	1	0.96		0.041	1
Phenanthrene	85-01-8	190,000	10,000	mg/kg	0.235		0.041	1	10.1		0.19	5	12.1		0.19	5	6.5		0.084	2	1.12		0.045	1	53.7	E	0.041	1
Pyrene	129-00-0	96,000	2,200	mg/kg	ND	U	0.041	1	6.64		0.19	5	3.52		0.19	5	6.5		0.084	2	2.15		0.045	1	35.5	E	0.041	1
Metals																												
Lead*	7439-92-1	2,240	450	mg/kg	333		2.4	1	128		2.5	1	79.5		2.6	1	1190		2.7	1	2730		4	2	1590		2	1

Notes:
CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA - Not Analyzed
ft bgs - feet below ground surface
*Site Specific Standard for lead is 2,240 mg/kg

¹PADEP Non-Residential Direct Contact MSC for surface soils (0-2 feet below ground surface) (last updated August 27, 2016).

² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (last updated August 27, 2016).

**Naphthalene was analyzed either as a semi volatile organic compound (analytical method SW8270C SIM) or volatile organic compound (analytical method SW8260B or SW8021B). Naphthalene results are presented on this table as semi-volatile organic compounds. In the event that both methods were used for one sample, the lower of the two detection limits was used.

Qualifiers:
U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
E - Compound was over the calibration range
D- Indicates a dilution

Exceedance Summary:	
10	Reported result exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC or the site-specific standard for lead.
10 10	Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC. DL exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC.

Table 4
Summary of Surface Soil Sample Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Surface Soil Direct Contact MSC ¹	PADEP Non-Residential Soil to Groundwater MSC ²	Location ID	AOI5_BH-13-29				AOI5_BH-13-30				AOI5_BH-13-31				AOI5_BH-13-32				AOI5_BH-13-33				AOI5_BH-13-34				
				Sample ID	AOI5_BH-13-29_1-1.5_30613				AOI5_BH-13-30_1.5-2_30713				AOI5_BH-13-31_1.5-2_30613				AOI5_BH-13-32_1.5-2_30613				AOI5_BH-13-33_1.5-2_30713				AOI5_BH-13-34_1.5-2_30613				
				Sample Date	3/6/2013				3/7/2013				3/6/2013				3/6/2013				3/7/2013				3/6/2013				
				Sample Depth (ft bgs)	1-1.5				1.5-2				1.5-2				1.5-2				1.5-2				1.5-2				
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result
Volatile Organic Compounds																													
1,2,4-Trimethylbenzene	95-63-6	560	35	mg/kg	ND	U	46	1	0.0107		0.0045	1	ND	U	0.005	1	ND	U	110	2.5	ND	U	0.37	1	ND	U	0.68	1	
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	3.7	0.005	mg/kg	ND	U	9.3	1	ND	U	0.0009	1	ND	U	0.001	1	ND	U	21	2.5	ND	U	0.073	1	ND	U	0.14	1	
1,2-Dichloroethane	107-06-2	86	0.5	mg/kg	ND	U	9.3	1	ND	U	0.0009	1	ND	U	0.001	1	ND	U	21	2.5	ND	U	0.073	1	ND	U	0.14	1	
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	ND	U	46	1	0.006		0.0045	1	ND	U	0.005	1	ND	U	110	2.5	ND	U	0.37	1	ND	U	0.68	1	
Benzene	71-43-2	290	0.5	mg/kg	ND	U	9.3	1	ND	U	0.0009	1	0.0161		0.001	1	1070		21	2.5	ND	U	0.073	1	13.6		0.14	1	
Ethylbenzene	100-41-4	890	70	mg/kg	ND	U	9.3	1	ND	U	0.0009	1	ND	U	0.001	1	ND	U	21	2.5	ND	U	0.073	1	0.701		0.14	1	
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	15500		460	5	ND	U	0.0045	1	0.0093		0.005	1	9330		1100	25	ND	U	0.37	1	1650		170	2.5	
Methyl Tert-Butyl Ether	1634-04-4	8,600	2	mg/kg	ND	U	9.3	1	ND	U	0.0009	1	ND	U	0.001	1	ND	U	21	2.5	ND	U	0.073	1	ND	U	0.14	1	
Toluene	108-88-3	10,000	100	mg/kg	ND	U	9.3	1	ND	U	0.0009	1	ND	U	0.001	1	ND	U	21	2.5	ND	U	0.073	1	ND	U	0.14	1	
Xylenes, Total (Dimethylbenzene)	1330-20-7	8,000	1,000	mg/kg	ND	U	9.3	1	0.0073		0.0009	1	ND	U	0.001	1	ND	U	21	2.5	0.0879		0.073	1	ND	U	0.14	1	
Semi-Volatile Organic Compounds																													
Anthracene	120-12-7	190,000	350	mg/kg	0.199		0.052	1	0.403		0.074	2	0.0522		0.043	1	0.653		0.044	1	0.281		0.039	1	0.309		0.04	1	
Benzo(A)Anthracene	56-55-3	130	430	mg/kg	0.538		0.052	1	0.772		0.074	2	0.137		0.043	1	1.99		0.044	1	0.858		0.039	1	1.24		0.04	1	
Benzo(A)Pyrene	50-32-8	12	46	mg/kg	0.426		0.052	1	0.708		0.074	2	0.127		0.043	1	1.88		0.044	1	0.876		0.039	1	1.4		0.04	1	
Benzo(B)Fluoranthene	205-99-2	76	170	mg/kg	0.597		0.052	1	0.563		0.074	2	0.16		0.043	1	2.45		0.044	1	0.993		0.039	1	1.33		0.04	1	
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	0.293		0.052	1	0.622		0.074	2	0.129		0.043	1	1.29		0.044	1	0.783		0.039	1	0.933		0.04	1	
Chrysene	218-01-9	760	230	mg/kg	0.548		0.052	1	0.776		0.074	2	0.159		0.043	1	2.13		0.044	1	0.925		0.039	1	1.32		0.04	1	
Fluorene	86-73-7	130,000	3,800	mg/kg	0.168		0.052	1	0.235		0.074	2	ND	U	0.043	1	0.451		0.044	1	0.526		0.039	1	0.209		0.04	1	
Naphthalene**	91-20-3	760	25	mg/kg	ND	U	0.052	1	0.329		0.074	2	ND	U	0.043	1	1.64		0.044	1	0.14		0.039	1	0.186		0.04	1	
Phenanthrene	85-01-8	190,000	10,000	mg/kg	0.998		0.052	1	1.39		0.074	2	0.145		0.043	1	3.33		0.044	1	1.43		0.039	1	1.37		0.04	1	
Pyrene	129-00-0	96,000	2,200	mg/kg	0.989		0.052	1	1.21		0.074	2	0.221		0.043	1	3		0.044	1	1.45		0.039	1	1.53		0.04	1	
Metals																													
Lead*	7439-92-1	2,240	450	mg/kg	195		2	1	446		1.8	1	365		1.9	1	2020		6	3	1090		2	1	851		2.1	1	

Notes:
CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA - Not Analyzed
ft bgs - feet below ground surface
*Site Specific Standard for lead is 2,240 mg/kg

¹PADEP Non-Residential Direct Contact MSC for surface soils (0-2 feet below ground surface) (last updated August 27, 2016).

² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (last updated August 27, 2016).

**Naphthalene was analyzed either as a semi volatile organic compound (analytical method SW8270C SIM) or volatile organic compound (analytical method SW8260B or SW8021B). Naphthalene results are presented on this table as semi-volatile organic compounds. In the event that both methods were used for one sample, the lower of the two detection limits was used.

Qualifiers:
U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
E - Compound was over the calibration range
D- Indicates a dilution

Exceedance Summary:

10

Reported result exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC or the site-specific standard for lead.

10

Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC.

10

DL exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC.

Table 4
Summary of Surface Soil Sample Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Surface Soil Direct Contact MSC ¹	PADEP Non-Residential Soil to Groundwater MSC ²	Location ID	AOI5_BH-13-35				AOI5_BH-13-36				AOI5_BH-13-37				AOI5_BH-13-38				AOI5_BH-13-39				AOI-5_BH-13-42			
				Sample ID	AOI5_BH-13-35_1.5-2_30613				AOI5_BH-13-36_1.5-2_30613				AOI5_BH-13-37_1.5-2_030513				AOI5_BH-13-38_1.5-2_030513				AOI5_BH-13-39_1.5-2_030513				BH-13-42-1.5-2_030413			
				Sample Date	3/6/2013				3/6/2013				3/5/2013				3/5/2013				3/5/2013				3/4/2013			
				Sample Depth (ft bgs)	1.5-2				1.5-2				1.5-2				1.5-2				1.5-2				1.5-2			
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF
Volatile Organic Compounds																												
1,2,4-Trimethylbenzene	95-63-6	560	35	mg/kg	ND	U	0.006	1	ND	U	0.51	1	ND	U	0.0041	1	ND	U	0.0069	1	ND	U	0.0052	1	ND	U	0.0042	1
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	3.7	0.005	mg/kg	ND	U	0.0012	1	ND	U	0.1	1	ND	U	0.00081	1	ND	U	0.0014	1	ND	U	0.001	1	ND	U	0.00084	1
1,2-Dichloroethane	107-06-2	86	0.5	mg/kg	ND	U	0.0012	1	ND	U	0.1	1	ND	U	0.00081	1	ND	U	0.0014	1	ND	U	0.001	1	ND	U	0.00084	1
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	ND	U	0.006	1	ND	U	0.51	1	ND	U	0.0041	1	ND	U	0.0069	1	ND	U	0.0052	1	ND	U	0.0042	1
Benzene	71-43-2	290	0.5	mg/kg	0.0512		0.0012	1	2.62		0.1	1	0.0021		0.00081	1	ND	U	0.0014	1	0.00025	J	0.001	1	ND	U	0.00084	1
Ethylbenzene	100-41-4	890	70	mg/kg	ND	U	0.0012	1	ND	U	0.1	1	ND	U	0.00081	1	ND	U	0.0014	1	ND	U	0.001	1	ND	U	0.00084	1
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	ND	U	0.006	1	881		25	1	ND	U	0.0041	1	ND	U	0.0069	1	ND	U	0.0052	1	ND	U	0.0042	1
Methyl Tert-Butyl Ether	1634-04-4	8,600	2	mg/kg	ND	U	0.0012	1	ND	U	0.1	1	ND	U	0.00081	1	ND	U	0.0014	1	ND	U	0.001	1	ND	U	0.00084	1
Toluene	108-88-3	10,000	100	mg/kg	ND	U	0.0012	1	ND	U	0.1	1	ND	U	0.00081	1	ND	U	0.0014	1	ND	U	0.001	1	ND	U	0.00084	1
Xylenes, Total (Dimethylbenzene)	1330-20-7	8,000	1,000	mg/kg	ND	U	0.0012	1	ND	U	0.1	1	ND	U	0.00081	1	ND	U	0.0014	1	ND	U	0.001	1	ND	U	0.00084	1
Semi-Volatile Organic Compounds																												
Anthracene	120-12-7	190,000	350	mg/kg	0.358		0.039	1	0.161		0.076	2	0.0396		0.035	1	0.036	J	0.045	1	0.209		0.044	1	0.075		0.038	1
Benzo(A)Anthracene	56-55-3	130	430	mg/kg	0.851		0.039	1	0.468		0.076	2	0.182		0.035	1	0.233		0.045	1	0.685		0.044	1	0.247		0.038	1
Benzo(A)Pyrene	50-32-8	12	46	mg/kg	0.198		0.039	1	0.438		0.076	2	0.192		0.035	1	0.224		0.045	1	0.756		0.044	1	0.315		0.038	1
Benzo(B)Fluoranthene	205-99-2	76	170	mg/kg	0.823		0.039	1	0.484		0.076	2	0.205		0.035	1	0.263		0.045	1	0.71		0.044	1	0.294		0.038	1
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	0.287		0.039	1	0.327		0.076	2	0.12		0.035	1	0.137		0.045	1	0.556		0.044	1	0.225		0.038	1
Chrysene	218-01-9	760	230	mg/kg	1.17		0.039	1	0.526		0.076	2	0.194		0.035	1	0.245		0.045	1	0.713		0.044	1	0.27		0.038	1
Fluorene	86-73-7	130,000	3,800	mg/kg	0.504		0.039	1	0.0949		0.076	2	0.0158	J	0.035	1	ND	U	0.045	1	0.0439	J	0.044	1	0.0164	J	0.038	1
Naphthalene**	91-20-3	760	25	mg/kg	0.212		0.039	1	ND	U	0.076	2	0.0191	J	0.035	1	0.014	J	0.045	1	0.0511		0.044	1	0.0446		0.038	1
Phenanthrene	85-01-8	190,000	10,000	mg/kg	6.19		0.19	5	0.691		0.076	2	0.158		0.035	1	0.141		0.045	1	0.611		0.044	1	0.147		0.038	1
Pyrene	129-00-0	96,000	2,200	mg/kg	2.32		0.039	1	0.772		0.076	2	0.27		0.035	1	0.289		0.045	1	0.925		0.044	1	0.276		0.038	1
Metals																												
Lead*	7439-92-1	2,240	450	mg/kg	1500		2	1	201		2	1	284		2.4	1	3600		7.9	3	1120		2.8	1	496		2.5	1

Notes:
CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA - Not Analyzed
ft bgs - feet below ground surface
*Site Specific Standard for lead is 2,240 mg/kg

¹PADEP Non-Residential Direct Contact MSC for surface soils (0-2 feet below ground surface) (last updated August 27, 2016).

² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (last updated August 27, 2016).

**Naphthalene was analyzed either as a semi volatile organic compound (analytical method SW8270C SIM) or volatile organic compound (analytical method SW8260B or SW8021B). Naphthalene results are presented on this table as semi-volatile organic compounds. In the event that both methods were used for one sample, the lower of the two detection limits was used.

Qualifiers:
U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
E - Compound was over the calibration range
D- Indicates a dilution

Exceedance Summary:

10	Reported result exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC or the site-specific standard for lead.
10	Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC.
10	DL exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC.

Table 4
Summary of Surface Soil Sample Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Surface Soil Direct Contact MSC ¹	PADEP Non-Residential Soil to Groundwater MSC ²	Location ID	AOI5_BH-13-43				AOI5_BH-13-44				AOI5_BH-13-116				AOI5_BH-13-117				AOI5_BH-13-121				AOI5_BH-13-122			
				Sample ID	BH-13-43-1.5-2_030513				AOI5_BH-13-44_1.5-2_030813				AOI-5_BH-13-116_0-5_102913				AOI-5_BH-13-117_0-5_102913				AOI-5_BH-13-121_102913_0-0.5				AOI-5_BH-13-122_0-5_102913			
				Sample Date	3/5/2013				3/8/2013				10/29/2013				10/29/2013				10/29/2013				10/29/2013			
				Sample Depth (ft bgs)	1.5-2				1.5-2				0-0.5				0-0.5				0-0.5				0-0.5			
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF
Volatile Organic Compounds																												
1,2,4-Trimethylbenzene	95-63-6	560	35	mg/kg	ND	U	0.0048	1	ND	U	0.0044	1	ND	U	0.0074	1	ND	U	0.0066	1	ND	U	0.0054	1	ND	U	0.012	1
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	3.7	0.005	mg/kg	ND	U	0.00097	1	ND	U	0.00087	1	ND	U	0.004	1	ND	U	0.0037	1	ND	U	0.0034	1	ND	U	0.0053	1
1,2-Dichloroethane	107-06-2	86	0.5	mg/kg	ND	U	0.00097	1	ND	U	0.00087	1	ND	U	0.0015	1	ND	U	0.0013	1	ND	U	0.0011	1	ND	U	0.0025	1
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	ND	U	0.0048	1	ND	U	0.0044	1	ND	U	0.0074	1	ND	U	0.0066	1	ND	U	0.0054	1	ND	U	0.012	1
Benzene	71-43-2	290	0.5	mg/kg	0.0004	J	0.00097	1	ND	U	0.00087	1	ND	U	0.0015	1	ND	U	0.0013	1	ND	U	0.0011	1	ND	U	0.0025	1
Ethylbenzene	100-41-4	890	70	mg/kg	ND	U	0.00097	1	ND	U	0.00087	1	ND	U	0.0015	1	ND	U	0.0013	1	ND	U	0.0011	1	ND	U	0.0025	1
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	ND	U	0.0048	1	0.0044		0.0044	1	ND	U	0.0074	1	ND	U	0.0066	1	ND	U	0.0054	1	ND	U	0.012	1
Methyl Tert-Butyl Ether	1634-04-4	8,600	2	mg/kg	ND	U	0.00097	1	ND	U	0.00087	1	ND	U	0.0015	1	ND	U	0.0013	1	ND	U	0.0011	1	ND	U	0.0025	1
Toluene	108-88-3	10,000	100	mg/kg	ND	U	0.00097	1	ND	U	0.00087	1	ND	U	0.0015	1	ND	U	0.0013	1	ND	U	0.0011	1	ND	U	0.0025	1
Xylenes, Total (Dimethylbenzene)	1330-20-7	8,000	1,000	mg/kg	ND	U	0.00097	1	ND	U	0.00087	1	ND	U	0.0015	1	ND	U	0.0013	1	ND	U	0.0011	1	ND	U	0.0025	1
Semi-Volatile Organic Compounds																												
Anthracene	120-12-7	190,000	350	mg/kg	0.137		0.042	1	0.155		0.033	1	0.0795		0.054	1	0.195		0.049	1	0.111		0.044	1	0.132		0.067	1
Benzo(A)Anthracene	56-55-3	130	430	mg/kg	0.617		0.042	1	0.592		0.033	1	0.392		0.054	1	1.01		0.049	1	0.544		0.044	1	0.67		0.067	1
Benzo(A)Pyrene	50-32-8	12	46	mg/kg	0.799		0.042	1	0.696		0.033	1	0.534		0.054	1	0.991		0.049	1	0.631		0.044	1	0.8		0.067	1
Benzo(B)Fluoranthene	205-99-2	76	170	mg/kg	0.91		0.042	1	0.937		0.033	1	0.684		0.054	1	1.16		0.049	1	0.822		0.044	1	1.02		0.067	1
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	0.719		0.042	1	0.66		0.033	1	0.433		0.054	1	0.641		0.049	1	0.436		0.044	1	0.542		0.067	1
Chrysene	218-01-9	760	230	mg/kg	0.695		0.042	1	0.599		0.033	1	0.608		0.054	1	1.35		0.049	1	0.717		0.044	1	0.96		0.067	1
Fluorene	86-73-7	130,000	3,800	mg/kg	0.0517		0.042	1	0.0341		0.033	1	ND	U	0.054	1	0.036	J	0.049	1	0.0413	J	0.044	1	0.0456	J	0.067	1
Naphthalene**	91-20-3	760	25	mg/kg	0.109		0.042	1	0.0669		0.033	1	0.027	J	0.054	1	0.0232	J	0.049	1	0.0357	J	0.044	1	0.031	J	0.067	1
Phenanthrene	85-01-8	190,000	10,000	mg/kg	0.356		0.042	1	0.304		0.033	1	0.388		0.054	1	1.03		0.049	1	0.514		0.044	1	0.764		0.067	1
Pyrene	129-00-0	96,000	2,200	mg/kg	0.698		0.042	1	0.687		0.033	1	0.88		0.054	1	2.64		0.049	1	1		0.044	1	1.42		0.067	1
Metals																												
Lead*	7439-92-1	2,240	450	mg/kg	1080		2.6	1	950		2.1	1	724		1.2	1	704		1.1	1	1160		1	1	1450		1.7	1

Notes:
CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA - Not Analyzed
ft bgs - feet below ground surface
*Site Specific Standard for lead is 2,240 mg/kg

¹PADEP Non-Residential Direct Contact MSC for surface soils (0-2 feet below ground surface) (last updated August 27, 2016).

² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (last updated August 27, 2016).

**Naphthalene was analyzed either as a semi volatile organic compound (analytical method SW8270C SIM) or volatile organic compound (analytical method SW8260B or SW8021B). Naphthalene results are presented on this table as semi-volatile organic compounds. In the event that both methods were used for one sample, the lower of the two detection limits was used.

Qualifiers:
U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
E - Compound was over the calibration range
D- Indicates a dilution

Exceedance Summary:

10

Reported result exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC or the site-specific standard for lead.

10

Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC.

10

DL exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC.

Table 4
Summary of Surface Soil Sample Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Surface Soil Direct Contact MSC ¹	PADEP Non-Residential Soil to Groundwater MSC ²	Location ID	AOI5_BH-13-123				AOI5_BH-13-124				AOI5_BH-13-125				AOI5_BH-13-126				AOI5_BH-13-127				AOI5_BH-13-128			
				Sample ID	AOI-5_BH-13-123_0-5_102913				AOI-5_BH-13-124_0-5_102913				AOI-5_BH-13-125_0-5_102913				AOI-5_BH-13-126_0-0.5_102913				AOI-5_BH-13-127-0-1_103013				AOI-5_BH-13-128-0-1_103013			
				Sample Date	10/29/2013				10/29/2013				10/29/2013				10/29/2013				10/30/2013				10/30/2013			
				Sample Depth (ft bgs)	0-0.5				0-0.5				0-0.5				0-0.5				0-1				0-1			
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF
Volatile Organic Compounds																												
1,2,4-Trimethylbenzene	95-63-6	560	35	mg/kg	ND	U	0.011	1	ND	U	0.013	1	ND	U	0.0074	1	ND	U	0.0041	1	ND	U	0.0066	1	ND	U	0.0059	1
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	3.7	0.005	mg/kg	ND	U	0.0043	1	ND	U	0.0043	1	ND	U	0.004	1	ND	U	0.0039	1	ND	U	0.0028	1	ND	U	0.0027	1
1,2-Dichloroethane	107-06-2	86	0.5	mg/kg	ND	U	0.0023	1	ND	U	0.0027	1	ND	U	0.0015	1	ND	U	0.00083	1	ND	U	0.0013	1	ND	U	0.0012	1
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	ND	U	0.011	1	ND	U	0.013	1	ND	U	0.0074	1	ND	U	0.0041	1	ND	U	0.0066	1	ND	U	0.0059	1
Benzene	71-43-2	290	0.5	mg/kg	ND	U	0.0023	1	ND	U	0.0027	1	ND	U	0.0015	1	ND	U	0.00083	1	ND	U	0.0013	1	ND	U	0.0012	1
Ethylbenzene	100-41-4	890	70	mg/kg	ND	U	0.0023	1	ND	U	0.0027	1	ND	U	0.0015	1	ND	U	0.00083	1	ND	U	0.0013	1	ND	U	0.0012	1
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	ND	U	0.011	1	ND	U	0.013	1	ND	U	0.0074	1	ND	U	0.0041	1	ND	U	0.0066	1	ND	U	0.0059	1
Methyl Tert-Butyl Ether	1634-04-4	8,600	2	mg/kg	ND	U	0.0023	1	ND	U	0.0027	1	ND	U	0.0015	1	ND	U	0.00083	1	ND	U	0.0013	1	ND	U	0.0012	1
Toluene	108-88-3	10,000	100	mg/kg	ND	U	0.0023	1	ND	U	0.0027	1	ND	U	0.0015	1	ND	U	0.00083	1	ND	U	0.0013	1	ND	U	0.0012	1
Xylenes, Total (Dimethylbenzene)	1330-20-7	8,000	1,000	mg/kg	ND	U	0.0023	1	ND	U	0.0027	1	ND	U	0.0015	1	ND	U	0.00083	1	ND	U	0.0013	1	ND	U	0.0012	1
Semi-Volatile Organic Compounds																												
Anthracene	120-12-7	190,000	350	mg/kg	0.685		0.053	1	0.126		0.053	1	0.327		0.052	1	0.106		0.05	1	0.0566		0.033	1	0.178		0.072	2
Benzo(A)Anthracene	56-55-3	130	430	mg/kg	2.57		0.053	1	0.198		0.053	1	0.349		0.052	1	0.141		0.05	1	0.159		0.033	1	0.489		0.072	2
Benzo(A)Pyrene	50-32-8	12	46	mg/kg	2.27		0.053	1	0.303		0.053	1	0.512		0.052	1	0.195		0.05	1	0.169		0.033	1	0.453		0.072	2
Benzo(B)Fluoranthene	205-99-2	76	170	mg/kg	2.66		0.053	1	0.312		0.053	1	0.656		0.052	1	0.219		0.05	1	0.214		0.033	1	0.656		0.072	2
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	1.49		0.053	1	0.522		0.053	1	1.37		0.052	1	0.323		0.05	1	0.122		0.033	1	0.328		0.072	2
Chrysene	218-01-9	760	230	mg/kg	2.67		0.053	1	0.354		0.053	1	0.808		0.052	1	0.193		0.05	1	0.2		0.033	1	0.575		0.072	2
Fluorene	86-73-7	130,000	3,800	mg/kg	0.0877		0.053	1	ND	U	0.053	1	0.0767		0.052	1	ND	U	0.05	1	ND	U	0.033	1	0.0609	J	0.072	2
Naphthalene**	91-20-3	760	25	mg/kg	0.0404	J	0.053	1	0.0675		0.053	1	0.0462	J	0.052	1	0.0253	J	0.05	1	ND	U	0.033	1	ND	U	0.072	2
Phenanthrene	85-01-8	190,000	10,000	mg/kg	1.83		0.053	1	0.165		0.053	1	0.32		0.052	1	0.103		0.05	1	0.158		0.033	1	0.672		0.072	2
Pyrene	129-00-0	96,000	2,200	mg/kg	4.31		0.053	1	0.324		0.053	1	0.717		0.052	1	0.186		0.05	1	0.294		0.033	1	0.791		0.072	2
Metals																												
Lead*	7439-92-1	2,240	450	mg/kg	1780		5.7	5	1350		1.2	1	2890		12	10	2950		12	10	62.9		0.88	1	115		0.9	1

Notes:
CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA - Not Analyzed
ft bgs - feet below ground surface
*Site Specific Standard for lead is 2,240 mg/kg

¹PADEP Non-Residential Direct Contact MSC for surface soils (0-2 feet below ground surface) (last updated August 27, 2016).

² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (last updated August 27, 2016).

**Naphthalene was analyzed either as a semi volatile organic compound (analytical method SW8270C SIM) or volatile organic compound (analytical method SW8260B or SW8021B). Naphthalene results are presented on this table as semi-volatile organic compounds. In the event that both methods were used for one sample, the lower of the two detection limits was used.

Qualifiers:
U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
E - Compound was over the calibration range
D- Indicates a dilution

Exceedance Summary:

10	Reported result exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC or the site-specific standard for lead.
10	Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC.
10	DL exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC.

Table 4
Summary of Surface Soil Sample Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Surface Soil Direct Contact MSC ¹	PADEP Non-Residential Soil to Groundwater MSC ²	Location ID	AOI5_BH-13-129				AOI5_BH-13-130				AOI5_BH-13-131				AOI5_BH-13-132				AOI5_BH-13-133				AOI5_BH-13-134			
				Sample ID	AOI-5_BH-13-129-0-1_103013				AOI-5_BH-13-130_0-1_103013				AOI-5_BH-13-131_0-1_103013				AOI-5_BH-13-132_0-1_103013				AOI-5_BH-13-133_0-1_103013				AOI-5_BH-13-134_0-1_103013			
				Sample Date	10/30/2013				10/30/2013				10/30/2013				10/30/2013				10/30/2013				10/30/2013			
				Sample Depth (ft bgs)	0-1				0-1				0-1				0-1				0-1				0-1			
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF
Volatile Organic Compounds																												
1,2,4-Trimethylbenzene	95-63-6	560	35	mg/kg	ND	U	0.0054	1	ND	U	0.0076	1	ND	U	0.0075	1	ND	U	0.0061	1	ND	U	0.0055	1	ND	U	0.0062	1
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	3.7	0.005	mg/kg	ND	U	0.0026	1	ND	U	0.0027	1	ND	U	0.0027	1	ND	U	0.0026	1	ND	U	0.0026	1	ND	U	0.0026	1
1,2-Dichloroethane	107-06-2	86	0.5	mg/kg	ND	U	0.0011	1	ND	U	0.0015	1	ND	U	0.0015	1	ND	U	0.0012	1	ND	U	0.0011	1	ND	U	0.0012	1
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	ND	U	0.0054	1	ND	U	0.0076	1	ND	U	0.0075	1	ND	U	0.0061	1	ND	U	0.0055	1	ND	U	0.0062	1
Benzene	71-43-2	290	0.5	mg/kg	ND	U	0.0011	1	ND	U	0.0015	1	ND	U	0.0015	1	ND	U	0.0012	1	ND	U	0.0011	1	ND	U	0.0012	1
Ethylbenzene	100-41-4	890	70	mg/kg	ND	U	0.0011	1	ND	U	0.0015	1	ND	U	0.0015	1	ND	U	0.0012	1	ND	U	0.0011	1	ND	U	0.0012	1
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	ND	U	0.0054	1	ND	U	0.0076	1	ND	U	0.0075	1	ND	U	0.0061	1	ND	U	0.0055	1	ND	U	0.0062	1
Methyl Tert-Butyl Ether	1634-04-4	8,600	2	mg/kg	ND	U	0.0011	1	ND	U	0.0015	1	ND	U	0.0015	1	ND	U	0.0012	1	ND	U	0.0011	1	ND	U	0.0012	1
Toluene	108-88-3	10,000	100	mg/kg	ND	U	0.0011	1	ND	U	0.0015	1	ND	U	0.0015	1	ND	U	0.0012	1	ND	U	0.0011	1	ND	U	0.0012	1
Xylenes, Total (Dimethylbenzene)	1330-20-7	8,000	1,000	mg/kg	ND	U	0.0011	1	ND	U	0.0015	1	ND	U	0.0015	1	ND	U	0.0012	1	ND	U	0.0011	1	ND	U	0.0012	1
Semi-Volatile Organic Compounds																												
Anthracene	120-12-7	190,000	350	mg/kg	0.273		0.035	1	0.0788	J	0.16	5	0.0989		0.066	2	ND	U	0.16	5	0.0786		0.034	1	0.15		0.068	2
Benzo(A)Anthracene	56-55-3	130	430	mg/kg	0.746		0.035	1	0.165		0.16	5	0.355		0.066	2	0.154	J	0.16	5	0.176		0.034	1	0.301		0.068	2
Benzo(A)Pyrene	50-32-8	12	46	mg/kg	0.7		0.035	1	0.182		0.16	5	0.345		0.066	2	0.176		0.16	5	0.22		0.034	1	0.313		0.068	2
Benzo(B)Fluoranthene	205-99-2	76	170	mg/kg	0.875		0.035	1	0.26		0.16	5	0.41		0.066	2	0.239		0.16	5	0.28		0.034	1	0.397		0.068	2
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	0.467		0.035	1	0.173		0.16	5	0.208		0.066	2	0.167		0.16	5	0.189		0.034	1	0.221		0.068	2
Chrysene	218-01-9	760	230	mg/kg	0.822		0.035	1	0.189		0.16	5	0.377		0.066	2	0.178		0.16	5	0.241		0.034	1	0.363		0.068	2
Fluorene	86-73-7	130,000	3,800	mg/kg	0.0734		0.035	1	ND	U	0.16	5	ND	U	0.066	2	ND	U	0.16	5	ND	U	0.034	1	ND	U	0.068	2
Naphthalene**	91-20-3	760	25	mg/kg	0.0414		0.035	1	ND	U	0.16	5	ND	U	0.066	2	ND	U	0.16	5	ND	U	0.034	1	0.0642	J	0.068	2
Phenanthrene	85-01-8	190,000	10,000	mg/kg	1.11		0.035	1	0.108	J	0.16	5	0.191		0.066	2	0.0959	J	0.16	5	0.129		0.034	1	0.508		0.068	2
Pyrene	129-00-0	96,000	2,200	mg/kg	1.22		0.035	1	0.223		0.16	5	0.409		0.066	2	0.197		0.16	5	0.273		0.034	1	0.49		0.068	2
Metals																												
Lead*	7439-92-1	2,240	450	mg/kg	171		0.88	1	52.8		0.89	1	48.5		0.87	1	47.6		0.86	1	74.8		0.84	1	55.2		0.9	1

Notes:
CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA - Not Analyzed
ft bgs - feet below ground surface
*Site Specific Standard for lead is 2,240 mg/kg

¹PADEP Non-Residential Direct Contact MSC for surface soils (0-2 feet below ground surface) (last updated August 27, 2016).

² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (last updated August 27, 2016).

**Naphthalene was analyzed either as a semi volatile organic compound (analytical method SW8270C SIM) or volatile organic compound (analytical method SW8260B or SW8021B). Naphthalene results are presented on this table as semi-volatile organic compounds. In the event that both methods were used for one sample, the lower of the two detection limits was used.

Qualifiers:
U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
E - Compound was over the calibration range
D- Indicates a dilution

Exceedance Summary:	
10	Reported result exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC or the site-specific standard for lead.
10 10	Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC. DL exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC.

Table 4
Summary of Surface Soil Sample Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Surface Soil Direct Contact MSC ¹	PADEP Non-Residential Soil to Groundwater MSC ²	Location ID	AOI5_BH-13-135				AOI5_BH-13-136				AOI5_BH-13-137				AOI5_BH-13-138				AOI5_BH-13-139				AOI5_BH-13-140			
				Sample ID	AOI-5_BH-13-135-0-1_103013				AOI5-BH-13-136_103013_0-1				AOI5-BH-13-137_103013_0-1				AOI5-BH-13-138_103013_0-1				AOI5-BH-13-139_103013_0-1				AOI5-BH-13-140_103013_0-1			
				Sample Date	10/30/2013				10/30/2013				10/30/2013				10/30/2013				10/30/2013				10/30/2013			
				Sample Depth (ft bgs)	0-1				0-1				0-1				0-1				0-1				0-1			
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF
Volatile Organic Compounds																												
1,2,4-Trimethylbenzene	95-63-6	560	35	mg/kg	ND	U	0.0061	1	ND	U	0.006	1	ND	U	0.0057	1	ND	U	0.0071	1	ND	U	0.0061	1	ND	U	0.0067	1
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	3.7	0.005	mg/kg	ND	U	0.0026	1	ND	U	0.0026	1	ND	U	0.0027	1	ND	U	0.0029	1	ND	U	0.0027	1	ND	U	0.0027	1
1,2-Dichloroethane	107-06-2	86	0.5	mg/kg	ND	U	0.0012	1	ND	U	0.0012	1	ND	U	0.0011	1	ND	U	0.0014	1	ND	U	0.0012	1	ND	U	0.0013	1
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	ND	U	0.0061	1	ND	U	0.006	1	ND	U	0.0057	1	ND	U	0.0071	1	ND	U	0.0061	1	ND	U	0.0067	1
Benzene	71-43-2	290	0.5	mg/kg	ND	U	0.0012	1	ND	U	0.0012	1	ND	U	0.0011	1	ND	U	0.0014	1	ND	U	0.0012	1	ND	U	0.0013	1
Ethylbenzene	100-41-4	890	70	mg/kg	ND	U	0.0012	1	ND	U	0.0012	1	ND	U	0.0011	1	ND	U	0.0014	1	ND	U	0.0012	1	ND	U	0.0013	1
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	ND	U	0.0061	1	ND	U	0.006	1	ND	U	0.0057	1	ND	U	0.0071	1	ND	U	0.0061	1	ND	U	0.0067	1
Methyl Tert-Butyl Ether	1634-04-4	8,600	2	mg/kg	ND	U	0.0012	1	ND	U	0.0012	1	ND	U	0.0011	1	ND	U	0.0014	1	ND	U	0.0012	1	ND	U	0.0013	1
Toluene	108-88-3	10,000	100	mg/kg	ND	U	0.0012	1	ND	U	0.0012	1	ND	U	0.0011	1	ND	U	0.0014	1	ND	U	0.0012	1	ND	U	0.0013	1
Xylenes, Total (Dimethylbenzene)	1330-20-7	8,000	1,000	mg/kg	ND	U	0.0012	1	ND	U	0.0012	1	ND	U	0.0011	1	ND	U	0.0014	1	ND	U	0.0012	1	ND	U	0.0013	1
Semi-Volatile Organic Compounds																												
Anthracene	120-12-7	190,000	350	mg/kg	0.0862		0.034	1	0.0696	J	0.16	1	0.113	J	0.16	1	0.0873	J	0.19	1	0.214		0.16	1	ND	U	0.17	1
Benzo(A)Anthracene	56-55-3	130	430	mg/kg	0.198		0.034	1	0.206		0.16	1	0.271		0.16	1	0.206		0.19	1	0.455		0.16	1	0.205		0.17	1
Benzo(A)Pyrene	50-32-8	12	46	mg/kg	0.266		0.034	1	0.303		0.16	1	0.29		0.16	1	0.22		0.19	1	0.462		0.16	1	0.25		0.17	1
Benzo(B)Fluoranthene	205-99-2	76	170	mg/kg	0.333		0.034	1	0.28		0.16	1	0.456		0.16	1	0.341		0.19	1	0.523		0.16	1	0.296		0.17	1
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	0.222		0.034	1	0.259		0.16	1	0.314		0.16	1	0.301		0.19	1	0.397		0.16	1	0.212		0.17	1
Chrysene	218-01-9	760	230	mg/kg	0.262		0.034	1	0.25		0.16	1	0.278		0.16	1	0.243		0.19	1	0.476		0.16	1	0.25		0.17	1
Fluorene	86-73-7	130,000	3,800	mg/kg	ND	U	0.034	1	ND	U	0.16	1	ND	U	0.16	1	ND	U	0.19	1	0.145	J	0.16	1	ND	U	0.17	1
Naphthalene**	91-20-3	760	25	mg/kg	ND	U	0.034	1	ND	U	0.16	1	ND	U	0.16	1	ND	U	0.19	1	ND	U	0.16	1	ND	U	0.17	1
Phenanthrene	85-01-8	190,000	10,000	mg/kg	0.242		0.034	1	0.101	J	0.16	1	0.244		0.16	1	0.106	J	0.19	1	0.623		0.16	1	0.105	J	0.17	1
Pyrene	129-00-0	96,000	2,200	mg/kg	0.343		0.034	1	0.401		0.16	1	0.516		0.16	1	0.403		0.19	1	0.874		0.16	1	0.295		0.17	1
Metals																												
Lead*	7439-92-1	2,240	450	mg/kg	60.9		0.83	1	53.4		0.9	1	39.1		0.91	1	35.1		0.97	1	69.2		0.86	1	57.2		0.92	1

Notes:
CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA - Not Analyzed
ft bgs - feet below ground surface
*Site Specific Standard for lead is 2,240 mg/kg

¹PADEP Non-Residential Direct Contact MSC for surface soils (0-2 feet below ground surface) (last updated August 27, 2016).

² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (last updated August 27, 2016).

**Naphthalene was analyzed either as a semi volatile organic compound (analytical method SW8270C SIM) or volatile organic compound (analytical method SW8260B or SW8021B). Naphthalene results are presented on this table as semi-volatile organic compounds. In the event that both methods were used for one sample, the lower of the two detection limits was used.

Qualifiers:
U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
E - Compound was over the calibration range
D- Indicates a dilution

Exceedance Summary:

10	Reported result exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC or the site-specific standard for lead.
10	Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC.
10	DL exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC.

Table 4
Summary of Surface Soil Sample Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Surface Soil Direct Contact MSC ¹	PADEP Non-Residential Soil to Groundwater MSC ²	Location ID	AOI5_BH-13-141				AOI5_BH-13-142				AOI5_BH-13-143				AOI5_BH-13-144				AOI5_BH-13-145				AOI5_BH-13-146			
				Sample ID	AOI5-BH-13-141_103013_0-1				AOI5-BH-13-142_103013_0-1				AOI5-BH-13-143_103013_0-1				AOI5-BH-13-144_103013_0-1				AOI5-BH-13-145_103013_0-1				AOI5-BH-13-146_103013_0-1			
				Sample Date	10/30/2013				10/30/2013				10/30/2013				10/30/2013				10/30/2013				10/30/2013			
				Sample Depth (ft bgs)	0-1				0-1				0-1				0-1				0-1				0-1			
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF
Volatile Organic Compounds																												
1,2,4-Trimethylbenzene	95-63-6	560	35	mg/kg	ND	U	0.0061	1	ND	U	0.0074	1	ND	U	0.006	1	ND	U	0.0056	1	ND	U	0.0059	1	ND	U	0.0074	1
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	3.7	0.005	mg/kg	ND	U	0.0026	1	ND	U	0.0028	1	ND	U	0.0027	1	ND	U	0.0027	1	ND	U	0.0027	1	ND	U	0.0026	1
1,2-Dichloroethane	107-06-2	86	0.5	mg/kg	ND	U	0.0012	1	ND	U	0.0015	1	ND	U	0.0012	1	ND	U	0.0011	1	ND	U	0.0012	1	ND	U	0.0015	1
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	ND	U	0.0061	1	ND	U	0.0074	1	ND	U	0.006	1	ND	U	0.0056	1	ND	U	0.0059	1	ND	U	0.0074	1
Benzene	71-43-2	290	0.5	mg/kg	ND	U	0.0012	1	ND	U	0.0015	1	ND	U	0.0012	1	ND	U	0.0011	1	ND	U	0.0012	1	ND	U	0.0015	1
Ethylbenzene	100-41-4	890	70	mg/kg	ND	U	0.0012	1	ND	U	0.0015	1	ND	U	0.0012	1	ND	U	0.0011	1	ND	U	0.0012	1	ND	U	0.0015	1
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	ND	U	0.0061	1	ND	U	0.0074	1	ND	U	0.006	1	ND	U	0.0056	1	ND	U	0.0059	1	ND	U	0.0074	1
Methyl Tert-Butyl Ether	1634-04-4	8,600	2	mg/kg	ND	U	0.0012	1	ND	U	0.0015	1	ND	U	0.0012	1	ND	U	0.0011	1	ND	U	0.0012	1	ND	U	0.0015	1
Toluene	108-88-3	10,000	100	mg/kg	ND	U	0.0012	1	ND	U	0.0015	1	ND	U	0.0012	1	ND	U	0.0011	1	ND	U	0.0012	1	ND	U	0.0015	1
Xylenes, Total (Dimethylbenzene)	1330-20-7	8,000	1,000	mg/kg	ND	U	0.0012	1	ND	U	0.0015	1	ND	U	0.0012	1	ND	U	0.0011	1	ND	U	0.0012	1	ND	U	0.0015	1
Semi-Volatile Organic Compounds																												
Anthracene	120-12-7	190,000	350	mg/kg	0.121	J	0.17	1	0.0841	J	0.18	1	0.109	J	0.17	1	0.071		0.035	1	0.133	J	0.18	1	0.256		0.17	1
Benzo(A)Anthracene	56-55-3	130	430	mg/kg	0.227		0.17	1	0.271		0.18	1	0.269		0.17	1	0.209		0.035	1	0.317		0.18	1	0.585		0.17	1
Benzo(A)Pyrene	50-32-8	12	46	mg/kg	0.302		0.17	1	0.414		0.18	1	0.347		0.17	1	0.256		0.035	1	0.402		0.18	1	0.725		0.17	1
Benzo(B)Fluoranthene	205-99-2	76	170	mg/kg	0.381		0.17	1	0.348		0.18	1	0.439		0.17	1	0.324		0.035	1	0.509		0.18	1	0.765		0.17	1
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	0.257		0.17	1	0.337		0.18	1	0.269		0.17	1	0.293		0.035	1	0.405		0.18	1	0.607		0.17	1
Chrysene	218-01-9	760	230	mg/kg	0.263		0.17	1	0.264		0.18	1	0.31		0.17	1	0.252		0.035	1	0.417		0.18	1	0.719		0.17	1
Fluorene	86-73-7	130,000	3,800	mg/kg	0.111	J	0.17	1	ND	U	0.18	1	ND	U	0.17	1	ND	U	0.035	1	ND	U	0.18	1	ND	U	0.17	1
Naphthalene**	91-20-3	760	25	mg/kg	ND	U	0.17	1	0.0822	J	0.18	1	ND	U	0.17	1	0.0481		0.035	1	ND	U	0.18	1	ND	U	0.17	1
Phenanthrene	85-01-8	190,000	10,000	mg/kg	0.127	J	0.17	1	0.161	J	0.18	1	0.342		0.17	1	0.185		0.035	1	0.296		0.18	1	0.539		0.17	1
Pyrene	129-00-0	96,000	2,200	mg/kg	0.393		0.17	1	0.44		0.18	1	0.532		0.17	1	0.425		0.035	1	0.642		0.18	1	1.29		0.17	1
Metals																												
Lead*	7439-92-1	2,240	450	mg/kg	76.8		0.9	1	37.9		0.93	1	40.1		0.88	1	4060		8.9	10	80.4		0.92	1	49.4		0.84	1

Notes:
CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA - Not Analyzed
ft bgs - feet below ground surface
*Site Specific Standard for lead is 2,240 mg/kg

¹PADEP Non-Residential Direct Contact MSC for surface soils (0-2 feet below ground surface) (last updated August 27, 2016).

² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (last updated August 27, 2016).

**Naphthalene was analyzed either as a semi volatile organic compound (analytical method SW8270C SIM) or volatile organic compound (analytical method SW8260B or SW8021B). Naphthalene results are presented on this table as semi-volatile organic compounds. In the event that both methods were used for one sample, the lower of the two detection limits was used.

Qualifiers:
U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
E - Compound was over the calibration range
D- Indicates a dilution

Exceedance Summary:

10

Reported result exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC or the site-specific standard for lead.

10

Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC.

10

DL exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC.

Table 4
Summary of Surface Soil Sample Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Surface Soil Direct Contact MSC ¹	PADEP Non-Residential Soil to Groundwater MSC ²	Location ID	AOI5_BH-13-147				AOI5_BH-13-148				AOI5_BH-13-149				AOI5_BH-13-149				AOI5_BH-13-150				AOI5_BH-13-151			
				Sample ID	AOI5-BH-13-147_103013_0-1				AOI5-BH-13-148_103013_0-1				AOI5-BH-13-149_103013_0-1				AOI5-BH-13-DUP-103013_0-1				AOI5-BH-13-150_103013_0-1				AOI5-BH-13-151_103013_0-1			
				Sample Date	10/30/2013				10/30/2013				10/30/2013				10/30/2013				10/30/2013				10/30/2013			
				Sample Depth (ft bgs)	0-1				0-1				0-1				0-1				0-1				0-1			
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF
Volatile Organic Compounds																												
1,2,4-Trimethylbenzene	95-63-6	560	35	mg/kg	ND	U	0.0057	1	ND	U	0.0061	1	ND	U	0.0063	1	ND	U	0.0056	1	ND	U	0.0082	1	ND	U	0.007	1
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	3.7	0.005	mg/kg	ND	U	0.0027	1	ND	U	0.0027	1	ND	U	0.0027	1	ND	U	0.0027	1	ND	U	0.0029	1	ND	U	0.003	1
1,2-Dichloroethane	107-06-2	86	0.5	mg/kg	ND	U	0.0011	1	ND	U	0.0012	1	ND	U	0.0013	1	ND	U	0.0011	1	ND	U	0.0016	1	ND	U	0.0014	1
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	ND	U	0.0057	1	ND	U	0.0061	1	ND	U	0.0063	1	ND	U	0.0056	1	ND	U	0.0082	1	ND	U	0.007	1
Benzene	71-43-2	290	0.5	mg/kg	ND	U	0.0011	1	ND	U	0.0012	1	ND	U	0.0013	1	ND	U	0.0011	1	ND	U	0.0016	1	ND	U	0.0014	1
Ethylbenzene	100-41-4	890	70	mg/kg	ND	U	0.0011	1	ND	U	0.0012	1	ND	U	0.0013	1	ND	U	0.0011	1	ND	U	0.0016	1	ND	U	0.0014	1
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	ND	U	0.0057	1	ND	U	0.0061	1	ND	U	0.0063	1	ND	U	0.0056	1	ND	U	0.0082	1	ND	U	0.007	1
Methyl Tert-Butyl Ether	1634-04-4	8,600	2	mg/kg	ND	U	0.0011	1	ND	U	0.0012	1	ND	U	0.0013	1	ND	U	0.0011	1	ND	U	0.0016	1	ND	U	0.0014	1
Toluene	108-88-3	10,000	100	mg/kg	ND	U	0.0011	1	ND	U	0.0012	1	ND	U	0.0013	1	ND	U	0.0011	1	ND	U	0.0016	1	ND	U	0.0014	1
Xylenes, Total (Dimethylbenzene)	1330-20-7	8,000	1,000	mg/kg	ND	U	0.0011	1	ND	U	0.0012	1	ND	U	0.0013	1	ND	U	0.0011	1	ND	U	0.0016	1	ND	U	0.0014	1
Semi-Volatile Organic Compounds																												
Anthracene	120-12-7	190,000	350	mg/kg	0.112	J	0.17	1	0.0753	J	0.17	1	0.0401		0.034	1	0.041		0.035	1	0.293		0.038	1	0.161		0.076	2
Benzo(A)Anthracene	56-55-3	130	430	mg/kg	0.25		0.17	1	0.203		0.17	1	0.117		0.034	1	0.122		0.035	1	1.08		0.038	1	0.81		0.076	2
Benzo(A)Pyrene	50-32-8	12	46	mg/kg	0.323		0.17	1	0.288		0.17	1	0.144		0.034	1	0.147		0.035	1	1.14		0.038	1	1.03		0.076	2
Benzo(B)Fluoranthene	205-99-2	76	170	mg/kg	0.376		0.17	1	0.313		0.17	1	0.168		0.034	1	0.169		0.035	1	1.39		0.038	1	1.31		0.076	2
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	0.232		0.17	1	0.233		0.17	1	0.13		0.034	1	0.151		0.035	1	0.762		0.038	1	0.68		0.076	2
Chrysene	218-01-9	760	230	mg/kg	0.302		0.17	1	0.231		0.17	1	0.147		0.034	1	0.159		0.035	1	1.23		0.038	1	1		0.076	2
Fluorene	86-73-7	130,000	3,800	mg/kg	ND	U	0.17	1	ND	U	0.17	1	ND	U	0.034	1	ND	U	0.035	1	0.0827		0.038	1	ND	U	0.076	2
Naphthalene**	91-20-3	760	25	mg/kg	ND	U	0.17	1	ND	U	0.17	1	ND	U	0.034	1	ND	U	0.035	1	0.0517		0.038	1	ND	U	0.076	2
Phenanthrene	85-01-8	190,000	10,000	mg/kg	0.151	J	0.17	1	0.137	J	0.17	1	0.104		0.034	1	0.0864		0.035	1	1.41		0.038	1	0.565		0.076	2
Pyrene	129-00-0	96,000	2,200	mg/kg	0.444		0.17	1	0.372		0.17	1	0.267		0.034	1	0.246		0.035	1	2.35		0.038	1	1.5		0.076	2
Metals																												
Lead*	7439-92-1	2,240	450	mg/kg	43.5		0.89	1	44.9		0.89	1	42.5		0.88	1	39.4		0.9	1	1750		4.8	5	1020		1	1

Notes:
CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA - Not Analyzed
ft bgs - feet below ground surface
*Site Specific Standard for lead is 2,240 mg/kg

¹PADEP Non-Residential Direct Contact MSC for surface soils (0-2 feet below ground surface) (last updated August 27, 2016).

² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (last updated August 27, 2016).

**Naphthalene was analyzed either as a semi volatile organic compound (analytical method SW8270C SIM) or volatile organic compound (analytical method SW8260B or SW8021B). Naphthalene results are presented on this table as semi-volatile organic compounds. In the event that both methods were used for one sample, the lower of the two detection limits was used.

Qualifiers:
U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
E - Compound was over the calibration range
D- Indicates a dilution

Exceedance Summary:

10	Reported result exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC or the site-specific standard for lead.
10	Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC.
10	DL exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC.

Table 4
Summary of Surface Soil Sample Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Surface Soil Direct Contact MSC ¹	PADEP Non-Residential Soil to Groundwater MSC ²	Location ID	AOI5 BH-13-152				AOI5 BH-13-153				AOI5 BH-13-154				AOI5 BH-13-155				AOI5 BH-13-156				AOI5 BH-13-158			
				Sample ID	AOI5-BH-13-152_103013_0-1				AOI5-BH-13-153_103013_0-1				AOI-5 BH-13-154_0-0.5_102913				AOI-5 BH-13-155_0-5_102913				AOI-5 BH-13-156_0-5_102913				AOI-5 BH-13-158_0-1_102913			
				Sample Date	10/30/2013				10/30/2013				10/29/2013				10/29/2013				10/29/2013				10/29/2013			
				Sample Depth (ft bgs)	0-1				0-1				0-0.5				0-0.5				0-0.5				0-1			
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF
Volatile Organic Compounds																												
1,2,4-Trimethylbenzene	95-63-6	560	35	mg/kg	ND	U	0.0062	1	ND	U	0.006	1	ND	U	0.0075	1	ND	U	0.0062	1	ND	U	0.0076	1	ND	U	0.0072	1
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	3.7	0.005	mg/kg	ND	U	0.0031	1	ND	U	0.003	1	ND	U	0.0033	1	ND	U	0.003	1	ND	U	0.0031	1	ND	U	0.0031	1
1,2-Dichloroethane	107-06-2	86	0.5	mg/kg	ND	U	0.0012	1	ND	U	0.0012	1	ND	U	0.0015	1	ND	U	0.0012	1	ND	U	0.0015	1	ND	U	0.0014	1
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	ND	U	0.0062	1	ND	U	0.006	1	ND	U	0.0075	1	ND	U	0.0062	1	ND	U	0.0076	1	ND	U	0.0072	1
Benzene	71-43-2	290	0.5	mg/kg	ND	U	0.0012	1	ND	U	0.0012	1	ND	U	0.0015	1	ND	U	0.0012	1	ND	U	0.0015	1	ND	U	0.0014	1
Ethylbenzene	100-41-4	890	70	mg/kg	ND	U	0.0012	1	ND	U	0.0012	1	ND	U	0.0015	1	ND	U	0.0012	1	ND	U	0.0015	1	ND	U	0.0014	1
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	ND	U	0.0062	1	ND	U	0.006	1	ND	U	0.0075	1	ND	U	0.0062	1	ND	U	0.0076	1	ND	U	0.0072	1
Methyl Tert-Butyl Ether	1634-04-4	8,600	2	mg/kg	ND	U	0.0012	1	ND	U	0.0012	1	ND	U	0.0015	1	ND	U	0.0012	1	ND	U	0.0015	1	ND	U	0.0014	1
Toluene	108-88-3	10,000	100	mg/kg	ND	U	0.0012	1	ND	U	0.0012	1	ND	U	0.0015	1	ND	U	0.0012	1	ND	U	0.0015	1	ND	U	0.0014	1
Xylenes, Total (Dimethylbenzene)	1330-20-7	8,000	1,000	mg/kg	ND	U	0.0012	1	ND	U	0.0012	1	ND	U	0.0015	1	ND	U	0.0012	1	ND	U	0.0015	1	ND	U	0.0014	1
Semi-Volatile Organic Compounds																												
Anthracene	120-12-7	190,000	350	mg/kg	0.393		0.039	1	0.352		0.038	1	0.128		0.043	1	0.19		0.039	1	0.134		0.041	1	0.583		0.037	1
Benzo(A)Anthracene	56-55-3	130	430	mg/kg	1.25		0.039	1	1.8		0.038	1	0.497		0.043	1	0.68		0.039	1	0.391		0.041	1	1.34		0.037	1
Benzo(A)Pyrene	50-32-8	12	46	mg/kg	1.25		0.039	1	1.74		0.038	1	0.574		0.043	1	0.781		0.039	1	0.467		0.041	1	1.33		0.037	1
Benzo(B)Fluoranthene	205-99-2	76	170	mg/kg	1.52		0.039	1	2.27		0.038	1	0.768		0.043	1	1.02		0.039	1	0.633		0.041	1	1.68		0.037	1
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	0.838		0.039	1	1.08		0.038	1	0.477		0.043	1	0.664		0.039	1	0.424		0.041	1	0.989		0.037	1
Chrysene	218-01-9	760	230	mg/kg	1.29		0.039	1	2.2		0.038	1	0.617		0.043	1	0.833		0.039	1	0.43		0.041	1	1.48		0.037	1
Fluorene	86-73-7	130,000	3,800	mg/kg	0.112		0.039	1	0.0977		0.038	1	ND	U	0.043	1	0.0364	J	0.039	1	ND	U	0.041	1	0.321		0.037	1
Naphthalene**	91-20-3	760	25	mg/kg	0.0368	J	0.039	1	0.0468		0.038	1	0.038	J	0.043	1	0.0585		0.039	1	0.0485		0.041	1	0.412		0.037	1
Phenanthrene	85-01-8	190,000	10,000	mg/kg	1.45		0.039	1	1.48		0.038	1	0.406		0.043	1	0.52		0.039	1	0.289		0.041	1	2.27		0.037	1
Pyrene	129-00-0	96,000	2,200	mg/kg	2.58		0.039	1	3.45		0.038	1	0.784		0.043	1	1.04		0.039	1	0.536		0.041	1	2.14		0.037	1
Metals																												
Lead*	7439-92-1	2,240	450	mg/kg	2290		5	5	1270		0.99	1	1840		11	10	1690		9.7	10	1350		0.98	1	1190		1	1

Notes:
CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA - Not Analyzed
ft bgs - feet below ground surface
*Site Specific Standard for lead is 2,240 mg/kg

¹PADEP Non-Residential Direct Contact MSC for surface soils (0-2 feet below ground surface) (last updated August 27, 2016).

² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (last updated August 27, 2016).

**Naphthalene was analyzed either as a semi volatile organic compound (analytical method SW8270C SIM) or volatile organic compound (analytical method SW8260B or SW8021B). Naphthalene results are presented on this table as semi-volatile organic compounds. In the event that both methods were used for one sample, the lower of the two detection limits was used.

Qualifiers:
U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
E - Compound was over the calibration range
D- Indicates a dilution

Exceedance Summary:

10

Reported result exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC or the site-specific standard for lead.

10

Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC.

10

DL exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC.

Table 4
Summary of Surface Soil Sample Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Surface Soil Direct Contact MSC ¹	PADEP Non-Residential Soil to Groundwater MSC ²	Location ID	AOI5_BH-13-159				AOI5_BH-14-01				AOI5_BH-14-02				AOI5_BH-14-03				AOI5_BH-14-04				AOI5_BH-14-05			
				Sample ID	AOI-5_BH-13-159_0-1_102913				AOI5_BH-14-01				AOI5_BH-14-02				AOI5_BH-14-03				AOI5_BH-14-04				AOI5_BH-14-05			
				Sample Date	10/29/2013				3/17/2014				3/17/2014				3/17/2014				3/17/2014				3/18/2014			
				Sample Depth (ft bgs)	0-1				0-2				0-2				0-2				0-2				0-2			
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF
Volatile Organic Compounds																												
1,2,4-Trimethylbenzene	95-63-6	560	35	mg/kg	ND	U	0.0052	1	ND	U	0.007	1	0.0013	J	0.0095	1	ND	U	35	1	ND	U	0.46	1	ND	U	0.0057	1
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	3.7	0.005	mg/kg	ND	U	0.003	1	ND	U	0.0036	1	ND	U	0.0035	1	ND	U	0.0029	1	ND	U	0.0034	1	ND	U	0.0028	1
1,2-Dichloroethane	107-06-2	86	0.5	mg/kg	ND	U	0.001	1	ND	U	0.0014	1	ND	U	0.0019	1	ND	U	7	1	ND	U	0.092	1	ND	U	0.0011	1
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	ND	U	0.0052	1	ND	U	0.007	1	ND	U	0.0095	1	ND	U	35	1	ND	U	0.46	1	ND	U	0.0057	1
Benzene	71-43-2	290	0.5	mg/kg	ND	U	0.001	1	ND	U	0.0014	1	ND	U	0.0019	1	ND	U	7	1	56.7		0.92	1	ND	U	0.0011	1
Ethylbenzene	100-41-4	890	70	mg/kg	ND	U	0.001	1	ND	U	0.0014	1	ND	U	0.0019	1	44.2		7	1	ND	U	0.092	1	ND	U	0.0011	1
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	ND	U	0.0052	1	ND	U	0.007	1	ND	U	0.0095	1	21100		3500	100	15.1		0.46	1	ND	U	0.0057	1
Methyl Tert-Butyl Ether	1634-04-4	8,600	2	mg/kg	ND	U	0.001	1	ND	U	0.0014	1	ND	U	0.0019	1	ND	U	7	1	ND	U	0.092	1	ND	U	0.0011	1
Toluene	108-88-3	10,000	100	mg/kg	ND	U	0.001	1	0.00066	J	0.0014	1	ND	U	0.0019	1	ND	U	7	1	0.0199	J	0.092	1	ND	U	0.0011	1
Xylenes, Total (Dimethylbenzene)	1330-20-7	8,000	1,000	mg/kg	ND	U	0.001	1	ND	U	0.0014	1	ND	U	0.0019	1	ND	U	7	1	ND	U	0.092	1	ND	U	0.0011	1
Semi-Volatile Organic Compounds																												
Anthracene	120-12-7	190,000	350	mg/kg	0.0202	J	0.037	1	0.0623		0.047	1	0.0482		0.045	1	0.0301	J	0.035	1	0.0475		0.042	1	0.0575		0.033	1
Benzo(A)Anthracene	56-55-3	130	430	mg/kg	0.035	J	0.037	1	0.0408	J	0.047	1	0.198		0.045	1	0.13		0.035	1	0.166		0.042	1	0.214		0.033	1
Benzo(A)Pyrene	50-32-8	12	46	mg/kg	0.0647		0.037	1	0.0621		0.047	1	0.24		0.045	1	0.136		0.035	1	0.163		0.042	1	0.227		0.033	1
Benzo(B)Fluoranthene	205-99-2	76	170	mg/kg	0.0787		0.037	1	0.0608		0.047	1	0.287		0.045	1	0.168		0.035	1	0.21		0.042	1	0.289		0.033	1
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	0.0814		0.037	1	0.132		0.047	1	0.183		0.045	1	0.103		0.035	1	0.122		0.042	1	0.2		0.033	1
Chrysene	218-01-9	760	230	mg/kg	0.0427		0.037	1	0.0394	J	0.047	1	0.212		0.045	1	0.153		0.035	1	0.206		0.042	1	0.271		0.033	1
Fluorene	86-73-7	130,000	3,800	mg/kg	ND	U	0.037	1	ND	U	0.047	1	ND	U	0.045	1	ND	U	0.035	1	0.0168	J	0.042	1	ND	U	0.033	1
Naphthalene**	91-20-3	760	25	mg/kg	ND	U	0.037	1	0.025	J	0.047	1	ND	U	0.045	1	ND	U	0.035	1	0.0414	J	0.042	1	ND	U	0.033	1
Phenanthrene	85-01-8	190,000	10,000	mg/kg	0.0198	J	0.037	1	0.0304	J	0.047	1	0.164		0.045	1	0.0849		0.035	1	0.155		0.042	1	0.151		0.033	1
Pyrene	129-00-0	96,000	2,200	mg/kg	0.0377		0.037	1	ND	U	0.047	1	ND	U	0.045	1	ND	U	0.035	1	ND	U	0.042	1	0.426		0.033	1
Metals																												
Lead*	7439-92-1	2,240	450	mg/kg	158		0.9	1	175		2	1	2130		5.8	3	47.1		2.3	1	40.6		2	1	45.7		2.2	1

Notes:
CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA - Not Analyzed
ft bgs - feet below ground surface
*Site Specific Standard for lead is 2,240 mg/kg

¹PADEP Non-Residential Direct Contact MSC for surface soils (0-2 feet below ground surface) (last updated August 27, 2016).

² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (last updated August 27, 2016).

**Naphthalene was analyzed either as a semi volatile organic compound (analytical method SW8270C SIM) or volatile organic compound (analytical method SW8260B or SW8021B). Naphthalene results are presented on this table as semi-volatile organic compounds. In the event that both methods were used for one sample, the lower of the two detection limits was used.

Qualifiers:
U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
E - Compound was over the calibration range
D- Indicates a dilution

Exceedance Summary:

10

Reported result exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC or the site-specific standard for lead.

10

Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC.

10

DL exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC.

Table 4
Summary of Surface Soil Sample Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Surface Soil Direct Contact MSC ¹	PADEP Non-Residential Soil to Groundwater MSC ²	Location ID	AOI5_BH-14-06				AOI5_BH-14-06				AOI5_BH-14-07				AOI5_BH-14-08				AOI5_BH-14-09				AOI5_BH-14-10			
				Sample ID	AOI5_BH-14-06				AOI5_BH-14-DUP1				AOI5_BH-14-07				AOI5_BH-14-08				AOI5_BH-14-09				AOI5_BH-14-10			
				Sample Date	3/14/2014				3/14/2014				3/14/2014				3/14/2014				3/18/2014				3/18/2014			
				Sample Depth (ft bgs)	0-2				0-2				0-2				0-2				0-2				0-2			
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF
Volatile Organic Compounds																												
1,2,4-Trimethylbenzene	95-63-6	560	35	mg/kg	NA				NA				NA				NA				ND	U	0.0058	1	ND	U	0.0068	1
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	3.7	0.005	mg/kg	NA				NA				NA				NA				ND	U	0.0028	1	ND	U	0.0028	1
1,2-Dichloroethane	107-06-2	86	0.5	mg/kg	NA				NA				NA				NA				ND	U	0.0012	1	ND	U	0.0014	1
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	NA				NA				NA				NA				ND	U	0.0058	1	ND	U	0.0068	1
Benzene	71-43-2	290	0.5	mg/kg	ND	U	0.0017	1	ND	U	0.0017	1	ND	U	0.0019	1	ND	U	0.0019	1	ND	U	0.0012	1	ND	U	0.0014	1
Ethylbenzene	100-41-4	890	70	mg/kg	ND	U	0.0017	1	ND	U	0.0017	1	ND	U	0.0019	1	ND	U	0.0019	1	ND	U	0.0012	1	ND	U	0.0014	1
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	NA				NA				NA				NA				ND	U	0.0058	1	ND	U	0.0068	1
Methyl Tert-Butyl Ether	1634-04-4	8,600	2	mg/kg	NA				NA				NA				NA				ND	U	0.0012	1	ND	U	0.0014	1
Toluene	108-88-3	10,000	100	mg/kg	ND	U	0.0017	1	ND	U	0.0017	1	ND	U	0.0019	1	ND	U	0.0019	1	ND	U	0.0012	1	ND	U	0.0014	1
Xylenes, Total (Dimethylbenzene)	1330-20-7	8,000	1,000	mg/kg	ND	U	0.0017	1	ND	U	0.0017	1	0.0039		0.0019	1	ND	U	0.0019	1	ND	U	0.0012	1	ND	U	0.0014	1
Semi-Volatile Organic Compounds																												
Anthracene	120-12-7	190,000	350	mg/kg	NA				NA				NA				NA				0.0479	J	0.066	2	0.079		0.035	1
Benzo(A)Anthracene	56-55-3	130	430	mg/kg	NA				NA				NA				NA				0.18		0.066	2	0.264		0.035	1
Benzo(A)Pyrene	50-32-8	12	46	mg/kg	0.2		0.045	1	ND	U	0.23	1	ND	U	0.049	1	0.337		0.047	1	0.217		0.066	2	0.29		0.035	1
Benzo(B)Fluoranthene	205-99-2	76	170	mg/kg	NA				NA				NA				NA				0.267		0.066	2	0.388		0.035	1
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	NA				NA				NA				NA				0.203		0.066	2	0.23		0.035	1
Chrysene	218-01-9	760	230	mg/kg	NA				NA				NA				NA				0.212		0.066	2	0.356		0.035	1
Fluorene	86-73-7	130,000	3,800	mg/kg	NA				NA				NA				NA				ND	U	0.066	2	0.0231	J	0.035	1
Naphthalene**	91-20-3	760	25	mg/kg	0.0259	J	0.045	1	ND	U	0.23	1	0.0363	J	0.049	1	0.0628		0.047	1	ND	U	0.066	2	0.0162	J	0.035	1
Phenanthrene	85-01-8	190,000	10,000	mg/kg	0.119		0.045	1	ND	U	0.23	1	ND	U	0.049	1	0.183		0.047	1	0.1		0.066	2	0.283		0.035	1
Pyrene	129-00-0	96,000	2,200	mg/kg	NA				NA				NA				NA				0.327		0.066	2	0.538		0.035	1
Metals																												
Lead*	7439-92-1	2,240	450	mg/kg	1570		6.1	3	1390		2	1	1800		6.1	3	1670		2	1	37.9		2.3	1	27.5		2.2	1

Notes:
CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA - Not Analyzed
ft bgs - feet below ground surface
*Site Specific Standard for lead is 2,240 mg/kg

¹PADEP Non-Residential Direct Contact MSC for surface soils (0-2 feet below ground surface) (last updated August 27, 2016).

² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (last updated August 27, 2016).

**Naphthalene was analyzed either as a semi volatile organic compound (analytical method SW8270C SIM) or volatile organic compound (analytical method SW8260B or SW8021B). Naphthalene results are presented on this table as semi-volatile organic compounds. In the event that both methods were used for one sample, the lower of the two detection limits was used.

Qualifiers:
U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
E - Compound was over the calibration range
D- Indicates a dilution

Exceedance Summary:

10

Reported result exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC or the site-specific standard for lead.

10

Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC.

10

DL exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC.

Table 4
Summary of Surface Soil Sample Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Surface Soil Direct Contact MSC ¹	PADEP Non-Residential Soil to Groundwater MSC ²	Location ID	AOI5_BH-14-11				AOI5_BH-14-13				AOI5-BH-14-14				AOI5-BH-14-15				AOI5-BH-14-17				AOI5-BH-14-18			
				Sample ID	AOI5_BH-14-11				AOI5_BH-14-13				AOI5-14-14-0-2'				AOI5-14-15-0-2'				AOI5-14-17-0-2'				AOI5-14-18-0-2'			
				Sample Date	3/18/2014				3/18/2014				6/16/2014				6/16/2014				6/16/2014				6/16/2014			
				Sample Depth (ft bgs)	0-2				0-2				0-2				0-2				0-2				0-2			
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF
Volatile Organic Compounds																												
1,2,4-Trimethylbenzene	95-63-6	560	35	mg/kg	ND	U	0.0064	1	ND	U	0.0053	1	0.0019	J	0.002	1	0.0007	J	0.002	1	0.0003	J	0.0027	1	ND		0.0028	1
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	3.7	0.005	mg/kg	ND	U	0.0029	1	ND	U	0.0028	1	ND		0.0027	1	ND		0.003	1	ND		0.0029	1	ND		0.0029	1
1,2-Dichloroethane	107-06-2	86	0.5	mg/kg	ND	U	0.0013	1	ND	U	0.0011	1	ND		0.001	1	ND		0.001	1	ND		0.0013	1	ND		0.0014	1
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	ND	U	0.0064	1	ND	U	0.0053	1	0.0014	J	0.002	1	0.00035	J	0.002	1	0.00034	J	0.0027	1	ND		0.0028	1
Benzene	71-43-2	290	0.5	mg/kg	0.00038	J	0.0013	1	ND	U	0.0011	1	0.00043	J	0.00051	1	0.00043	J	0.0005	1	ND		0.00067	1	ND		0.0007	1
Ethylbenzene	100-41-4	890	70	mg/kg	ND	U	0.0013	1	ND	U	0.0011	1	ND		0.001	1	0.00033	J	0.001	1	ND		0.0013	1	ND		0.0014	1
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	ND	U	0.0064	1	ND	U	0.0053	1	0.00023	J	0.0051	1	0.00059	J	0.005	1	ND		0.0067	1	ND		0.007	1
Methyl Tert-Butyl Ether	1634-04-4	8,600	2	mg/kg	ND	U	0.0013	1	ND	U	0.0011	1	ND		0.001	1	0.00041	J	0.001	1	NDJ		0.0013	1	ND		0.0014	1
Toluene	108-88-3	10,000	100	mg/kg	ND	U	0.0013	1	ND	U	0.0011	1	0.0006	J	0.001	1	0.0006	J	0.001	1	ND		0.0013	1	ND		0.0014	1
Xylenes, Total (Dimethylbenzene)	1330-20-7	8,000	1,000	mg/kg	ND	U	0.0013	1	ND	U	0.0011	1	0.0012		0.001	1	0.0022		0.001	1	0.00037	J	0.0013	1	ND		0.0014	1
Semi-Volatile Organic Compounds																												
Anthracene	120-12-7	190,000	350	mg/kg	0.105		0.07	2	0.0466		0.035	1	0.387		0.035	1	0.0659		0.038	1	0.26		0.034	1	0.0393		0.037	1
Benzo(A)Anthracene	56-55-3	130	430	mg/kg	0.323		0.07	2	0.158		0.035	1	1.08		0.035	1	0.182		0.038	1	0.783		0.034	1	0.148		0.037	1
Benzo(A)Pyrene	50-32-8	12	46	mg/kg	0.316		0.07	2	0.154		0.035	1	1.17		0.035	1	0.244		0.038	1	0.951		0.034	1	0.176		0.037	1
Benzo(B)Fluoranthene	205-99-2	76	170	mg/kg	0.376		0.07	2	0.202		0.035	1	1.38		0.035	1	0.319		0.038	1	1.04		0.034	1	0.207		0.037	1
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	0.227		0.07	2	0.141		0.035	1	0.865		0.035	1	0.2		0.038	1	0.673		0.034	1	0.135		0.037	1
Chrysene	218-01-9	760	230	mg/kg	0.396		0.07	2	0.204		0.035	1	1.22		0.035	1	0.212		0.038	1	0.803		0.034	1	0.159		0.037	1
Fluorene	86-73-7	130,000	3,800	mg/kg	0.0316	J	0.07	2	ND	U	0.035	1	0.106		0.035	1	0.0233	J	0.038	1	0.0849		0.034	1	ND		0.037	1
Naphthalene**	91-20-3	760	25	mg/kg	ND	U	0.07	2	ND	U	0.035	1	0.0909		0.035	1	0.0422		0.038	1	0.0673		0.034	1	ND		0.037	1
Phenanthrene	85-01-8	190,000	10,000	mg/kg	0.444		0.07	2	0.102		0.035	1	1.19		0.035	1	0.137		0.038	1	0.774		0.034	1	0.146		0.037	1
Pyrene	129-00-0	96,000	2,200	mg/kg	0.712		0.07	2	0.327		0.035	1	1.98		0.035	1	0.244		0.038	1	1.29		0.034	1	0.239		0.037	1
Metals																												
Lead*	7439-92-1	2,240	450	mg/kg	38.3		2.4	1	29.5		2.3	1	120		2.1	1	336		2	1	87.7		2	1	31		2	1

Notes:
CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA - Not Analyzed
ft bgs - feet below ground surface
*Site Specific Standard for lead is 2,240 mg/kg

¹PADEP Non-Residential Direct Contact MSC for surface soils (0-2 feet below ground surface) (last updated August 27, 2016).

² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (last updated August 27, 2016).

**Naphthalene was analyzed either as a semi volatile organic compound (analytical method SW8270C SIM) or volatile organic compound (analytical method SW8260B or SW8021B). Naphthalene results are presented on this table as semi-volatile organic compounds. In the event that both methods were used for one sample, the lower of the two detection limits was used.

Qualifiers:
U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
E - Compound was over the calibration range
D- Indicates a dilution

Exceedance Summary:

10	Reported result exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC or the site-specific standard for lead.
10	Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC.
10	DL exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC.

Table 4
Summary of Surface Soil Sample Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Surface Soil Direct Contact MSC ¹	PADEP Non-Residential Soil to Groundwater MSC ²	Location ID	BH 14-19				BH 14-20				BH 14-21				BH 14-22				BH 14-24				BH 14-25			
				Sample ID	AOI-5_BH_14-19_0-2'				AOI-5_BH_14-20				AOI-5_BH_14-21_0-2'				AOI-5_BH_14-22_0-2'				AOI-5_BH_14-24_0-2'				AOI-5_BH_14-25_0-2'			
				Sample Date	6/18/2014				6/20/2014				6/18/2014				6/18/2014				6/18/2014							
				Sample Depth (ft bgs)	0-2				0-2				0-2				0-2				0-2				0-2			
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF
Volatile Organic Compounds																												
1,2,4-Trimethylbenzene	95-63-6	560	35	mg/kg	0.0011	J	0.0019	1	ND	U	0.0021	1	ND	U	0.0022	1	ND	U	0.0018	1	ND	U	0.003	1	0.0036		0.0034	1
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	3.7	0.005	mg/kg	ND	U	0.0051	1	ND	U	0.003	1	ND	U	0.0031	1	ND	U	0.003	1	ND	U	0.0032	1	ND	U	0.0042	1
1,2-Dichloroethane	107-06-2	86	0.5	mg/kg	ND	U	0.00093	1	ND	U	0.0011	1	ND	U	0.0011	1	ND	U	0.0009	1	ND	U	0.0015	1	ND	U	0.0017	1
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	0.00075	J	0.0019	1	ND	U	0.0021	1	ND	U	0.0022	1	ND	U	0.0018	1	ND	U	0.003	1	0.00069	J	0.0034	1
Benzene	71-43-2	290	0.5	mg/kg	0.0044		0.00047	1	ND	U	0.00054	1	0.0034		0.00055	1	0.00061		0.00045	1	0.00062	J	0.00075	1	0.006		0.00084	1
Ethylbenzene	100-41-4	890	70	mg/kg	0.00054	J	0.00093	1	ND	U	0.0011	1	ND	U	0.0011	1	ND	U	0.0009	1	ND	U	0.0015	1	ND	U	0.0017	1
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	ND	U	0.0047	1	ND	U	0.0054	1	ND	U	0.0055	1	ND	U	0.0045	1	ND	U	0.0075	1	0.00058	J	0.0084	1
Methyl Tert-Butyl Ether	1634-04-4	8,600	2	mg/kg	ND	U	0.00093	1	ND	U	0.0011	1	ND	U	0.0011	1	ND	U	0.0009	1	ND	U	0.0015	1	ND	U	0.0017	1
Toluene	108-88-3	10,000	100	mg/kg	0.00053	J	0.00093	1	ND	U	0.0011	1	ND	U	0.0011	1	ND	U	0.0009	1	ND	U	0.0015	1	ND	U	0.0017	1
Xylenes, Total (Dimethylbenzene)	1330-20-7	8,000	1,000	mg/kg	0.0082		0.00093	1	ND	U	0.0011	1	ND	U	0.0011	1	0.00023	J	0.0009	1	ND	U	0.0015	1	ND	U	0.0017	1
Semi-Volatile Organic Compounds																												
Anthracene	120-12-7	190,000	350	mg/kg	0.0334		0.033	1	0.142		0.039	1	0.671		0.039	1	0.163		0.037	1	0.0179	J	0.043	1	0.659		0.053	1
Benzo(A)Anthracene	56-55-3	130	430	mg/kg	0.0933		0.033	1	0.422		0.039	1	0.914		0.039	1	0.352		0.037	1	0.0983		0.043	1	1.47		0.053	1
Benzo(A)Pyrene	50-32-8	12	46	mg/kg	0.102		0.033	1	0.578		0.039	1	0.932		0.039	1	0.303		0.037	1	0.122		0.043	1	1.29		0.053	1
Benzo(B)Fluoranthene	205-99-2	76	170	mg/kg	0.0952		0.033	1	0.644		0.039	1	1		0.039	1	0.301		0.037	1	0.167		0.043	1	1.28		0.053	1
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	0.096		0.033	1	0.449		0.039	1	0.513		0.039	1	0.272		0.037	1	0.113		0.043	1	0.983		0.053	1
Chrysene	218-01-9	760	230	mg/kg	0.118		0.033	1	0.438		0.039	1	1.98		0.039	1	0.449		0.037	1	0.106		0.043	1	2.16		0.053	1
Fluorene	86-73-7	130,000	3,800	mg/kg	ND	U	0.033	1	0.023	J	0.039	1	0.903		0.039	1	0.0904		0.037	1	ND	U	0.043	1	0.519		0.053	1
Naphthalene**	91-20-3	760	25	mg/kg	0.0208	J	0.033	1	0.161		0.039	1	0.145		0.039	1	0.0347	J	0.037	1	ND	U	0.043	1	0.149		0.053	1
Phenanthrene	85-01-8	190,000	10,000	mg/kg	0.0492		0.033	1	0.187		0.039	1	2.34		0.039	1	0.319		0.037	1	0.0447		0.043	1	3.67		0.053	1
Pyrene	129-00-0	96,000	2,200	mg/kg	0.11		0.033	1	0.443		0.039	1	2.65		0.039	1	0.527		0.037	1	0.0956		0.043	1	3.02		0.053	1
Metals																												
Lead*	7439-92-1	2,240	450	mg/kg	70		1.9	1	168		2.1	1	394		1.9	1	441		1.9	1	641		4	2	1200		4.1	2

Notes:
CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA - Not Analyzed
ft bgs - feet below ground surface
*Site Specific Standard for lead is 2,240 mg/kg

¹PADEP Non-Residential Direct Contact MSC for surface soils (0-2 feet below ground surface) (last updated August 27, 2016).

² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (last updated August 27, 2016).

**Naphthalene was analyzed either as a semi volatile organic compound (analytical method SW8270C SIM) or volatile organic compound (analytical method SW8260B or SW8021B). Naphthalene results are presented on this table as semi-volatile organic compounds. In the event that both methods were used for one sample, the lower of the two detection limits was used.

Qualifiers:
U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
E - Compound was over the calibration range
D- Indicates a dilution

Exceedance Summary:

10

Reported result exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC or the site-specific standard for lead.

10

Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC.

10

DL exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC.

Table 4
Summary of Surface Soil Sample Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Surface Soil Direct Contact MSC ¹	PADEP Non-Residential Soil to Groundwater MSC ²	Location ID	BH_14-26				BH_14-27				BH_14-28				BH_14-29				BH_14-30				BH_14-31			
				Sample ID	AOI-5_BH_14-26_0-2'				AOI-5_BH_14-27_0-2'				AOI-5_BH_14-28_0-2'				AOI-5_BH_14-29_0-2'				AOI-5_BH_14-30_0-2'				AOI-5_BH_14-31_0-2'			
				Sample Date	6/19/2014				6/19/2014				6/19/2014				6/19/2014				6/19/2014							
				Sample Depth (ft bgs)	0-2				0-2				0-2				0-2				0-2				0-2			
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF
Volatile Organic Compounds																												
1,2,4-Trimethylbenzene	95-63-6	560	35	mg/kg	ND	U	0.0031	1	ND	U	0.0023	1	ND	U	0.0017	1	ND	U	0.0031	1	ND	U	0.0021	1	ND	U	0.003	1
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	3.7	0.005	mg/kg	ND	U	0.0027	1	ND	U	0.0027	1	ND	U	0.0027	1	ND	U	0.003	1	ND	U	0.0029	1	ND	U	0.007	1
1,2-Dichloroethane	107-06-2	86	0.5	mg/kg	ND	U	0.0015	1	ND	U	0.0012	1	ND	U	0.00086	1	ND	U	0.0015	1	ND	U	0.001	1	ND	U	0.0015	1
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	ND	U	0.0031	1	ND	U	0.0023	1	ND	U	0.0017	1	ND	U	0.0031	1	ND	U	0.0021	1	ND	U	0.003	1
Benzene	71-43-2	290	0.5	mg/kg	ND	U	0.00077	1	ND	U	0.00059	1	1.76		0.057	1	0.0337		0.00077	1	3.13		0.068	1	0.125		0.00076	1
Ethylbenzene	100-41-4	890	70	mg/kg	ND	U	0.0015	1	ND	U	0.0012	1	ND	U	0.00086	1	ND	U	0.0015	1	ND	U	0.001	1	ND	U	0.0015	1
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	ND	U	0.0077	1	ND	U	0.0059	1	ND	U	0.0043	1	0.0008	J	0.0077	1	0.00027	J	0.0052	1	ND	U	0.0076	1
Methyl Tert-Butyl Ether	1634-04-4	8,600	2	mg/kg	ND	U	0.0015	1	ND	U	0.0012	1	ND	U	0.00086	1	ND	U	0.0015	1	ND	U	0.001	1	ND	U	0.0015	1
Toluene	108-88-3	10,000	100	mg/kg	ND	U	0.0015	1	ND	U	0.0012	1	ND	U	0.00086	1	ND	U	0.0015	1	0.0019		0.001	1	ND	U	0.0015	1
Xylenes, Total (Dimethylbenzene)	1330-20-7	8,000	1,000	mg/kg	ND	U	0.0015	1	ND	U	0.0012	1	ND	U	0.00086	1	ND	U	0.0015	1	ND	U	0.001	1	ND	U	0.0015	1
Semi-Volatile Organic Compounds																												
Anthracene	120-12-7	190,000	350	mg/kg	0.0562	J	0.071	2	0.0481	J	0.073	2	0.0565		0.036	1	0.424		0.04	1	0.1		0.076	2	0.483		0.047	1
Benzo(A)Anthracene	56-55-3	130	430	mg/kg	0.176		0.071	2	0.145		0.073	2	0.227		0.036	1	1.54		0.04	1	0.294		0.076	2	2.24		0.047	1
Benzo(A)Pyrene	50-32-8	12	46	mg/kg	0.207		0.071	2	0.173		0.073	2	0.241		0.036	1	1.71		0.04	1	0.281		0.076	2	2.38		0.047	1
Benzo(B)Fluoranthene	205-99-2	76	170	mg/kg	0.268		0.071	2	0.229		0.073	2	0.319		0.036	1	2.13		0.04	1	0.373		0.076	2	2.95		0.047	1
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	0.176		0.071	2	0.151		0.073	2	0.183		0.036	1	1.34		0.04	1	0.227		0.076	2	1.62		0.047	1
Chrysene	218-01-9	760	230	mg/kg	0.205		0.071	2	0.207		0.073	2	0.275		0.036	1	1.71		0.04	1	0.374		0.076	2	2.23		0.047	1
Fluorene	86-73-7	130,000	3,800	mg/kg	ND	U	0.071	2	ND	U	0.073	2	ND	U	0.036	1	0.117		0.04	1	0.0403	J	0.076	2	0.145		0.047	1
Naphthalene**	91-20-3	760	25	mg/kg	ND	U	0.071	2	ND	U	0.073	2	ND	U	0.036	1	0.0902		0.04	1	0.06	J	0.076	2	0.0775		0.047	1
Phenanthrene	85-01-8	190,000	10,000	mg/kg	0.109		0.071	2	0.121		0.073	2	0.178		0.036	1	1.72		0.04	1	0.337		0.076	2	2.1		0.047	1
Pyrene	129-00-0	96,000	2,200	mg/kg	0.289		0.071	2	0.236		0.073	2	0.388		0.036	1	2.54		0.04	1	0.597		0.076	2	3.31		0.047	1
Metals																												
Lead*	7439-92-1	2,240	450	mg/kg	51.2		1.9	1	60.7		1.9	1	153		1.9	1	1330		2.4	1	350		2	1	1980		1.9	1

Notes:
CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA - Not Analyzed
ft bgs - feet below ground surface
*Site Specific Standard for lead is 2,240 mg/kg

¹PADEP Non-Residential Direct Contact MSC for surface soils (0-2 feet below ground surface) (last updated August 27, 2016).

² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (last updated August 27, 2016).

**Naphthalene was analyzed either as a semi volatile organic compound (analytical method SW8270C SIM) or volatile organic compound (analytical method SW8260B or SW8021B). Naphthalene results are presented on this table as semi-volatile organic compounds. In the event that both methods were used for one sample, the lower of the two detection limits was used.

Qualifiers:
U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
E - Compound was over the calibration range
D- Indicates a dilution

Exceedance Summary:

10	Reported result exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC or the site-specific standard for lead.
10 10	Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC. DL exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC.

Table 4
Summary of Surface Soil Sample Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Surface Soil Direct Contact MSC ¹	PADEP Non-Residential Soil to Groundwater MSC ²	Location ID	BH_14-32				BH_14-33				BH_14-34				BH_14-35				BH_14-36				BH_14-37			
				Sample ID	AOI-5-BH_14-32_0-2'				AOI-5-BH_14-33_0-2'				AOI-5-BH_14-34_0-2'				AOI-5-BH_14-35_0-2'				AOI-5_BH_14-36_0-2'				AOI-5_BH_14-37_0-2'			
				Sample Date	6/17/2014				6/17/2014				6/17/2014				6/17/2014				6/18/2014				6/19/2014			
				Sample Depth (ft bgs)	0-2				0-2				0-2				0-2				0-2				0-2			
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF
Volatile Organic Compounds																												
1,2,4-Trimethylbenzene	95-63-6	560	35	mg/kg	ND	U	0.0028	1	0.133	J	0.32	1	0.262		0.2	1	ND	U	0.0029	1	ND	U	0.0018	1	ND	U	0.0021	1
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	3.7	0.005	mg/kg	ND	U	0.0029	1	ND	U	0.003	1	ND	U	0.003	1	ND	U	0.003	1	ND	U	0.0054	1	ND	U	0.0029	1
1,2-Dichloroethane	107-06-2	86	0.5	mg/kg	ND	U	0.0014	1	ND	U	0.16	1	ND	U	0.1	1	ND	U	0.0014	1	ND	U	0.00088	1	ND	U	0.001	1
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	ND	U	0.0028	1	0.0497	J	0.32	1	0.0746	J	0.2	1	ND	U	0.0029	1	ND	U	0.0018	1	ND	U	0.0021	1
Benzene	71-43-2	290	0.5	mg/kg	ND	U	0.00071	1	0.127		0.08	1	0.348		0.05	1	ND	U	0.00071	1	0.0032		0.00044	1	0.0727		0.00052	1
Ethylbenzene	100-41-4	890	70	mg/kg	ND	U	0.0014	1	0.0978	J	0.16	1	0.267		0.1	1	ND	U	0.0014	1	ND	U	0.00088	1	ND	U	0.001	1
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	ND	U	0.0071	1	59.5		4	1	39.2		2.5	1	ND	U	0.0071	1	ND	U	0.0044	1	ND	U	0.0052	1
Methyl Tert-Butyl Ether	1634-04-4	8,600	2	mg/kg	ND	U	0.0014	1	ND	U	0.16	1	ND	U	0.1	1	ND	U	0.0014	1	ND	U	0.00088	1	ND	U	0.001	1
Toluene	108-88-3	10,000	100	mg/kg	ND	U	0.0014	1	0.128	J	0.16	1	0.396		0.1	1	0.00053	J	0.0014	1	ND	U	0.00088	1	ND	U	0.001	1
Xylenes, Total (Dimethylbenzene)	1330-20-7	8,000	1,000	mg/kg	ND	U	0.0014	1	0.389		0.16	1	0.837		0.1	1	ND	U	0.0014	1	ND	U	0.00088	1	ND	U	0.001	1
Semi-Volatile Organic Compounds																												
Anthracene	120-12-7	190,000	350	mg/kg	0.104		0.038	1	3.04		0.037	1	4.6		0.39	1	0.592		0.037	1	0.227		0.032	1	0.503		0.038	1
Benzo(A)Anthracene	56-55-3	130	430	mg/kg	0.343		0.038	1	13.3		0.37	10	8.32		0.39	1	0.945		0.037	1	1.24		0.032	1	1.99		0.038	1
Benzo(A)Pyrene	50-32-8	12	46	mg/kg	0.481		0.038	1	12.5		0.37	10	7.66		0.39	1	1.31		0.037	1	1.13		0.032	1	2.94		0.038	1
Benzo(B)Fluoranthene	205-99-2	76	170	mg/kg	0.544		0.038	1	16.2		0.37	10	9.66		0.39	1	1.58		0.037	1	1.25		0.032	1	3.11		0.038	1
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	0.317		0.038	1	3.57		0.037	1	3.83		0.39	1	0.854		0.037	1	0.591		0.032	1	1.7		0.038	1
Chrysene	218-01-9	760	230	mg/kg	0.362		0.038	1	14.5		0.37	10	8.93		0.39	1	1.14		0.037	1	1.02		0.032	1	2.21		0.038	1
Fluorene	86-73-7	130,000	3,800	mg/kg	0.0359	J	0.038	1	2.67		0.037	1	5.09		0.39	1	0.429		0.037	1	0.0171	J	0.032	1	0.129		0.038	1
Naphthalene**	91-20-3	760	25	mg/kg	0.0849		0.038	1	0.555		0.037	1	2.18		0.39	1	1.2		0.037	1	0.0765		0.032	1	0.461		0.038	1
Phenanthrene	85-01-8	190,000	10,000	mg/kg	0.489		0.038	1	31		0.37	10	28.3		0.39	1	1.52		0.037	1	0.19		0.032	1	0.84		0.038	1
Pyrene	129-00-0	96,000	2,200	mg/kg	0.453		0.038	1	25.6		0.37	10	17.3		0.39	1	1.64		0.037	1	1.43		0.032	1	2.8		0.038	1
Metals																												
Lead*	7439-92-1	2,240	450	mg/kg	344		1.9	1	1520		2.1	1	1140		4.1	2	376		2.1	1	37.9		1.9	1	181		2.3	1

Notes:
CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA - Not Analyzed
ft bgs - feet below ground surface
*Site Specific Standard for lead is 2,240 mg/kg

¹PADEP Non-Residential Direct Contact MSC for surface soils (0-2 feet below ground surface) (last updated August 27, 2016).

² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (last updated August 27, 2016).

**Naphthalene was analyzed either as a semi volatile organic compound (analytical method SW8270C SIM) or volatile organic compound (analytical method SW8260B or SW8021B). Naphthalene results are presented on this table as semi-volatile organic compounds. In the event that both methods were used for one sample, the lower of the two detection limits was used.

Qualifiers:
U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
E - Compound was over the calibration range
D- Indicates a dilution

Exceedance Summary:

10

Reported result exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC or the site-specific standard for lead.

10

Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC.

10

DL exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC.

Table 4
Summary of Surface Soil Sample Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Surface Soil Direct Contact MSC ¹	PADEP Non-Residential Soil to Groundwater MSC ²	Location ID	BH-14-38				GP1209-PP				GP1212-PP				GPBR_08212014_B17C				GPBR_08212014_B18C				GPBR_08212014_B19C			
				Sample ID	BH-14-38_0-2'				GP1209-PP-0.5				GP1212-PP-0.5				GPBR_017C_08-21-2014(PH3B)				GPBR_018C_08-21-2014(PH3B)				GPBR_019C_08-21-2014(PH3B)			
				Sample Date	6/26/2014				1/23/2012				1/23/2012				8/21/2014				8/21/2014				8/21/2014			
				Sample Depth (ft bgs)	0-2				0.5-1				0.5-1				1-2				1-2				1-2			
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF
Volatile Organic Compounds																												
1,2,4-Trimethylbenzene	95-63-6	560	35	mg/kg	ND	U	0.002	1	ND	U	0.073	55.03	ND	U	0.002	1.62	NA				NA				NA			
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	3.7	0.005	mg/kg	ND	U	0.0029	1	ND	U	0.073	55.03	ND	U	0.002	1.62	NA				NA				NA			
1,2-Dichloroethane	107-06-2	86	0.5	mg/kg	ND	U	0.001	1	ND	U	0.073	55.03	ND	U	0.002	1.62	NA				NA				NA			
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	ND	U	0.002	1	ND	U	0.073	55.03	ND	U	0.002	1.62	NA				NA				NA			
Benzene	71-43-2	290	0.5	mg/kg	ND	U	0.0005	1	2.2		0.036	55.03	0.034		0.001	1.62	NA				NA				NA			
Ethylbenzene	100-41-4	890	70	mg/kg	ND	U	0.001	1	ND	U	0.073	55.03	ND	U	0.002	1.62	NA				NA				NA			
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	ND	U	0.005	1	4.1		0.073	55.03	0.033		0.002	1.62	NA				NA				NA			
Methyl Tert-Butyl Ether	1634-04-4	8,600	2	mg/kg	ND	U	0.001	1	ND	U	0.036	55.03	ND	U	0.001	1.62	NA				NA				NA			
Toluene	108-88-3	10,000	100	mg/kg	ND	U	0.001	1	ND	U	0.073	55.03	ND	U	0.002	1.62	NA				NA				NA			
Xylenes, Total (Dimethylbenzene)	1330-20-7	8,000	1,000	mg/kg	ND	U	0.001	1	ND	U	0.073	55.03	ND	U	0.002	1.62	NA				NA				NA			
Semi-Volatile Organic Compounds																												
Anthracene	120-12-7	190,000	350	mg/kg	0.0209	J	0.038	1	ND	U	0.0088	10	0.042		0.0084	10	0.172		0.036	1	0.324		0.039	1	0.135		0.037	1
Benzo(A)Anthracene	56-55-3	130	430	mg/kg	0.0298	J	0.038	1	0.016	J	0.0044	10	0.16		0.0042	10	0.408		0.036	1	1.24		0.039	1	0.488		0.037	1
Benzo(A)Pyrene	50-32-8	12	46	mg/kg	0.0319	J	0.038	1	0.02		0.0044	10	0.17		0.0042	10	0.478		0.036	1	1.12		0.039	1	0.571		0.037	1
Benzo(B)Fluoranthene	205-99-2	76	170	mg/kg	0.0386		0.038	1	0.017		0.0035	10	0.14		0.0034	10	0.569		0.036	1	1.67		0.039	1	0.779		0.037	1
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	0.0411		0.038	1	0.033	J	0.026	10	0.24		0.025	10	0.303		0.036	1	0.777		0.039	1	0.393		0.037	1
Chrysene	218-01-9	760	230	mg/kg	0.0316	J	0.038	1	ND	U	0.04	10	0.23		0.038	10	0.55		0.036	1	1.44		0.039	1	0.715		0.037	1
Fluorene	86-73-7	130,000	3,800	mg/kg	ND	U	0.038	1	ND	U	0.044	10	ND	U	0.042	10	0.063		0.036	1	0.0789		0.039	1	0.0308	J	0.037	1
Naphthalene**	91-20-3	760	25	mg/kg	ND	U	0.038	1	NA				NA				0.179		0.036	1	0.277		0.039	1	0.0607		0.037	1
Phenanthrene	85-01-8	190,000	10,000	mg/kg	0.0321	J	0.038	1	0.028	J	0.026	10	0.16		0.025	10	0.357		0.036	1	1.26		0.039	1	0.485		0.037	1
Pyrene	129-00-0	96,000	2,200	mg/kg	0.0447		0.038	1	0.049	J	0.044	10	0.26		0.042	10	0.835		0.036	1	2.07		0.039	1	1		0.037	1
Metals																												
Lead*	7439-92-1	2,240	450	mg/kg	222		4.1	1	22.2		0.29	1	110		0.267	1	380		2.3	1	1020		2.4	1	816		2.3	1

Notes:
CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA - Not Analyzed
ft bgs - feet below ground surface
*Site Specific Standard for lead is 2,240 mg/kg

¹PADEP Non-Residential Direct Contact MSC for surface soils (0-2 feet below ground surface) (last updated August 27, 2016).
² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (last updated August 27, 2016).

**Naphthalene was analyzed either as a semi volatile organic compound (analytical method SW8270C SIM) or volatile organic compound (analytical method SW8260B or SW8021B). Naphthalene results are presented on this table as semi-volatile organic compounds. In the event that both methods were used for one sample, the lower of the two detection limits was used.

Qualifiers:
U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
E - Compound was over the calibration range
D- Indicates a dilution

Exceedance Summary:

10

Reported result exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC or the site-specific standard for lead.

10

Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC.

10

DL exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC.

Table 4
Summary of Surface Soil Sample Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Surface Soil Direct Contact MSC ¹	PADEP Non-Residential Soil to Groundwater MSC ²	Location ID	GPBR 08212014 B3				GPBR 08212014 B5				GPBR 08212014 B8				NHZSS				AOI-5 14-15 0-2'				AOI-5 14-18 0-2'			
				Sample ID	GPBR 014G 08-21-2014(PH3B-3)				GPBR 015G 08-21-2014(PH3B-5)				GPBR 016G 08-21-2014(PH3B-8)				NHZSS 041714				AOI-5 14-15 0-2'				AOI-5 14-18 0-2'			
				Sample Date	8/21/2014				8/21/2014				8/21/2014				4/17/2014				6/16/2014				6/16/2014			
				Sample Depth (ft bgs)	1-2				1-2				1-2				0-2				0-2				0-2			
Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF				
Volatile Organic Compounds																												
1,2,4-Trimethylbenzene	95-63-6	560	35	mg/kg	ND	U	0.005	1	ND	U	0.0025	1	ND	U	0.0052	1	NA				0.0007	J	0.002	1	ND		0.0028	1
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4		0.005	mg/kg	ND	U	0.0031	1	ND	U	0.0029	1	ND	U	0.0029	1	NA				ND		0.003	1	ND		0.0029	1
1,2-Dichloroethane	107-06-2	86	0.5	mg/kg	ND	U	0.0025	1	ND	U	0.0012	1	ND	U	0.0026	1	ND	U	2.7	1	ND		0.001	1	ND		0.0014	1
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	ND	U	0.005	1	ND	U	0.0025	1	ND	U	0.0052	1	NA				0.00035	J	0.002	1	ND		0.0028	1
Benzene	71-43-2	290	0.5	mg/kg	ND	U	0.0012	1	ND	U	0.00062	1	ND	U	0.0013	1	4.29		2.7	1	0.00043	J	0.0005	1	ND		0.0007	1
Ethylbenzene	100-41-4	890	70	mg/kg	ND	U	0.0025	1	ND	U	0.0012	1	ND	U	0.0026	1	ND	U	2.7	1	0.00033	J	0.001	1	ND		0.0014	1
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	ND	U	0.012	1	ND	U	0.0062	1	ND	U	0.013	1	1270		140	10	0.00059	J	0.005	1	ND		0.007	1
Methyl Tert-Butyl Ether	1634-04-4	8,600	2	mg/kg	ND	U	0.0025	1	ND	U	0.0012	1	ND	U	0.0026	1	NA				0.00041	J	0.001	1	ND		0.0014	1
Toluene	108-88-3	10,000	100	mg/kg	ND	U	0.0025	1	ND	U	0.0012	1	ND	U	0.0026	1	ND	U	2.7	1	0.0006	J	0.001	1	ND		0.0014	1
Xylenes, Total (Dimethylbenzene)	1330-20-7	8,000	1,000	mg/kg	ND	U	0.0025	1	ND	U	0.0012	1	ND	U	0.0026	1	ND	U	2.7	1	0.0022		0.001	1	ND		0.0014	1
Semi-Volatile Organic Compounds																												
Anthracene	120-12-7	190,000	350	mg/kg	NA				NA				NA				0.313	J	0.38	1	0.0659		0.038	1	0.0393		0.037	1
Benzo(A)Anthracene	56-55-3	130	430	mg/kg	NA				NA				NA				0.933		0.38	1	0.182		0.038	1	0.148		0.037	1
Benzo(A)Pyrene	50-32-8	12	46	mg/kg	NA				NA				NA				0.843		0.38	1	0.244		0.038	1	0.176		0.037	1
Benzo(B)Fluoranthene	205-99-2	76	170	mg/kg	NA				NA				NA				0.99		0.38	1	0.319		0.038	1	0.207		0.037	1
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	NA				NA				NA				0.656		0.38	1	0.2		0.038	1	0.135		0.037	1
Chrysene	218-01-9	760	230	mg/kg	NA				NA				NA				1.04		0.38	1	0.212		0.038	1	0.159		0.037	1
Fluorene	86-73-7	130,000	3,800	mg/kg	NA				NA				NA				0.169	J	0.38	1	0.0233	J	0.038	1	ND		0.037	1
Naphthalene**	91-20-3	760	25	mg/kg	NA				NA				NA				0.231	J	0.38	1	0.0422		0.038	1	ND		0.037	1
Phenanthrene	85-01-8	190,000	10,000	mg/kg	NA				NA				NA				1.38		0.38	1	0.137		0.038	1	0.146		0.037	1
Pyrene	129-00-0	96,000	2,200	mg/kg	NA				NA				NA				1.7		0.38	1	0.244		0.038	1	0.239		0.037	1
Metals																												
Lead*	7439-92-1	2,240	450	mg/kg	NA				NA				NA				1360		2.3	1	336		2	1	31		2	1

Notes:
CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA - Not Analyzed
ft bgs - feet below ground surface
*Site Specific Standard for lead is 2,240 mg/kg

¹PADEP Non-Residential Direct Contact MSC for surface soils (0-2 feet below ground surface) (last updated August 27, 2016).

² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (last updated August 27, 2016).

**Naphthalene was analyzed either as a semi volatile organic compound (analytical method SW8270C SIM) or volatile organic compound (analytical method SW8260B or SW8021B). Naphthalene results are presented on this table as semi-volatile organic compounds. In the event that both methods were used for one sample, the lower of the two detection limits was used.
Qualifiers:
U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
E - Compound was over the calibration range
D- Indicates a dilution
Exceedance Summary:

10

Reported result exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC or the site-specific standard for lead.

10

10

Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC.
DL exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC.

Table 4
Summary of Surface Soil Sample Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Surface Soil Direct Contact MSC ¹	PADEP Non-Residential Soil to Groundwater MSC ²	Location ID	AOI-5_14-17_0-2'				AOI-5_14-14_0-2'				AOI5-16-1-0-2-021016				GP-1208-LINE-1				GP-1208-LINE-2				GP-1208-LINE-3				
				Sample ID	AOI-5_14-17_0-2'				AOI-5_14-14_0-2'				AOI5-16-1-0-2-021016				GP-1208-LINE-1				GP-1208-LINE-2				GP-1208-LINE-3				
				Sample Date	6/16/2014				6/16/2014				2/10/2016				5/30/2007				5/30/2007				5/30/2007				
				Sample Depth (ft bgs)	0-2				0-2				0-2				0-0.5				0-0.5				0-0.5				
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	
Volatile Organic Compounds																													
1,2,4-Trimethylbenzene	95-63-6	560	35	mg/kg	0.0003	J	0.0027	1	0.0019	J	0.002	1	NA				NA				NA				NA				
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	3.7	0.005	mg/kg	ND		0.0029	1	ND		0.0027	1	NA				NA				NA				NA				
1,2-Dichloroethane	107-06-2	86	0.5	mg/kg	ND		0.0013	1	ND		0.001	1	NA				NA				NA				NA				
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	0.00034	J	0.0027	1	0.0014	J	0.002	1	NA				NA				NA				NA				
Benzene	71-43-2	290	0.5	mg/kg	ND		0.00067	1	0.00043	J	0.00051	1	NA				2.4	D	0.21	50	1	D	0.19	50	0.75	D	0.17	50	
Ethylbenzene	100-41-4	890	70	mg/kg	ND		0.0013	1	ND		0.001	1	NA				NA				NA				NA				
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	ND		0.0067	1	0.00023	J	0.0051	1	NA				NA				NA				NA				
Methyl Tert-Butyl Ether	1634-04-4	8,600	2	mg/kg	ND		0.0013	1	ND		0.001	1	NA				NA				NA				NA				
Toluene	108-88-3	10,000	100	mg/kg	ND		0.0013	1	0.0006	J	0.001	1	NA				NA				NA				NA				
Xylenes, Total (Dimethylbenzene)	1330-20-7	8,000	1,000	mg/kg	0.00037	J	0.0013	1	0.0012		0.001	1	NA				NA				NA				NA				
Semi-Volatile Organic Compounds																													
Anthracene	120-12-7	190,000	350	mg/kg	0.26		0.034	1	0.387		0.035	1	NA				NA				NA				NA				
Benzo(A)Anthracene	56-55-3	130	430	mg/kg	0.783		0.034	1	1.08		0.035	1	0.3		0.0073	1	NA				NA				NA				
Benzo(A)Pyrene	50-32-8	12	46	mg/kg	0.951		0.034	1	1.17		0.035	1	NA				NA				NA				NA				
Benzo(B)Fluoranthene	205-99-2	76	170	mg/kg	1.04		0.034	1	1.38		0.035	1	NA				NA				NA				NA				
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	0.673		0.034	1	0.865		0.035	1	NA				NA				NA				NA				
Chrysene	218-01-9	760	230	mg/kg	0.803		0.034	1	1.22		0.035	1	NA				NA				NA				NA				
Fluorene	86-73-7	130,000	3,800	mg/kg	0.0849		0.034	1	0.106		0.035	1	NA				NA				NA				NA				
Naphthalene**	91-20-3	760	25	mg/kg	0.0673		0.034	1	0.0909		0.035	1	NA				NA				NA				NA				
Phenanthrene	85-01-8	190,000	10,000	mg/kg	0.774		0.034	1	1.19		0.035	1	NA				NA				NA				NA				
Pyrene	129-00-0	96,000	2,200	mg/kg	1.29		0.034	1	1.98		0.035	1	NA				NA				NA				NA				
Metals																													
Lead*	7439-92-1	2,240	450	mg/kg	87.7		2	1	120		2.1	1	121		0.31	1	NA				NA				NA				

Notes:
CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA - Not Analyzed
ft bgs - feet below ground surface
*Site Specific Standard for lead is 2,240 mg/kg

¹PADEP Non-Residential Direct Contact MSC for surface soils (0-2 feet below ground surface) (last updated August 27, 2016).

² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (last updated August 27, 2016).

**Naphthalene was analyzed either as a semi volatile organic compound (analytical method SW8270C SIM) or volatile organic compound (analytical method SW8260B or SW8021B). Naphthalene results are presented on this table as semi-volatile organic compounds. In the event that both methods were used for one sample, the lower of the two detection limits was used.

Qualifiers:
U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
E - Compound was over the calibration range
D- Indicates a dilution

Exceedance Summary:	
10	Reported result exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC or the site-specific standard for lead.
10 10	Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC. DL exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC.

Table 4
Summary of Surface Soil Sample Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Surface Soil Direct Contact MSC ¹	PADEP Non-Residential Soil to Groundwater MSC ²	Location ID	GP-1208-LINE-4				GP-1208-LINE-5				GP-1208-LINE-6				GP-1208-LINE-7			
				Sample ID	GP-1208-LINE-4				GP-1208-LINE-5				GP-1208-LINE-6				GP-1208-LINE-7			
				Sample Date	5/30/2007				5/30/2007				5/30/2007				5/30/2007			
				Sample Depth (ft bgs)	0-0.5				0-0.5				0-0.5				0-0.5			
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF
Volatile Organic Compounds																				
1,2,4-Trimethylbenzene	95-63-6	560	35	mg/kg	NA				NA				NA				NA			
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	3.7	0.005	mg/kg	NA				NA				NA				NA			
1,2-Dichloroethane	107-06-2	86	0.5	mg/kg	NA				NA				NA				NA			
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	NA				NA				NA				NA			
Benzene	71-43-2	290	0.5	mg/kg	0.93	D	0.23	50	ND	U,D	0.26	50	0.2	J,D	0.22	50	1.9	D	0.25	50
Ethylbenzene	100-41-4	890	70	mg/kg	NA				NA				NA				NA			
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	NA				NA				NA				NA			
Methyl Tert-Butyl Ether	1634-04-4	8,600	2	mg/kg	NA				NA				NA				NA			
Toluene	108-88-3	10,000	100	mg/kg	NA				NA				NA				NA			
Xylenes, Total (Dimethylbenzene)	1330-20-7	8,000	1,000	mg/kg	NA				NA				NA				NA			
Semi-Volatile Organic Compounds																				
Anthracene	120-12-7	190,000	350	mg/kg	NA				NA				NA				NA			
Benzo(A)Anthracene	56-55-3	130	430	mg/kg	NA				NA				NA				NA			
Benzo(A)Pyrene	50-32-8	12	46	mg/kg	NA				NA				NA				NA			
Benzo(B)Fluoranthene	205-99-2	76	170	mg/kg	NA				NA				NA				NA			
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	NA				NA				NA				NA			
Chrysene	218-01-9	760	230	mg/kg	NA				NA				NA				NA			
Fluorene	86-73-7	130,000	3,800	mg/kg	NA				NA				NA				NA			
Naphthalene**	91-20-3	760	25	mg/kg	NA				NA				NA				NA			
Phenanthrene	85-01-8	190,000	10,000	mg/kg	NA				NA				NA				NA			
Pyrene	129-00-0	96,000	2,200	mg/kg	NA				NA				NA				NA			
Metals																				
Lead*	7439-92-1	2,240	450	mg/kg	NA				NA				NA				NA			

Notes:
CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA - Not Analyzed
ft bgs - feet below ground surface
*Site Specific Standard for lead is 2,240 mg/kg
¹PADEP Non-Residential Direct Contact MSC for surface soils (0-2 feet below ground surface) (last updated August 27, 2016).
² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (last updated August 27, 2016).

**Naphthalene was analyzed either as a semi volatile organic compound (analytical method SW8270C SIM) or volatile organic compound (analytical method SW8260B or SW8021B). Naphthalene results are presented on this table as semi-volatile organic compounds. In the event that both methods were used for one sample, the lower of the two detection limits was used.

Qualifiers:
U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
E - Compound was over the calibration range
D- Indicates a dilution

Exceedance Summary:

10

Reported result exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC or the site-specific standard for lead.

10
10

Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC.
DL exceeds the PADEP Non-Residential Surface Soil Direct Contact MSC.

Table 5
Summary of Subsurface Soil Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Subsurface Soil Direct Contact MSC ¹	PADEP Non-Residential Subsurface Soil Direct Contact MSC ²	Location ID	A-169				A-170				A-171				A-172			
				Sample ID	PH-AOI5_A-169_2-4_06172014				A-170_4-6'				A-171_4-6'				PH-AOI5_A-172_2-3_06172014			
				Sample Date	6/17/14				6/24/14				6/25/14				6/17/14			
				Sample Depth (ft bgs)	2-4				4-6				4-6				2-3			
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF
Volatile Organic Compounds (VOCs)																				
1,2,4-Trimethylbenzene	95-63-6	640	35	mg/kg	0.086	J	0.23	1	0.00054	J	0.0016	1	ND	U	0.0018	1	0.00079	J	0.0034	1
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	4.3	0.005	mg/kg	ND	U	0.0062	1	ND	U	0.0029	1	ND	U	0.003	1	ND	U	0.004	1
1,2-Dichloroethane	107-06-2	98	0.5	mg/kg	ND	U	0.12	1	ND	U	0.00082	1	ND	U	0.00089	1	ND	U	0.0017	1
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	ND	U	0.23	1	ND	U	0.0016	1	ND	U	0.0018	1	ND	U	0.0034	1
Benzene	71-43-2	330	0.5	mg/kg	0.0949		0.058	1	ND	U	0.00041	1	ND	U	0.00045	1	0.00052	J	0.00086	1
Ethylbenzene	100-41-4	1,000	70	mg/kg	0.0864	J	0.12	1	0.00062	J	0.00082	1	ND	U	0.00089	1	0.00075	J	0.0017	1
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	17.3		0.58	1	0.0185		0.0041	1	ND	U	0.0045	1	0.0034	J	0.0086	1
Methyl Tert-Butyl Ether	1634-04-4	9,900	2	mg/kg	ND	U	0.12	1	ND	U	0.00082	1	ND	U	0.00089	1	ND	U	0.0017	1
Toluene	108-88-3	10,000	100	mg/kg	0.134		0.12	1	ND	U	0.00082	1	ND	U	0.00089	1	0.0012	J	0.0017	1
Xylenes, Total (Dimethylbenzene)	1330-20-7	9,100	1,000	mg/kg	0.282		0.12	1	0.0014		0.00082	1	ND	U	0.00089	1	0.0033		0.0017	1
Semi-volatile Organic Compounds (SVOCs)																				
Anthracene	120-12-7	190,000	350	mg/kg	0.261		0.041	1	0.153		0.037	1	0.45		0.04	1	0.157		0.053	1
Benzo(A)Anthracene	56-55-3	190,000	430	mg/kg	0.132		0.041	1	0.363		0.037	1	1.31		0.04	1	0.317		0.053	1
Benzo(A)Pyrene	50-32-8	190,000	46	mg/kg	0.104		0.041	1	0.375		0.037	1	1.48		0.04	1	0.409		0.053	1
Benzo(B)Fluoranthene	205-99-2	190,000	170	mg/kg	0.151		0.041	1	0.437		0.037	1	1.64		0.04	1	0.497		0.053	1
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	0.0456		0.041	1	0.497		0.037	1	0.905		0.04	1	0.306		0.053	1
Chrysene	218-01-9	190,000	230	mg/kg	0.357		0.041	1	0.388		0.037	1	1.25		0.04	1	0.367		0.053	1
Fluorene	86-73-7	190,000	3,800	mg/kg	5.41		0.16	4	0.108		0.037	1	ND	U	0.04	1	0.174		0.053	1
Naphthalene	91-20-3	190,000	25	mg/kg	ND	U	0.041	1	ND	U	0.037	1	0.187		0.04	1	0.253		0.053	1
Phenanthrene	85-01-8	190,000	10,000	mg/kg	2.72		0.041	1	0.491		0.037	1	0.874		0.04	1	0.457		0.053	1
Pyrene	129-00-0	190,000	2,200	mg/kg	0.359		0.041	1	0.696		0.037	1	1.94		0.04	1	0.318		0.053	1
Metals																				
Lead	7439-92-1	190,000	450	mg/kg	148		2.4	1	61.8		2	1	37.3		2.2	1	170		2	1

Notes:

CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA- Not Analyzed
ft bgs - feet below ground surface

¹ PADEP Act 2 Non-Residential Subsurface Soil Direct Contact MSCs (last updated August 27, 2016).
² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (last updated August 27, 2016).

Qualifiers:

U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
D - Indicates a dilution

Exceedance Summary:

10	Reported result exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.
10	Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC
10	DL exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.

Table 5
Summary of Subsurface Soil Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Subsurface Soil Direct Contact MSC ¹	PADEP Non-Residential Subsurface Soil Direct Contact MSC ²	Location ID	A-173				A-185				A-186				AOI5 BH-01-12			
				Sample ID	A-173_4-6'				A-185_6-8'				A-186_4-6'				BH-01-12_2-2.5			
				Sample Date	6/25/14				6/24/14				6/27/14				8/8/12			
				Sample Depth (ft bgs)	4-6				6-8				4-6				2-2.5			
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF
Volatile Organic Compounds (VOCs)																				
1,2,4-Trimethylbenzene	95-63-6	640	35	mg/kg	0.0006	J	0.0025	1	ND	U	0.0028	1	ND	U	0.0021	1	0.75		0.06	49.09
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	4.3	0.005	mg/kg	ND	U	0.0034	1	ND	U	0.0033	1	ND	U	0.0031	1	ND	U	0.06	49.09
1,2-Dichloroethane	107-06-2	98	0.5	mg/kg	ND	U	0.0013	1	ND	U	0.0014	1	ND	U	0.0011	1	ND	U	0.06	49.09
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	ND	U	0.0025	1	ND	U	0.0028	1	ND	U	0.0021	1	0.34		0.06	49.09
Benzene	71-43-2	330	0.5	mg/kg	ND	U	0.00063	1	0.0017		0.00069	1	ND	U	0.00053	1	0.34		0.03	49.09
Ethylbenzene	100-41-4	1,000	70	mg/kg	0.00033	J	0.0013	1	0.00033	J	0.0014	1	ND	U	0.0011	1	0.29	J	0.06	49.09
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	ND	U	0.0063	1	ND	U	0.0069	1	ND	U	0.0053	1	6.2		0.06	49.09
Methyl Tert-Butyl Ether	1634-04-4	9,900	2	mg/kg	ND	U	0.0013	1	0.0011	J	0.0014	1	ND	U	0.0011	1	ND	U	0.03	49.09
Toluene	108-88-3	10,000	100	mg/kg	ND	U	0.0013	1	0.0006	J	0.0014	1	ND	U	0.0011	1	0.47		0.06	49.09
Xylenes, Total (Dimethylbenzene)	1330-20-7	9,100	1,000	mg/kg	0.001	J	0.0013	1	0.0022		0.0014	1	ND	U	0.0011	1	1.6		0.06	49.09
Semi-volatile Organic Compounds (SVOCs)																				
Anthracene	120-12-7	190,000	350	mg/kg	ND	U	0.046	1	0.718		0.21	1	ND	U	0.037	1	14		0.2	10
Benzo(A)Anthracene	56-55-3	190,000	430	mg/kg	1.95		0.046	1	0.933		0.21	1	ND	U	0.037	1	7.9		0.2	10
Benzo(A)Pyrene	50-32-8	190,000	46	mg/kg	2.27		0.046	1	0.926		0.21	1	ND	U	0.037	1	4.8		0.2	10
Benzo(B)Fluoranthene	205-99-2	190,000	170	mg/kg	2.27		0.046	1	1.07		0.21	1	ND	U	0.037	1	5.1		0.2	10
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	1.42		0.046	1	0.54		0.21	1	ND	U	0.037	1	2.6		0.2	10
Chrysene	218-01-9	190,000	230	mg/kg	1.8		0.046	1	2.28		0.21	1	ND	U	0.037	1	9.7		0.2	10
Fluorene	86-73-7	190,000	3,800	mg/kg	ND	U	0.046	1	1.06		0.21	1	ND	U	0.037	1	54		0.2	10
Naphthalene	91-20-3	190,000	25	mg/kg	0.387		0.046	1	ND	U	0.21	1	ND	U	0.037	1	15		0.2	10
Phenanthrene	85-01-8	190,000	10,000	mg/kg	ND	U	0.046	1	1.71		0.21	1	ND	U	0.037	1	86		0.2	10
Pyrene	129-00-0	190,000	2,200	mg/kg	2.16		0.046	1	3.8		0.21	1	ND	U	0.037	1	17		0.2	10
Metals																				
Lead	7439-92-1	190,000	450	mg/kg	140		2.6	1	330		2.2	1	99.3		2.2	1	358		0.0529	10

Notes:

CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA- Not Analyzed
ft bgs - feet below ground surface

¹ PADEP Act 2 Non-Residential Subsurface Soil Direct Contact MSCs (last updated August 27, 2016).
² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (las

Qualifiers:

U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
D - Indicates a dilution

Exceedance Summary:

10	Reported result exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.
10	Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC
10	DL exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.

Table 5
Summary of Subsurface Soil Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Subsurface Soil Direct Contact MSC ¹	PADEP Non-Residential Subsurface Soil Direct Contact MSC ²	Location ID	AOI5 BH-02-12				AOI5 BH-03-12				AOI5 BH-04-12				AOI5 BH-07-12			
				Sample ID	BH-02-12 2.5-3				BH-03-12 2.5-3				BH-04-12 2-2.5				BH-07-12 3-3.5			
				Sample Date	8/8/12				8/7/12				8/7/12				8/6/12			
				Sample Depth (ft bgs)	2.5-3				2.5-3				2-2.5				3-3.5			
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF
Volatile Organic Compounds (VOCs)																				
1,2,4-Trimethylbenzene	95-63-6	640	35	mg/kg	ND	U	0.002	1.19	0.067		0.005	0.83	1.6	J	0.48	375.17	0.33		0.062	44.25
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	4.3	0.005	mg/kg	ND	U	0.002	1.19	ND	U	0.005	0.83	ND	U	0.48	375.17	ND	U	0.062	44.25
1,2-Dichloroethane	107-06-2	98	0.5	mg/kg	ND	U	0.002	1.19	ND	U	0.005	0.83	ND	U	0.48	375.17	ND	U	0.062	44.25
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	ND	U	0.002	1.19	0.16		0.005	0.83	0.51	J	0.48	375.17	0.16	J	0.062	44.25
Benzene	71-43-2	330	0.5	mg/kg	ND	U	0.0008	1.19	ND	U	0.005	0.83	0.86	J	0.24	375.17	ND	U	0.031	44.25
Ethylbenzene	100-41-4	1,000	70	mg/kg	ND	U	0.002	1.19	0.007		0.005	0.83	1.5	J	0.48	375.17	ND	U	0.062	44.25
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	ND	U	0.002	1.19	0.86		0.28	46.61	ND	U	0.48	375.17	0.27	J	0.062	44.25
Methyl Tert-Butyl Ether	1634-04-4	9,900	2	mg/kg	ND	U	0.0008	1.19	ND	U	0.005	0.83	ND	U	0.24	375.17	ND	U	0.031	44.25
Toluene	108-88-3	10,000	100	mg/kg	ND	U	0.002	1.19	0.007		0.005	0.83	3.3		0.48	375.17	ND	U	0.062	44.25
Xylenes, Total (Dimethylbenzene)	1330-20-7	9,100	1,000	mg/kg	ND	U	0.002	1.19	0.025		0.005	0.83	10		0.48	375.17	ND	U	0.062	44.25
Semi-volatile Organic Compounds (SVOCs)																				
Anthracene	120-12-7	190,000	350	mg/kg	2.1		0.024	5	ND	U	1	10	12		0.21	10	0.83		0.14	1
Benzo(A)Anthracene	56-55-3	190,000	430	mg/kg	1.8		0.024	5	ND	U	1	10	3.3		0.21	10	0.93		0.14	1
Benzo(A)Pyrene	50-32-8	190,000	46	mg/kg	1.8		0.024	5	ND	U	1	10	1.6		0.21	10	0.48	J	0.14	1
Benzo(B)Fluoranthene	205-99-2	190,000	170	mg/kg	2.2		0.024	5	ND	U	1	10	2.7		0.21	10	0.53	J	0.14	1
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	1.3		0.024	5	ND	U	1	10	1	J	0.21	10	0.46	J	0.14	1
Chrysene	218-01-9	190,000	230	mg/kg	1.8		0.024	5	1.4		1	10	4.1		0.21	10	1.8		0.14	1
Fluorene	86-73-7	190,000	3,800	mg/kg	1.3		0.024	5	ND	U	1	10	37		0.21	10	0.87		0.14	1
Naphthalene	91-20-3	190,000	25	mg/kg	9.1		0.024	5	ND	U	1	10	8.6		0.21	10	0.43	J	0.14	1
Phenanthrene	85-01-8	190,000	10,000	mg/kg	5.4		0.024	5	2.5		1	10	84		0.21	10	2.4		0.14	1
Pyrene	129-00-0	190,000	2,200	mg/kg	2.4		0.024	5	1.6		1	10	11		0.21	10	4.7		0.14	1
Metals																				
Lead	7439-92-1	190,000	450	mg/kg	179		0.0312	5	56.9		0.237	2	1610		0.276	50	111		0.0121	2

Notes:

CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA- Not Analyzed
ft bgs - feet below ground surface

¹ PADEP Act 2 Non-Residential Subsurface Soil Direct Contact MSCs (last updated August 27, 2016).

² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (las

Qualifiers:

U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
D - Indicates a dilution

Exceedance Summary:

10	Reported result exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.
10	Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC
10	DL exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.

Table 5
Summary of Subsurface Soil Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Subsurface Soil Direct Contact MSC ¹	PADEP Non-Residential Subsurface Soil Direct Contact MSC ²	Location ID	AOI5 BH-10-12				AOI5 BH-14-12				AOI5 BH-15-12				AOI5 BH-16-12			
				Sample ID	BH-10-12 4.5-5				BH-14-12 3.5-4				BH-15-12 4-4.5				BH-16-12 3.5-4			
				Sample Date	8/9/12				8/7/12				8/7/12				8/7/12			
				Sample Depth (ft bgs)	4.5-5				3.5-4				4-4.5				3.5-4			
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF
Volatile Organic Compounds (VOCs)																				
1,2,4-Trimethylbenzene	95-63-6	640	35	mg/kg	ND	U	0.001	0.99	0.005	J	0.001	0.95	ND	U	0.002	1.77	ND	U	0.005	0.81
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	4.3	0.005	mg/kg	ND	U	0.001	0.99	ND	U	0.001	0.95	ND	U	0.002	1.77	ND	U	0.005	0.81
1,2-Dichloroethane	107-06-2	98	0.5	mg/kg	ND	U	0.001	0.99	ND	U	0.001	0.95	ND	U	0.002	1.77	ND	U	0.005	0.81
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	ND	U	0.001	0.99	0.003	J	0.001	0.95	ND	U	0.002	1.77	ND	U	0.005	0.81
Benzene	71-43-2	330	0.5	mg/kg	0.025		0.0006	0.99	0.008		0.0006	0.95	ND	U	0.001	1.77	ND	U	0.005	0.81
Ethylbenzene	100-41-4	1,000	70	mg/kg	ND	U	0.001	0.99	0.003	J	0.001	0.95	ND	U	0.002	1.77	ND	U	0.005	0.81
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	ND	U	0.001	0.99	0.004	J	0.001	0.95	ND	U	0.002	1.77	ND	U	0.005	0.81
Methyl Tert-Butyl Ether	1634-04-4	9,900	2	mg/kg	ND	U	0.0006	0.99	ND	U	0.0006	0.95	ND	U	0.001	1.77	ND	U	0.005	0.81
Toluene	108-88-3	10,000	100	mg/kg	ND	U	0.001	0.99	0.012		0.001	0.95	ND	U	0.002	1.77	ND	U	0.005	0.81
Xylenes, Total (Dimethylbenzene)	1330-20-7	9,100	1,000	mg/kg	ND	U	0.001	0.99	0.012		0.001	0.95	ND	U	0.002	1.77	ND	U	0.005	0.81
Semi-volatile Organic Compounds (SVOCs)																				
Anthracene	120-12-7	190,000	350	mg/kg	0.42		0.02	5	0.48		0.044	10	0.098	J	0.041	10	0.36		0.019	1
Benzo(A)Anthracene	56-55-3	190,000	430	mg/kg	1.2		0.02	5	1.2		0.044	10	0.36		0.041	10	1.3		0.019	1
Benzo(A)Pyrene	50-32-8	190,000	46	mg/kg	1.1		0.02	5	1.4		0.044	10	0.28		0.041	10	1.2		0.019	1
Benzo(B)Fluoranthene	205-99-2	190,000	170	mg/kg	1.6		0.02	5	1.7		0.044	10	0.43		0.041	10	1.4		0.019	1
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	0.95		0.02	5	1.4		0.044	10	0.2	J	0.041	10	0.75		0.019	1
Chrysene	218-01-9	190,000	230	mg/kg	1.4		0.02	5	1.3		0.044	10	0.66		0.041	10	1.2		0.019	1
Fluorene	86-73-7	190,000	3,800	mg/kg	0.077	J	0.02	5	0.14	J	0.044	10	ND	U	0.041	10	0.13		0.019	1
Naphthalene	91-20-3	190,000	25	mg/kg	0.87		0.02	5	1.6		0.044	10	0.32		0.041	10	0.044		0.019	1
Phenanthrene	85-01-8	190,000	10,000	mg/kg	1.6		0.02	5	1.1		0.044	10	0.58		0.041	10	1.3		0.019	1
Pyrene	129-00-0	190,000	2,200	mg/kg	1.8		0.02	5	1.4		0.044	10	0.51		0.041	10	2		0.019	1
Metals																				
Lead	7439-92-1	190,000	450	mg/kg	1730		0.269	50	164		0.0286	5	120		0.0259	5	160		0.557	5

Notes:

CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA- Not Analyzed
ft bgs - feet below ground surface

¹ PADEP Act 2 Non-Residential Subsurface Soil Direct Contact MSCs (last updated August 27, 2016).

² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (las

Qualifiers:

U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
D - Indicates a dilution

Exceedance Summary:

10	Reported result exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.
10	Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC
10	DL exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.

Table 5
Summary of Subsurface Soil Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Subsurface Soil Direct Contact MSC ¹	PADEP Non-Residential Subsurface Soil Direct Contact MSC ²	Location ID	AOI5 BH-20-12				AOI5 BH-21-12				AOI5 BH-31-12				AOI5 BH-34-12			
				Sample ID	BH-20-12 3.5-4				BH-21-12 5.5-6				BH-31-12 3-3.5				BH-34-12 4-4.5			
				Sample Date	8/6/12				8/6/12				8/8/12				8/7/12			
				Sample Depth (ft bgs)	3.5-4				5.5-6				3-3.5				4-4.5			
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF
Volatile Organic Compounds (VOCs)																				
1,2,4-Trimethylbenzene	95-63-6	640	35	mg/kg	0.003	J	0.001	0.96	0.005	J	0.002	0.94	0.001	J	0.001	0.92	ND	U	0.001	1.09
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	4.3	0.005	mg/kg	ND	U	0.001	0.96	ND	U	0.002	0.94	ND	U	0.001	0.92	ND	U	0.001	1.09
1,2-Dichloroethane	107-06-2	98	0.5	mg/kg	ND	U	0.001	0.96	ND	U	0.002	0.94	ND	U	0.001	0.92	ND	U	0.001	1.09
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	0.002	J	0.001	0.96	0.002	J	0.002	0.94	ND	U	0.001	0.92	ND	U	0.001	1.09
Benzene	71-43-2	330	0.5	mg/kg	ND	U	0.0007	0.96	0.002	J	0.0008	0.94	0.001	J	0.0007	0.92	0.012		0.0007	1.09
Ethylbenzene	100-41-4	1,000	70	mg/kg	ND	U	0.001	0.96	ND	U	0.002	0.94	ND	U	0.001	0.92	ND	U	0.001	1.09
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	0.003	J	0.001	0.96	0.056		0.002	0.94	0.002	J	0.001	0.92	ND	U	0.001	1.09
Methyl Tert-Butyl Ether	1634-04-4	9,900	2	mg/kg	ND	U	0.0007	0.96	ND	U	0.0008	0.94	ND	U	0.0007	0.92	ND	U	0.0007	1.09
Toluene	108-88-3	10,000	100	mg/kg	ND	U	0.001	0.96	0.002	J	0.002	0.94	0.002	J	0.001	0.92	0.002	J	0.001	1.09
Xylenes, Total (Dimethylbenzene)	1330-20-7	9,100	1,000	mg/kg	0.004	J	0.001	0.96	0.013		0.002	0.94	0.001	J	0.001	0.92	0.021		0.001	1.09
Semi-volatile Organic Compounds (SVOCs)																				
Anthracene	120-12-7	190,000	350	mg/kg	1.5		0.049	10	3.3		0.057	10	1.3		0.026	5	0.65		0.044	10
Benzo(A)Anthracene	56-55-3	190,000	430	mg/kg	2.1		0.049	10	4.1		0.057	10	0.98		0.026	5	2.4		0.044	10
Benzo(A)Pyrene	50-32-8	190,000	46	mg/kg	2.6		0.049	10	4.1		0.057	10	0.95		0.026	5	2.5		0.044	10
Benzo(B)Fluoranthene	205-99-2	190,000	170	mg/kg	2.7		0.049	10	3.8		0.057	10	1		0.026	5	2.8		0.044	10
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	2.1		0.049	10	2.6		0.057	10	0.78		0.026	5	1.7		0.044	10
Chrysene	218-01-9	190,000	230	mg/kg	2.7		0.049	10	5.5		0.057	10	1.3		0.026	5	2.3		0.044	10
Fluorene	86-73-7	190,000	3,800	mg/kg	1.3		0.049	10	1.8		0.057	10	1.4		0.026	5	0.21	J	0.044	10
Naphthalene	91-20-3	190,000	25	mg/kg	10		0.049	10	14		0.057	10	5.9		0.026	5	0.2	J	0.044	10
Phenanthrene	85-01-8	190,000	10,000	mg/kg	4.1		0.049	10	5.7		0.057	10	4.5		0.026	5	2.3		0.044	10
Pyrene	129-00-0	190,000	2,200	mg/kg	2.3		0.049	10	6.5		0.057	10	1.6		0.026	5	3.4		0.044	10
Metals																				
Lead	7439-92-1	190,000	450	mg/kg	377		0.063	10	314		0.037	5	152		0.0332	5	1340		0.282	50

Notes:

CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA- Not Analyzed
ft bgs - feet below ground surface

¹ PADEP Act 2 Non-Residential Subsurface Soil Direct Contact MSCs (last updated August 27, 2016).

² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (las

Qualifiers:

U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
D - Indicates a dilution

Exceedance Summary:

10	Reported result exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.
10	Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC
10	DL exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.

Table 5
Summary of Subsurface Soil Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Subsurface Soil Direct Contact MSC ¹	PADEP Non-Residential Subsurface Soil Direct Contact MSC ²	Location ID	AOI5 BH-35-12				AOI5 BH-36-12				AOI5 BH-37-12				AOI5 BH-38-12			
				Sample ID	BH-35-12 2.5-3				BH-36-12 3.5-4				BH-37-12 2-2.5				BH-38-12 3-3.5			
				Sample Date	8/8/12				8/7/12				8/8/12				8/7/12			
				Sample Depth (ft bgs)	2.5-3				3.5-4				2-2.5				3-3.5			
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF
Volatile Organic Compounds (VOCs)																				
1,2,4-Trimethylbenzene	95-63-6	640	35	mg/kg	ND	U	0.005	0.84	0.003	J	0.001	0.92	0.29	J	0.094	67.4	0.003	J	0.002	1.36
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	4.3	0.005	mg/kg	ND	U	0.005	0.84	ND	U	0.001	0.92	ND	U	0.094	67.4	0.002	J	0.002	1.36
1,2-Dichloroethane	107-06-2	98	0.5	mg/kg	ND	U	0.005	0.84	ND	U	0.001	0.92	ND	U	0.094	67.4	ND	U	0.002	1.36
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	ND	U	0.005	0.84	0.002	J	0.001	0.92	ND	U	0.094	67.4	0.002	J	0.002	1.36
Benzene	71-43-2	330	0.5	mg/kg	ND	U	0.005	0.84	0.039		0.0006	0.92	ND	U	0.047	67.4	0.005	J	0.0009	1.36
Ethylbenzene	100-41-4	1,000	70	mg/kg	ND	U	0.005	0.84	ND	U	0.001	0.92	ND	U	0.094	67.4	ND	U	0.002	1.36
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	ND	U	0.005	0.84	ND	U	0.001	0.92	ND	U	0.094	67.4	ND	U	0.002	1.36
Methyl Tert-Butyl Ether	1634-04-4	9,900	2	mg/kg	ND	U	0.005	0.84	ND	U	0.0006	0.92	ND	U	0.047	67.4	ND	U	0.0009	1.36
Toluene	108-88-3	10,000	100	mg/kg	ND	U	0.005	0.84	0.014		0.001	0.92	ND	U	0.094	67.4	0.004	J	0.002	1.36
Xylenes, Total (Dimethylbenzene)	1330-20-7	9,100	1,000	mg/kg	0.018		0.005	0.84	0.009		0.001	0.92	0.11	J	0.094	67.4	0.002	J	0.002	1.36
Semi-volatile Organic Compounds (SVOCs)																				
Anthracene	120-12-7	190,000	350	mg/kg	0.15		0.11	5	0.18	J	0.043	10	0.21		0.023	5	0.13	J	0.046	10
Benzo(A)Anthracene	56-55-3	190,000	430	mg/kg	0.68		0.11	5	0.29		0.043	10	0.63		0.023	5	0.53		0.046	10
Benzo(A)Pyrene	50-32-8	190,000	46	mg/kg	0.69		0.11	5	0.42		0.043	10	0.6		0.023	5	0.55		0.046	10
Benzo(B)Fluoranthene	205-99-2	190,000	170	mg/kg	0.95		0.11	5	0.46		0.043	10	0.87		0.023	5	0.64		0.046	10
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	0.53		0.11	5	1		0.043	10	0.54		0.023	5	0.43		0.046	10
Chrysene	218-01-9	190,000	230	mg/kg	0.78		0.11	5	0.44		0.043	10	0.67		0.023	5	0.52		0.046	10
Fluorene	86-73-7	190,000	3,800	mg/kg	ND	U	0.11	5	0.056	J	0.043	10	0.21		0.023	5	0.096	J	0.046	10
Naphthalene	91-20-3	190,000	25	mg/kg	0.78		0.11	5	0.28		0.043	10	1.2		0.023	5	0.83		0.046	10
Phenanthrene	85-01-8	190,000	10,000	mg/kg	0.86		0.11	5	0.28		0.043	10	0.96		0.023	5	0.49		0.046	10
Pyrene	129-00-0	190,000	2,200	mg/kg	1.2		0.11	5	0.34		0.043	10	0.92		0.023	5	0.55		0.046	10
Metals																				
Lead	7439-92-1	190,000	450	mg/kg	660		2.4	20	254		0.0283	5	2230		0.305	50	2890		0.299	50

Notes:

CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA- Not Analyzed
ft bgs - feet below ground surface

¹ PADEP Act 2 Non-Residential Subsurface Soil Direct Contact MSCs (last updated August 27, 2016).
² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (las

Qualifiers:

U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
D - Indicates a dilution

Exceedance Summary:

10	Reported result exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.
10	Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC
10	DL exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.

Table 5
Summary of Subsurface Soil Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Subsurface Soil Direct Contact MSC ¹	PADEP Non-Residential Subsurface Soil Direct Contact MSC ²	Location ID	AOI5 BH-39-12				AOI5 BH-40-12				AOI5 BH-13-08				AOI5 BH-13-15			
				Sample ID	BH-39-12 2-2.5				BH-40-12 3-3.5				AOI5 BH-13-08 3.5-4_031113				AOI5 BH-13-15 4.5-5_031113			
				Sample Date	8/7/12				8/7/12				3/11/13				3/11/13			
				Sample Depth (ft bgs)	2-2.5				3-3.5				3.5-4				4.5-5			
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF
Volatile Organic Compounds (VOCs)																				
1,2,4-Trimethylbenzene	95-63-6	640	35	mg/kg	0.002	J	0.001	0.93	ND	U	0.001	0.94	ND	U	0.0047	1	ND	U	0.005	1
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	4.3	0.005	mg/kg	ND	U	0.001	0.93	ND	U	0.001	0.94	ND	U	0.00094	1	ND	U	0.00099	1
1,2-Dichloroethane	107-06-2	98	0.5	mg/kg	ND	U	0.001	0.93	ND	U	0.001	0.94	ND	U	0.00094	1	ND	U	0.00099	1
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	0.001	J	0.001	0.93	ND	U	0.001	0.94	ND	U	0.0047	1	ND	U	0.005	1
Benzene	71-43-2	330	0.5	mg/kg	0.021		0.0006	0.93	0.021		0.0006	0.94	ND	U	0.00094	1	ND	U	0.00099	1
Ethylbenzene	100-41-4	1,000	70	mg/kg	0.001	J	0.001	0.93	0.002	J	0.001	0.94	ND	U	0.00094	1	ND	U	0.00099	1
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	ND	U	0.001	0.93	ND	U	0.001	0.94	ND	U	0.0047	1	ND	U	0.005	1
Methyl Tert-Butyl Ether	1634-04-4	9,900	2	mg/kg	ND	U	0.0006	0.93	ND	U	0.0006	0.94	ND	U	0.00094	1	ND	U	0.00099	1
Toluene	108-88-3	10,000	100	mg/kg	0.013		0.001	0.93	0.014		0.001	0.94	ND	U	0.00094	1	ND	U	0.00099	1
Xylenes, Total (Dimethylbenzene)	1330-20-7	9,100	1,000	mg/kg	0.008		0.001	0.93	0.009		0.001	0.94	ND	U	0.00094	1	ND	U	0.00099	1
Semi-volatile Organic Compounds (SVOCs)																				
Anthracene	120-12-7	190,000	350	mg/kg	0.2	J	0.04	10	0.41		0.046	10	ND	U	0.036	1	0.0631		0.038	1
Benzo(A)Anthracene	56-55-3	190,000	430	mg/kg	0.57		0.04	10	1.5		0.046	10	ND	U	0.036	1	0.0985		0.038	1
Benzo(A)Pyrene	50-32-8	190,000	46	mg/kg	0.78		0.04	10	1.6		0.046	10	ND	U	0.036	1	0.0824		0.038	1
Benzo(B)Fluoranthene	205-99-2	190,000	170	mg/kg	0.99		0.04	10	2		0.046	10	ND	U	0.036	1	0.112		0.038	1
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	0.94		0.04	10	1.3		0.046	10	ND	U	0.036	1	0.0524		0.038	1
Chrysene	218-01-9	190,000	230	mg/kg	0.68		0.04	10	1.8		0.046	10	ND	U	0.036	1	0.1		0.038	1
Fluorene	86-73-7	190,000	3,800	mg/kg	0.084	J	0.04	10	0.39		0.046	10	ND	U	0.036	1	ND	U	0.038	1
Naphthalene	91-20-3	190,000	25	mg/kg	0.48		0.04	10	0.98		0.046	10	ND	U	0.036	1	ND	U	0.038	1
Phenanthrene	85-01-8	190,000	10,000	mg/kg	0.36		0.04	10	1		0.046	10	ND	U	0.036	1	0.263		0.038	1
Pyrene	129-00-0	190,000	2,200	mg/kg	0.72		0.04	10	2.5		0.046	10	ND	U	0.036	1	0.202		0.038	1
Metals																				
Lead	7439-92-1	190,000	450	mg/kg	3470		0.524	100	1140		0.298	50	34.5		2.1	1	15.6		2	1

Notes:

CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA- Not Analyzed
ft bgs - feet below ground surface

¹ PADEP Act 2 Non-Residential Subsurface Soil Direct Contact MSCs (last updated August 27, 2016).
² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (las

Qualifiers:

U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
D - Indicates a dilution

Exceedance Summary:

10	Reported result exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.
10	Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC
10	DL exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.

Table 5
Summary of Subsurface Soil Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Subsurface Soil Direct Contact MSC ¹	PADEP Non-Residential Subsurface Soil Direct Contact MSC ²	Location ID	AOI5_BH-13-16				AOI5_BH-13-17				AOI5_BH-13-22				AOI5_BH-13-24			
				Sample ID	AOI5_BH-13-16_3.5-4_031113				AOI5_BH-13-17_5-5.5_031113				AOI5_BH-13-22_2-2.5_030813				AOI5_BH-13-24_2-2.5_030813			
				Sample Date	3/11/13				3/11/13				3/8/13				3/8/13			
				Sample Depth (ft bgs)	3.5-4				5-5.5				2-2.5				2-2.5			
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF
Volatile Organic Compounds (VOCs)																				
1,2,4-Trimethylbenzene	95-63-6	640	35	mg/kg	0.686		0.6	1	ND	U	0.0062	1	ND	U	0.64	1	ND	U	6.4	1
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	4.3	0.005	mg/kg	ND	U	0.12	1	ND	U	0.0012	1	ND	U	0.13	1	ND	U	1.3	1
1,2-Dichloroethane	107-06-2	98	0.5	mg/kg	ND	U	0.12	1	ND	U	0.0012	1	ND	U	0.13	1	ND	U	1.3	1
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	ND	U	0.6	1	ND	U	0.0062	1	ND	U	0.64	1	ND	U	6.4	1
Benzene	71-43-2	330	0.5	mg/kg	0.736		0.12	1	ND	U	0.0012	1	0.336		0.13	1	2.31		1.3	1
Ethylbenzene	100-41-4	1,000	70	mg/kg	0.831		0.12	1	ND	U	0.0012	1	0.275		0.13	1	4.32		1.3	1
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	ND	U	0.6	1	ND	U	0.0062	1	1.72		0.64	1	3160		320	50
Methyl Tert-Butyl Ether	1634-04-4	9,900	2	mg/kg	ND	U	0.12	1	ND	U	0.0012	1	ND	U	0.13	1	ND	U	1.3	1
Toluene	108-88-3	10,000	100	mg/kg	2.2		0.12	1	ND	U	0.0012	1	0.552		0.13	1	4.6		1.3	1
Xylenes, Total (Dimethylbenzene)	1330-20-7	9,100	1,000	mg/kg	2.83		0.12	1	ND	U	0.0012	1	1.01		0.13	1	14.3		1.3	1
Semi-volatile Organic Compounds (SVOCs)																				
Anthracene	120-12-7	190,000	350	mg/kg	0.817		0.04	1	0.0931		0.038	1	6.45		0.21	5	3.02		0.19	5
Benzo(A)Anthracene	56-55-3	190,000	430	mg/kg	3.45		0.04	1	0.19		0.038	1	2.78		0.21	5	1.38		0.19	5
Benzo(A)Pyrene	50-32-8	190,000	46	mg/kg	3.56		0.04	1	0.17		0.038	1	1.99		0.21	5	0.863		0.19	5
Benzo(B)Fluoranthene	205-99-2	190,000	170	mg/kg	3.19		0.08	2	0.256		0.038	1	2.53		0.21	5	1.63		0.19	5
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	2.06		0.04	1	0.155		0.038	1	1.06		0.21	5	0.609		0.19	5
Chrysene	218-01-9	190,000	230	mg/kg	3.33		0.04	1	0.307		0.038	1	2.95		0.21	5	1.9		0.19	5
Fluorene	86-73-7	190,000	3,800	mg/kg	0.322		0.04	1	ND	U	0.038	1	14.7		0.21	5	5.42		0.19	5
Naphthalene	91-20-3	190,000	25	mg/kg	0.507		0.04	1	0.0508		0.038	1	ND	U	0.21	5	1.37		0.19	5
Phenanthrene	85-01-8	190,000	10,000	mg/kg	1.25		0.04	1	0.316		0.038	1	29.3		0.83	20	11.8		0.19	5
Pyrene	129-00-0	190,000	2,200	mg/kg	3.81		0.04	1	0.297		0.038	1	9.1		0.21	5	3.88		0.19	5
Metals																				
Lead	7439-92-1	190,000	450	mg/kg	260		1.9	1	896		2.6	1	80.3		2.5	1	115		2.4	1

Notes:

CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA- Not Analyzed
ft bgs - feet below ground surface
¹ PADEP Act 2 Non-Residential Subsurface Soil Direct Contact MSCs (last updated August 27, 2016).
² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (las

Qualifiers:

U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
D - Indicates a dilution

Exceedance Summary:

10	Reported result exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.
10	Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC
10	DL exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.

Table 5
Summary of Subsurface Soil Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Subsurface Soil Direct Contact MSC ¹	PADEP Non-Residential Subsurface Soil Direct Contact MSC ²	Location ID	AOI5_BH-13-25				AOI5-BH-13-27				AOI5_BH-13-34				AOI5_BH-13-37			
				Sample ID	AOI5_BH-13-25_2.5-3_030813				AOI5-BH-13-27-2.5-330713				AOI5_BH-13-34_2.5-3_30613				AOI5_BH-13-37-2.5-3_030513			
				Sample Date	3/8/13				3/7/13				3/6/13				3/5/13			
				Sample Depth (ft bgs)	2.5-3				2.5-3				2.5-3				2.5-3			
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF
Volatile Organic Compounds (VOCs)																				
1,2,4-Trimethylbenzene	95-63-6	640	35	mg/kg	0.72		0.55	1	ND	U	0.0056	1	ND	U	170	2.5	ND	U	0.0065	1
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	4.3	0.005	mg/kg	ND	U	0.11	1	ND	U	0.0011	1	ND	U	34	2.5	ND	U	0.0013	1
1,2-Dichloroethane	107-06-2	98	0.5	mg/kg	ND	U	0.11	1	ND	U	0.0011	1	ND	U	34	2.5	ND	U	0.0013	1
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	ND	U	0.55	1	ND	U	0.0056	1	ND	U	170	2.5	ND	U	0.0065	1
Benzene	71-43-2	330	0.5	mg/kg	1.22		0.11	1	0.0336		0.0011	1	35.3		34	2.5	0.0011	J	0.0013	1
Ethylbenzene	100-41-4	1,000	70	mg/kg	1.56		0.11	1	ND	U	0.0011	1	ND	U	34	2.5	ND	U	0.0013	1
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	3.96		0.55	1	0.0445		0.0056	1	23200		1700	25	ND	U	0.0065	1
Methyl Tert-Butyl Ether	1634-04-4	9,900	2	mg/kg	ND	U	0.11	1	ND	U	0.0011	1	ND	U	34	2.5	ND	U	0.0013	1
Toluene	108-88-3	10,000	100	mg/kg	1.58		0.11	1	ND	U	0.0011	1	ND	U	34	2.5	ND	U	0.0013	1
Xylenes, Total (Dimethylbenzene)	1330-20-7	9,100	1,000	mg/kg	3.66		0.11	1	ND	U	0.0011	1	ND	U	34	2.5	ND	U	0.0013	1
Semi-volatile Organic Compounds (SVOCs)																				
Anthracene	120-12-7	190,000	350	mg/kg	4.99		0.19	5	ND	U	0.042	1	0.218		0.046	1	0.328		0.042	1
Benzo(A)Anthracene	56-55-3	190,000	430	mg/kg	5.98		0.19	5	ND	U	0.042	1	0.712		0.046	1	0.921		0.042	1
Benzo(A)Pyrene	50-32-8	190,000	46	mg/kg	13.6		0.19	5	0.0689		0.042	1	0.642		0.046	1	0.747		0.042	1
Benzo(B)Fluoranthene	205-99-2	190,000	170	mg/kg	14.1		0.19	5	0.0688		0.042	1	0.841		0.046	1	0.717		0.042	1
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	9.17		0.19	5	0.0535		0.042	1	0.48		0.046	1	0.451		0.042	1
Chrysene	218-01-9	190,000	230	mg/kg	7.02		0.19	5	0.107		0.042	1	0.769		0.046	1	0.899		0.042	1
Fluorene	86-73-7	190,000	3,800	mg/kg	7.46		0.19	5	ND	U	0.042	1	0.127		0.046	1	0.0746		0.042	1
Naphthalene	91-20-3	190,000	25	mg/kg	ND	U	0.19	5	ND	U	0.042	1	0.272		0.046	1	0.0579		0.042	1
Phenanthrene	85-01-8	190,000	10,000	mg/kg	15.3		0.19	5	0.123		0.042	1	0.979		0.046	1	1.05		0.042	1
Pyrene	129-00-0	190,000	2,200	mg/kg	4.53		0.19	5	0.0941		0.042	1	1.1		0.046	1	1.43		0.042	1
Metals																				
Lead	7439-92-1	190,000	450	mg/kg	42.4		2.3	1	2120		2.8	1	677		2	1	1000		2.8	1

Notes:

CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA- Not Analyzed
ft bgs - feet below ground surface

¹ PADEP Act 2 Non-Residential Subsurface Soil Direct Contact MSCs (last updated August 27, 2016).
² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (las

Qualifiers:

U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
D - Indicates a dilution

Exceedance Summary:

10	Reported result exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.
10	Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC
10	DL exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.

Table 5
Summary of Subsurface Soil Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Subsurface Soil Direct Contact MSC ¹	PADEP Non-Residential Subsurface Soil Direct Contact MSC ²	Location ID	AOI5_BH-13-38				AOI5_BH-13-39				AOI5_BH-13-39				AOI5_BH-13-40			
				Sample ID	AOI5_BH-13-38_3.5-4_030513				AOI5_BH-13-39_2.5-3_030513				AOI5_BH-13-39_2-2.5_030513				BH-13-40-2-2.5_030413			
				Sample Date	3/5/13				3/5/13				3/5/13				3/4/13			
				Sample Depth (ft bgs)	3.5-4				2.5-3				2-2.5				2-2.5			
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF
Volatile Organic Compounds (VOCs)																				
1,2,4-Trimethylbenzene	95-63-6	640	35	mg/kg	ND	U	0.007	1	0.00049	J	0.0049	1	0.173	J	0.49	1	ND	U	0.0059	1
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	4.3	0.005	mg/kg	ND	U	0.0014	1	ND	U	0.00099	1	ND	U	0.098	1	ND	U	0.0012	1
1,2-Dichloroethane	107-06-2	98	0.5	mg/kg	ND	U	0.0014	1	ND	U	0.00099	1	ND	U	0.098	1	ND	U	0.0012	1
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	ND	U	0.007	1	ND	U	0.0049	1	0.0466	J	0.49	1	ND	U	0.0059	1
Benzene	71-43-2	330	0.5	mg/kg	ND	U	0.0014	1	0.00058	J	0.00099	1	0.21		0.098	1	0.00055	J	0.0012	1
Ethylbenzene	100-41-4	1,000	70	mg/kg	ND	U	0.0014	1	0.00041	J	0.00099	1	0.168		0.098	1	ND	U	0.0012	1
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	ND	U	0.007	1	ND	U	0.0049	1	ND	U	0.49	1	ND	U	0.0059	1
Methyl Tert-Butyl Ether	1634-04-4	9,900	2	mg/kg	ND	U	0.0014	1	ND	U	0.00099	1	ND	U	0.098	1	ND	U	0.0012	1
Toluene	108-88-3	10,000	100	mg/kg	ND	U	0.0014	1	0.0014		0.00099	1	0.372		0.098	1	0.00035	J	0.0012	1
Xylenes, Total (Dimethylbenzene)	1330-20-7	9,100	1,000	mg/kg	ND	U	0.0014	1	0.0022		0.00099	1	0.835		0.098	1	ND	U	0.0012	1
Semi-volatile Organic Compounds (SVOCs)																				
Anthracene	120-12-7	190,000	350	mg/kg	0.897		0.053	1	0.083		0.045	1	0.335		0.045	1	0.475		0.036	1
Benzo(A)Anthracene	56-55-3	190,000	430	mg/kg	2.38		0.053	1	0.146		0.045	1	0.884		0.045	1	1.24		0.036	1
Benzo(A)Pyrene	50-32-8	190,000	46	mg/kg	2.1		0.053	1	0.275		0.045	1	0.855		0.045	1	0.948		0.036	1
Benzo(B)Fluoranthene	205-99-2	190,000	170	mg/kg	2.32		0.053	1	0.307		0.045	1	1.02		0.045	1	0.898		0.036	1
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	1.19		0.053	1	0.288		0.045	1	0.605		0.045	1	0.474		0.036	1
Chrysene	218-01-9	190,000	230	mg/kg	2.4		0.053	1	0.19		0.045	1	0.991		0.045	1	1.29		0.036	1
Fluorene	86-73-7	190,000	3,800	mg/kg	0.395		0.053	1	0.0413	J	0.045	1	0.473		0.045	1	0.144		0.036	1
Naphthalene	91-20-3	190,000	25	mg/kg	0.208		0.053	1	0.111		0.045	1	0.132		0.045	1	0.0524		0.036	1
Phenanthrene	85-01-8	190,000	10,000	mg/kg	3.35		0.053	1	0.152		0.045	1	1.12		0.045	1	1.97		0.036	1
Pyrene	129-00-0	190,000	2,200	mg/kg	3.67		0.053	1	0.178		0.045	1	1.53		0.045	1	2.35		0.036	1
Metals																				
Lead	7439-92-1	190,000	450	mg/kg	2950		3.2	1	1740		14	5	1440		2.9	1	269		2.4	1

Notes:

CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA- Not Analyzed
ft bgs - feet below ground surface

¹ PADEP Act 2 Non-Residential Subsurface Soil Direct Contact MSCs (last updated August 27, 2016).
² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (las

Qualifiers:

U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
D - Indicates a dilution

Exceedance Summary:

10	Reported result exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.
10	Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC
10	DL exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.

Table 5
Summary of Subsurface Soil Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Subsurface Soil Direct Contact MSC ¹	PADEP Non-Residential Subsurface Soil Direct Contact MSC ²	Location ID	AOI-5_BH-13-41				AOI-5_BH-13-42				AOI5_BH-13-43				
				Sample ID	BH-13-41-2-2.5_030413				BH-13-42-2.5-3_030413				BH-13-43-2-2.5_030513				
				Sample Date	3/4/13				3/4/13				3/5/13				
				Sample Depth (ft bgs)	2-2.5				2.5-3				2-2.5				
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	
Volatile Organic Compounds (VOCs)																	
1,2,4-Trimethylbenzene	95-63-6	640	35	mg/kg	ND	U	0.0046	1	ND	U	0.0037	1	ND	U	0.0054	1	
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	4.3	0.005	mg/kg	ND	U	0.00093	1	ND	U	0.00074	1	ND	U	0.0011	1	
1,2-Dichloroethane	107-06-2	98	0.5	mg/kg	ND	U	0.00093	1	ND	U	0.00074	1	ND	U	0.0011	1	
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	ND	U	0.0046	1	ND	U	0.0037	1	ND	U	0.0054	1	
Benzene	71-43-2	330	0.5	mg/kg	0.00058	J	0.00093	1	ND	U	0.00074	1	0.00022	J	0.0011	1	
Ethylbenzene	100-41-4	1,000	70	mg/kg	ND	U	0.00093	1	ND	U	0.00074	1	ND	U	0.0011	1	
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	ND	U	0.0046	1	ND	U	0.0037	1	ND	U	0.0054	1	
Methyl Tert-Butyl Ether	1634-04-4	9,900	2	mg/kg	ND	U	0.00093	1	ND	U	0.00074	1	ND	U	0.0011	1	
Toluene	108-88-3	10,000	100	mg/kg	0.00032	J	0.00093	1	ND	U	0.00074	1	ND	U	0.0011	1	
Xylenes, Total (Dimethylbenzene)	1330-20-7	9,100	1,000	mg/kg	ND	U	0.00093	1	ND	U	0.00074	1	ND	U	0.0011	1	
Semi-volatile Organic Compounds (SVOCs)																	
Anthracene	120-12-7	190,000	350	mg/kg	0.116		0.037	1	ND	U	0.039	1	0.0959		0.042	1	
Benzo(A)Anthracene	56-55-3	190,000	430	mg/kg	0.309		0.037	1	0.0334	J	0.039	1	0.224		0.042	1	
Benzo(A)Pyrene	50-32-8	190,000	46	mg/kg	0.334		0.037	1	0.0339	J	0.039	1	0.381		0.042	1	
Benzo(B)Fluoranthene	205-99-2	190,000	170	mg/kg	0.415		0.037	1	0.0335	J	0.039	1	0.339		0.042	1	
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	0.298		0.037	1	0.0295	J	0.039	1	0.524		0.042	1	
Chrysene	218-01-9	190,000	230	mg/kg	0.376		0.037	1	0.0338	J	0.039	1	0.312		0.042	1	
Fluorene	86-73-7	190,000	3,800	mg/kg	0.0947		0.037	1	ND	U	0.039	1	0.0617		0.042	1	
Naphthalene	91-20-3	190,000	25	mg/kg	0.113		0.037	1	ND	U	0.039	1	0.083		0.042	1	
Phenanthrene	85-01-8	190,000	10,000	mg/kg	0.535		0.037	1	0.0199	J	0.039	1	0.159		0.042	1	
Pyrene	129-00-0	190,000	2,200	mg/kg	0.532		0.037	1	0.0455		0.039	1	0.269		0.042	1	
Metals																	
Lead	7439-92-1	190,000	450	mg/kg	712		2.3	1	232		2.5	1	878		2.7	1	

Notes:

CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA- Not Analyzed
ft bgs - feet below ground surface
¹ PADEP Act 2 Non-Residential Subsurface Soil Direct Contact MSCs (last updated August 27, 2016).
² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (las

Qualifiers:

U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
D - Indicates a dilution

Exceedance Summary:

10	Reported result exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.
10	Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC
10	DL exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.

Table 5
Summary of Subsurface Soil Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Subsurface Soil Direct Contact MSC ¹	PADEP Non-Residential Subsurface Soil Direct Contact MSC ²	Location ID	AOI5-BH-14-14				AOI5-BH-14-15				AOI5-BH-14-17				AOI5-BH-14-18			
				Sample ID	AOI-5_14-14_8-9'				AOI-5_14-15_8.0'				AOI-5_14-17_8.0'				AOI-5_14-18_7.0'			
				Sample Date	6/16/14				6/16/14				6/16/14				6/16/14			
				Sample Depth (ft bgs)	8-9				8-8.5				8-8.7				7-7.5			
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF
Volatile Organic Compounds (VOCs)																				
1,2,4-Trimethylbenzene	95-63-6	640	35	mg/kg	ND☐		0.0026	1	0.305	J☐	0.41	1	0.499		0.37	1	0.156	J☐	0.39	1
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	4.3	0.005	mg/kg	ND☐		0.0034	1	ND☐		0.0042	1	ND☐		0.0079	1	ND☐		0.004	1
1,2-Dichloroethane	107-06-2	98	0.5	mg/kg	ND☐		0.0013	1	ND☐		0.21	1	ND☐		0.19	1	ND☐		0.19	1
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	ND☐		0.0026	1	0.112	J☐	0.41	1	0.279	J☐	0.37	1	0.0673	J☐	0.39	1
Benzene	71-43-2	330	0.5	mg/kg	ND☐		0.00065	1	3.21		0.1	1	0.537		0.093	1	0.395		0.096	1
Ethylbenzene	100-41-4	1,000	70	mg/kg	ND☐		0.0013	1	0.628		0.21	1	0.275		0.19	1	0.144	J☐	0.19	1
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	ND☐		0.0065	1	3.11		1	1	1.67		0.93	1	0.878	J☐	0.96	1
Methyl Tert-Butyl Ether	1634-04-4	9,900	2	mg/kg	0.0026		0.0013	1	ND☐		0.21	1	ND		0.19	1	0.049	J☐	0.19	1
Toluene	108-88-3	10,000	100	mg/kg	ND☐		0.0013	1	0.892		0.21	1	1.49		0.19	1	0.636		0.19	1
Xylenes, Total (Dimethylbenzene)	1330-20-7	9,100	1,000	mg/kg	0.00071	J☐	0.0013	1	1.63		0.21	1	0.516		0.19	1	0.282		0.19	1
Semi-volatile Organic Compounds (SVOCs)																				
Anthracene	120-12-7	190,000	350	mg/kg	1.38		0.045	1	1.21		0.054	1	NA				ND☐		0.051	1
Benzo(A)Anthracene	56-55-3	190,000	430	mg/kg	8.65		0.45	10	1.3		0.054	1	NA				0.0385	J	0.051	1
Benzo(A)Pyrene	50-32-8	190,000	46	mg/kg	10.6		0.45	10	1.1		0.054	1	NA				0.0376	J☐	0.051	1
Benzo(B)Fluoranthene	205-99-2	190,000	170	mg/kg	11.5		0.45	10	1.13		0.054	1	NA				0.0329	J☐	0.051	1
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	5.72		0.45	10	0.563		0.054	1	NA				0.0229	J☐	0.051	1
Chrysene	218-01-9	190,000	230	mg/kg	7.82		0.45	10	1.41		0.054	1	NA				0.0351	J☐	0.051	1
Fluorene	86-73-7	190,000	3,800	mg/kg	0.417		0.045	1	1.08		0.054	1	NA				0.0205	J☐	0.051	1
Naphthalene	91-20-3	190,000	25	mg/kg	0.891		0.045	1	0.335		0.054	1	NA				ND☐		0.051	1
Phenanthrene	85-01-8	190,000	10,000	mg/kg	2.15		0.045	1	4.13		0.054	1	NA				0.0356	J☐	0.051	1
Pyrene	129-00-0	190,000	2,200	mg/kg	8.85		0.45	10	2.91		0.054	1	NA				0.0718		0.051	1
Metals																				
Lead	7439-92-1	190,000	450	mg/kg	144		2	1	203		2	1	336		1.9	1	14.5		1.9	1

Notes:

CAS No - Chemical Abstracts Service Registry Number

PADEP - Pennsylvania Department of Environmental Protection Agency

MSC - Medium Specific Concentration

mg/kg - milligram per kilogram

Q - Qualifier

DL - May be reporting limit or method detection limit

DF - Dilution Factor

ND - Not Detected

NA- Not Analyzed

ft bgs - feet below ground surface

¹ PADEP Act 2 Non-Residential Subsurface Soil Direct Contact MSCs (last updated August 27, 2016).

² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (las

Qualifiers:

U - The compound was analyzed but not detected

J - Estimated value. Result between method detection and reporting limits

D - Indicates a dilution

Exceedance Summary:

10	Reported result exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.
10	Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC
10	DL exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.

Table 5
Summary of Subsurface Soil Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Subsurface Soil Direct Contact MSC ¹	PADEP Non-Residential Subsurface Soil Direct Contact MSC ²	Location ID	BH_14-19				BH_14-20				BH_14-21				BH_14-22			
				Sample ID	AOI-5_BH_14-19_6-8'				AOI-5_BH_14_20_6-8'				AOI-5_BH_14-21_4-6'				AOI-5_BH_14-22_4-6'			
				Sample Date	6/18/14				6/24/14				6/18/14				6/18/14			
				Sample Depth (ft bgs)	6-8				6-8				4-6				4-6			
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF
Volatile Organic Compounds (VOCs)																				
1,2,4-Trimethylbenzene	95-63-6	640	35	mg/kg	ND	U	0.0032	1	ND	U	0.0033	1	ND	U	0.0031	1	0.00047	J	0.0029	1
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	4.3	0.005	mg/kg	ND	U	0.0061	1	ND	U	0.0081	1	ND	U	0.0079	1	ND	U	0.0036	1
1,2-Dichloroethane	107-06-2	98	0.5	mg/kg	ND	U	0.0016	1	ND	U	0.0016	1	ND	U	0.0016	1	ND	U	0.0015	1
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	ND	U	0.0032	1	ND	U	0.0033	1	ND	U	0.0031	1	ND	U	0.0029	1
Benzene	71-43-2	330	0.5	mg/kg	0.0031		0.0008	1	ND	U	0.00081	1	0.0021		0.00079	1	ND	U	0.00073	1
Ethylbenzene	100-41-4	1,000	70	mg/kg	ND	U	0.0016	1	ND	U	0.0016	1	ND	U	0.0016	1	ND	U	0.0015	1
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	ND	U	0.008	1	ND	U	0.0081	1	ND	U	0.0079	1	ND	U	0.0073	1
Methyl Tert-Butyl Ether	1634-04-4	9,900	2	mg/kg	ND	U	0.0016	1	0.00041	J	0.0016	1	0.0011	J	0.0016	1	0.00076	J	0.0015	1
Toluene	108-88-3	10,000	100	mg/kg	ND	U	0.0016	1	ND	U	0.0016	1	ND	U	0.0016	1	ND	U	0.0015	1
Xylenes, Total (Dimethylbenzene)	1330-20-7	9,100	1,000	mg/kg	ND	U	0.0016	1	ND	U	0.0016	1	ND	U	0.0016	1	0.00073	J	0.0015	1
Semi-volatile Organic Compounds (SVOCs)																				
Anthracene	120-12-7	190,000	350	mg/kg	0.0545		0.049	1	ND	U	0.054	1	7.23		0.51	10	0.587		0.048	1
Benzo(A)Anthracene	56-55-3	190,000	430	mg/kg	0.147		0.049	1	ND	U	0.054	1	15		0.51	10	2.27		0.048	1
Benzo(A)Pyrene	50-32-8	190,000	46	mg/kg	0.147		0.049	1	ND	U	0.054	1	14.3		0.51	10	2.57		0.048	1
Benzo(B)Fluoranthene	205-99-2	190,000	170	mg/kg	0.146		0.049	1	ND	U	0.054	1	15.6		0.51	10	2.45		0.048	1
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	0.0825		0.049	1	ND	U	0.054	1	9.57		0.51	10	1.4		0.048	1
Chrysene	218-01-9	190,000	230	mg/kg	0.148		0.049	1	ND	U	0.054	1	15.9		0.51	10	2.2		0.048	1
Fluorene	86-73-7	190,000	3,800	mg/kg	ND	U	0.049	1	ND	U	0.054	1	3.32		0.051	1	0.363		0.048	1
Naphthalene	91-20-3	190,000	25	mg/kg	0.0401	J	0.049	1	ND	U	0.054	1	1.3		0.051	1	0.513		0.048	1
Phenanthrene	85-01-8	190,000	10,000	mg/kg	0.101		0.049	1	ND	U	0.054	1	32.2		0.51	10	1.87		0.048	1
Pyrene	129-00-0	190,000	2,200	mg/kg	0.291		0.049	1	0.0302	J	0.054	1	34		0.51	10	3.1		0.048	1
Metals																				
Lead	7439-92-1	190,000	450	mg/kg	20.7		2	1	17.1		3.1	1	473		2	1	87.6		1.9	1

Notes:

CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA- Not Analyzed
ft bgs - feet below ground surface

¹ PADEP Act 2 Non-Residential Subsurface Soil Direct Contact MSCs (last updated August 27, 2016).

² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (las

Qualifiers:

U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
D - Indicates a dilution

Exceedance Summary:

10	Reported result exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.
10	Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC
10	DL exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.

Table 5
Summary of Subsurface Soil Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Subsurface Soil Direct Contact MSC ¹	PADEP Non-Residential Subsurface Soil Direct Contact MSC ²	Location ID	BH_14-24				BH_14-25				BH_14-28				BH_14-30			
				Sample ID	AOI-5_BH_14_24_4-6'				AOI-5_BH_14-25_6-8'				AOI-5_BH_14-28_4-6'				AOI-5_BH_14-30_4-6'			
				Sample Date	6/24/14				6/18/14				6/19/14				6/19/14			
				Sample Depth (ft bgs)	4-6				6-8				4-6				4-6			
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF
Volatile Organic Compounds (VOCs)																				
1,2,4-Trimethylbenzene	95-63-6	640	35	mg/kg	0.198		0.18	1	ND	U	0.0026	1	ND	U	0.003	1	ND	U	0.0028	1
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	4.3	0.005	mg/kg	ND	U	0.0035	1	ND	U	0.0036	1	ND	U	0.0064	1	ND	U	0.0036	1
1,2-Dichloroethane	107-06-2	98	0.5	mg/kg	ND	U	0.09	1	ND	U	0.0013	1	ND	U	0.0015	1	ND	U	0.0014	1
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	0.0527	J	0.18	1	ND	U	0.0026	1	ND	U	0.003	1	ND	U	0.0028	1
Benzene	71-43-2	330	0.5	mg/kg	ND	U	0.045	1	0.0052		0.00064	1	664		4.1	1	984		8.2	1
Ethylbenzene	100-41-4	1,000	70	mg/kg	0.107		0.09	1	ND	U	0.0013	1	0.00039	J	0.0015	1	0.00046	J	0.0014	1
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	0.0425	J	0.45	1	ND	U	0.0064	1	0.0015	J	0.0075	1	0.0034	J	0.007	1
Methyl Tert-Butyl Ether	1634-04-4	9,900	2	mg/kg	ND	U	0.09	1	ND	U	0.0013	1	ND	U	0.0015	1	ND	U	0.0014	1
Toluene	108-88-3	10,000	100	mg/kg	0.1		0.09	1	ND	U	0.0013	1	0.003		0.0015	1	0.0111		0.0014	1
Xylenes, Total (Dimethylbenzene)	1330-20-7	9,100	1,000	mg/kg	0.492		0.09	1	ND	U	0.0013	1	0.00093	J	0.0015	1	0.00044	J	0.0014	1
Semi-volatile Organic Compounds (SVOCs)																				
Anthracene	120-12-7	190,000	350	mg/kg	0.0946		0.042	1	0.0399	J	0.042	1	0.184		0.042	1	0.282		0.048	1
Benzo(A)Anthracene	56-55-3	190,000	430	mg/kg	0.381		0.042	1	0.0902		0.042	1	0.478		0.042	1	0.585		0.048	1
Benzo(A)Pyrene	50-32-8	190,000	46	mg/kg	0.309		0.042	1	0.0909		0.042	1	0.443		0.042	1	0.622		0.048	1
Benzo(B)Fluoranthene	205-99-2	190,000	170	mg/kg	0.373		0.042	1	0.0725		0.042	1	0.632		0.042	1	0.971		0.048	1
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	0.226		0.042	1	0.0506		0.042	1	0.332		0.042	1	0.722		0.048	1
Chrysene	218-01-9	190,000	230	mg/kg	0.381		0.042	1	0.0885		0.042	1	0.582		0.042	1	0.731		0.048	1
Fluorene	86-73-7	190,000	3,800	mg/kg	ND	U	0.042	1	0.0289	J	0.042	1	0.155		0.042	1	0.221		0.048	1
Naphthalene	91-20-3	190,000	25	mg/kg	ND	U	0.042	1	0.0182	J	0.042	1	0.323		0.042	1	0.889		0.048	1
Phenanthrene	85-01-8	190,000	10,000	mg/kg	0.332		0.042	1	0.126		0.042	1	1.01		0.042	1	1.3		0.048	1
Pyrene	129-00-0	190,000	2,200	mg/kg	0.745		0.042	1	0.186		0.042	1	0.93		0.042	1	1.16		0.048	1
Metals																				
Lead	7439-92-1	190,000	450	mg/kg	134		2.4	1	13.7		2	1	196		2	1	320		2.1	1

Notes:

CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA- Not Analyzed
ft bgs - feet below ground surface

¹ PADEP Act 2 Non-Residential Subsurface Soil Direct Contact MSCs (last updated August 27, 2016).

² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (las

Qualifiers:

U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
D - Indicates a dilution

Exceedance Summary:

10	Reported result exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.
10	Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC
10	DL exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.

Table 5
Summary of Subsurface Soil Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Subsurface Soil Direct Contact MSC ¹	PADEP Non-Residential Subsurface Soil Direct Contact MSC ²	Location ID	BH_14-31				BH_14-32				BH_14-33				BH_14-34			
				Sample ID	AOI-5_BH_14-31_4-6'				AOI-5-BH_14-32_4-5'				AOI-5-BH_14-33_5-6'				AOI-5-BH_14-34_5-6'			
				Sample Date	6/19/14				6/17/14				6/17/14				6/17/14			
				Sample Depth (ft bgs)	4-6				4-5				5-6				5-6			
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF
Volatile Organic Compounds (VOCs)																				
1,2,4-Trimethylbenzene	95-63-6	640	35	mg/kg	ND	U	0.0035	1	1.15		0.3	1	0.384		0.28	1	0.207	J	0.47	1
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	4.3	0.005	mg/kg	ND	U	0.004	1	ND	U	0.0031	1	ND	U	0.0032	1	ND	U	0.0033	1
1,2-Dichloroethane	107-06-2	98	0.5	mg/kg	ND	U	0.0018	1	ND	U	0.15	1	ND	U	0.14	1	ND	U	0.23	1
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	ND	U	0.0035	1	0.247	J	0.3	1	0.11	J	0.28	1	ND	U	0.47	1
Benzene	71-43-2	330	0.5	mg/kg	0.0712		0.00088	1	0.638		0.076	1	0.265		0.071	1	0.177		0.12	1
Ethylbenzene	100-41-4	1,000	70	mg/kg	ND	U	0.0018	1	1.71		0.15	1	0.697		0.14	1	0.407		0.23	1
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	ND	U	0.0088	1	28.6		0.76	1	45.1		7.1	1	71.2		5.8	1
Methyl Tert-Butyl Ether	1634-04-4	9,900	2	mg/kg	ND	U	0.0018	1	ND	U	0.15	1	ND	U	0.14	1	ND	U	0.23	1
Toluene	108-88-3	10,000	100	mg/kg	ND	U	0.0018	1	1.12		0.15	1	0.344		0.14	1	0.238		0.23	1
Xylenes, Total (Dimethylbenzene)	1330-20-7	9,100	1,000	mg/kg	ND	U	0.0018	1	3.47		0.15	1	1.21		0.14	1	0.735		0.23	1
Semi-volatile Organic Compounds (SVOCs)																				
Anthracene	120-12-7	190,000	350	mg/kg	0.16		0.046	1	1		0.04	1	0.575		0.042	1	1.54		0.043	1
Benzo(A)Anthracene	56-55-3	190,000	430	mg/kg	0.966		0.046	1	0.655		0.04	1	0.922		0.042	1	1.29		0.043	1
Benzo(A)Pyrene	50-32-8	190,000	46	mg/kg	1.12		0.046	1	0.547		0.04	1	0.916		0.042	1	1.09		0.043	1
Benzo(B)Fluoranthene	205-99-2	190,000	170	mg/kg	1.46		0.046	1	0.634		0.04	1	1.08		0.042	1	1.27		0.043	1
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	0.905		0.046	1	0.284		0.04	1	0.521		0.042	1	0.562		0.043	1
Chrysene	218-01-9	190,000	230	mg/kg	0.997		0.046	1	0.726		0.04	1	1.05		0.042	1	1.56		0.043	1
Fluorene	86-73-7	190,000	3,800	mg/kg	0.0633		0.046	1	2.77		0.04	1	0.859		0.042	1	3.23		0.043	1
Naphthalene	91-20-3	190,000	25	mg/kg	0.037	J	0.046	1	ND	U	0.04	1	ND	U	0.042	1	ND	U	0.043	1
Phenanthrene	85-01-8	190,000	10,000	mg/kg	0.607		0.046	1	6.14		0.2	5	3.01		0.042	1	10.4		0.21	5
Pyrene	129-00-0	190,000	2,200	mg/kg	1.28		0.046	1	1.43		0.04	1	1.88		0.042	1	2.8		0.043	1
Metals																				
Lead	7439-92-1	190,000	450	mg/kg	843		4	2	215		2	1	204		1.9	1	135		2	1

Notes:

CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA- Not Analyzed
ft bgs - feet below ground surface

¹ PADEP Act 2 Non-Residential Subsurface Soil Direct Contact MSCs (last updated August 27, 2016).
² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (las

Qualifiers:

U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
D - Indicates a dilution

Exceedance Summary:

10	Reported result exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.
10	Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC
10	DL exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.

Table 5
Summary of Subsurface Soil Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Subsurface Soil Direct Contact MSC ¹	PADEP Non-Residential Subsurface Soil Direct Contact MSC ²	Location ID	BH_14-35				BH_14-36				BH_14-37				BH-14-38			
				Sample ID	AOI-5-BH_14-35_5-6'				AOI-5_BH_14-36_4-6'				AOI-5_BH_14-37_6-8'				BH-14-38_4-6'			
				Sample Date	6/17/14				6/18/14				6/19/14				6/26/14			
				Sample Depth (ft bgs)	5-6				4-6				6-8				4-6			
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF
Volatile Organic Compounds (VOCs)																				
1,2,4-Trimethylbenzene	95-63-6	640	35	mg/kg	0.0449	J	0.26	1	ND	U	0.0023	1	ND	U	0.0033	1	ND	U	0.0022	1
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	4.3	0.005	mg/kg	ND	U	0.0032	1	ND	U	0.0034	1	ND	U	0.0047	1	ND	U	0.0031	1
1,2-Dichloroethane	107-06-2	98	0.5	mg/kg	ND	U	0.13	1	ND	U	0.0012	1	ND	U	0.0017	1	ND	U	0.0011	1
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	ND	U	0.26	1	ND	U	0.0023	1	ND	U	0.0033	1	0.00026	J	0.0022	1
Benzene	71-43-2	330	0.5	mg/kg	ND	U	0.066	1	0.0014		0.00058	1	0.166		0.00083	1	ND	U	0.00055	1
Ethylbenzene	100-41-4	1,000	70	mg/kg	0.0685	J	0.13	1	ND	U	0.0012	1	ND	U	0.0017	1	ND	U	0.0011	1
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	33.1		6.6	1	ND	U	0.0058	1	ND	U	0.0083	1	0.0036	J	0.0055	1
Methyl Tert-Butyl Ether	1634-04-4	9,900	2	mg/kg	ND	U	0.13	1	ND	U	0.0012	1	ND	U	0.0017	1	ND	U	0.0011	1
Toluene	108-88-3	10,000	100	mg/kg	ND	U	0.13	1	0.00061	J	0.0012	1	0.00052	J	0.0017	1	ND	U	0.0011	1
Xylenes, Total (Dimethylbenzene)	1330-20-7	9,100	1,000	mg/kg	ND	U	0.13	1	ND	U	0.0012	1	ND	U	0.0017	1	0.0007	J	0.0011	1
Semi-volatile Organic Compounds (SVOCs)																				
Anthracene	120-12-7	190,000	350	mg/kg	0.0238	J	0.041	1	0.163		0.045	1	0.0684		0.061	1	1.1		0.039	1
Benzo(A)Anthracene	56-55-3	190,000	430	mg/kg	0.0762		0.041	1	0.527		0.045	1	0.176		0.061	1	1.28		0.039	1
Benzo(A)Pyrene	50-32-8	190,000	46	mg/kg	0.0563		0.041	1	0.472		0.045	1	0.2		0.061	1	0.788		0.039	1
Benzo(B)Fluoranthene	205-99-2	190,000	170	mg/kg	0.061		0.041	1	0.444		0.045	1	0.221		0.061	1	1.04		0.039	1
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	0.0315	J	0.041	1	0.228		0.045	1	0.129		0.061	1	0.284		0.039	1
Chrysene	218-01-9	190,000	230	mg/kg	0.0827		0.041	1	0.463		0.045	1	0.181		0.061	1	0.953		0.039	1
Fluorene	86-73-7	190,000	3,800	mg/kg	0.0341	J	0.041	1	0.264		0.045	1	ND	U	0.061	1	0.411		0.039	1
Naphthalene	91-20-3	190,000	25	mg/kg	0.0193	J	0.041	1	0.0754		0.045	1	0.0652		0.061	1	ND	U	0.039	1
Phenanthrene	85-01-8	190,000	10,000	mg/kg	0.115		0.041	1	0.419		0.045	1	0.135		0.061	1	3.28		0.039	1
Pyrene	129-00-0	190,000	2,200	mg/kg	0.134		0.041	1	0.955		0.045	1	0.228		0.061	1	3.58		0.039	1
Metals																				
Lead	7439-92-1	190,000	450	mg/kg	3.1		1.9	1	45		2.1	1	103		2	1	91.3		4.6	1

Notes:

CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA- Not Analyzed
ft bgs - feet below ground surface

¹ PADEP Act 2 Non-Residential Subsurface Soil Direct Contact MSCs (last updated August 27, 2016).
² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (las

Qualifiers:

U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
D - Indicates a dilution

Exceedance Summary:

10	Reported result exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.
10	Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC
10	DL exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.

Table 5
Summary of Subsurface Soil Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Subsurface Soil Direct Contact MSC ¹	PADEP Non-Residential Subsurface Soil Direct Contact MSC ²	Location ID	GP-1208-PER-1				GP-1208-PER-2				GP-1208-PER-3				GP-1208-PER-4			
				Sample ID	GP-1208-PER-1				GP-1208-PER-2				GP-1208-PER-3				GP-1208-PER-4			
				Sample Date	5/30/07				5/30/07				5/30/07				5/30/07			
				Sample Depth (ft bgs)	3-3.5				3-3.5				3-3.5				3-3.5			
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF
Volatile Organic Compounds (VOCs)																				
1,2,4-Trimethylbenzene	95-63-6	640	35	mg/kg	NA				NA				NA				NA			
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	4.3	0.005	mg/kg	NA				NA				NA				NA			
1,2-Dichloroethane	107-06-2	98	0.5	mg/kg	NA				NA				NA				NA			
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	NA				NA				NA				NA			
Benzene	71-43-2	330	0.5	mg/kg	1	D	0.28	50	4.8	D	0.21	50	16	D	0.3	50	5.4	D	0.28	50
Ethylbenzene	100-41-4	1,000	70	mg/kg	NA				NA				NA				NA			
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	NA				NA				NA				NA			
Methyl Tert-Butyl Ether	1634-04-4	9,900	2	mg/kg	NA				NA				NA				NA			
Toluene	108-88-3	10,000	100	mg/kg	NA				NA				NA				NA			
Xylenes, Total (Dimethylbenzene)	1330-20-7	9,100	1,000	mg/kg	NA				NA				NA				NA			
Semi-volatile Organic Compounds (SVOCs)																				
Anthracene	120-12-7	190,000	350	mg/kg	NA				NA				NA				NA			
Benzo(A)Anthracene	56-55-3	190,000	430	mg/kg	NA				NA				NA				NA			
Benzo(A)Pyrene	50-32-8	190,000	46	mg/kg	NA				NA				NA				NA			
Benzo(B)Fluoranthene	205-99-2	190,000	170	mg/kg	NA				NA				NA				NA			
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	NA				NA				NA				NA			
Chrysene	218-01-9	190,000	230	mg/kg	NA				NA				NA				NA			
Fluorene	86-73-7	190,000	3,800	mg/kg	NA				NA				NA				NA			
Naphthalene	91-20-3	190,000	25	mg/kg	NA				NA				NA				NA			
Phenanthrene	85-01-8	190,000	10,000	mg/kg	NA				NA				NA				NA			
Pyrene	129-00-0	190,000	2,200	mg/kg	NA				NA				NA				NA			
Metals																				
Lead	7439-92-1	190,000	450	mg/kg	NA				NA				NA				NA			

Notes:

CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA- Not Analyzed
ft bgs - feet below ground surface
¹ PADEP Act 2 Non-Residential Subsurface Soil Direct Contact MSCs (last updated August 27, 2016).
² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (las

Qualifiers:

U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
D - Indicates a dilution

Exceedance Summary:

10	Reported result exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.
10	Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC
10	DL exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.

Table 5
Summary of Subsurface Soil Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Subsurface Soil Direct Contact MSC ¹	PADEP Non-Residential Subsurface Soil Direct Contact MSC ²	Location ID	GP-1208-PER-5				GP-1208-SUB-1				GP1209-1210				GP1209-E			
				Sample ID	GP-1208-PER-5				GP-1208-SUB-1				GP1209-1210-2.6-3.1				GP1209-E-2.8-3.3			
				Sample Date	5/30/07				5/30/07				1/23/12				1/23/12			
				Sample Depth (ft bgs)	3-3.5				5-5.5				2.6-3.1				2.8-3.3			
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF
Volatile Organic Compounds (VOCs)																				
1,2,4-Trimethylbenzene	95-63-6	640	35	mg/kg	NA				NA				ND	U	3.6	2606.16	ND	U	0.092	65.92
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	4.3	0.005	mg/kg	NA				NA				ND	U	3.6	2606.16	ND	U	0.092	65.92
1,2-Dichloroethane	107-06-2	98	0.5	mg/kg	NA				NA				ND	U	3.6	2606.16	ND	U	0.092	65.92
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	NA				NA				ND	U	3.6	2606.16	ND	U	0.092	65.92
Benzene	71-43-2	330	0.5	mg/kg	8	D	0.19	50	0.76	D	0.29	50	230		1.8	2606.16	13		0.046	65.92
Ethylbenzene	100-41-4	1,000	70	mg/kg	NA				NA				ND	U	3.6	2606.16	ND	U	0.092	65.92
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	NA				NA				510		3.6	2606.16	0.23	J	0.092	65.92
Methyl Tert-Butyl Ether	1634-04-4	9,900	2	mg/kg	NA				NA				ND	U	1.8	2606.16	ND	U	0.046	65.92
Toluene	108-88-3	10,000	100	mg/kg	NA				NA				ND	U	3.6	2606.16	ND	U	0.092	65.92
Xylenes, Total (Dimethylbenzene)	1330-20-7	9,100	1,000	mg/kg	NA				NA				ND	U	3.6	2606.16	ND	U	0.092	65.92
Semi-volatile Organic Compounds (SVOCs)																				
Anthracene	120-12-7	190,000	350	mg/kg	NA				NA				1.2		0.018	20	ND	U	0.038	10
Benzo(A)Anthracene	56-55-3	190,000	430	mg/kg	NA				NA				2		0.0092	20	0.24		0.0046	10
Benzo(A)Pyrene	50-32-8	190,000	46	mg/kg	NA				NA				1.8		0.0092	20	0.18		0.0046	10
Benzo(B)Fluoranthene	205-99-2	190,000	170	mg/kg	NA				NA				1.6		0.0074	20	0.36		0.0037	10
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	NA				NA				2.5		0.055	20	0.64		0.028	10
Chrysene	218-01-9	190,000	230	mg/kg	NA				NA				2.7		0.083	20	0.36		0.042	10
Fluorene	86-73-7	190,000	3,800	mg/kg	NA				NA				0.79		0.092	20	ND	U	0.046	10
Naphthalene	91-20-3	190,000	25	mg/kg	NA				NA				NA				NA			
Phenanthrene	85-01-8	190,000	10,000	mg/kg	NA				NA				5.2		0.055	20	0.64		0.028	10
Pyrene	129-00-0	190,000	2,200	mg/kg	NA				NA				5.1		0.092	20	0.33		0.046	10
Metals																				
Lead	7439-92-1	190,000	450	mg/kg	NA				NA				2800		1.5	5	1540		0.3	1

Notes:

CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA- Not Analyzed
ft bgs - feet below ground surface

¹ PADEP Act 2 Non-Residential Subsurface Soil Direct Contact MSCs (last updated August 27, 2016).
² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (las

Qualifiers:

U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
D - Indicates a dilution

Exceedance Summary:

10	Reported result exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.
10	Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC
10	DL exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.

Table 5
Summary of Subsurface Soil Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Subsurface Soil Direct Contact MSC ¹	PADEP Non-Residential Subsurface Soil Direct Contact MSC ²	Location ID	GP1209-NW				GP1209-SW				GP1210-NE				GP1210-NW			
				Sample ID	GP1209-NW-2.8-3.3				GP1209-SW-3.0-3.5				GP1210-NE-2.8-3.3				GP1210-NW-2.9-3.4			
				Sample Date	1/23/12				1/23/12				1/23/12				1/23/12			
				Sample Depth (ft bgs)	2.8-3.3				3-3.5				2.8-3.3				2.9-3.4			
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF
Volatile Organic Compounds (VOCs)																				
1,2,4-Trimethylbenzene	95-63-6	640	35	mg/kg	ND	U	0.096	65.24	ND	U	56	11488	ND	U	4	3003.5	ND	U	0.1	70.15
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	4.3	0.005	mg/kg	ND	U	0.096	65.24	ND	U	56	11488	ND	U	4	3003.5	ND	U	0.1	70.15
1,2-Dichloroethane	107-06-2	98	0.5	mg/kg	ND	U	0.096	65.24	ND	U	56	11488	ND	U	4	3003.5	ND	U	0.1	70.15
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	ND	U	0.096	65.24	ND	U	56	11488	ND	U	4	3003.5	ND	U	0.1	70.15
Benzene	71-43-2	330	0.5	mg/kg	4		0.048	65.24	49	J	28	11488	1500		5	7508.75	1.4		0.051	70.15
Ethylbenzene	100-41-4	1,000	70	mg/kg	ND	U	0.096	65.24	ND	U	56	11488	ND	U	4	3003.5	ND	U	0.1	70.15
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	26		0.096	65.24	13000		56	11488	2000		10	7508.75	1.5		0.1	70.15
Methyl Tert-Butyl Ether	1634-04-4	9,900	2	mg/kg	ND	U	0.048	65.24	ND	U	28	11488	ND	U	2	3003.5	ND	U	0.051	70.15
Toluene	108-88-3	10,000	100	mg/kg	ND	U	0.096	65.24	ND	U	56	11488	6.5	J	4	3003.5	ND	U	0.1	70.15
Xylenes, Total (Dimethylbenzene)	1330-20-7	9,100	1,000	mg/kg	ND	U	0.096	65.24	ND	U	56	11488	ND	U	4	3003.5	ND	U	0.1	70.15
Semi-volatile Organic Compounds (SVOCs)																				
Anthracene	120-12-7	190,000	350	mg/kg	0.044		0.0098	10	0.77		0.033	10	0.53		0.018	20	0.023	J	0.0097	10
Benzo(A)Anthracene	56-55-3	190,000	430	mg/kg	0.28		0.0049	10	1.6		0.016	10	2.2		0.0089	20	0.16		0.0049	10
Benzo(A)Pyrene	50-32-8	190,000	46	mg/kg	0.27		0.0049	10	1.4		0.016	10	2.5		0.0089	20	0.13		0.0049	10
Benzo(B)Fluoranthene	205-99-2	190,000	170	mg/kg	0.46		0.0039	10	1.2		0.013	10	2.1		0.0071	20	0.15		0.0039	10
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	0.75		0.029	10	1.8		0.098	10	3.6		0.053	20	ND	U	0.29	10
Chrysene	218-01-9	190,000	230	mg/kg	0.53		0.044	10	2.2		0.15	10	3.2		0.08	20	0.24		0.044	10
Fluorene	86-73-7	190,000	3,800	mg/kg	ND	U	0.049	10	0.59	J	0.16	10	0.42		0.089	20	ND	U	0.049	10
Naphthalene	91-20-3	190,000	25	mg/kg	NA				NA				NA				NA			
Phenanthrene	85-01-8	190,000	10,000	mg/kg	0.34		0.029	10	4.3		0.098	10	2.7		0.053	20	0.13		0.029	10
Pyrene	129-00-0	190,000	2,200	mg/kg	0.54		0.049	10	4.1		0.16	10	3.6		0.089	20	0.27		0.049	10
Metals																				
Lead	7439-92-1	190,000	450	mg/kg	2490		1.59	5	1460		1.07	1	2680		1.44	5	645		0.314	1

Notes:

CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA- Not Analyzed
ft bgs - feet below ground surface

¹ PADEP Act 2 Non-Residential Subsurface Soil Direct Contact MSCs (last updated August 27, 2016).
² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (las

Qualifiers:

U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
D - Indicates a dilution

Exceedance Summary:

10	Reported result exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.
10	Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC
10	DL exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.

Table 5
Summary of Subsurface Soil Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Subsurface Soil Direct Contact MSC ¹	PADEP Non-Residential Subsurface Soil Direct Contact MSC ²	Location ID	GP1210-SW				GP1212-NE				GP1212-NW				GP1212-SE			
				Sample ID	GP1210-SW-3.3-3.8				GP1212-NE-2.9-3.4				GP1212-NW-2.7-3.2				GP1212-SE-2.9-3.4			
				Sample Date	1/23/12				1/23/12				1/23/12				1/23/12			
				Sample Depth (ft bgs)	3.3-3.8				2.9-3.4				2.7-3.2				2.9-3.4			
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF
Volatile Organic Compounds (VOCs)																				
1,2,4-Trimethylbenzene	95-63-6	640	35	mg/kg	ND	U	9.3	6462.38	ND	U	9.1	6282.61	ND	U	0.11	73.07	ND	U	10	7285.88
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	4.3	0.005	mg/kg	ND	U	9.3	6462.38	ND	U	9.1	6282.61	ND	U	0.11	73.07	ND	U	10	7285.88
1,2-Dichloroethane	107-06-2	98	0.5	mg/kg	ND	U	9.3	6462.38	ND	U	9.1	6282.61	ND	U	0.11	73.07	ND	U	10	7285.88
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	ND	U	9.3	6462.38	ND	U	9.1	6282.61	ND	U	0.11	73.07	ND	U	10	7285.88
Benzene	71-43-2	330	0.5	mg/kg	910		4.6	6462.38	6.6	J	4.6	6282.61	0.18	J	0.054	73.07	ND	U	5.2	7285.88
Ethylbenzene	100-41-4	1,000	70	mg/kg	10	J	9.3	6462.38	ND	U	9.1	6282.61	ND	U	0.11	73.07	ND	U	10	7285.88
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	33000		370	258495	28000		360	251304	14		0.11	73.07	30000		420	291435
Methyl Tert-Butyl Ether	1634-04-4	9,900	2	mg/kg	ND	U	4.6	6462.38	ND	U	4.6	6282.61	ND	U	0.054	73.07	ND	U	5.2	7285.88
Toluene	108-88-3	10,000	100	mg/kg	ND	U	9.3	6462.38	ND	U	9.1	6282.61	ND	U	0.11	73.07	ND	U	10	7285.88
Xylenes, Total (Dimethylbenzene)	1330-20-7	9,100	1,000	mg/kg	ND	U	9.3	6462.38	17	J	9.1	6282.61	0.16	J	0.11	73.07	ND	U	10	7285.88
Semi-volatile Organic Compounds (SVOCs)																				
Anthracene	120-12-7	190,000	350	mg/kg	0.51		0.019	20	1.5		0.19	10	0.13		0.02	20	1.5		0.048	50
Benzo(A)Anthracene	56-55-3	190,000	430	mg/kg	1.3		0.0096	20	3.9		0.097	10	0.98		0.0098	20	3.3		0.024	50
Benzo(A)Pyrene	50-32-8	190,000	46	mg/kg	1.2		0.0096	20	4.3		0.097	10	1.3		0.0098	20	3.6		0.024	50
Benzo(B)Fluoranthene	205-99-2	190,000	170	mg/kg	1.2		0.0076	20	3.8		0.077	10	1.1		0.0079	20	3.1		0.019	50
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	2.2		0.057	20	6.7		0.58	10	2.9		0.059	20	5.2		0.14	50
Chrysene	218-01-9	190,000	230	mg/kg	1.7		0.086	20	6.3		0.87	10	2.1		0.089	20	4.9		0.21	50
Fluorene	86-73-7	190,000	3,800	mg/kg	0.47		0.096	20	1.5	J	0.97	10	ND	U	0.098	20	1.3		0.24	50
Naphthalene	91-20-3	190,000	25	mg/kg	NA				NA				NA				NA			
Phenanthrene	85-01-8	190,000	10,000	mg/kg	3.4		0.057	20	6.8		0.58	10	0.68		0.059	20	6.8		0.14	50
Pyrene	129-00-0	190,000	2,200	mg/kg	3		0.096	20	8.6		0.97	10	1.9		0.098	20	7.9		0.24	50
Metals																				
Lead	7439-92-1	190,000	450	mg/kg	1370		0.309	1	2550		1.58	5	4440		1.61	5	2890		1.56	5

Notes:

CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA- Not Analyzed
ft bgs - feet below ground surface

¹ PADEP Act 2 Non-Residential Subsurface Soil Direct Contact MSCs (last updated August 27, 2016).
² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (las

Qualifiers:

U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
D - Indicates a dilution

Exceedance Summary:

10	Reported result exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.
10	Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC
10	DL exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.

Table 5
Summary of Subsurface Soil Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Subsurface Soil Direct Contact MSC ¹	PADEP Non-Residential Subsurface Soil Direct Contact MSC ²	Location ID	GP1212-SW				GPBR_08212014_A11				GPBR_08212014_A11C				GPBR_08212014_A12C			
				Sample ID	GP1212-SW-2.7-3.2				GPBR_010G_08-21-2014(PH3A-11)				GPBR_011C_08-21-2014(PH3A)				GPBR_012C_08-21-2014(PH3A)			
				Sample Date	1/23/12				8/21/14				8/21/14				8/21/14			
				Sample Depth (ft bgs)	2.7-3.2				2.5-3.5				2.5-3.5				2.5-3.5			
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF
Volatile Organic Compounds (VOCs)																				
1,2,4-Trimethylbenzene	95-63-6	640	35	mg/kg	ND	U	0.002	1.13	ND	U	0.0031	1	NA				NA			
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	4.3	0.005	mg/kg	ND	U	0.002	1.13	ND	U	0.0092	1	NA				NA			
1,2-Dichloroethane	107-06-2	98	0.5	mg/kg	ND	U	0.002	1.13	ND	U	0.0016	1	NA				NA			
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	ND	U	0.002	1.13	ND	U	0.0031	1	NA				NA			
Benzene	71-43-2	330	0.5	mg/kg	0.003	J	0.0008	1.13	ND	U	0.00078	1	NA				NA			
Ethylbenzene	100-41-4	1,000	70	mg/kg	ND	U	0.002	1.13	ND	U	0.0016	1	NA				NA			
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	0.011		0.002	1.13	0.00042	J	0.0078	1	NA				NA			
Methyl Tert-Butyl Ether	1634-04-4	9,900	2	mg/kg	ND	U	0.0008	1.13	ND	U	0.0016	1	NA				NA			
Toluene	108-88-3	10,000	100	mg/kg	0.002	J	0.002	1.13	ND	U	0.0016	1	NA				NA			
Xylenes, Total (Dimethylbenzene)	1330-20-7	9,100	1,000	mg/kg	0.003	J	0.002	1.13	ND	U	0.0016	1	NA				NA			
Semi-volatile Organic Compounds (SVOCs)																				
Anthracene	120-12-7	190,000	350	mg/kg	0.56		0.019	20	NA				0.0977		0.039	1	0.116		0.037	1
Benzo(A)Anthracene	56-55-3	190,000	430	mg/kg	1.6		0.0095	20	NA				0.282		0.039	1	0.296		0.037	1
Benzo(A)Pyrene	50-32-8	190,000	46	mg/kg	1.7		0.0095	20	NA				0.314		0.039	1	0.366		0.037	1
Benzo(B)Fluoranthene	205-99-2	190,000	170	mg/kg	1.5		0.0076	20	NA				0.402		0.039	1	0.407		0.037	1
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	2.3		0.057	20	NA				0.213		0.039	1	0.235		0.037	1
Chrysene	218-01-9	190,000	230	mg/kg	2.2		0.085	20	NA				0.451		0.039	1	0.437		0.037	1
Fluorene	86-73-7	190,000	3,800	mg/kg	0.36	J	0.095	20	NA				0.0259	J	0.039	1	0.0275	J	0.037	1
Naphthalene	91-20-3	190,000	25	mg/kg	NA				NA				0.0621		0.039	1	0.119		0.037	1
Phenanthrene	85-01-8	190,000	10,000	mg/kg	2.4		0.057	20	NA				0.455		0.039	1	0.331		0.037	1
Pyrene	129-00-0	190,000	2,200	mg/kg	2.4		0.095	20	NA				0.609		0.039	1	0.476		0.037	1
Metals																				
Lead	7439-92-1	190,000	450	mg/kg	1850		0.309	1	NA				1570		2.4	1	227		2.3	1

Notes:

CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA- Not Analyzed
ft bgs - feet below ground surface

¹ PADEP Act 2 Non-Residential Subsurface Soil Direct Contact MSCs (last updated August 27, 2016).
² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (las

Qualifiers:

U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
D - Indicates a dilution

Exceedance Summary:

10	Reported result exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.
10	Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC
10	DL exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.

Table 5
Summary of Subsurface Soil Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Subsurface Soil Direct Contact MSC ¹	PADEP Non-Residential Subsurface Soil Direct Contact MSC ²	Location ID	GPBR_08212014_A13C				GPBR_08212014_A3				GPBR_08212014_A7				
				Sample ID	GPBR_013C_08-21-2014(PH3A)				GPBR_008G_08-21-2014(PH3A-3)				GPBR_009G_08-21-2014(PH3A-7)				
				Sample Date	8/21/14				8/21/14				8/21/14				
				Sample Depth (ft bgs)	2.5-3.5				2.5-3.5				2.5-3.5				
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	
Volatile Organic Compounds (VOCs)																	
1,2,4-Trimethylbenzene	95-63-6	640	35	mg/kg	NA					ND	U	0.0025	1	ND	U	0.0031	1
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	4.3	0.005	mg/kg	NA					ND	U	0.0087	1	ND	U	0.0082	1
1,2-Dichloroethane	107-06-2	98	0.5	mg/kg	NA					ND	U	0.0013	1	ND	U	0.0015	1
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	NA					ND	U	0.0025	1	ND	U	0.0031	1
Benzene	71-43-2	330	0.5	mg/kg	NA					ND	U	0.00063	1	ND	U	0.00077	1
Ethylbenzene	100-41-4	1,000	70	mg/kg	NA					ND	U	0.0013	1	ND	U	0.0015	1
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	NA					ND	U	0.0063	1	ND	U	0.0077	1
Methyl Tert-Butyl Ether	1634-04-4	9,900	2	mg/kg	NA					ND	U	0.0013	1	ND	U	0.0015	1
Toluene	108-88-3	10,000	100	mg/kg	NA					ND	U	0.0013	1	ND	U	0.0015	1
Xylenes, Total (Dimethylbenzene)	1330-20-7	9,100	1,000	mg/kg	NA					ND	U	0.0013	1	ND	U	0.0015	1
Semi-volatile Organic Compounds (SVOCs)																	
Anthracene	120-12-7	190,000	350	mg/kg	0.0317	J	0.036	1		NA				NA			
Benzo(A)Anthracene	56-55-3	190,000	430	mg/kg	0.0479		0.036	1		NA				NA			
Benzo(A)Pyrene	50-32-8	190,000	46	mg/kg	0.0475		0.036	1		NA				NA			
Benzo(B)Fluoranthene	205-99-2	190,000	170	mg/kg	0.0956		0.036	1		NA				NA			
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	0.041		0.036	1		NA				NA			
Chrysene	218-01-9	190,000	230	mg/kg	0.113		0.036	1		NA				NA			
Fluorene	86-73-7	190,000	3,800	mg/kg	ND	U	0.036	1		NA				NA			
Naphthalene	91-20-3	190,000	25	mg/kg	0.0375		0.036	1		NA				NA			
Phenanthrene	85-01-8	190,000	10,000	mg/kg	0.108		0.036	1		NA				NA			
Pyrene	129-00-0	190,000	2,200	mg/kg	0.0803		0.036	1		NA				NA			
Metals																	
Lead	7439-92-1	190,000	450	mg/kg	160		2.3	1		NA				NA			

Notes:

CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA- Not Analyzed
ft bgs - feet below ground surface
¹ PADEP Act 2 Non-Residential Subsurface Soil Direct Contact MSCs (last updated August 27, 2016).
² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (las

Qualifiers:

U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
D - Indicates a dilution

Exceedance Summary:

10	Reported result exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.
10	Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC
10	DL exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.

Table 5
Summary of Subsurface Soil Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Subsurface Soil Direct Contact MSC ¹	PADEP Non-Residential Subsurface Soil Direct Contact MSC ²	Location ID	GPBT_03062014_2_12				GPBT_03062014_2_1C				GPBT_03062014_2_2C				
				Sample ID	GPBT_003G_03-06-2014(STF2-12)				GPBT_001C_03-06-2014(STF2)				GPBT_002C_03-06-2014(STF2)				
				Sample Date	3/6/14				3/6/14				3/6/14				
				Sample Depth (ft bgs)	2-3				2-3				2-3				
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	
Volatile Organic Compounds (VOCs)																	
1,2,4-Trimethylbenzene	95-63-6	640	35	mg/kg	0.423	J	0.53	1	NA				NA				
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	4.3	0.005	mg/kg	ND	U	0.0027	1	NA				NA				
1,2-Dichloroethane	107-06-2	98	0.5	mg/kg	ND	U	0.11	1	NA				NA				
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	0.147	J	0.53	1	NA				NA				
Benzene	71-43-2	330	0.5	mg/kg	0.0214	J	0.11	1	NA				NA				
Ethylbenzene	100-41-4	1,000	70	mg/kg	0.124		0.11	1	NA				NA				
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	0.636		0.53	1	NA				NA				
Methyl Tert-Butyl Ether	1634-04-4	9,900	2	mg/kg	ND	U	0.11	1	NA				NA				
Toluene	108-88-3	10,000	100	mg/kg	0.0716	J	0.11	1	NA				NA				
Xylenes, Total (Dimethylbenzene)	1330-20-7	9,100	1,000	mg/kg	0.461		0.11	1	NA				NA				
Semi-volatile Organic Compounds (SVOCs)																	
Anthracene	120-12-7	190,000	350	mg/kg	NA				1.34		0.04	1	0.649		0.037	1	
Benzo(A)Anthracene	56-55-3	190,000	430	mg/kg	NA				0.398		0.04	1	1.04		0.037	1	
Benzo(A)Pyrene	50-32-8	190,000	46	mg/kg	NA				0.237		0.04	1	1.07		0.037	1	
Benzo(B)Fluoranthene	205-99-2	190,000	170	mg/kg	NA				0.475		0.04	1	1.49		0.037	1	
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	NA				0.251		0.04	1	0.921		0.037	1	
Chrysene	218-01-9	190,000	230	mg/kg	NA				1.27		0.04	1	1.35		0.037	1	
Fluorene	86-73-7	190,000	3,800	mg/kg	NA				20.2		0.4	10	0.532		0.037	1	
Naphthalene	91-20-3	190,000	25	mg/kg	NA				0.547		0.04	1	0.245		0.037	1	
Phenanthrene	85-01-8	190,000	10,000	mg/kg	NA				14.3		0.4	10	1.19		0.037	1	
Pyrene	129-00-0	190,000	2,200	mg/kg	NA				1.45		0.04	1	2.59		0.037	1	
Metals																	
Lead	7439-92-1	190,000	450	mg/kg	NA				163		2.6	1	179		2.5	1	

Notes:

CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA- Not Analyzed
ft bgs - feet below ground surface

¹ PADEP Act 2 Non-Residental Subsurface Soil Direct Contact MSCs (last updated August 27, 2016).
² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (las

Qualifiers:

U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
D - Indicates a dilution

Exceedance Summary:

10	Reported result exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.
10	Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC
10	DL exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.

Table 5
Summary of Subsurface Soil Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Subsurface Soil Direct Contact MSC ¹	PADEP Non-Residential Subsurface Soil Direct Contact MSC ²	Location ID	GPBT_03062014_2_3				GPBT_03062014_2_3C				GPBT_03062014_2_7			
				Sample ID	GPBT_001G_03-06-2014(STF2-3)				GPBT_003C_03-06-2014(STF2)				GPBT_002G_03-06-2014(STF2-7)			
				Sample Date	3/6/14				3/6/14				3/6/14			
				Sample Depth (ft bgs)	2-3				2-3				2-3			
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF
Volatile Organic Compounds (VOCs)																
1,2,4-Trimethylbenzene	95-63-6	640	35	mg/kg	0.851	J	1.1	1	NA				0.0671	J	0.52	1
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	4.3	0.005	mg/kg	ND	U	0.0033	1	NA				ND	U	0.003	1
1,2-Dichloroethane	107-06-2	98	0.5	mg/kg	ND	U	0.21	1	NA				ND	U	0.1	1
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	0.295	J	1.1	1	NA				0.0386	J	0.52	1
Benzene	71-43-2	330	0.5	mg/kg	0.14	J	0.21	1	NA				0.0261	J	0.1	1
Ethylbenzene	100-41-4	1,000	70	mg/kg	0.367		0.21	1	NA				0.0523	J	0.1	1
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	7.71		1.1	1	NA				0.173	J	0.52	1
Methyl Tert-Butyl Ether	1634-04-4	9,900	2	mg/kg	ND	U	0.21	1	NA				ND	U	0.1	1
Toluene	108-88-3	10,000	100	mg/kg	0.801		0.21	1	NA				0.104		0.1	1
Xylenes, Total (Dimethylbenzene)	1330-20-7	9,100	1,000	mg/kg	2.52		0.21	1	NA				0.172		0.1	1
Semi-volatile Organic Compounds (SVOCs)																
Anthracene	120-12-7	190,000	350	mg/kg	NA				0.383		0.041	1	NA			
Benzo(A)Anthracene	56-55-3	190,000	430	mg/kg	NA				1.23		0.041	1	NA			
Benzo(A)Pyrene	50-32-8	190,000	46	mg/kg	NA				1.04		0.041	1	NA			
Benzo(B)Fluoranthene	205-99-2	190,000	170	mg/kg	NA				1.86		0.041	1	NA			
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	NA				0.685		0.041	1	NA			
Chrysene	218-01-9	190,000	230	mg/kg	NA				1.41		0.041	1	NA			
Fluorene	86-73-7	190,000	3,800	mg/kg	NA				0.314		0.041	1	NA			
Naphthalene	91-20-3	190,000	25	mg/kg	NA				0.256		0.041	1	NA			
Phenanthrene	85-01-8	190,000	10,000	mg/kg	NA				0.702		0.041	1	NA			
Pyrene	129-00-0	190,000	2,200	mg/kg	NA				3.75		0.041	1	NA			
Metals																
Lead	7439-92-1	190,000	450	mg/kg	NA				299		2.8	1	NA			

Notes:

CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA- Not Analyzed
ft bgs - feet below ground surface
¹ PADEP Act 2 Non-Residential Subsurface Soil Direct Contact MSCs (last updated August 27, 2016).
² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (las

Qualifiers:

U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
D - Indicates a dilution

Exceedance Summary:

10	Reported result exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.
10	Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC
10	DL exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.

Table 5
Summary of Subsurface Soil Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Subsurface Soil Direct Contact MSC ¹	PADEP Non-Residential Subsurface Soil Direct Contact MSC ²	Location ID	GPBT_03062014_3_4				GPBT_03062014_3_4C			
				Sample ID	GPBT_004G_03-06-2014(STF3-4)				GPBT_004C_03-06-2014(STF3)			
				Sample Date	3/6/14				3/6/14			
				Sample Depth (ft bgs)	2-3				2-3			
				Unit	Result	Q	DL	DF	Result	Q	DL	DF
Volatile Organic Compounds (VOCs)												
1,2,4-Trimethylbenzene	95-63-6	640	35	mg/kg	3.71		0.78	1	NA			
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	4.3	0.005	mg/kg	ND	U	0.0034	1	NA			
1,2-Dichloroethane	107-06-2	98	0.5	mg/kg	ND	U	0.16	1	NA			
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	0.567	J	0.78	1	NA			
Benzene	71-43-2	330	0.5	mg/kg	0.567		0.16	1	NA			
Ethylbenzene	100-41-4	1,000	70	mg/kg	0.487		0.16	1	NA			
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	8.74		0.78	1	NA			
Methyl Tert-Butyl Ether	1634-04-4	9,900	2	mg/kg	ND	U	0.16	1	NA			
Toluene	108-88-3	10,000	100	mg/kg	0.982		0.16	1	NA			
Xylenes, Total (Dimethylbenzene)	1330-20-7	9,100	1,000	mg/kg	1.64		0.16	1	NA			
Semi-volatile Organic Compounds (SVOCs)												
Anthracene	120-12-7	190,000	350	mg/kg	NA				1.76		0.39	10
Benzo(A)Anthracene	56-55-3	190,000	430	mg/kg	NA				1.15		0.39	10
Benzo(A)Pyrene	50-32-8	190,000	46	mg/kg	NA				1.11		0.39	10
Benzo(B)Fluoranthene	205-99-2	190,000	170	mg/kg	NA				1.36		0.39	10
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	NA				1.09		0.39	10
Chrysene	218-01-9	190,000	230	mg/kg	NA				1.41		0.39	10
Fluorene	86-73-7	190,000	3,800	mg/kg	NA				4		0.39	10
Naphthalene	91-20-3	190,000	25	mg/kg	NA				ND	U	0.39	10
Phenanthrene	85-01-8	190,000	10,000	mg/kg	NA				8.49		0.39	10
Pyrene	129-00-0	190,000	2,200	mg/kg	NA				2.56		0.39	10
Metals												
Lead	7439-92-1	190,000	450	mg/kg	NA				511		2.3	1

Notes:

CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA- Not Analyzed
ft bgs - feet below ground surface

¹ PADEP Act 2 Non-Residential Subsurface Soil Direct Contact MSCs (last updated August 27, 2016).

² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (las

Qualifiers:

U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
D - Indicates a dilution

Exceedance Summary:

10	Reported result exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.
10	Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC
10	DL exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.

Table 5
Summary of Subsurface Soil Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Subsurface Soil Direct Contact MSC ¹	PADEP Non-Residential Subsurface Soil Direct Contact MSC ²	Location ID	GPBT_03062014_3_5C				GPBT_03062014_3_6				GPBT_03062014_3_6C				GPBT_03062014_3_8			
				Sample ID	GPBT_005C_03-06-2014(STF3)				GPBT_005G_03-06-2014(STF3-6)				GPBT_006C_03-06-2014(STF3)				GPBT_006G_03-06-2014(STF3-8)			
				Sample Date	3/6/14				3/6/14				3/6/14				3/6/14			
				Sample Depth (ft bgs)	2-3				2-3				2-3				2-3			
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF
Volatile Organic Compounds (VOCs)																				
1,2,4-Trimethylbenzene	95-63-6	640	35	mg/kg	NA				0.868		0.74	1	NA				0.168	J	0.72	1
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	4.3	0.005	mg/kg	NA				ND	U	0.0033	1	NA				ND	U	0.0033	1
1,2-Dichloroethane	107-06-2	98	0.5	mg/kg	NA				ND	U	0.15	1	NA				ND	U	0.14	1
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	NA				0.409	J	0.74	1	NA				0.0542	J	0.72	1
Benzene	71-43-2	330	0.5	mg/kg	NA				0.239		0.15	1	NA				0.101	J	0.14	1
Ethylbenzene	100-41-4	1,000	70	mg/kg	NA				0.38		0.15	1	NA				0.182		0.14	1
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	NA				3.76		0.74	1	NA				1.55		0.72	1
Methyl Tert-Butyl Ether	1634-04-4	9,900	2	mg/kg	NA				ND	U	0.15	1	NA				ND	U	0.14	1
Toluene	108-88-3	10,000	100	mg/kg	NA				0.284		0.15	1	NA				0.18		0.14	1
Xylenes, Total (Dimethylbenzene)	1330-20-7	9,100	1,000	mg/kg	NA				1.56		0.15	1	NA				0.647		0.14	1
Semi-volatile Organic Compounds (SVOCs)																				
Anthracene	120-12-7	190,000	350	mg/kg	0.97		0.21	5	NA				0.33		0.036	1	NA			
Benzo(A)Anthracene	56-55-3	190,000	430	mg/kg	1.61		0.21	5	NA				0.612		0.036	1	NA			
Benzo(A)Pyrene	50-32-8	190,000	46	mg/kg	1.36		0.21	5	NA				0.795		0.036	1	NA			
Benzo(B)Fluoranthene	205-99-2	190,000	170	mg/kg	1.78		0.21	5	NA				1.43		0.036	1	NA			
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	1.16		0.21	5	NA				0.794		0.036	1	NA			
Chrysene	218-01-9	190,000	230	mg/kg	1.69		0.21	5	NA				0.787		0.036	1	NA			
Fluorene	86-73-7	190,000	3,800	mg/kg	0.918		0.21	5	NA				0.0348	J	0.036	1	NA			
Naphthalene	91-20-3	190,000	25	mg/kg	ND	U	0.21	5	NA				0.0838		0.036	1	NA			
Phenanthrene	85-01-8	190,000	10,000	mg/kg	3.2		0.21	5	NA				0.263		0.036	1	NA			
Pyrene	129-00-0	190,000	2,200	mg/kg	2.82		0.21	5	NA				0.783		0.036	1	NA			
Metals																				
Lead	7439-92-1	190,000	450	mg/kg	531		2.6	1	NA				318		2.3	1	NA			

Notes:

CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA- Not Analyzed
ft bgs - feet below ground surface

¹ PADEP Act 2 Non-Residential Subsurface Soil Direct Contact MSCs (last updated August 27, 2016).
² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (las

Qualifiers:

U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
D - Indicates a dilution

Exceedance Summary:

10	Reported result exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.
10	Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC
10	DL exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.

Table 5
Summary of Subsurface Soil Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Subsurface Soil Direct Contact MSC ¹	PADEP Non-Residential Subsurface Soil Direct Contact MSC ²	Location ID	GPBT_03072014_4_10				GPBT_03072014_4_3				GPBT_03072014_4_4				GPBT_03072014_4_7			
				Sample ID	GPBT_009G_03-07-2014(STF4-10)				GPBT_006G_03-06-2014(RW4-3)				GPBT_007G_03-07-2014(STF4-4)				GPBT_008G_03-07-2014(STF4-7)			
				Sample Date	3/7/14				3/6/14				3/7/14				3/7/14			
				Sample Depth (ft bgs)	2-3				3.5-4.5				2-3				2-3			
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF
Volatile Organic Compounds (VOCs)																				
1,2,4-Trimethylbenzene	95-63-6	640	35	mg/kg	ND	U	0.63	1	0.405	J	0.95	1	0.0871	J	0.54	1	0.365	J	3.5	1
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	4.3	0.005	mg/kg	ND	U	0.0032	1	ND	U	0.0039	1	ND	U	0.003	1	ND	U	0.0032	1
1,2-Dichloroethane	107-06-2	98	0.5	mg/kg	ND	U	0.13	1	ND	U	0.19	1	ND	U	0.11	1	ND	U	0.7	1
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	ND	U	0.63	1	0.163	J	0.95	1	0.0375	J	0.54	1	ND	U	3.5	1
Benzene	71-43-2	330	0.5	mg/kg	ND	U	0.13	1	0.101	J	0.19	1	0.117		0.11	1	0.64	J	0.7	1
Ethylbenzene	100-41-4	1,000	70	mg/kg	ND	U	0.13	1	0.238		0.19	1	0.11		0.11	1	0.544	J	0.7	1
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	1.09		0.63	1	0.716	J	0.95	1	1.01		0.54	1	5.74		3.5	1
Methyl Tert-Butyl Ether	1634-04-4	9,900	2	mg/kg	ND	U	0.13	1	ND	U	0.19	1	ND	U	0.11	1	ND	U	0.7	1
Toluene	108-88-3	10,000	100	mg/kg	0.0444	J	0.13	1	0.377		0.19	1	0.0914	J	0.11	1	0.477	J	0.7	1
Xylenes, Total (Dimethylbenzene)	1330-20-7	9,100	1,000	mg/kg	0.167		0.13	1	1.34		0.19	1	0.399		0.11	1	1.86		0.7	1
Semi-volatile Organic Compounds (SVOCs)																				
Anthracene	120-12-7	190,000	350	mg/kg	NA				0.553		0.094	2	NA				NA			
Benzo(A)Anthracene	56-55-3	190,000	430	mg/kg	NA				0.663		0.094	2	NA				NA			
Benzo(A)Pyrene	50-32-8	190,000	46	mg/kg	NA				0.877		0.094	2	NA				NA			
Benzo(B)Fluoranthene	205-99-2	190,000	170	mg/kg	NA				0.933		0.094	2	NA				NA			
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	NA				0.9		0.094	2	NA				NA			
Chrysene	218-01-9	190,000	230	mg/kg	NA				0.755		0.094	2	NA				NA			
Fluorene	86-73-7	190,000	3,800	mg/kg	NA				1.16		0.094	2	NA				NA			
Naphthalene	91-20-3	190,000	25	mg/kg	NA				0.341		0.094	2	NA				NA			
Phenanthrene	85-01-8	190,000	10,000	mg/kg	NA				1.61		0.094	2	NA				NA			
Pyrene	129-00-0	190,000	2,200	mg/kg	NA				1.56		0.094	2	NA				NA			
Metals																				
Lead	7439-92-1	190,000	450	mg/kg	NA				207		3	1	NA				NA			

Notes:

CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA- Not Analyzed
ft bgs - feet below ground surface

¹ PADEP Act 2 Non-Residential Subsurface Soil Direct Contact MSCs (last updated August 27, 2016).

² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (las

Qualifiers:

U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
D - Indicates a dilution

Exceedance Summary:

10	Reported result exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.
10	Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC
10	DL exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.

Table 5
Summary of Subsurface Soil Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Subsurface Soil Direct Contact MSC ¹	PADEP Non-Residential Subsurface Soil Direct Contact MSC ²	Location ID	GPBT_03072014_4_7C				GPBT_03072014_4_8C				GPBT_03072014_4_9C				GPBT_03072014_5_1			
				Sample ID	GPBT_007C_03-07-2014(STF4)				GPBT_008C_03-07-2014(STF4)				GPBT_009C_03-07-2014(STF4)				GPBT_010G_03-07-2014(STF5-1)			
				Sample Date	3/7/14				3/7/14				3/7/14				3/7/14			
				Sample Depth (ft bgs)	2-3				2-3				2-3				2-3			
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF
Volatile Organic Compounds (VOCs)																				
1,2,4-Trimethylbenzene	95-63-6	640	35	mg/kg	NA				NA				NA				0.0709	J	0.9	1
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	4.3	0.005	mg/kg	NA				NA				NA				ND	U	0.0039	1
1,2-Dichloroethane	107-06-2	98	0.5	mg/kg	NA				NA				NA				ND	U	0.18	1
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	NA				NA				NA				ND	U	0.9	1
Benzene	71-43-2	330	0.5	mg/kg	NA				NA				NA				0.0721	J	0.18	1
Ethylbenzene	100-41-4	1,000	70	mg/kg	NA				NA				NA				ND	U	0.18	1
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	NA				NA				NA				ND	U	0.9	1
Methyl Tert-Butyl Ether	1634-04-4	9,900	2	mg/kg	NA				NA				NA				ND	U	0.18	1
Toluene	108-88-3	10,000	100	mg/kg	NA				NA				NA				0.144	J	0.18	1
Xylenes, Total (Dimethylbenzene)	1330-20-7	9,100	1,000	mg/kg	NA				NA				NA				0.0692	J	0.18	1
Semi-volatile Organic Compounds (SVOCs)																				
Anthracene	120-12-7	190,000	350	mg/kg	0.578		0.041	1	0.673		0.037	1	0.189		0.039	1	NA			
Benzo(A)Anthracene	56-55-3	190,000	430	mg/kg	0.815		0.041	1	1.07		0.037	1	0.247		0.039	1	NA			
Benzo(A)Pyrene	50-32-8	190,000	46	mg/kg	0.957		0.041	1	1.25		0.037	1	0.322		0.039	1	NA			
Benzo(B)Fluoranthene	205-99-2	190,000	170	mg/kg	0.952		0.041	1	1.36		0.037	1	0.41		0.039	1	NA			
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	1		0.041	1	0.762		0.037	1	0.241		0.039	1	NA			
Chrysene	218-01-9	190,000	230	mg/kg	1.23		0.041	1	1.3		0.037	1	0.302		0.039	1	NA			
Fluorene	86-73-7	190,000	3,800	mg/kg	0.209		0.041	1	0.455		0.037	1	0.361		0.039	1	NA			
Naphthalene	91-20-3	190,000	25	mg/kg	0.384		0.041	1	ND	U	0.037	1	ND	U	0.039	1	NA			
Phenanthrene	85-01-8	190,000	10,000	mg/kg	1.06		0.041	1	2.23		0.037	1	0.677		0.039	1	NA			
Pyrene	129-00-0	190,000	2,200	mg/kg	1.14		0.041	1	2.2		0.037	1	0.353		0.039	1	NA			
Metals																				
Lead	7439-92-1	190,000	450	mg/kg	298		2	1	1860		2.5	1	106		2.6	1	NA			

Notes:

CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA- Not Analyzed
ft bgs - feet below ground surface

¹ PADEP Act 2 Non-Residential Subsurface Soil Direct Contact MSCs (last updated August 27, 2016).
² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (las

Qualifiers:

U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
D - Indicates a dilution

Exceedance Summary:

10	Reported result exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.
10	Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC
10	DL exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.

Table 5
Summary of Subsurface Soil Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Subsurface Soil Direct Contact MSC ¹	PADEP Non-Residential Subsurface Soil Direct Contact MSC ²	Location ID	GPBT_03072014_5_10C				GPBT_03072014_5_11C				GPBT_03072014_5_12C				GPBT_03072014_5_6			
				Sample ID	GPBT_010C_03-07-2014(STF5)				GPBT_011C_03-07-2014(STF5)				GPBT_012C_03-07-2014(STF5)				GPBT_011G_03-07-2014(STF5-6)			
				Sample Date	3/7/14				3/7/14				3/7/14				3/7/14			
				Sample Depth (ft bgs)	2-3				2-3				2-3				2-3			
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF
Volatile Organic Compounds (VOCs)																				
1,2,4-Trimethylbenzene	95-63-6	640	35	mg/kg	NA				NA				NA				0.0652	J	0.44	1
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	4.3	0.005	mg/kg	NA				NA				NA				ND	U	0.0028	1
1,2-Dichloroethane	107-06-2	98	0.5	mg/kg	NA				NA				NA				ND	U	0.089	1
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	NA				NA				NA				0.0267	J	0.44	1
Benzene	71-43-2	330	0.5	mg/kg	NA				NA				NA				0.153		0.089	1
Ethylbenzene	100-41-4	1,000	70	mg/kg	NA				NA				NA				0.0508	J	0.089	1
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	NA				NA				NA				ND	U	0.44	1
Methyl Tert-Butyl Ether	1634-04-4	9,900	2	mg/kg	NA				NA				NA				ND	U	0.089	1
Toluene	108-88-3	10,000	100	mg/kg	NA				NA				NA				0.192		0.089	1
Xylenes, Total (Dimethylbenzene)	1330-20-7	9,100	1,000	mg/kg	NA				NA				NA				0.247		0.089	1
Semi-volatile Organic Compounds (SVOCs)																				
Anthracene	120-12-7	190,000	350	mg/kg	0.687		0.041	1	3.77		0.34	10	0.124		0.037	1	NA			
Benzo(A)Anthracene	56-55-3	190,000	430	mg/kg	1.86		0.041	1	5.68		0.34	10	0.194		0.037	1	NA			
Benzo(A)Pyrene	50-32-8	190,000	46	mg/kg	1.84		0.041	1	4.74		0.34	10	0.266		0.037	1	NA			
Benzo(B)Fluoranthene	205-99-2	190,000	170	mg/kg	2.06		0.041	1	4.54		0.34	10	0.277		0.037	1	NA			
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	0.929		0.041	1	2.31		0.034	1	0.269		0.037	1	NA			
Chrysene	218-01-9	190,000	230	mg/kg	2		0.041	1	5.47		0.34	10	0.239		0.037	1	NA			
Fluorene	86-73-7	190,000	3,800	mg/kg	0.358		0.041	1	1.43		0.034	1	0.0275	J	0.037	1	NA			
Naphthalene	91-20-3	190,000	25	mg/kg	0.101		0.041	1	0.102		0.034	1	0.0808		0.037	1	NA			
Phenanthrene	85-01-8	190,000	10,000	mg/kg	0.525		0.041	1	9.51		0.34	10	0.221		0.037	1	NA			
Pyrene	129-00-0	190,000	2,200	mg/kg	2.51		0.041	1	13.1		0.34	10	0.305		0.037	1	NA			
Metals																				
Lead	7439-92-1	190,000	450	mg/kg	138		2	1	165		2.3	1	400		2.5	1	NA			

Notes:

CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA- Not Analyzed
ft bgs - feet below ground surface

¹ PADEP Act 2 Non-Residential Subsurface Soil Direct Contact MSCs (last updated August 27, 2016).
² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (las

Qualifiers:

U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
D - Indicates a dilution

Exceedance Summary:

10	Reported result exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.
10	Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC
10	DL exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.

Table 5
Summary of Subsurface Soil Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Subsurface Soil Direct Contact MSC ¹	PADEP Non-Residential Subsurface Soil Direct Contact MSC ²	Location ID	GPBT_03072014_5_8				GPBT_03102014_6_12				GPBT_03102014_6_13C				GPBT_03102014_6_14C			
				Sample ID	GPBT_012G_03-07-2014(STF5-8)				GPBT_015G_03-10-2014(STF6-12)				GPBT_013C_03-10-2014(STF6)				GPBT_014C_03-10-2014(STF6)			
				Sample Date	3/7/14				3/10/14				3/10/14				3/10/14			
				Sample Depth (ft bgs)	2-3				2-3				2-3				2-3			
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF
Volatile Organic Compounds (VOCs)																				
1,2,4-Trimethylbenzene	95-63-6	640	35	mg/kg	ND	U	0.0046	1	ND	U	0.0056	1	NA				NA			
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	4.3	0.005	mg/kg	ND	U	0.0027	1	ND	U	0.0028	1	NA				NA			
1,2-Dichloroethane	107-06-2	98	0.5	mg/kg	ND	U	0.00091	1	ND	U	0.0011	1	NA				NA			
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	ND	U	0.0046	1	ND	U	0.0056	1	NA				NA			
Benzene	71-43-2	330	0.5	mg/kg	ND	U	0.00091	1	ND	U	0.0011	1	NA				NA			
Ethylbenzene	100-41-4	1,000	70	mg/kg	ND	U	0.00091	1	ND	U	0.0011	1	NA				NA			
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	ND	U	0.0046	1	ND	U	0.0056	1	NA				NA			
Methyl Tert-Butyl Ether	1634-04-4	9,900	2	mg/kg	ND	U	0.00091	1	ND	U	0.0011	1	NA				NA			
Toluene	108-88-3	10,000	100	mg/kg	ND	U	0.00091	1	0.00025	J	0.0011	1	NA				NA			
Xylenes, Total (Dimethylbenzene)	1330-20-7	9,100	1,000	mg/kg	ND	U	0.00091	1	0.00035	J	0.0011	1	NA				NA			
Semi-volatile Organic Compounds (SVOCs)																				
Anthracene	120-12-7	190,000	350	mg/kg	NA				NA				0.114		0.038	1	0.121		0.036	1
Benzo(A)Anthracene	56-55-3	190,000	430	mg/kg	NA				NA				0.55		0.038	1	0.308		0.036	1
Benzo(A)Pyrene	50-32-8	190,000	46	mg/kg	NA				NA				0.605		0.038	1	0.471		0.036	1
Benzo(B)Fluoranthene	205-99-2	190,000	170	mg/kg	NA				NA				0.77		0.038	1	0.466		0.036	1
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	NA				NA				0.407		0.038	1	0.569		0.036	1
Chrysene	218-01-9	190,000	230	mg/kg	NA				NA				0.536		0.038	1	0.378		0.036	1
Fluorene	86-73-7	190,000	3,800	mg/kg	NA				NA				0.0484		0.038	1	0.0611		0.036	1
Naphthalene	91-20-3	190,000	25	mg/kg	NA				NA				0.059		0.038	1	0.124		0.036	1
Phenanthrene	85-01-8	190,000	10,000	mg/kg	NA				NA				0.46		0.038	1	0.205		0.036	1
Pyrene	129-00-0	190,000	2,200	mg/kg	NA				NA				0.823		0.038	1	0.434		0.036	1
Metals																				
Lead	7439-92-1	190,000	450	mg/kg	NA				NA				153		2.3	1	269		2.6	1

Notes:
CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA- Not Analyzed
ft bgs - feet below ground surface
¹ PADEP Act 2 Non-Residential Subsurface Soil Direct Contact MSCs (last updated August 27, 2016).
² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (las

Qualifiers:
U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
D - Indicates a dilution

10	Reported result exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.
10	Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC
10	DL exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.

Table 5
Summary of Subsurface Soil Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Subsurface Soil Direct Contact MSC ¹	PADEP Non-Residential Subsurface Soil Direct Contact MSC ²	Location ID	GPBT_03102014_6_15C				GPBT_03102014_6_3				GPBT_03102014_6_9				GPBT_03102014_7_12				
				Sample ID	GPBT_015C_03-10-2014(STF6)				GPBT_013G_03-10-2014(STF6-3)				GPBT_014G_03-10-2014(STF6-9)				GPBT_018G_03-10-2014(STF7-12)				
				Sample Date	3/10/14				3/10/14				3/10/14				3/10/14				
				Sample Depth (ft bgs)	2-3				2-3				2-3				2-3				
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	
Volatile Organic Compounds (VOCs)																					
1,2,4-Trimethylbenzene	95-63-6	640	35	mg/kg	NA					ND	U	0.0047	1	ND	U	0.0043	1	0.00027	J	0.0057	1
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	4.3	0.005	mg/kg	NA					ND	U	0.003	1	ND	U	0.0028	1	ND	U	0.0032	1
1,2-Dichloroethane	107-06-2	98	0.5	mg/kg	NA					ND	U	0.00094	1	ND	U	0.00087	1	ND	U	0.0011	1
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	NA					ND	U	0.0047	1	ND	U	0.0043	1	ND	U	0.0057	1
Benzene	71-43-2	330	0.5	mg/kg	NA					ND	U	0.00094	1	ND	U	0.00087	1	ND	U	0.0011	1
Ethylbenzene	100-41-4	1,000	70	mg/kg	NA					0.00039	J	0.00094	1	ND	U	0.00087	1	0.00027	J	0.0011	1
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	NA					ND	U	0.0047	1	ND	U	0.0043	1	ND	U	0.0057	1
Methyl Tert-Butyl Ether	1634-04-4	9,900	2	mg/kg	NA					ND	U	0.00094	1	ND	U	0.00087	1	ND	U	0.0011	1
Toluene	108-88-3	10,000	100	mg/kg	NA					ND	U	0.00094	1	ND	U	0.00087	1	ND	U	0.0011	1
Xylenes, Total (Dimethylbenzene)	1330-20-7	9,100	1,000	mg/kg	NA					0.00043	J	0.00094	1	ND	U	0.00087	1	0.00078	J	0.0011	1
Semi-volatile Organic Compounds (SVOCs)																					
Anthracene	120-12-7	190,000	350	mg/kg	0.114		0.036	1		NA				NA				NA			
Benzo(A)Anthracene	56-55-3	190,000	430	mg/kg	0.446		0.036	1		NA				NA				NA			
Benzo(A)Pyrene	50-32-8	190,000	46	mg/kg	0.554		0.036	1		NA				NA				NA			
Benzo(B)Fluoranthene	205-99-2	190,000	170	mg/kg	0.725		0.036	1		NA				NA				NA			
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	0.51		0.036	1		NA				NA				NA			
Chrysene	218-01-9	190,000	230	mg/kg	0.585		0.036	1		NA				NA				NA			
Fluorene	86-73-7	190,000	3,800	mg/kg	0.0464		0.036	1		NA				NA				NA			
Naphthalene	91-20-3	190,000	25	mg/kg	0.082		0.036	1		NA				NA				NA			
Phenanthrene	85-01-8	190,000	10,000	mg/kg	0.286		0.036	1		NA				NA				NA			
Pyrene	129-00-0	190,000	2,200	mg/kg	0.776		0.036	1		NA				NA				NA			
Metals																					
Lead	7439-92-1	190,000	450	mg/kg	70.1		2.3	1		NA				NA				NA			

Notes:

CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA- Not Analyzed
ft bgs - feet below ground surface

¹ PADEP Act 2 Non-Residential Subsurface Soil Direct Contact MSCs (last updated August 27, 2016).

² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (las

Qualifiers:

U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
D - Indicates a dilution

Exceedance Summary:

10	Reported result exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.
10	Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC
10	DL exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.

Table 5
Summary of Subsurface Soil Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Subsurface Soil Direct Contact MSC ¹	PADEP Non-Residential Subsurface Soil Direct Contact MSC ²	Location ID	GPBT_03102014_7_16C				GPBT_03102014_7_17C				GPBT_03102014_7_18C				GPBT_03102014_7_4			
				Sample ID	GPBT_016C_03-10-2014(STF7)				GPBT_017C_03-10-2014(STF7)				GPBT_018C_03-10-2014(STF7)				GPBT_016G_03-10-2014(STF7-4)			
				Sample Date	3/10/14				3/10/14				3/10/14				3/10/14			
				Sample Depth (ft bgs)	2-3				2-3				2-3				2-3			
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF
Volatile Organic Compounds (VOCs)																				
1,2,4-Trimethylbenzene	95-63-6	640	35	mg/kg	NA				NA				NA				ND	U	0.004	1
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	4.3	0.005	mg/kg	NA				NA				NA				ND	U	0.0028	1
1,2-Dichloroethane	107-06-2	98	0.5	mg/kg	NA				NA				NA				ND	U	0.0008	1
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	NA				NA				NA				ND	U	0.004	1
Benzene	71-43-2	330	0.5	mg/kg	NA				NA				NA				0.00018	J	0.0008	1
Ethylbenzene	100-41-4	1,000	70	mg/kg	NA				NA				NA				ND	U	0.0008	1
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	NA				NA				NA				ND	U	0.004	1
Methyl Tert-Butyl Ether	1634-04-4	9,900	2	mg/kg	NA				NA				NA				ND	U	0.0008	1
Toluene	108-88-3	10,000	100	mg/kg	NA				NA				NA				0.00023	J	0.0008	1
Xylenes, Total (Dimethylbenzene)	1330-20-7	9,100	1,000	mg/kg	NA				NA				NA				0.00016	J	0.0008	1
Semi-volatile Organic Compounds (SVOCs)																				
Anthracene	120-12-7	190,000	350	mg/kg	0.361		0.041	1	0.731		0.034	1	0.288		0.037	1	NA			
Benzo(A)Anthracene	56-55-3	190,000	430	mg/kg	1.03		0.041	1	2.02		0.034	1	0.837		0.037	1	NA			
Benzo(A)Pyrene	50-32-8	190,000	46	mg/kg	1.58		0.041	1	2.13		0.034	1	1.14		0.037	1	NA			
Benzo(B)Fluoranthene	205-99-2	190,000	170	mg/kg	2.18		0.041	1	2.57		0.034	1	1.43		0.037	1	NA			
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	1.63		0.041	1	1.37		0.034	1	1.2		0.037	1	NA			
Chrysene	218-01-9	190,000	230	mg/kg	1.15		0.041	1	1.8		0.034	1	0.885		0.037	1	NA			
Fluorene	86-73-7	190,000	3,800	mg/kg	0.155		0.041	1	0.292		0.034	1	0.235		0.037	1	NA			
Naphthalene	91-20-3	190,000	25	mg/kg	0.217		0.041	1	0.411		0.034	1	0.26		0.037	1	NA			
Phenanthrene	85-01-8	190,000	10,000	mg/kg	0.384		0.041	1	2.2		0.034	1	0.438		0.037	1	NA			
Pyrene	129-00-0	190,000	2,200	mg/kg	1.23		0.041	1	3.22		0.034	1	1.11		0.037	1	NA			
Metals																				
Lead	7439-92-1	190,000	450	mg/kg	323		2.6	1	163		2.3	1	370		2.4	1	NA			

Notes:

CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA- Not Analyzed
ft bgs - feet below ground surface

¹ PADEP Act 2 Non-Residential Subsurface Soil Direct Contact MSCs (last updated August 27, 2016).
² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (las

Qualifiers:

U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
D - Indicates a dilution

Exceedance Summary:

10	Reported result exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.
10	Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC
10	DL exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.

Table 5
Summary of Subsurface Soil Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Subsurface Soil Direct Contact MSC ¹	PADEP Non-Residential Subsurface Soil Direct Contact MSC ²	Location ID	GPBT_03102014_7_8				GPBT_03112014_8_28C				GPBT_03112014_8_29C				GPBT_03112014_8_30C			
				Sample ID	GPBT_017G_03-10-2014(STF7-8)				GPBT_028C_03-11-2014(STF 8)				GPBT_029C_03-11-2014(STF 8)				GPBT_030C_03-11-2014(STF 8)			
				Sample Date	3/10/14				3/11/14				3/11/14				3/11/14			
				Sample Depth (ft bgs)	2-3				2-3				2-3				2-3			
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF
Volatile Organic Compounds (VOCs)																				
1,2,4-Trimethylbenzene	95-63-6	640	35	mg/kg	ND	U	0.0056	1	NA				NA				NA			
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	4.3	0.005	mg/kg	ND	U	0.003	1	NA				NA				NA			
1,2-Dichloroethane	107-06-2	98	0.5	mg/kg	ND	U	0.0011	1	NA				NA				NA			
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	ND	U	0.0056	1	NA				NA				NA			
Benzene	71-43-2	330	0.5	mg/kg	0.00074	J	0.0011	1	NA				NA				NA			
Ethylbenzene	100-41-4	1,000	70	mg/kg	ND	U	0.0011	1	NA				NA				NA			
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	ND	U	0.0056	1	NA				NA				NA			
Methyl Tert-Butyl Ether	1634-04-4	9,900	2	mg/kg	ND	U	0.0011	1	NA				NA				NA			
Toluene	108-88-3	10,000	100	mg/kg	ND	U	0.0011	1	NA				NA				NA			
Xylenes, Total (Dimethylbenzene)	1330-20-7	9,100	1,000	mg/kg	ND	U	0.0011	1	NA				NA				NA			
Semi-volatile Organic Compounds (SVOCs)																				
Anthracene	120-12-7	190,000	350	mg/kg	NA				0.775		0.04	1	1.36		0.047	1	2.7		0.22	1
Benzo(A)Anthracene	56-55-3	190,000	430	mg/kg	NA				0.98		0.04	1	0.694		0.047	1	1.36		0.22	1
Benzo(A)Pyrene	50-32-8	190,000	46	mg/kg	NA				1.4		0.04	1	1.19		0.047	1	1.55		0.22	1
Benzo(B)Fluoranthene	205-99-2	190,000	170	mg/kg	NA				1.54		0.04	1	1.23		0.047	1	1.29		0.22	1
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	NA				1.03		0.04	1	1.21		0.047	1	1.29		0.22	1
Chrysene	218-01-9	190,000	230	mg/kg	NA				1.01		0.04	1	0.767		0.047	1	2.22		0.22	1
Fluorene	86-73-7	190,000	3,800	mg/kg	NA				0.916		0.04	1	3.31		0.047	1	5.45		0.22	1
Naphthalene	91-20-3	190,000	25	mg/kg	NA				ND	U	0.04	1	ND	U	0.047	1	ND	U	0.22	1
Phenanthrene	85-01-8	190,000	10,000	mg/kg	NA				1.34		0.04	1	9.15		0.19	4	10.7		0.22	1
Pyrene	129-00-0	190,000	2,200	mg/kg	NA				1.18		0.04	1	1.24		0.047	1	4.03		0.22	1
Metals																				
Lead	7439-92-1	190,000	450	mg/kg	NA				235		2.6	1	208		3.2	1	141		2.8	1

Notes:

CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA- Not Analyzed
ft bgs - feet below ground surface

¹ PADEP Act 2 Non-Residential Subsurface Soil Direct Contact MSCs (last updated August 27, 2016).

² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (las

Qualifiers:

U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
D - Indicates a dilution

Exceedance Summary:

10	Reported result exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.
10	Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC
10	DL exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.

Table 5
Summary of Subsurface Soil Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Subsurface Soil Direct Contact MSC ¹	PADEP Non-Residential Subsurface Soil Direct Contact MSC ²	Location ID	GPBT_03112014_8_4				GPBT_03112014_8_5				GPBT_03112014_8_8				GPBT_03112014_9_1			
				Sample ID	GPBT_025G_03-11-2014(STF 8-4)				GPBT_026G_03-11-2014(STF 8-5)				GPBT_027G_03-11-2014(STF 8-8)				GPBT_019G_03-11-2014(STF 9-1)			
				Sample Date	3/11/14				3/11/14				3/11/14				3/11/14			
				Sample Depth (ft bgs)	2-3				2-3				2-3				2-3			
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF
Volatile Organic Compounds (VOCs)																				
1,2,4-Trimethylbenzene	95-63-6	640	35	mg/kg	0.13	J	0.79	1	0.104	J	1.1	1	0.078	J	0.8	1	0.0019	J	0.0079	1
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	4.3	0.005	mg/kg	ND	U	0.0038	1	ND	U	0.0043	1	ND	U	0.0039	1	ND	U	0.0039	1
1,2-Dichloroethane	107-06-2	98	0.5	mg/kg	ND	U	0.16	1	ND	U	0.23	1	ND	U	0.16	1	ND	U	0.0016	1
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	0.0432	J	0.79	1	ND	U	1.1	1	ND	U	0.8	1	ND	U	0.0079	1
Benzene	71-43-2	330	0.5	mg/kg	ND	U	0.16	1	ND	U	0.23	1	ND	U	0.16	1	ND	U	0.0016	1
Ethylbenzene	100-41-4	1,000	70	mg/kg	0.0632	J	0.16	1	0.0751	J	0.23	1	0.06	J	0.16	1	0.002		0.0016	1
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	0.0925	J	0.79	1	ND	U	1.1	1	0.465	J	0.8	1	0.13		0.0079	1
Methyl Tert-Butyl Ether	1634-04-4	9,900	2	mg/kg	ND	U	0.16	1	ND	U	0.23	1	ND	U	0.16	1	ND	U	0.0016	1
Toluene	108-88-3	10,000	100	mg/kg	0.139	J	0.16	1	0.0699	J	0.23	1	0.0512	J	0.16	1	0.0017		0.0016	1
Xylenes, Total (Dimethylbenzene)	1330-20-7	9,100	1,000	mg/kg	0.313		0.16	1	0.143	J	0.23	1	0.0961	J	0.16	1	0.0069		0.0016	1
Semi-volatile Organic Compounds (SVOCs)																				
Anthracene	120-12-7	190,000	350	mg/kg	NA				NA				NA				NA			
Benzo(A)Anthracene	56-55-3	190,000	430	mg/kg	NA				NA				NA				NA			
Benzo(A)Pyrene	50-32-8	190,000	46	mg/kg	NA				NA				NA				NA			
Benzo(B)Fluoranthene	205-99-2	190,000	170	mg/kg	NA				NA				NA				NA			
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	NA				NA				NA				NA			
Chrysene	218-01-9	190,000	230	mg/kg	NA				NA				NA				NA			
Fluorene	86-73-7	190,000	3,800	mg/kg	NA				NA				NA				NA			
Naphthalene	91-20-3	190,000	25	mg/kg	NA				NA				NA				NA			
Phenanthrene	85-01-8	190,000	10,000	mg/kg	NA				NA				NA				NA			
Pyrene	129-00-0	190,000	2,200	mg/kg	NA				NA				NA				NA			
Metals																				
Lead	7439-92-1	190,000	450	mg/kg	NA				NA				NA				NA			

Notes:

CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA- Not Analyzed
ft bgs - feet below ground surface

¹ PADEP Act 2 Non-Residential Subsurface Soil Direct Contact MSCs (last updated August 27, 2016).
² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (las

Qualifiers:

U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
D - Indicates a dilution

Exceedance Summary:

10	Reported result exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.
10	Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC
10	DL exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.

Table 5
Summary of Subsurface Soil Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Subsurface Soil Direct Contact MSC ¹	PADEP Non-Residential Subsurface Soil Direct Contact MSC ²	Location ID	GPBT_03112014_9_22C				GPBT_03112014_9_23C				GPBT_03112014_9_24C				GPBT_03112014_9_4			
				Sample ID	GPBT_022C_03-11-2014(STF 9)				GPBT_023C_03-11-2014(STF 9)				GPBT_024C_03-11-2014(STF 9)				GPBT_020G_03-11-2014(STF 9-4)			
				Sample Date	3/11/14				3/11/14				3/11/14				3/11/14			
				Sample Depth (ft bgs)	2-3				2-3				2-3				2-3			
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF
Volatile Organic Compounds (VOCs)																				
1,2,4-Trimethylbenzene	95-63-6	640	35	mg/kg	NA				NA				NA				0.427	J	0.62	1
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	4.3	0.005	mg/kg	NA				NA				NA				ND	U	0.003	1
1,2-Dichloroethane	107-06-2	98	0.5	mg/kg	NA				NA				NA				ND	U	0.12	1
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	NA				NA				NA				0.0636	J	0.62	1
Benzene	71-43-2	330	0.5	mg/kg	NA				NA				NA				ND	U	0.12	1
Ethylbenzene	100-41-4	1,000	70	mg/kg	NA				NA				NA				0.162		0.12	1
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	NA				NA				NA				1.11		0.62	1
Methyl Tert-Butyl Ether	1634-04-4	9,900	2	mg/kg	NA				NA				NA				ND	U	0.12	1
Toluene	108-88-3	10,000	100	mg/kg	NA				NA				NA				0.0375	J	0.12	1
Xylenes, Total (Dimethylbenzene)	1330-20-7	9,100	1,000	mg/kg	NA				NA				NA				0.617		0.12	1
Semi-volatile Organic Compounds (SVOCs)																				
Anthracene	120-12-7	190,000	350	mg/kg	0.779		0.25	5	0.634		0.052	1	0.584		0.045	1	NA			
Benzo(A)Anthracene	56-55-3	190,000	430	mg/kg	0.621		0.25	5	0.851		0.052	1	0.775		0.045	1	NA			
Benzo(A)Pyrene	50-32-8	190,000	46	mg/kg	0.697		0.25	5	0.786		0.052	1	0.963		0.045	1	NA			
Benzo(B)Fluoranthene	205-99-2	190,000	170	mg/kg	0.841		0.25	5	0.886		0.052	1	0.981		0.045	1	NA			
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	0.523		0.25	5	0.615		0.052	1	0.785		0.045	1	NA			
Chrysene	218-01-9	190,000	230	mg/kg	0.801		0.25	5	0.86		0.052	1	0.871		0.045	1	NA			
Fluorene	86-73-7	190,000	3,800	mg/kg	1.37		0.25	5	0.716		0.052	1	0.76		0.045	1	NA			
Naphthalene	91-20-3	190,000	25	mg/kg	ND	U	0.25	5	ND	U	0.052	1	0.431		0.045	1	NA			
Phenanthrene	85-01-8	190,000	10,000	mg/kg	3.62		0.25	5	1.6		0.052	1	2.48		0.045	1	NA			
Pyrene	129-00-0	190,000	2,200	mg/kg	1.43		0.25	5	1.39		0.052	1	1.2		0.045	1	NA			
Metals																				
Lead	7439-92-1	190,000	450	mg/kg	222		2.8	1	336		3.1	1	485		3.1	1	NA			

Notes:
CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA- Not Analyzed
ft bgs - feet below ground surface
¹ PADEP Act 2 Non-Residential Subsurface Soil Direct Contact MSCs (last updated August 27, 2016).
² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (las

Qualifiers:
U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
D - Indicates a dilution

Exceedance Summary:

10	Reported result exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.
10	Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC
10	DL exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.

Table 5
Summary of Subsurface Soil Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Subsurface Soil Direct Contact MSC ¹	PADEP Non-Residential Subsurface Soil Direct Contact MSC ²	Location ID	GPBT_03112014_9_8				GPBT_03122014_1_1				GPBT_03122014_1_12				GPBT_03122014_1_3			
				Sample ID	GPBT_021G_03-11-2014(STF 9-8)				GPBT_031G_03-12-2014 (STF1-1)				GPBT_033G_03-12-2014 (STF1-12)				GPBT_032G_03-12-2014 (STF1-3)			
				Sample Date	3/11/14				3/12/14				3/12/14				3/12/14			
				Sample Depth (ft bgs)	2-3				2-3				2-3				2-3			
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF
Volatile Organic Compounds (VOCs)																				
1,2,4-Trimethylbenzene	95-63-6	640	35	mg/kg	0.0018	J	0.0091	1	0.0508	J	0.61	1	ND	U	1.1	1	ND	U	0.01	1
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	4.3	0.005	mg/kg	ND	U	0.0043	1	ND	U	0.0027	1	ND	U	0.0029	1	ND	U	0.0033	1
1,2-Dichloroethane	107-06-2	98	0.5	mg/kg	ND	U	0.0018	1	ND	U	0.12	1	ND	U	0.22	1	ND	U	0.002	1
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	ND	U	0.0091	1	ND	U	0.61	1	ND	U	1.1	1	ND	U	0.01	1
Benzene	71-43-2	330	0.5	mg/kg	ND	U	0.0018	1	0.0248	J	0.12	1	ND	U	0.22	1	ND	U	0.002	1
Ethylbenzene	100-41-4	1,000	70	mg/kg	0.00085	J	0.0018	1	ND	U	0.12	1	ND	U	0.22	1	ND	U	0.002	1
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	0.0128		0.0091	1	0.0272	J	0.61	1	ND	U	1.1	1	ND	U	0.01	1
Methyl Tert-Butyl Ether	1634-04-4	9,900	2	mg/kg	ND	U	0.0018	1	ND	U	0.12	1	ND	U	0.22	1	ND	U	0.002	1
Toluene	108-88-3	10,000	100	mg/kg	ND	U	0.0018	1	ND	U	0.12	1	ND	U	0.22	1	ND	U	0.002	1
Xylenes, Total (Dimethylbenzene)	1330-20-7	9,100	1,000	mg/kg	0.004		0.0018	1	0.0367	J	0.12	1	0.0872	J	0.22	1	ND	U	0.002	1
Semi-volatile Organic Compounds (SVOCs)																				
Anthracene	120-12-7	190,000	350	mg/kg	NA				NA				NA				NA			
Benzo(A)Anthracene	56-55-3	190,000	430	mg/kg	NA				NA				NA				NA			
Benzo(A)Pyrene	50-32-8	190,000	46	mg/kg	NA				NA				NA				NA			
Benzo(B)Fluoranthene	205-99-2	190,000	170	mg/kg	NA				NA				NA				NA			
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	NA				NA				NA				NA			
Chrysene	218-01-9	190,000	230	mg/kg	NA				NA				NA				NA			
Fluorene	86-73-7	190,000	3,800	mg/kg	NA				NA				NA				NA			
Naphthalene	91-20-3	190,000	25	mg/kg	NA				NA				NA				NA			
Phenanthrene	85-01-8	190,000	10,000	mg/kg	NA				NA				NA				NA			
Pyrene	129-00-0	190,000	2,200	mg/kg	NA				NA				NA				NA			
Metals																				
Lead	7439-92-1	190,000	450	mg/kg	NA				NA				NA				NA			

Notes:

CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA- Not Analyzed
ft bgs - feet below ground surface

¹ PADEP Act 2 Non-Residential Subsurface Soil Direct Contact MSCs (last updated August 27, 2016).
² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (las

Qualifiers:

U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
D - Indicates a dilution

Exceedance Summary:

10	Reported result exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.
10	Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC
10	DL exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.

Table 5
Summary of Subsurface Soil Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Subsurface Soil Direct Contact MSC ¹	PADEP Non-Residential Subsurface Soil Direct Contact MSC ²	Location ID	GPBT_03122014_1_31C				GPBT_03122014_1_32C				GPBT_03122014_1_33C				GPBT_03122014_10_1			
				Sample ID	GPBT_031C_03-12-2014 (STF1)				GPBT_032C_03-12-2014 (STF1)				GPBT_033C_03-12-2014 (STF1)				GPBT_034G_03-12-2014 (STF10-1)			
				Sample Date	3/12/14				3/12/14				3/12/14				3/12/14			
				Sample Depth (ft bgs)	2-3				2-3				2-3				2-3			
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF
Volatile Organic Compounds (VOCs)																				
1,2,4-Trimethylbenzene	95-63-6	640	35	mg/kg	NA				NA				NA				1.19		0.93	1
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	4.3	0.005	mg/kg	NA				NA				NA				ND	U	0.003	1
1,2-Dichloroethane	107-06-2	98	0.5	mg/kg	NA				NA				NA				ND	U	0.19	1
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	NA				NA				NA				0.221	J	0.93	1
Benzene	71-43-2	330	0.5	mg/kg	NA				NA				NA				0.817		0.19	1
Ethylbenzene	100-41-4	1,000	70	mg/kg	NA				NA				NA				1.12		0.19	1
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	NA				NA				NA				1.14		0.93	1
Methyl Tert-Butyl Ether	1634-04-4	9,900	2	mg/kg	NA				NA				NA				ND	U	0.19	1
Toluene	108-88-3	10,000	100	mg/kg	NA				NA				NA				0.442		0.19	1
Xylenes, Total (Dimethylbenzene)	1330-20-7	9,100	1,000	mg/kg	NA				NA				NA				2.6		0.19	1
Semi-volatile Organic Compounds (SVOCs)																				
Anthracene	120-12-7	190,000	350	mg/kg	0.128		0.038	1	0.117	J	0.2	1	2.18		0.2	1	NA			
Benzo(A)Anthracene	56-55-3	190,000	430	mg/kg	0.402		0.038	1	0.723		0.2	1	4.79		0.2	1	NA			
Benzo(A)Pyrene	50-32-8	190,000	46	mg/kg	0.446		0.038	1	0.777		0.2	1	3.46		0.2	1	NA			
Benzo(B)Fluoranthene	205-99-2	190,000	170	mg/kg	0.5		0.038	1	0.864		0.2	1	3.7		0.2	1	NA			
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	0.223		0.038	1	0.293		0.2	1	1.44		0.2	1	NA			
Chrysene	218-01-9	190,000	230	mg/kg	0.408		0.038	1	0.82		0.2	1	4.76		0.2	1	NA			
Fluorene	86-73-7	190,000	3,800	mg/kg	0.0629		0.038	1	0.1	J	0.2	1	0.877		0.2	1	NA			
Naphthalene	91-20-3	190,000	25	mg/kg	0.0299	J	0.038	1	ND	U	0.2	1	0.17	J	0.2	1	NA			
Phenanthrene	85-01-8	190,000	10,000	mg/kg	0.323		0.038	1	0.466		0.2	1	9.21		0.2	1	NA			
Pyrene	129-00-0	190,000	2,200	mg/kg	0.631		0.038	1	0.748		0.2	1	7.8		0.2	1	NA			
Metals																				
Lead	7439-92-1	190,000	450	mg/kg	285		2.4	1	370		2.4	1	518		2.6	1	NA			

Notes:
CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA- Not Analyzed
ft bgs - feet below ground surface
¹ PADEP Act 2 Non-Residential Subsurface Soil Direct Contact MSCs (last updated August 27, 2016).
² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (las)

Qualifiers:
U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
D - Indicates a dilution

10	Reported result exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.
10	Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC
10	DL exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.

Table 5
Summary of Subsurface Soil Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Subsurface Soil Direct Contact MSC ¹	PADEP Non-Residential Subsurface Soil Direct Contact MSC ²	Location ID	GPBT_03122014_10_10				GPBT_03122014_10_3				GPBT_03122014_10_34C				GPBT_03122014_10_35C			
				Sample ID	GPBT_011G_03-12-2014(RW10-10)				GPBT_035G_03-12-2014 (STF10-3)				GPBT_034C_03-12-2014 (STF10)				GPBT_035C_03-12-2014 (STF10)			
				Sample Date	3/12/14				3/12/14				3/12/14				3/12/14			
				Sample Depth (ft bgs)	3.7-4.7				2-3				2-3				2-3			
				Unit	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF	Result	Q	DL	DF
Volatile Organic Compounds (VOCs)																				
1,2,4-Trimethylbenzene	95-63-6	640	35	mg/kg	ND	U	0.006	1	0.149	J	0.84	1	NA				NA			
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	4.3	0.005	mg/kg	ND	U	0.0036	1	ND	U	0.0029	1	NA				NA			
1,2-Dichloroethane	107-06-2	98	0.5	mg/kg	ND	U	0.0012	1	ND	U	0.17	1	NA				NA			
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	ND	U	0.006	1	0.047	J	0.84	1	NA				NA			
Benzene	71-43-2	330	0.5	mg/kg	ND	U	0.0012	1	0.362		0.17	1	NA				NA			
Ethylbenzene	100-41-4	1,000	70	mg/kg	ND	U	0.0012	1	0.359		0.17	1	NA				NA			
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	ND	U	0.006	1	2.09		0.84	1	NA				NA			
Methyl Tert-Butyl Ether	1634-04-4	9,900	2	mg/kg	ND	U	0.0012	1	ND	U	0.17	1	NA				NA			
Toluene	108-88-3	10,000	100	mg/kg	ND	U	0.0012	1	0.13	J	0.17	1	NA				NA			
Xylenes, Total (Dimethylbenzene)	1330-20-7	9,100	1,000	mg/kg	ND	U	0.0012	1	0.619		0.17	1	NA				NA			
Semi-volatile Organic Compounds (SVOCs)																				
Anthracene	120-12-7	190,000	350	mg/kg	0.182		0.073	1	NA				0.732		0.036	1	1.12		0.041	
Benzo(A)Anthracene	56-55-3	190,000	430	mg/kg	0.482		0.073	1	NA				0.289		0.036	1	1.65		0.041	
Benzo(A)Pyrene	50-32-8	190,000	46	mg/kg	0.602		0.073	1	NA				0.214		0.036	1	1.66		0.041	
Benzo(B)Fluoranthene	205-99-2	190,000	170	mg/kg	0.629		0.073	1	NA				0.337		0.036	1	2.03		0.041	
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	0.473		0.073	1	NA				0.144		0.036	1	1.01		0.041	
Chrysene	218-01-9	190,000	230	mg/kg	0.529		0.073	1	NA				0.34		0.036	1	1.68		0.041	
Fluorene	86-73-7	190,000	3,800	mg/kg	0.0569	J	0.073	1	NA				3.26		0.036	1	2.04		0.041	
Naphthalene	91-20-3	190,000	25	mg/kg	0.263		0.073	1	NA				ND	U	0.036	1	ND	U	0.041	
Phenanthrene	85-01-8	190,000	10,000	mg/kg	0.393		0.073	1	NA				7.96		0.18	5	5.68		0.16	
Pyrene	129-00-0	190,000	2,200	mg/kg	0.788		0.073	1	NA				0.829		0.036	1	3.97		0.041	
Metals																				
Lead	7439-92-1	190,000	450	mg/kg	308		3	1	NA				178		2.2	1	1560		2.5	

Notes:

CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA- Not Analyzed
ft bgs - feet below ground surface

¹ PADEP Act 2 Non-Residential Subsurface Soil Direct Contact MSCs (last updated August 27, 2016).
² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (las

Qualifiers:

U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
D - Indicates a dilution

Exceedance Summary:

10	Reported result exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.
10	Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC
10	DL exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.

Table 5
Summary of Subsurface Soil Analytical Results
AOI 5 Remedial Investigation Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Chemical Name	CAS No	PADEP Non-Residential Subsurface Soil Direct Contact MSC ¹	PADEP Non-Residential Subsurface Soil Direct Contact MSC ²	Location ID	GPBT_03122014_10_36C				GPBT_03122014_10_6			
				Sample ID	GPBT_036C_03-12-2014 (STF10)				GPBT_036G_03-12-2014 (STF10-6)			
				Sample Date	3/12/14				3/12/14			
				Sample Depth (ft bgs)	2-3				2-3			
				Unit	Result	Q	DL	DF	Result	Q	RL	DF
Volatile Organic Compounds (VOCs)												
1,2,4-Trimethylbenzene	95-63-6	640	35	mg/kg	NA				0.169	J	1.2	1
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	4.3	0.005	mg/kg	NA				ND	U	0.003	1
1,2-Dichloroethane	107-06-2	98		mg/kg	NA				ND	U	0.25	1
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	10,000	210	mg/kg	NA				ND	U	1.2	1
Benzene	71-43-2	330	0.5	mg/kg	NA				ND	U	0.25	1
Ethylbenzene	100-41-4	1,000	70	mg/kg	NA				0.125	J	0.25	1
Isopropylbenzene (Cumene)	98-82-8	10,000	2,500	mg/kg	NA				2.42		1.2	1
Methyl Tert-Butyl Ether	1634-04-4	9,900	2	mg/kg	NA				ND	U	0.25	1
Toluene	108-88-3	10,000	100	mg/kg	NA				0.0554	J	0.25	1
Xylenes, Total (Dimethylbenzene)	1330-20-7	9,100	1,000	mg/kg	NA				0.318		0.25	1
Semi-volatile Organic Compounds (SVOCs)												
Anthracene	120-12-7	190,000	350	mg/kg	0.193		0.041	1	NA			
Benzo(A)Anthracene	56-55-3	190,000	430	mg/kg	0.931		0.041	1	NA			
Benzo(A)Pyrene	50-32-8	190,000	46	mg/kg	0.906		0.041	1	NA			
Benzo(B)Fluoranthene	205-99-2	190,000	170	mg/kg	1.07		0.041	1	NA			
Benzo(G,H,I)Perylene	191-24-2	190,000	180	mg/kg	0.582		0.041	1	NA			
Chrysene	218-01-9	190,000	230	mg/kg	1.01		0.041	1	NA			
Fluorene	86-73-7	190,000	3,800	mg/kg	0.0427		0.041	1	NA			
Naphthalene	91-20-3	190,000	25	mg/kg	0.0425		0.041	1	NA			
Phenanthrene	85-01-8	190,000	10,000	mg/kg	0.618		0.041	1	NA			
Pyrene	129-00-0	190,000	2,200	mg/kg	1.13		0.041	1	NA			
Metals												
Lead	7439-92-1	190,000	450	mg/kg	789		2.5	1	NA			

Notes:

CAS No - Chemical Abstracts Service Registry Number
PADEP - Pennsylvania Department of Environmental Protection Agency
MSC - Medium Specific Concentration
mg/kg - milligram per kilogram
Q - Qualifier
DL - May be reporting limit or method detection limit
DF - Dilution Factor
ND - Not Detected
NA- Not Analyzed
ft bgs - feet below ground surface

¹ PADEP Act 2 Non-Residential Subsurface Soil Direct Contact MSCs (last updated August 27, 2016).

² PADEP Non-Residential Soil to Groundwater MSC for unsaturated soils in a used aquifer with total dissolved solids less than 2500 mg/l (las

Qualifiers:

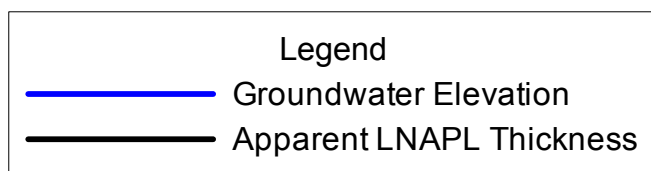
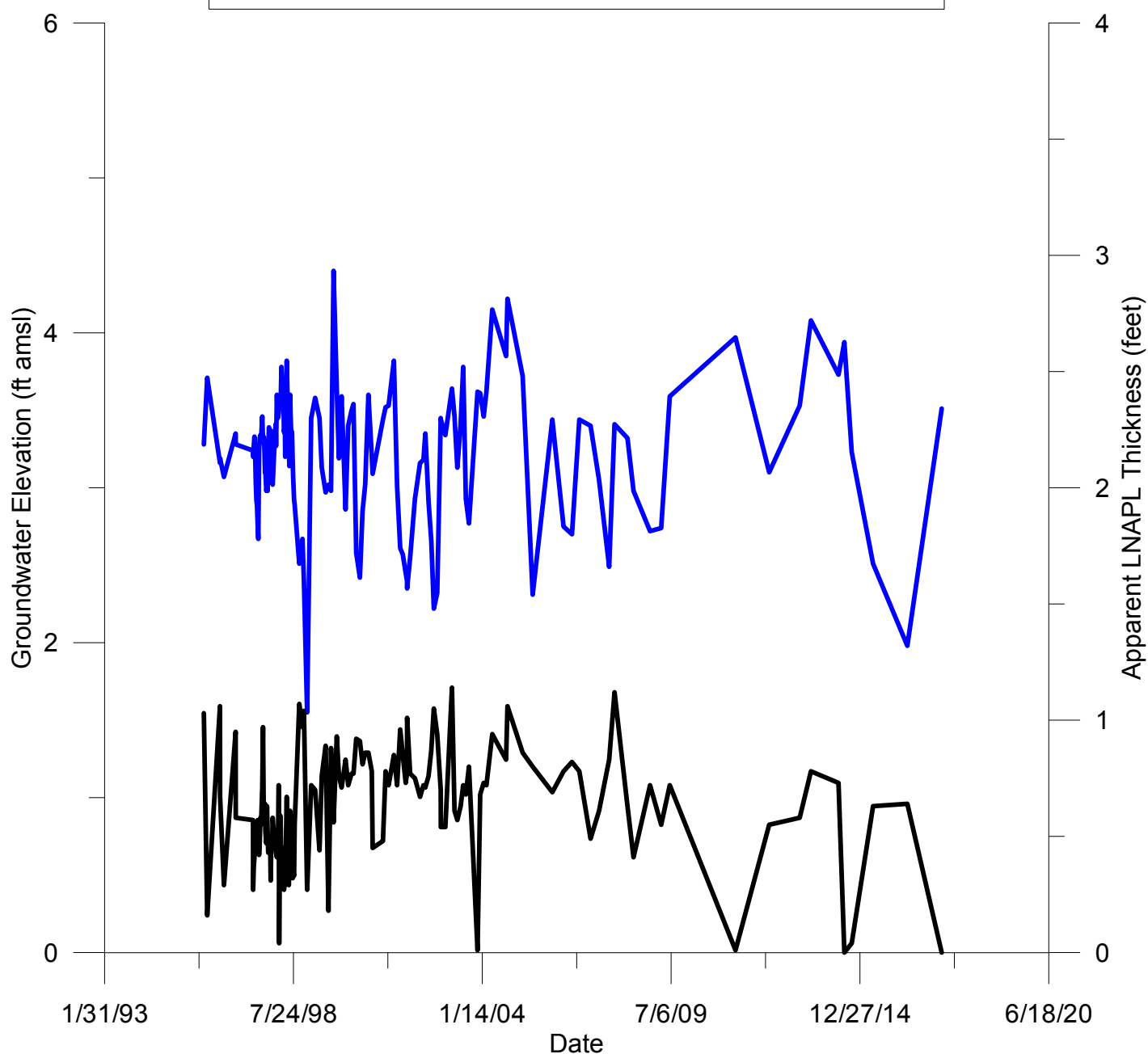
U - The compound was analyzed but not detected
J - Estimated value. Result between method detection and reporting limits
D - Indicates a dilution

Exceedance Summary:

10	Reported result exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.
10	Reported result exceeds the PADEP Non-Residential Soil to Groundwater MSC
10	DL exceeds the PADEP Non-Residential Subsurface Soil Direct Contact MSC.

13

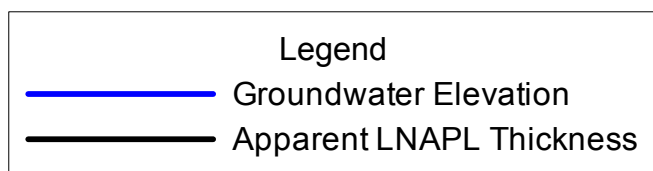
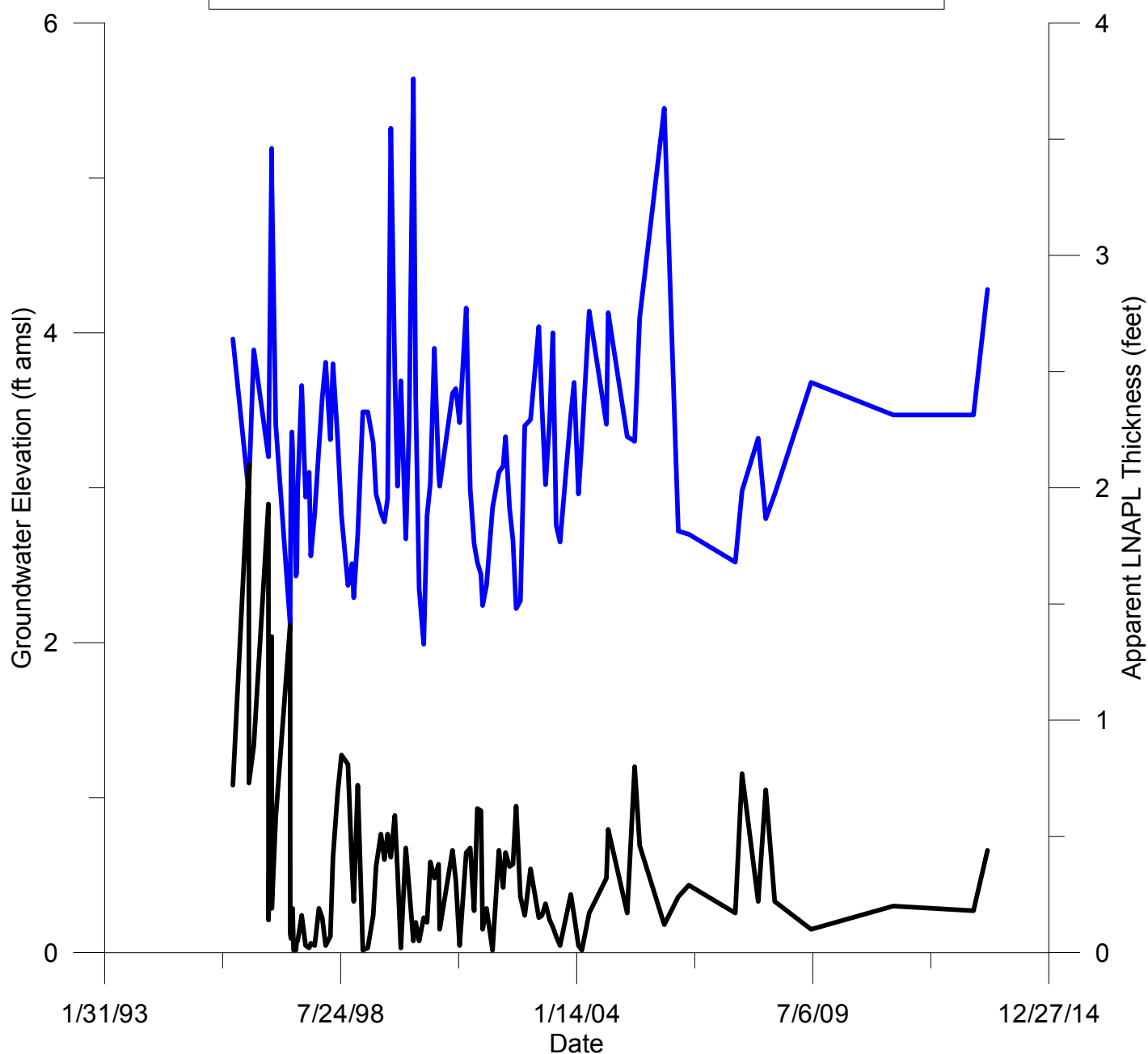
Figure G-1
Monitoring Well A-7
Apparent LNAPL Thickness and Groundwater Elevation Trends
AOI 5 Remedial Investigation Report
PES Philadelphia Refining Complex
Philadelphia, PA



Notes:

1. Apparent LNAPL thicknesses and groundwater elevations were obtained from gauging events spanning from December 1995 through May 2017.
2. Observed LNAPL sheen is displayed as 0.01 feet thick.
3. LNAPL = light non-aqueous phase liquid.
4. ft amsl = feet above mean sea level.

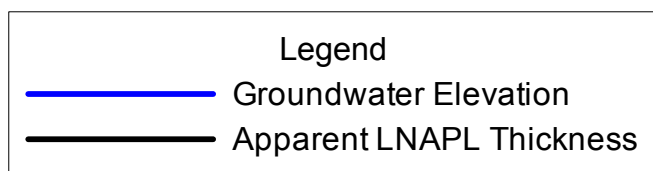
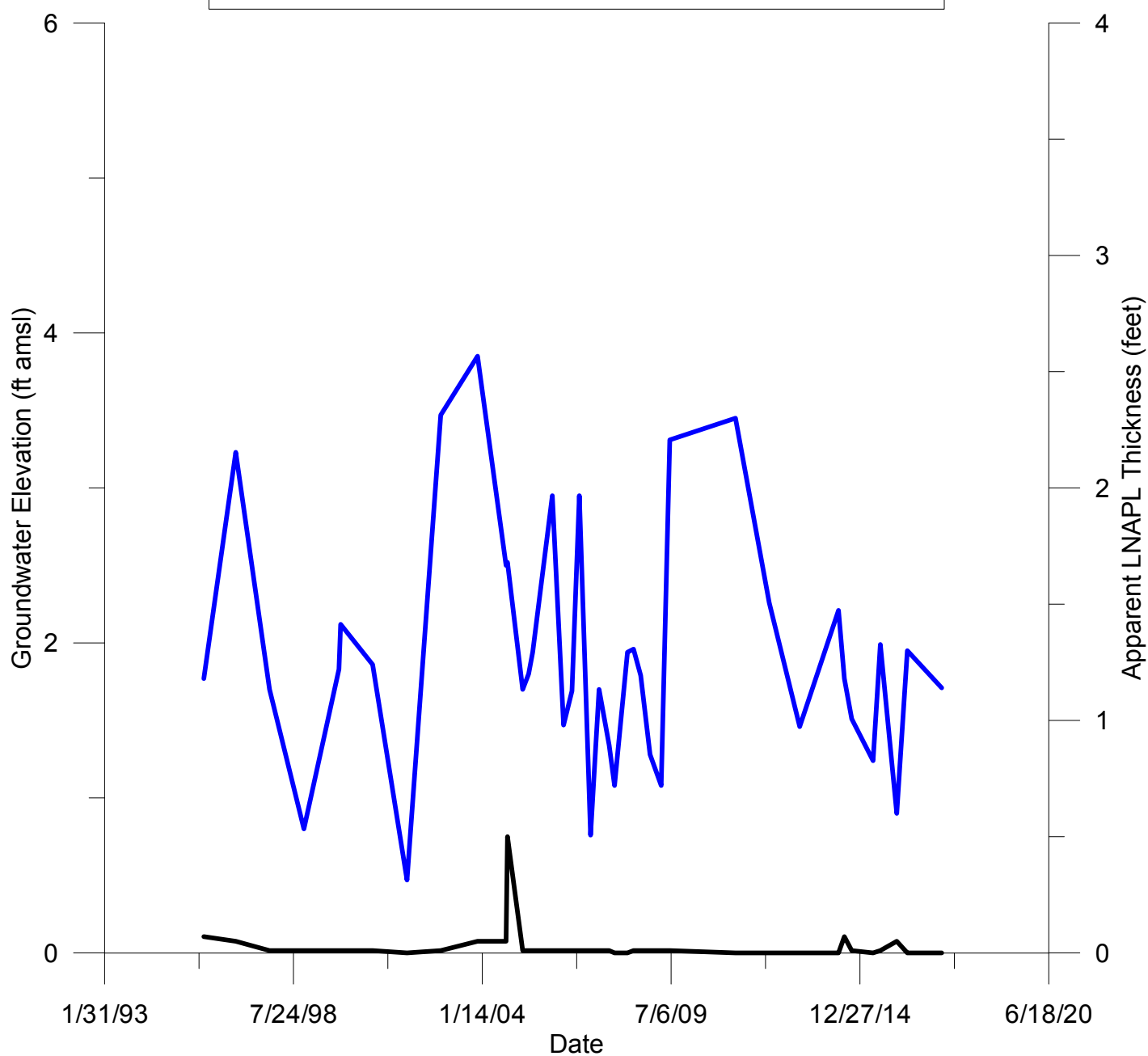
Figure G-2
Monitoring Well A-14
Apparent LNAPL Thickness and Groundwater Elevation Trends
AOI 5 Remedial Investigation Report
PES Philadelphia Refining Complex
Philadelphia, PA



Notes:

1. Apparent LNAPL thicknesses and groundwater elevations were obtained from gauging events spanning from January 1996 through July 2013.
2. Observed LNAPL sheen is displayed as 0.01 feet thick.
3. LNAPL = light non-aqueous phase liquid.
4. ft amsl = feet above mean sea level.

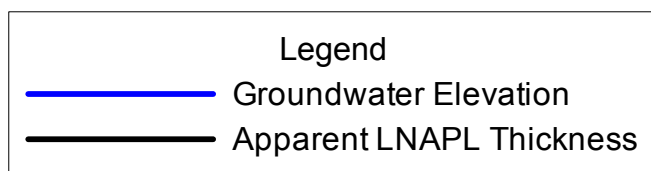
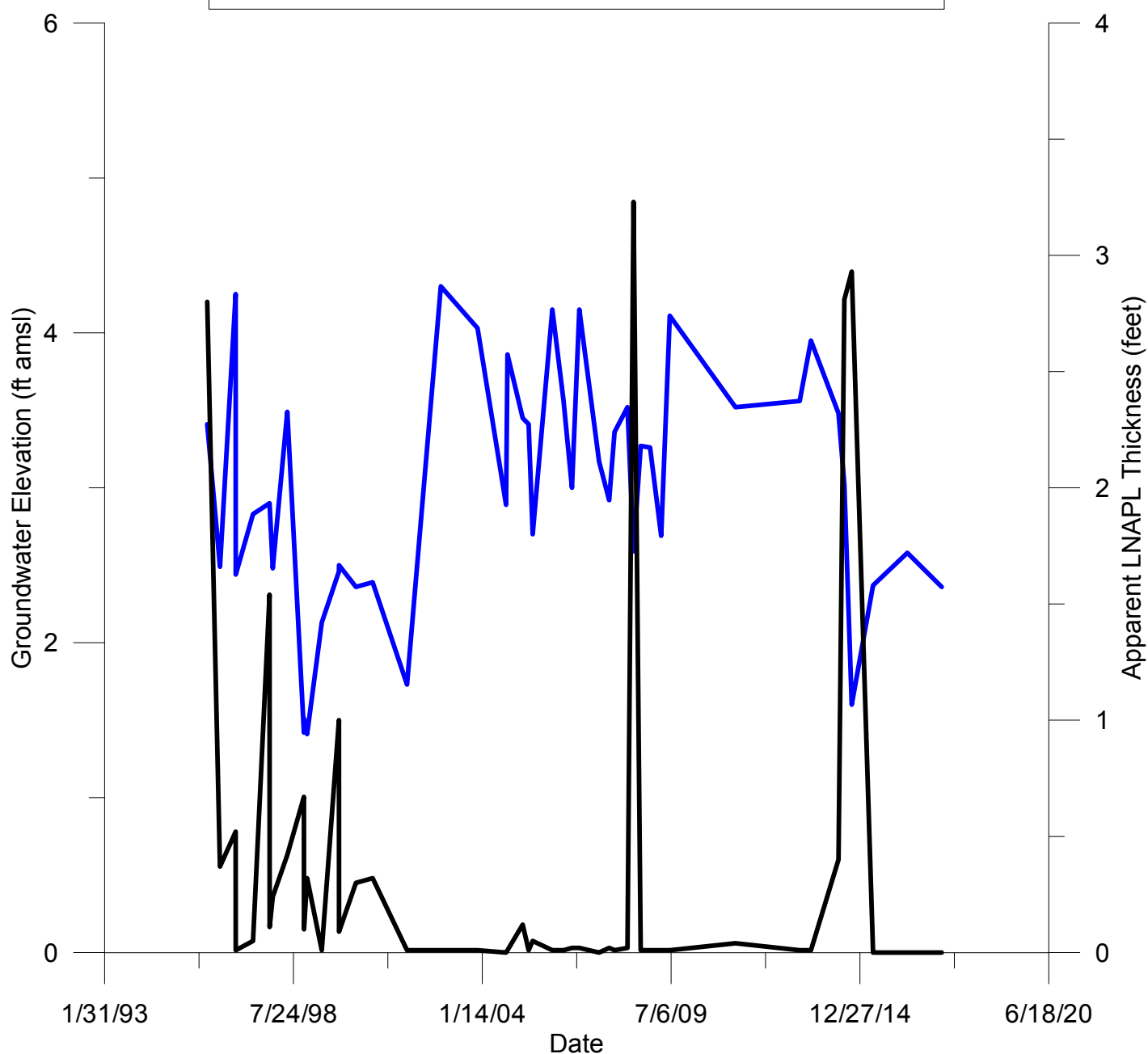
Figure G-3
Monitoring Well A-22
Apparent LNAPL Thickness and Groundwater Elevation Trends
AOI 5 Remedial Investigation Report
PES Philadelphia Refining Complex
Philadelphia, PA



Notes:

1. Apparent LNAPL thicknesses and groundwater elevations were obtained from gauging events spanning from December 1995 through May 2017.
2. Observed LNAPL sheen is displayed as 0.01 feet thick.
3. LNAPL = light non-aqueous phase liquid.
4. ft amsl = feet above mean sea level.

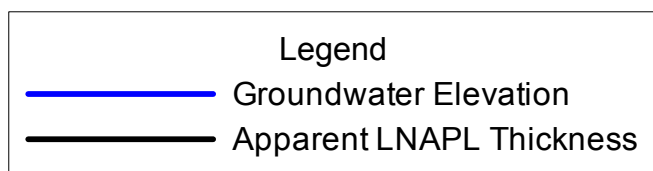
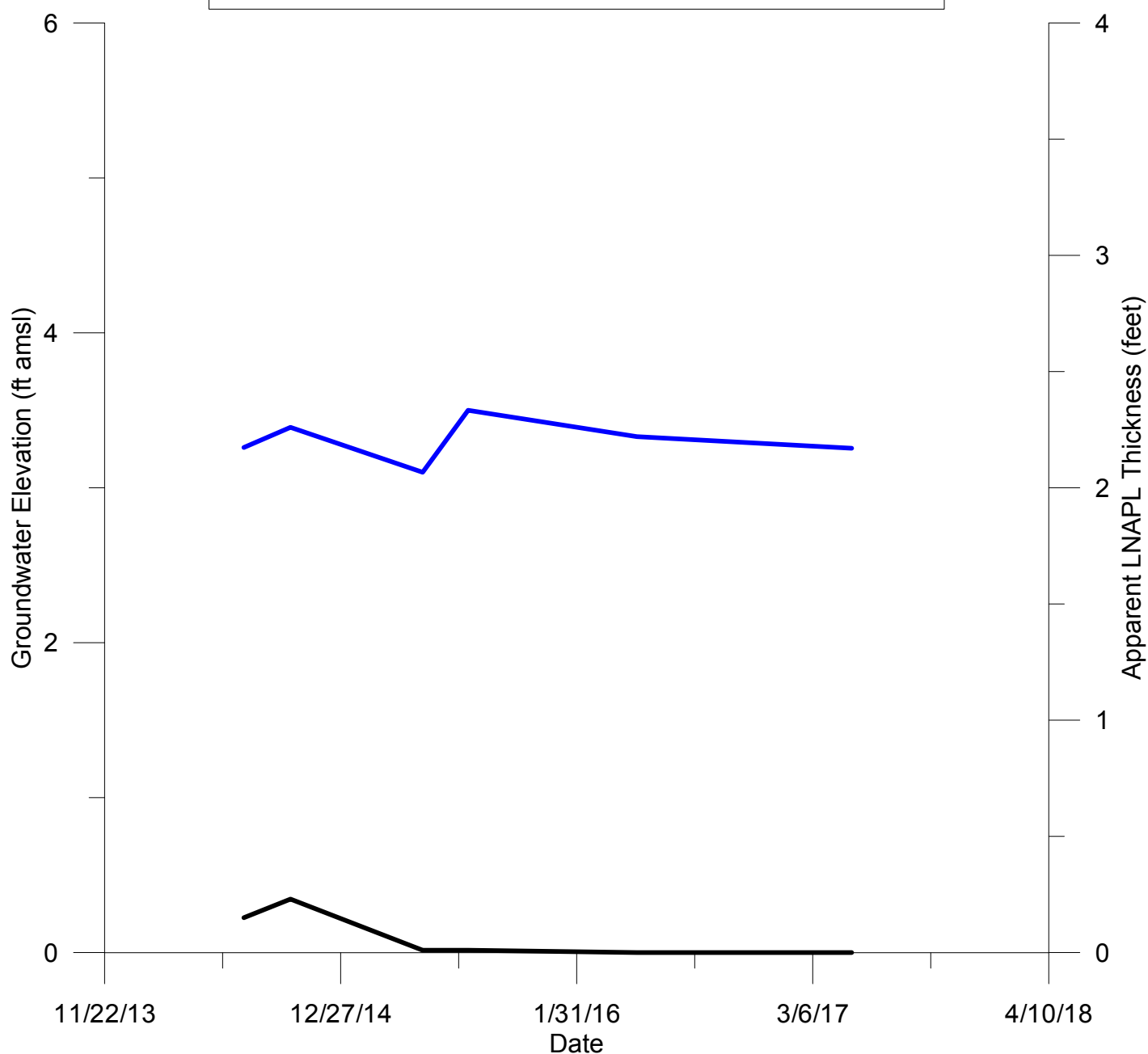
Figure G-4
Monitoring Well A-46
Apparent LNAPL Thickness and Groundwater Elevation Trends
AOI 5 Remedial Investigation Report
PES Philadelphia Refining Complex
Philadelphia, PA



Notes:

1. Apparent LNAPL thicknesses and groundwater elevations were obtained from gauging events spanning from January 1996 through May 2017.
2. Observed LNAPL sheen is displayed as 0.01 feet thick.
3. LNAPL = light non-aqueous phase liquid.
4. ft amsl = feet above mean sea level.

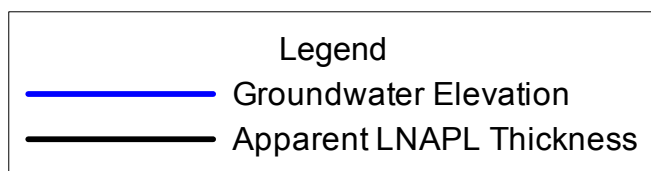
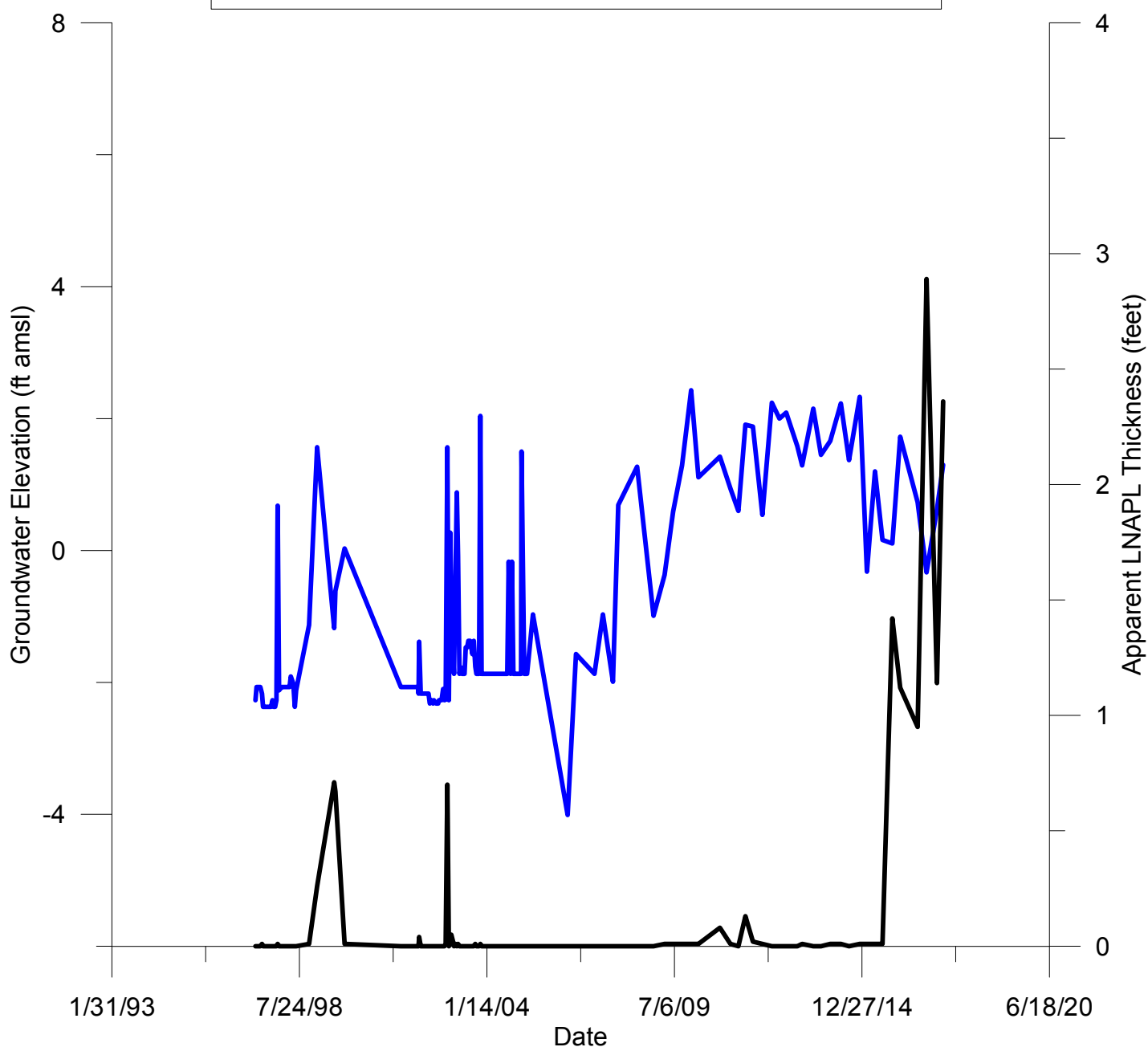
Figure G-5
Monitoring Well A-166
Apparent LNAPL Thickness and Groundwater Elevation Trends
AOI 5 Remedial Investigation Report
PES Philadelphia Refining Complex
Philadelphia, PA



Notes:

1. Apparent LNAPL thicknesses and groundwater elevations were obtained from gauging events spanning from July 2014 through May 2017.
2. Observed LNAPL sheen is displayed as 0.01 feet thick.
3. LNAPL = light non-aqueous phase liquid.
4. ft amsl = feet above mean sea level.

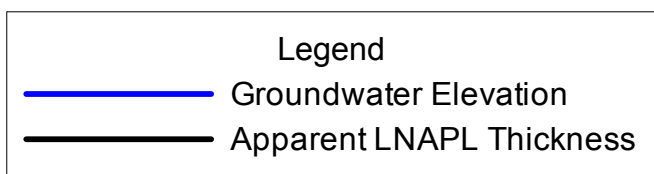
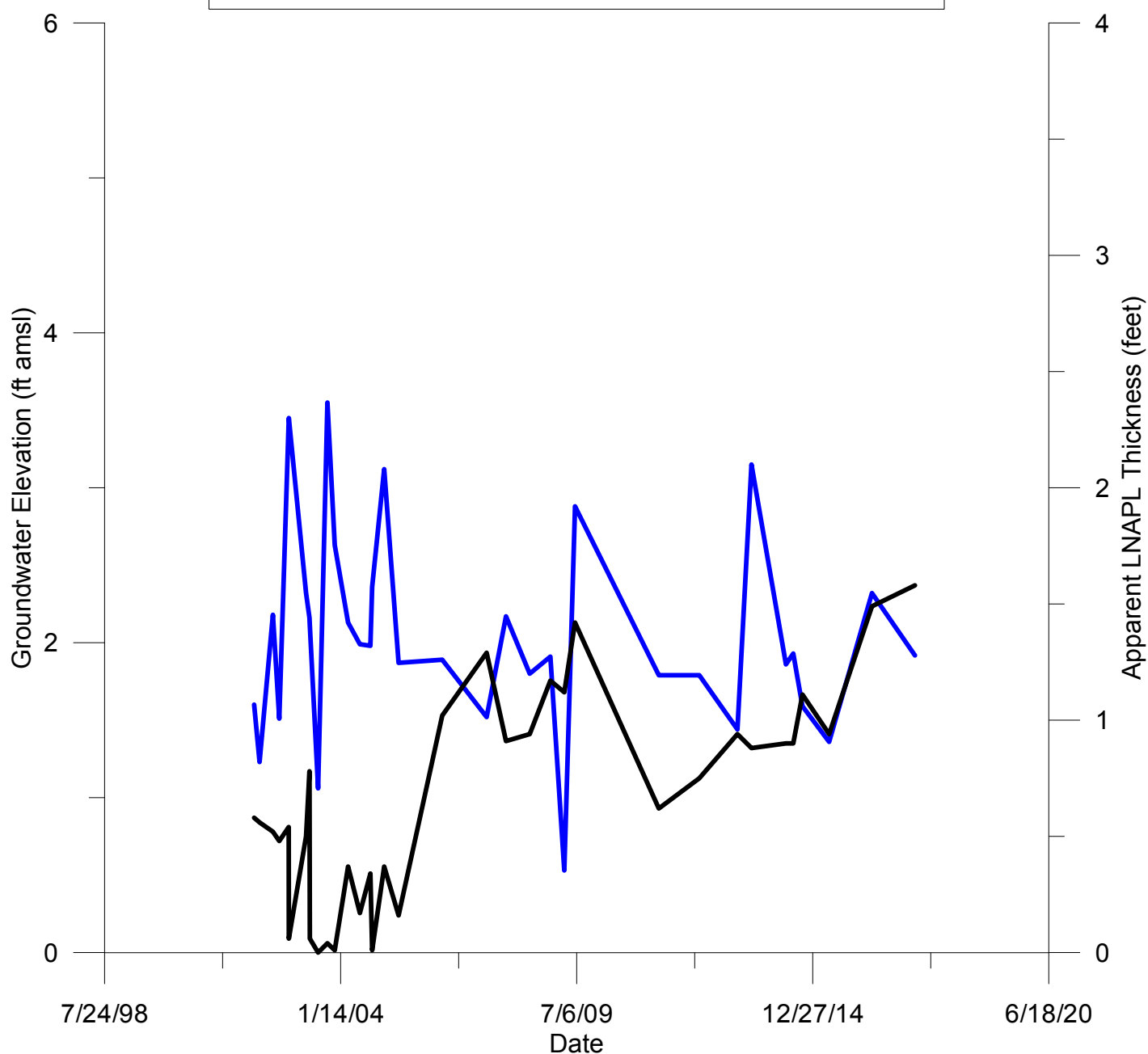
Figure G-6
Recovery Well RWBH-2
Apparent LNAPL Thickness and Groundwater Elevation Trends
AOI 5 Remedial Investigation Report
PES Philadelphia Refining Complex
Philadelphia, PA



Notes:

1. Apparent LNAPL thicknesses and groundwater elevations were obtained from gauging events spanning from April 1997 through May 2017.
2. Observed LNAPL sheen is displayed as 0.01 feet thick.
3. LNAPL = light non-aqueous phase liquid.
4. ft amsl = feet above mean sea level.

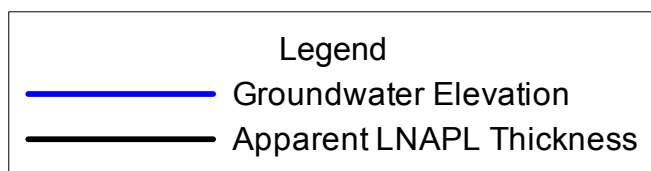
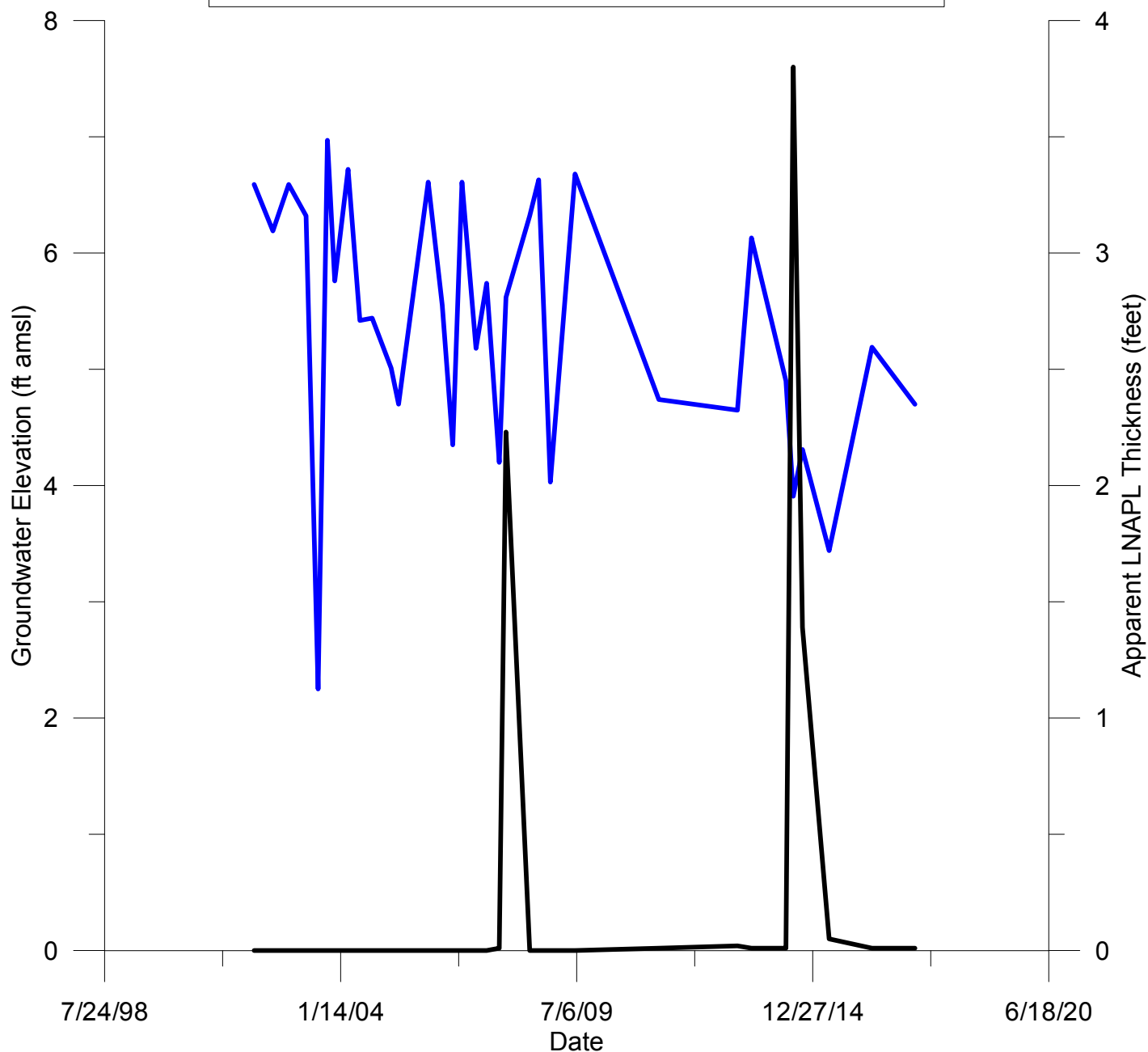
Figure G-7
Monitoring Well SW-1
Apparent LNAPL Thickness and Groundwater Elevation Trends
AOI 5 Remedial Investigation Report
PES Philadelphia Refining Complex
Philadelphia, PA



Notes:

1. Apparent LNAPL thicknesses and groundwater elevations were obtained from gauging events spanning from January 2002 through May 2017.
2. Observed LNAPL sheen is displayed as 0.01 feet thick.
3. LNAPL = light non-aqueous phase liquid.
4. ft amsl = feet above mean sea level.

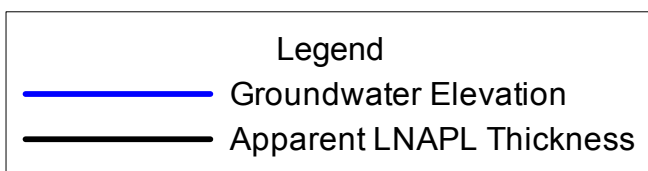
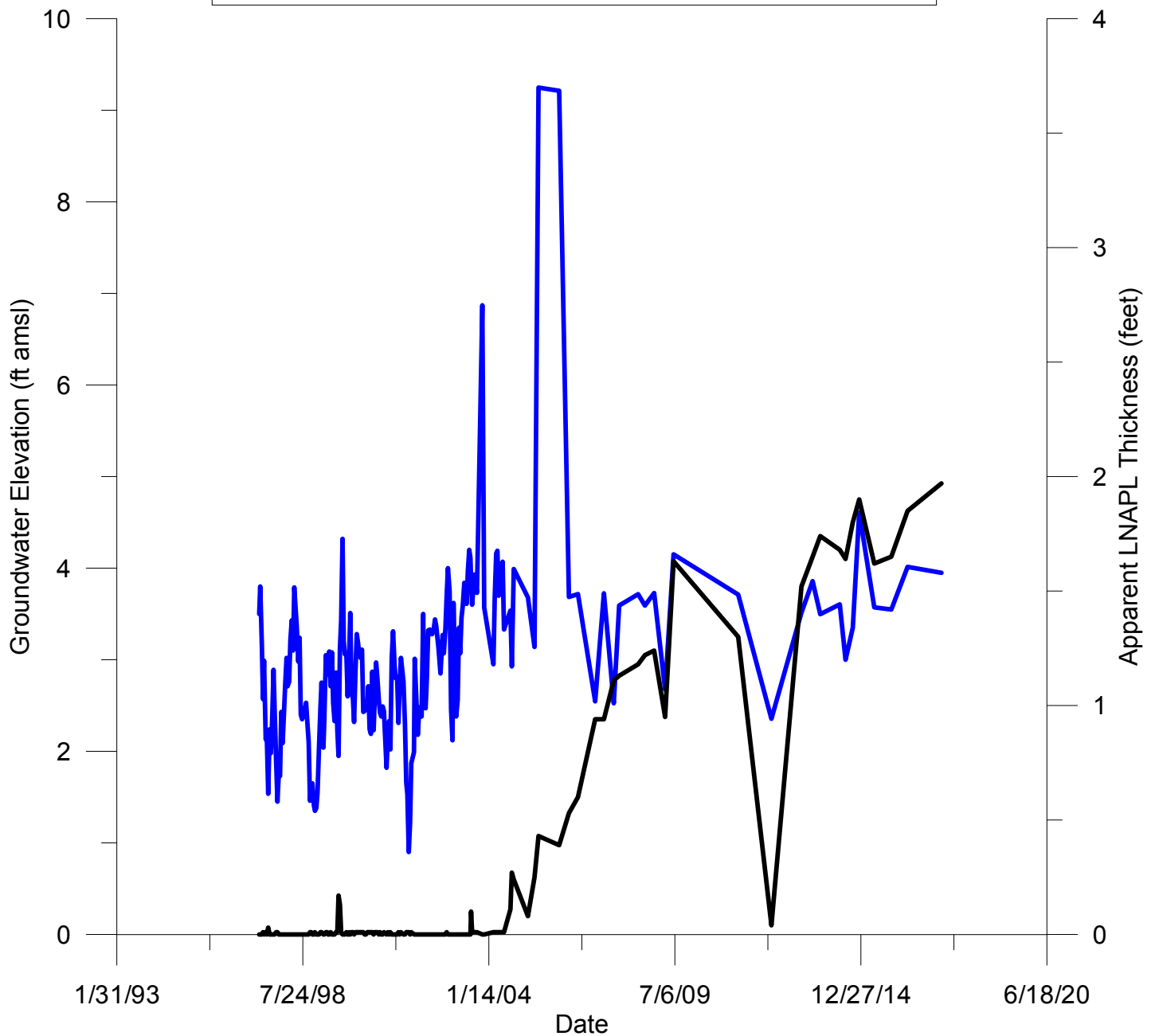
Figure G-8
 Temporary Well Point WP-A
 Apparent LNAPL Thickness and Groundwater Elevation Trends
 AOI 5 Remedial Investigation Report
 PES Philadelphia Refining Complex
 Philadelphia, PA



Notes:

1. Apparent LNAPL thicknesses and groundwater elevations were obtained from gauging events spanning from January 2002 through May 2017.
2. Observed LNAPL sheen is displayed as 0.01 feet thick.
3. LNAPL = light non-aqueous phase liquid.
4. ft amsl = feet above mean sea level.

Figure G-9
 Temporary Well Point WP9-8
 Apparent LNAPL Thickness and Groundwater Elevation Trends
 AOI 5 Remedial Investigation Report
 PES Philadelphia Refining Complex
 Philadelphia, PA



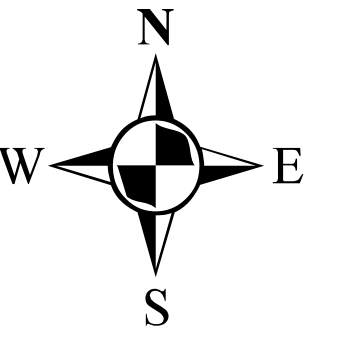
Notes:

1. Apparent LNAPL thicknesses and groundwater elevations were obtained from gauging events spanning from April 1997 through May 2017.
2. Observed LNAPL sheen is displayed as 0.01 feet thick.
3. LNAPL = light non-aqueous phase liquid.
4. ft amsl = feet above mean sea level.

AOI-6

AOI-5

Schuylkill River



Legend

Fill / Alluvium Monitoring Well with Apparent LNAPL Thickness (ft.)

Fill / Alluvium Recovery Well with Apparent LNAPL Thickness (ft.)

Monitoring Wells with No LNAPL

Monitoring Wells with No Gauging

AOIs

Sheet Pile Wall

LNAPL Types

Middle Distillate

Lube Oil

Unknown

Notes:

1. Actual LNAPL thickness for wells A-4, A-45, A-46, and SW-5 was unable to be measured due to the products viscosity.

Figure 11: Apparent LNAPL Thickness
AOI 5 Site Characterization Report
Sunoco Philadelphia Refinery
Philadelphia, Pennsylvania

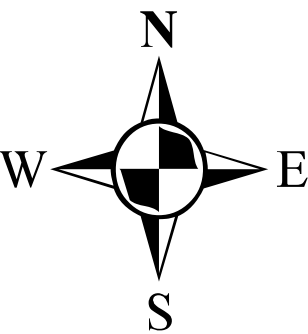


Sunoco, Inc. (R&M)
Philadelphia Refinery
3144 Passyunk Avenue
Philadelphia, PA.
19145

0 150 300 Feet

SCALE: 1" = 150'
DATE: August 3, 2007
DWN. BY: JSC
CKD. BY: JH
JOB#: 2574601

Q:\Data\2574601\ArcGIS\MapDocuments\AOI 5 SCR\Figure 11- Apparent LNAPL Thickness.mxd



Legend

- Shallow Monitoring Well with Apparent LNAPL Thickness (ft.)
- Shallow Monitoring Well with Apparent LNAPL Thickness (ft.)
- Monitoring Well (Unclassified) With No LNAPL
- Monitoring Wells With No LNAPL
- Fill / Alluvium Recovery Well with No LNAPL
- Monitoring Wells With No Gauging
- Occupied Buildings
- AOIs
- Sheet Pile Wall
- LNAPL Types**
- Middle Distillate
- Lube Oil
- Residual Oil

Notes:
1. NM = The actual LNAPL thickness for well SW-5 was unable to be measured due to the products viscosity.
2. Bing Maps aerial imagery provided by © 2010 Microsoft Corporation and its data suppliers and obtained under the licensing agreement with ESRI.

Figure 11: Apparent LNAPL Thickness
AOI-5 Site Characterization Report/
Remedial Investigation Report
Sunoco Philadelphia Refinery
Philadelphia, Pennsylvania

15

Air Sampling Locations and Field Conditions
October 2012
Philadelphia Refinery Operations, a series of Evergreen Resources Group, LLC

AOI	Sample No.	Location/Description	Sample Date	Start Time	Temperature (degrees F) at Start	Barometric Pressure (inHg) at Start	Weather Conditions at Start	End Time	Temperature (degrees F) at End	Barometric Pressure (inHg) at End	Weather Conditions at End	Sample Duration (hr:min)	Canister ID	Regulator ID	Pre-Sample Pressure, (PSI)	Post-Sample Pressure, (PSI)
AOI 5	1	B&S Office	10/24/2012	10:35	60.8	30.14	Haze, no precipitation, wind 5.8 to 9.2 mph	14:35	71.6	30.08	Partly Cloudy, no precipitation, wind 4.6 to 6.9 mph	4:00	AC01003	FCA00317	29.5	8.0
AOI 5	2	B&S Office (outside)	10/24/2012	10:37	60.8	30.14	Haze, no precipitation, wind 5.8 to 9.2 mph	14:39	71.6	30.08	Partly Cloudy, no precipitation, wind 4.6 to 6.9 mph	4:02	AC00760	FCA00595	29.5	13.0
AOI 6	3	24 Gate Building (1st floor)	10/24/2012	10:50	60.8	30.14	Haze, no precipitation, wind 5.8 to 9.2 mph	14:50	71.6	30.08	Partly Cloudy, no precipitation, wind 4.6 to 6.9 mph	4:00	AC01853	FCA00134	29.5	7.0
AOI 6	4	24 Gate Building (2nd floor)	10/24/2012	10:52	60.8	30.14	Haze, no precipitation, wind 5.8 to 9.2 mph	14:52	71.6	30.08	Partly Cloudy, no precipitation, wind 4.6 to 6.9 mph	4:00	AC01010	FCA00188	29.6	7.3
AOI 6	5	GP Training Building (1st floor vending area)	10/24/2012	11:07	63.0	30.14	Haze, no precipitation, wind 5.8 to 9.2 mph	15:07	72.0	30.08	Partly Cloudy, no precipitation, wind 4.6 to 6.9 mph	4:00	AC01928	FCA00161	29.5	9.0
AOI 6	6	GP Training Building (1st floor west)	10/24/2012	11:10	63.0	30.14	Haze, no precipitation, wind 5.8 to 9.2 mph	15:10	72.0	30.08	Partly Cloudy, no precipitation, wind 4.6 to 6.9 mph	4:00	AC01669	FCA00564	29.5	9.0
AOI 6	7	GP Training Building (3rd floor gym)	10/24/2012	11:12	63.0	30.14	Haze, no precipitation, wind 5.8 to 9.2 mph	15:13	72.0	30.08	Partly Cloudy, no precipitation, wind 4.6 to 6.9 mph	4:01	AC00641	FCA00023	29.5	6.5
AOI 6	8	GP Training Building (basement)	10/24/2012	11:16	63.0	30.14	Haze, no precipitation, wind 5.8 to 9.2 mph	15:16	72.0	30.08	Partly Cloudy, no precipitation, wind 4.6 to 6.9 mph	4:00	AC00747	FCA00604	29.5	7.5
AO 6	9	GP Main Office Building (basement west)	10/24/2012	12:26	64.0	30.13	Haze, no precipitation, wind 5.8 to 9.2 mph	16:26	73.0	30.07	Partly Cloudy, no precipitation, wind 4.6 to 6.9 mph	4:00	AC01113	FCA00575	29.5	7.0
AOI 6	10	GP Main Office Building (basement center)	10/24/2012	12:31	64.0	30.13	Haze, no precipitation, wind 5.8 to 9.2 mph	16:31	73.0	30.07	Partly Cloudy, no precipitation, wind 4.6 to 6.9 mph	4:00	AC01436	FCA00521	29.4	10.0
AOI 6	11	GP Main Office Building (basement east)	10/24/2012	12:33	64.0	30.13	Haze, no precipitation, wind 5.8 to 9.2 mph	16:33	73.0	30.07	Partly Cloudy, no precipitation, wind 4.6 to 6.9 mph	4:00	AC01376	FCA00349	29.4	8.0
AOI 6	12	GP Main Office Building (1st floor entrance)	10/24/2012	12:36	64.0	30.13	Haze, no precipitation, wind 5.8 to 9.2 mph	16:37	73.0	30.07	Partly Cloudy, no precipitation, wind 4.6 to 6.9 mph	4:01	AC00672	FCA00198	29.4	4.8
AOI 6	13	GP Main Office Building (1st floor west)	10/24/2012	12:40	64.0	30.13	Haze, no precipitation, wind 5.8 to 9.2 mph	16:40	73.0	30.07	Partly Cloudy, no precipitation, wind 4.6 to 6.9 mph	4:00	AC01145	FCA00374	29.4	6.5
AOI 6	14	GP Main Office Building (2nd floor west)	10/24/2012	12:44	64.0	30.13	Haze, no precipitation, wind 5.8 to 9.2 mph	16:44	73.0	30.07	Partly Cloudy, no precipitation, wind 4.6 to 6.9 mph	4:00	AC00782	FCA00298	29.6	0.0
AOI 6	15	GP Main Office Building (2nd floor east)	10/24/2012	12:48	64.0	30.13	Haze, no precipitation, wind 5.8 to 9.2 mph	16:48	73.0	30.07	Partly Cloudy, no precipitation, wind 4.6 to 6.9 mph	4:00	AC00475	FCA00402	29.5	3.5
AOI 6	16	GP Main Office Building (outside west)	10/24/2012	12:54	66.9	30.12	Haze, no precipitation, wind 5.8 to 9.2 mph	16:54	73.0	30.08	Partly Cloudy, no precipitation, wind 4.6 to 6.9 mph	4:00	AC01263	FCA00516	29.4	9.5
AOI 7	17	440 Building (2nd floor Room 221, inspection)	10/24/2012	13:10	66.9	30.12	Haze, no precipitation, wind 5.8 to 9.2 mph	17:10	73.0	30.08	Partly Cloudy, no precipitation, wind 4.6 to 6.9 mph	4:00	AC01215	FCA00365	29.5	8.0
AOI 7	18	440 Building (2nd floor meeting room)	10/24/2012	13:13	66.9	30.12	Haze, no precipitation, wind 5.8 to 9.2 mph	17:13	73.0	30.08	Partly Cloudy, no precipitation, wind 4.6 to 6.9 mph	4:00	AC01670	FCA00319	29.6	5.5
AOI 4	19	15 Pump House (inside)	10/24/2012	13:27	66.9	30.12	Haze, no precipitation, wind 5.8 to 9.2 mph	17:27	73.0	30.08	Partly Cloudy, no precipitation, wind 4.6 to 6.9 mph	4:00	AC01930	FCA00016	29.5	7.0
AOI 4	20	15 Pump House (under roof w/ pump equipment, approximately 8-10' below grade)	10/24/2012	13:30	66.9	30.12	Haze, no precipitation, wind 5.8 to 9.2 mph	17:30	73.0	30.08	Partly Cloudy, no precipitation, wind 4.6 to 6.9 mph	4:00	AC01420	FCA00397	29.5	6.3
AOI 4	21	15 Pump House (outside, at grade)	10/24/2012	13:35	66.9	30.12	Haze, no precipitation, wind 5.8 to 9.2 mph	17:35	73.0	30.08	Partly Cloudy, no precipitation, wind 4.6 to 6.9 mph	4:00	AC01464	FCA00034	29.5	3.0
AOI 8	22	North Yard Scale House (inside)	10/24/2012	13:51	66.9	30.12	Haze, no precipitation, wind 5.8 to 9.2 mph	17:51	73.0	30.08	Partly Cloudy, no precipitation, wind 4.6 to 6.9 mph	4:00	AC00590	FCA00168	29.8	7.8
AOI 8	23	North Yard Scale House (outside)	10/25/2012	8:17	59.0	30.23	Overcast, no precipitation, wind 5.8 to 6.9 mph	12:17	62.6	30.24	Overcast, no precipitation, wind 3.5 mph	4:00	AC01664	FCA00422	29.0	11.0
	24	"Trip blank," regulator attached, unopened	10/24/2012	---	---	---	---	---	---	---	---	---	AC01830	FCA00480	29.4	29.4
	25	"Trip blank," regulator attached, unopened	10/25/2012	---	---	---	---	---	---	---	---	---	AC01093	FCA00058	29.5	29.5
AOI 9	26	SRTF Propane Loading (inside)	10/25/2012	8:59	60.1	30.25	Overcast, no precipitation, wind 5.8 to 6.9 mph	12:59	63.0	30.24	Overcast, no precipitation, wind 3.5 mph	4:00	AC00540	FCA00482	29.3	8.5
AOI 9	27	SRTF Main Pump House (inside)	10/25/2012	9:07	60.1	30.25	Overcast, no precipitation, wind 5.8 to 6.9 mph	13:08	63.0	30.24	Overcast, no precipitation, wind 3.5 mph	4:01	AC01810	FCA00609	29.4	8.0
AOI 9	28	SRTF Main Pump House (outside)	10/25/2012	9:10	60.1	30.25	Overcast, no precipitation, wind 5.8 to 6.9 mph	13:10	63.0	30.24	Overcast, no precipitation, wind 3.5 mph	4:00	AC01350	FCA00454	29.5	5.0
AOI 2	29	PB Main Office Building, (safety office)	10/25/2012	8:23	60.8	30.24	Overcast, no precipitation, wind 5.8 to 6.9 mph	12:23	62.6	30.24	Overcast, no precipitation, wind 3.5 mph	4:00	AC00716	FCA00239	29.5	0.0
AOI 2	30	PB Main Office Building, (medical area)	10/25/2012	8:29	60.8	30.24	Overcast, no precipitation, wind 5.8 to 6.9 mph	12:29	62.6	30.24	Overcast, no precipitation, wind 3.5 mph	4:00	AC00501	FCA00015	29.5	6.0
AOI 2	31	PB Main Office Building, (1st floor lobby)	10/25/2012	8:34	60.8	30.24	Overcast, no precipitation, wind 5.8 to 6.9 mph	12:34	62.6	30.24	Overcast, no precipitation, wind 3.5 mph	4:00	AC00765	FCA00303	29.5	5.8
AOI 2	32	PB Main Office Building,(1st floor east wing)	10/25/2012	8:37	60.8	30.24	Overcast, no precipitation, wind 5.8 to 6.9 mph	12:37	62.6	30.24	Overcast, no precipitation, wind 3.5 mph	4:00	AC01403	FCA00432	29.5	10.0
AOI 2	33	PB Main Office Building, (1st floor west wing)	10/25/2012	8:41	60.8	30.24	Overcast, no precipitation, wind 5.8 to 6.9 mph	12:41	62.6	30.24	Overcast, no precipitation, wind 3.5 mph	4:00	AC01573	FCA00449	29.5	3.0
AOI 2	34	PB Main Office Building, (2nd floor west wing)	10/25/2012	8:44	60.8	30.24	Overcast, no precipitation, wind 5.8 to 6.9 mph	12:44	62.6	30.24	Overcast, no precipitation, wind 3.5 mph	4:00	AC00947	FCA00632	29.5	5.0
AOI 2	35	PB Main Office Building, (2nd floor center file room)	10/25/2012	8:48	60.8	30.24	Overcast, no precipitation, wind 5.8 to 6.9 mph	12:48	62.6	30.24	Overcast, no precipitation, wind 3.5 mph	4:00	AC00033	FCA00473	29.5	4.0
AOI 2	36	PB Main Office Building, (2nd floor east conference room)	10/25/2012	8:51	60.8	30.24	Overcast, no precipitation, wind 5.8 to 6.9 mph	12:51	62.6	30.24	Overcast, no precipitation, wind 3.5 mph	4:00	AC01790	FCA00538	29.5	3.5
AOI 2	37	PB Lab (west lab)	10/25/2012	9:00	60.1	30.25	Overcast, no precipitation, wind 5.8 to 6.9 mph	13:00	63.0	30.24	Overcast, no precipitation, wind 3.5 mph	4:00	AC01886	FCA00274	29.5	5.0
AOI 2	38	PB Lab (2nd floor office)	10/25/2012	9:08	60.1	30.25	Overcast, no precipitation, wind 5.8 to 6.9 mph	13:08	63.0	30.24	Overcast, no precipitation, wind 3.5 mph	4:00	AC01487	FCA00418	29.5	4.5
AOI 2	39	PB Refinery Hall (2nd floor conference room)	10/25/2012	9:40	60.1	30.25	Overcast, no precipitation, wind 5.8 to 6.9 mph	13:40	63.0	30.24	Overcast, no precipitation, wind 3.5 mph	4:00	AC01115	FCA00563	29.6	6.5
AOI 2	40	PB Refinery Hall (2nd floor east wing)	10/25/2012	9:43	60.1	30.25	Overcast, no precipitation, wind 5.8 to 6.9 mph	13:43	63.0	30.24	Overcast, no precipitation, wind 3.5 mph	4:00	AC01243	FCA00603	29.4	2.0
AOI 2	41	PB Maintenance Shop (break room)	10/25/2012	9:51	60.1	30.25	Overcast, no precipitation, wind 5.8 to 6.9 mph	13:51	63.0	30.24	Overcast, no precipitation, wind 3.5 mph	4:00	AC01218	FCA00405	29.6	9.0
AOI 2	42	PB Maintenance Shop (office)	10/25/2012	9:55	61.0	30.25	Overcast, no precipitation, wind 5.8 to 6.9 mph	13:55	64.0	30.23	Overcast, no precipitation, wind 3.5 mph	4:00	AC01179	FCA00040	29.6	4.8
AOI 2	43	PB buildings (adjacent gate area)	10/25/2012	10:00	61.0	30.25	Overcast, no precipitation, wind 5.8 to 6.9 mph	14:00	64.0	30.23	Overcast, no precipitation, wind 3.5 mph	4:00	AC00870	FCA00215	29.5	6.0
	44	"Trip blank," regulator attached, unopened	10/25/2012	---	---	---	---	---	---	---	---	---	AC00993	FCA00619	29.5	29.5

Notes:

AOI = Area of Inerest

F = Fahrenheit

inHg = inches of merucry

PSI = pounds per square inch

mph = miles per hour

Indoor Air Sampling Field Data Sheet
(Form SP-28)

A) General Information

Sample Identification Number: IA-A015-625
 Site Address: 3144 Passyunk Ave Phila PA
 Sample Canister Location: A01-5 625 BOUNDING NEAR RAILS
 Sample Date: 3.28.16 Sampler: ROBINS
 Sample Time: Start: 0827 Stop: 1557
 Shipping Date: 3.21.16
 Canister Type: 400 mL – 1.0 L Summa Canister 6 L Summa Canister/Other (specify):
 Canister Serial No.: 1385
 Flow Controller Serial No.: 415271
 Were "Instructions to Occupants Building" followed?
☐ Yes ☐ No

B) Sampling Information

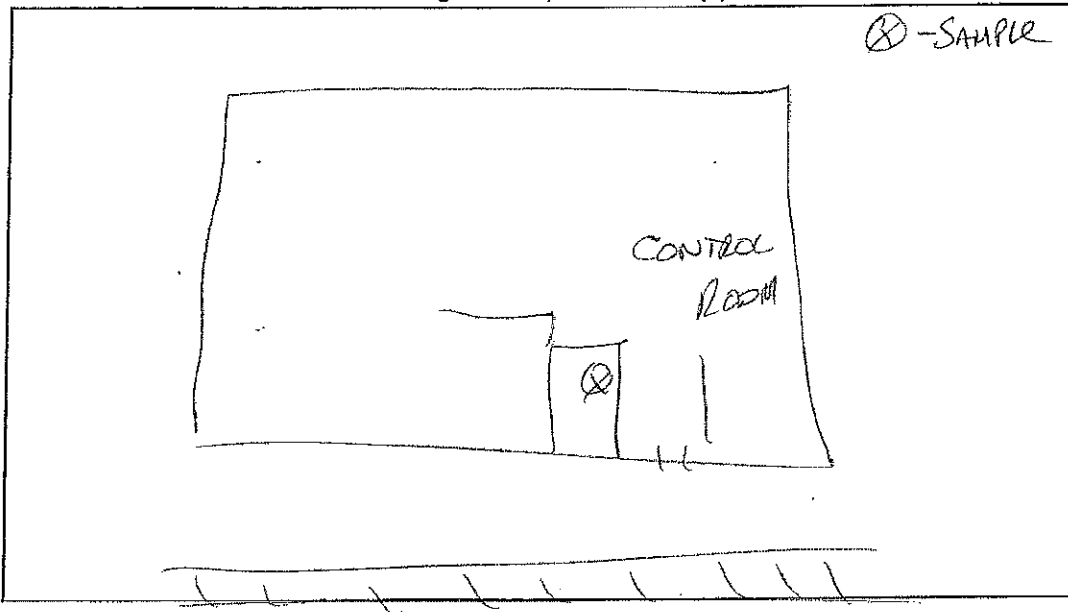
	Start		Stop	
	Ambient	Interior	Ambient	Interior
Temperature	<u>48</u>	<u>69</u>	<u>60</u>	<u>74</u>
Barometric Pressure	<u>29.9</u>		<u>29.8</u>	
Canister Pressure Gauge Reading:	Start <u>-30</u>		Stop <u>-9</u>	
Time:	<u>0827</u>		<u>1557</u>	
PID Reading:	<u>0.00 ppm</u>		<u>0.00</u>	
Basement Depth (ft below grade):	<u> </u>			
Window Marked:	<u>Yes/No</u>			

Was there significant precipitation (e.g., >1/2-inch rain) within 24 hours prior to (or during) the sampling event?
☐ Yes ☐ No

Describe the general weather conditions:
cool, light rain, breezy
windy

Indoor Air Sampling Field Data Sheet
(Form SP-28)

Provide Drawing of Sample Location(s) in Building



C) Comments

Control Room
Lunch Room
Table

Indoor Air Sampling Field Data Sheet
(Form SP-28)

A) General Information

Sample Identification Number: IA-A015-526-2 2nd floor
DOCK
office
 Site Address: 3144 Passyunk Ave Phila PA
 Sample Canister Location: A01-5 526 BOUNDING 2nd fl
 Sample Date: 3.28.16 Sampler: Red Bull
 Sample Time: Start: 0845 Stop: 1617
 Shipping Date: 3.21.16
 Canister Type: 400 mL – 1.0 L Summa Canister 6 L Summa Canister/Other (specify):
 Canister Serial No.: 1386
 Flow Controller Serial No.: 824844

Were "Instructions to Occupants Building" followed?
☐ Yes ☐ No

B) Sampling Information

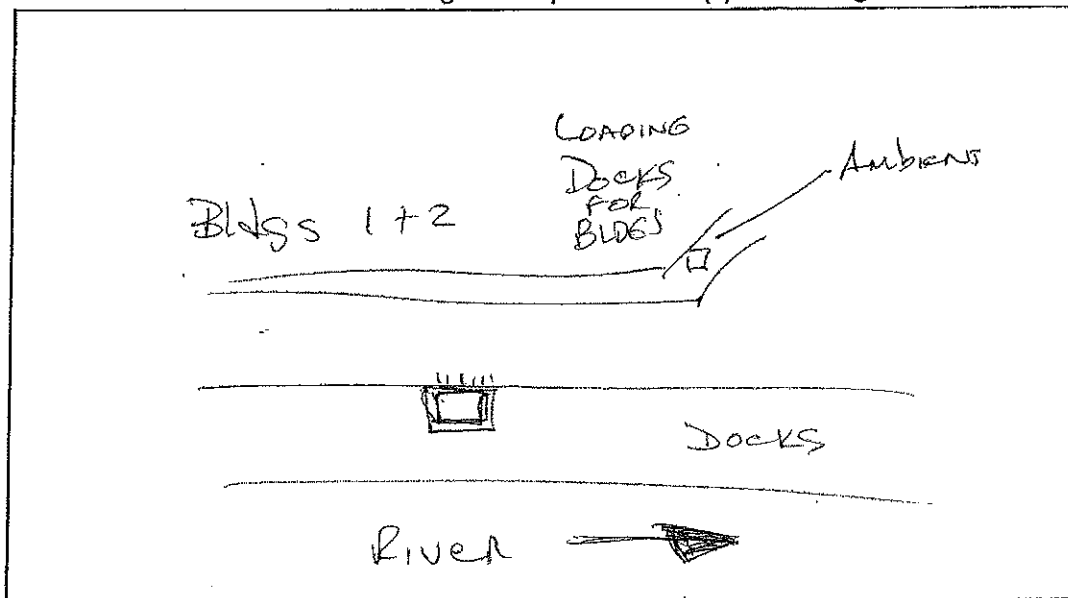
	Start		Stop	
	Ambient	Interior	Ambient	Interior
Temperature	<u>~50</u>	<u>61</u>	<u>60-74</u>	<u>74</u>
Barometric Pressure	<u>29.9</u>		<u>29.8</u>	
Canister Pressure Gauge Reading:	Start <u>-30</u>		Stop <u>-9</u>	
Time:	<u>0845</u>		<u>1617</u>	
PID Reading:	<u>0.00 ppm</u>		<u>0.00</u>	
Basement Depth (ft below grade):	<u>—</u>			
Window Marked:	<u>Yes/No</u>			

Was there significant precipitation (e.g., >1/2-inch rain) within 24 hours prior to (or during) the sampling event?
☐ Yes ☐ No

Describe the general weather conditions:
cool, light rain, breezy
mild, gusty winds, sunny during pickup

Indoor Air Sampling Field Data Sheet
(Form SP-28)

Provide Drawing of Sample Location(s) in Building



C) Comments

Dock Wharf Office

2-floors

2ND floor

15'x 8' Bldg - 2nd floor

Closed windows

Turned off steam heat

can of paint

can of Kwik-wipes

**Indoor Air Sampling Field Data Sheet
(Form SP-28)**

A) General Information

Sample Identification Number: IA-A015-526-1 1ST Floor
DOCK
Office
 Site Address: 3144 Passyunk Ave Phila PA
 Sample Canister Location: A01-5 526 BOUNDING 1ST Flr
 Sample Date: 3.28.16 Sampler: RO Bums
 Sample Time: Start: 0852 Stop: 1717
 Shipping Date: 3.21.16
 Canister Type: 400 mL – 1.0 L Summa Canister/ 6 L Summa Canister/Other (specify):

 Canister Serial No.: _____
 Flow Controller Serial No.: 710536
 Were "Instructions to Occupants Building" followed?
☐ Yes ☐ No

B) Sampling Information

	Start		Stop	
	Ambient	Interior	Ambient	Interior
Temperature	<u>~48</u>	<u>63</u>	<u>~60</u>	<u>70</u>
Barometric Pressure	<u>29.9</u>		<u>29.8</u>	
Canister Pressure Gauge Reading:	<u>-30</u>		<u>-10</u>	
Time:	<u>0852</u>		<u>1717</u>	
PID Reading:	<u>0.00 ppm</u>		<u>0.00</u>	
Basement Depth (ft below grade):	<u>—</u>		<u>—</u>	
Window Marked:	<u>Yes/No</u>		<u>—</u>	

Was there significant precipitation (e.g., >1/2-inch rain) within 24 hours prior to (or during) the sampling event?
☐ Yes ☐ No

Describe the general weather conditions:
Cool, Light rain, breezy
Windy gusty Sunny Cool

Indoor Air Sampling Field Data Sheet
(Form SP-28)

Provide Drawing of Sample Location(s) in Building

see A015-526-2

C) Comments

Sample on Desk
15' x 8' BLDG - 1ST Floor
Closed windows
Turned off steam heat

Indoor Air Sampling Field Data Sheet
(Form SP-28)

A) General Information

Sample Identification Number: IA-AD15-526¹⁶ 501 Dock
office
Back
Site Address: 3144 Passyunk Ave Phila PA
Sample Canister Location: AD1-5 526 BOUNG 501
Sample Date: 3.28.16 Sampler: Frederick
Sample Time: Start: 0904 Stop: 1631
Shipping Date: 3.21.16
Canister Type: 400 mL – 1.0 L Summa Canister 6 L Summa Canister/Other (specify):
Canister Serial No.: 1388
Flow Controller Serial No.: 715 210595
Were "Instructions to Occupants Building" followed?
☐ Yes ☐ No

B) Sampling Information

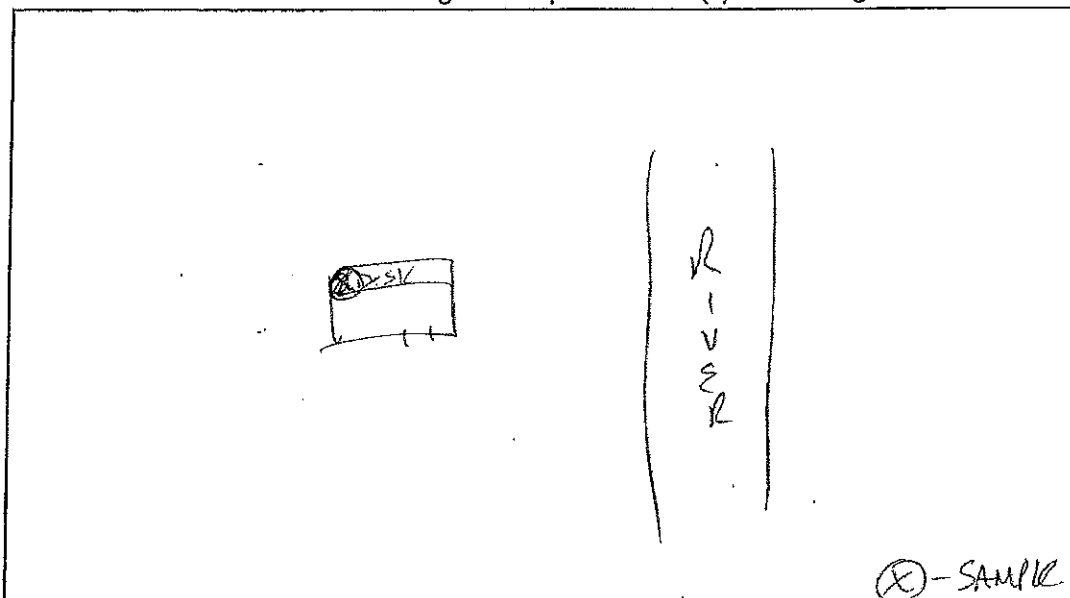
	Start		Stop	
	Ambient	Interior	Ambient	Interior
Temperature	<u>150</u>	<u>69 70°</u>	<u>60</u>	<u>16 78 80</u>
Barometric Pressure	<u>29.9</u>		<u>29.8</u>	
Canister Pressure Gauge Reading:	Start <u>-30</u>		Stop <u>-6.5</u>	
Time:	<u>0904</u>		<u>1631</u>	
PID Reading:	<u>0.00 ppm</u>		<u>0.00</u>	
Basement Depth (ft below grade):	<u>—</u>		<u>—</u>	
Window Marked:	<u>Yes/No</u>		<u>—</u>	

Was there significant precipitation (e.g., >1/2-inch rain) within 24 hours prior to (or during) the sampling event?
☐ Yes ☐ No

Describe the general weather conditions:
cool, light rain, breezy
sunny, gusty winds, cool

Indoor Air Sampling Field Data Sheet
(Form SP-28)

Provide Drawing of Sample Location(s) in Building



C)

Comments

Dock office

AOL 5

Brick Bldg

Steam Heat

8' x 10'

Aero Kroll Canister on shelf

Disinfectant

Indoor Air Sampling Field Data Sheet
(Form SP-28)

A) General Information

Sample Identification Number: IA-AD15-GP DOCK 2
 Site Address: 3144 Passyunk Ave Phila PA
 Sample Canister Location: AD1-5 GP DOCK BUILDING
 Sample Date: 3-28-16 Sampler: Red Bull
 Sample Time: Start: 0923 Stop: 1701
 Shipping Date: 3-21-16
 Canister Type: 400 mL – 1.0 L Summa Canister 6 L Summa Canister/Other (specify):
 Canister Serial No.: 1359
 Flow Controller Serial No.: 415275
 Were "Instructions to Occupants Building" followed?
☐ Yes ☐ No

B) Sampling Information

	Start		Stop	
	Ambient	Interior	Ambient	Interior
Temperature	<u>25.0</u>	<u>72.76</u>	<u>60</u>	<u>83</u>
Barometric Pressure	<u>29.9</u>		<u>29.8</u>	
Canister Pressure Gauge Reading:	Start <u>-30</u>		Stop <u>-9</u>	
Time:	<u>0923</u>		<u>1701</u>	
PID Reading:	<u>0.00 ppm</u>		<u>0.00</u>	
Basement Depth (ft below grade):	<u>—</u>		<u>—</u>	
Window Marked:	<u>Yes/No</u>		<u>—</u>	

Was there significant precipitation (e.g., >1/2-inch rain) within 24 hours prior to (or during) the sampling event?
☐ Yes ☐ No

Describe the general weather conditions:
lt rain; cool; breezy
gusty winds, partly sunny, mild during pickup

Indoor Air Sampling Field Data Sheet
(Form SP-28)

A) General Information

Sample Identification Number: IA-AD15-034A/B
 Site Address: 3144 Passyunk Ave Phila PA
 Sample Canister Location: AD1-5 034A/B BUILDING
 Sample Date: 3.28.16 Sampler: Red Bull
 Sample Time: Start: 0936 Stop: 1730
 Shipping Date: 3.21.16
 Canister Type: 400 mL – 1.0 L Summa Canister/ 6 L Summa Canister/Other (specify):
 Canister Serial No.: 1381
 Flow Controller Serial No.: 824845
 Were "Instructions to Occupants Building" followed?
☐ Yes ☐ No

B) Sampling Information

	Start		Stop	
	Ambient	Interior	Ambient	Interior
Temperature	<u>48</u>	<u>68</u>	<u>60</u>	<u>70</u>
Barometric Pressure	<u>29.9</u>		<u>29.8</u>	
Canister Pressure Gauge Reading:	Start <u>-30</u>		Stop <u>-7</u>	
Time:	<u>0936</u>		<u>1730</u>	
PID Reading:	<u>0.00 ppm</u>		<u>0.00</u>	
Basement Depth (ft below grade):	<u>—</u>			
Window Marked:	<u>Yes/No</u>			

Was there significant precipitation (e.g., >1/2-inch rain) within 24 hours prior to (or during) the sampling event?
☐ Yes ☐ No

Describe the general weather conditions: cool, light rain, breezy

Indoor Air Sampling Field Data Sheet
(Form SP-28)

A) General Information

Sample Identification Number: IA-A015-OUTDOOR *by wharf on Bldg Dock*
Site Address: 3144 Passyunk Ave Phila PA
Sample Canister Location: A01-5 BUILDING
Sample Date: 3.28.16 Sampler: RED BIRD
Sample Time: Start: 0945 Stop: _____
Shipping Date: 3.21.16
Canister Type: 400 mL – 1.0 L Summa Canister/6 L Summa Canister/Other (specify):
Canister Serial No.: 1356
Flow Controller Serial No.: 338046
Were "Instructions to Occupants Building" followed?
☐ Yes ☐ No

B) Sampling Information

	Start		Stop	
	Ambient	Interior	Ambient	Interior
Temperature	<u>50</u>	<u>—</u>	<u>58</u>	<u>—</u>
Barometric Pressure	<u>29.9</u>		<u>29.8</u>	
Canister Pressure Gauge Reading:	Start <u>30</u>		Stop <u>7+</u>	
Time:	<u>0945</u>		<u>1708</u>	
PID Reading:	<u>0.00 ppm</u>		<u>0.00</u>	
Basement Depth (ft below grade):	<u>—</u>		<u>—</u>	
Window Marked:	<u>Yes/No</u>		<u>—</u>	

Was there significant precipitation (e.g., >1/2-inch rain) within 24 hours prior to (or during) the sampling event?
☐ Yes ☐ No

Describe the general weather conditions:

cool, less light rain, breezy

OUTDOOR AIR SURVEY and SAMPLING FORM

Preparer's name: Luke Mokrycki Date: 5-3-16
 Preparer's affiliation: AQUATERA A Phone #: 610 431 5733
 Site Name: Philadelphia Refinery A05 Case #: _____
 Area and Description: AOI 5

Part I - Outside Contaminant Sources

Description of area and worker activities: Near Oct of Service AST
 Stationary sources nearby (gas stations, emission stacks, etc.): other tanks in service nearby
 Heavy vehicular traffic nearby (or other mobile sources): train car unloading rack
 Tanks or storage areas nearby: 1215 TK O.O.S.
 Monitoring wells nearby: ~~NA~~ BH-13-29

Part II - Outdoor Contaminant Sources

Identify all potential outdoor sources found around the working area, the location of the source, and whether the item was removed prior to outdoor air sampling event.

Potential Sources	Location(s)	Removed (Yes / No / NA)
Gasoline storage cans		<u>NO</u>
Gas-powered equipment		<u>1</u>
Kerosene storage cans		
Paints / thinners / strippers		
Cleaning solvents		
Other house cleaning products		
Polishes / waxes		
Insecticides		

Potential Sources	Location(s)	Removed (Yes / No / NA)
Other:		
<u>OIL TANKERS</u>	<u>20 yds EAST</u>	<u>NO</u>
<u>Rail, unloading racks nearby</u>		

Part III – Miscellaneous Items

Have any pesticides/herbicides been applied in the area? Yes / No

If so, when and which chemicals? _____

Has there ever been a fire in the area? Yes / No If yes, when? _____

Has painting or staining been done in the area in the last 6 months? Yes / No

If yes, when _____ and where? _____

Part IV – Sampling Information

Sample Technician: Luke Momyck Phone number: (938) 832-7476

Sample Source: Outdoor Air / Sub-Slab / Near Slab Soil Gas / Exterior Soil Gas

Sampler Type: Tedlar bag / Sorbent / Stainless Steel Canister / Other (specify): _____

Analytical Method: TO-15 / TO-17 / other: _____ Cert. Laboratory: _____

Sample locations

Field ID # AOIS-AA-16-002

Description of sample Location 2P deployed at boring BH-13-29 location

Sample height 6'

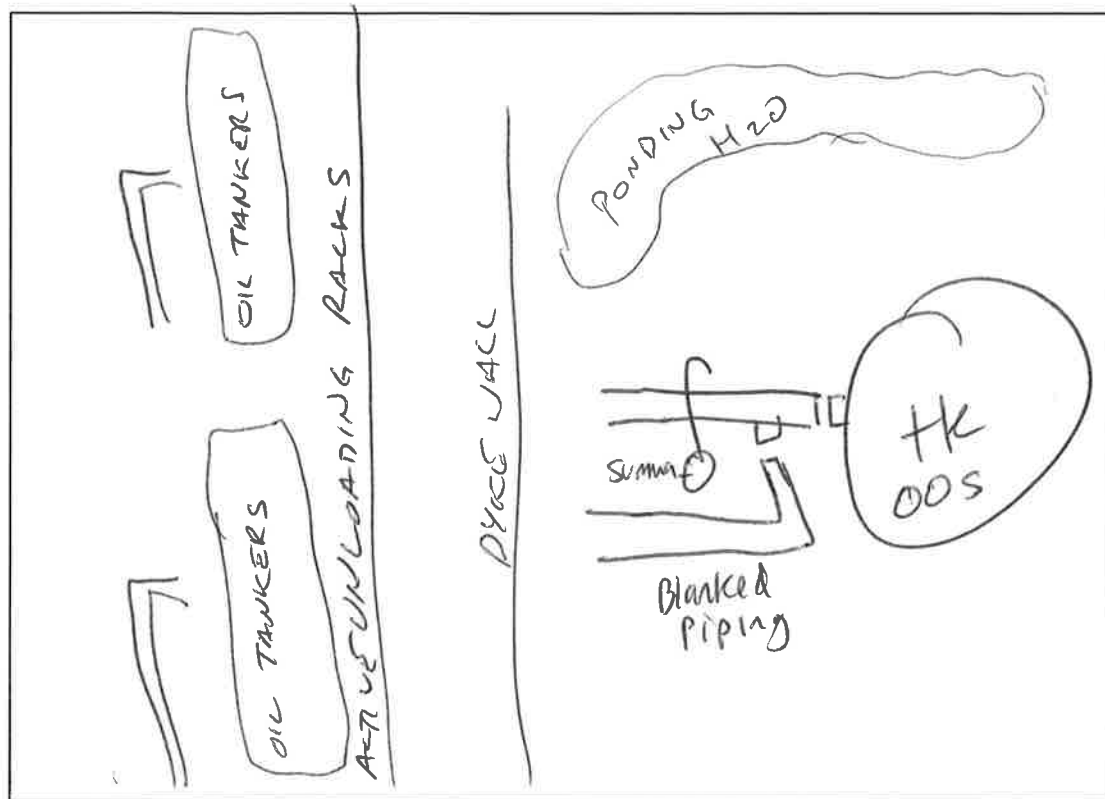
SUMA Canister Number 2823

Flow Control Number 0105

Starting Time and Pressure -31 @ 0930

Ending Time and Pressure -6 @ 1730

Provide Drawing of Sample Location(s)



Part V - Meteorological Conditions

Was there significant precipitation within 12 hours prior to (or during) the sampling event? Yes / No

Describe the general weather conditions: 55° cloudy passing rain light
Winds 7-8 mph SE

Part VI – General Observations

Provide any information that may be pertinent to the sampling event and may assist in the data interpretation process.

(NJDEP 1997; NHDES 1998; VDOH 1993; MassDEP 2002; NYSDOH 2005; CalEPA 2005)

OUTDOOR AIR SURVEY and SAMPLING FORM

Preparer's name: Luke Mokychai Date: 5-3-16
 Preparer's affiliation: Aava Tena Phone #: 610 931 5733
 Site Name: Philly Ref Case #: _____
 Area and Description: AOI 5

Part I - Outside Contaminant Sources

Description of area and worker activities: near separator
 Stationary sources nearby (gas stations, emission stacks, etc.): _____
 Heavy vehicular traffic nearby (or other mobile sources): diesel pump
 Tanks or storage areas nearby: 500 gal diesel tank (AST)
 Monitoring wells nearby: NA A-136

Part II - Outdoor Contaminant Sources

Identify all potential outdoor sources found around the working area, the location of the source, and whether the item was removed prior to outdoor air sampling event.

Potential Sources	Location(s)	Removed (Yes / No / NA)
Gasoline storage cans		No
Gas-powered equipment		
Kerosene storage cans		
Paints / thinners / strippers		
Cleaning solvents		
Other house cleaning products		
Polishes / waxes		
Insecticides		

Potential Sources	Location(s)	Removed (Yes / No / NA)
Other:		No
Large diesel tank	2/1 ~ 5'	
500 g	~ 10'	
Large diesel pump		
separator	~ 15'	
to ground		

Part III – Miscellaneous Items

Have any pesticides/herbicides been applied in the area? Yes / No

If so, when and which chemicals? _____

Has there ever been a fire in the area? Yes / No If yes, when? _____

Has painting or staining been done in the area in the last 6 months? Yes / No

If yes, when _____ and where? _____

Part IV – Sampling Information

Sample Technician: Luke Mohyeh Phone number: (484) 832 - 7476

Sample Source: Outdoor Air / Sub-Slab / Near Slab Soil Gas / Exterior Soil Gas

Sampler Type: Tedlar bag / Sorbent / Stainless Steel Canister / Other (specify): _____

Analytical Method: TO-15 / TO-17 / other: _____ Cert. Laboratory: _____

Sample locations

Field ID # A015-AA-16-003

Description of sample Location deployed @ A-B6

Sample height 6

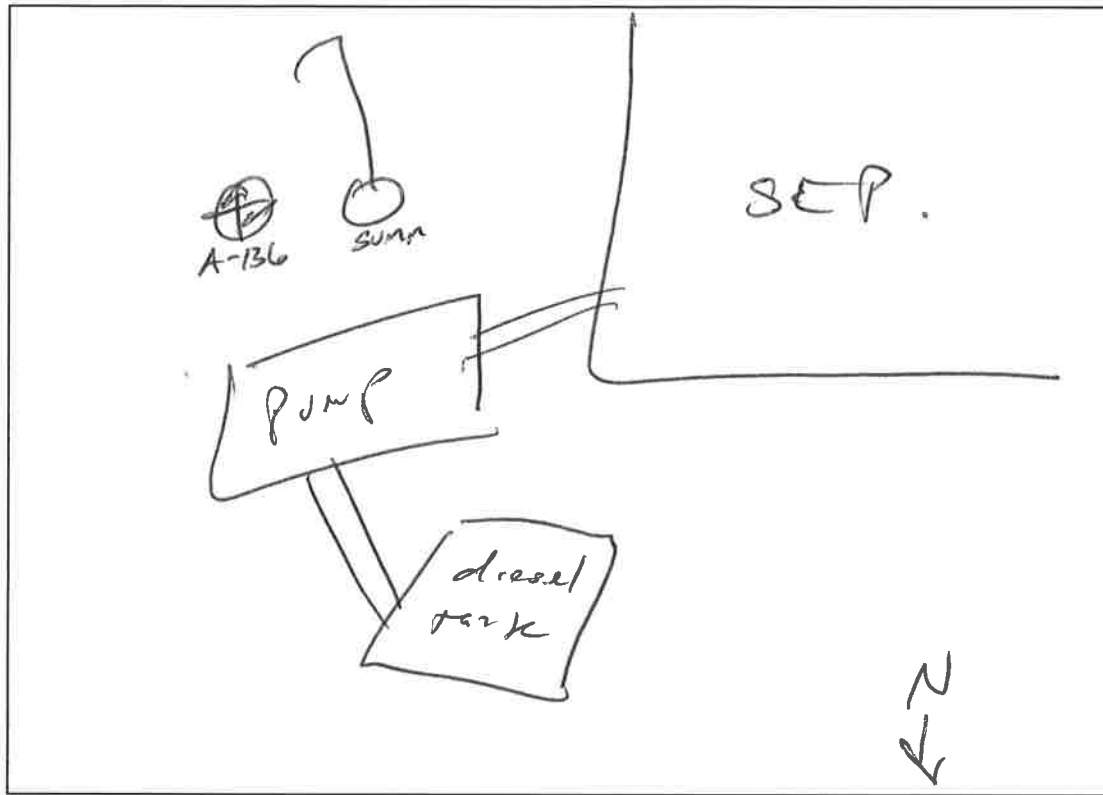
SUMA Canister Number 2129

Flow Control Number 0361

Starting Time and Pressure -32 - 0900

Ending Time and Pressure -6 - 1700

Provide Drawing of Sample Location(s)



Part V - Meteorological Conditions

Was there significant precipitation within 12 hours prior to (or during) the sampling event? Yes / No

Describe the general weather conditions: 54°F cloudy scattered
light rain winds 7-8 mph SE

Part VI – General Observations

Provide any information that may be pertinent to the sampling event and may assist in the data interpretation process.

(NJDEP 1997; NHDES 1998; VDOH 1993; MassDEP 2002; NYSDOH 2005; CalEPA 2005)

OUTDOOR AIR SURVEY and SAMPLING FORM

Preparer's name: Luke Mokymski Date: 5-3-16
 Preparer's affiliation: ARJATERA Phone #: _____
 Site Name: Philly Ref Case #: _____
 Area and Description: AOI S

Part I - Outside Contaminant Sources

Description of area and worker activities: unloading rack and train movements
 Stationary sources nearby (gas stations, emission stacks, etc.): rail car unloading
 Heavy vehicular traffic nearby (or other mobile sources): light p/c truck traffic
 Tanks or storage areas nearby: N/A
 Monitoring wells nearby: NA A-183

Part II - Outdoor Contaminant Sources

Identify all potential outdoor sources found around the working area, the location of the source, and whether the item was removed prior to outdoor air sampling event.

Potential Sources	Location(s)	Removed (Yes / No / NA)
Gasoline storage cans		NO
Gas-powered equipment		
Kerosene storage cans		
Paints / thinners / strippers		
Cleaning solvents		
Other house cleaning products		
Polishes / waxes		
Insecticides		

Potential Sources	Location(s)	Removed (Yes / No / NA)
Other:		
<u>Oil tank rail car unloading rack nearby</u>	<u>30 yds North</u>	<u>NO</u>

Part III – Miscellaneous Items

Have any pesticides/herbicides been applied in the area? Yes / No

If so, when and which chemicals? _____

Has there ever been a fire in the area? Yes / No If yes, when? _____

Has painting or staining been done in the area in the last 6 months? Yes / No

If yes, when _____ and where? _____

Part IV – Sampling Information

Sample Technician: Mike Morkycki Phone number: (484) 832-7476

Sample Source: Outdoor Air / Sub-Slab / Near Slab Soil Gas / Exterior Soil Gas

Sampler Type: Tedlar bag / Sorbent / Stainless Steel Canister / Other (specify): _____

Analytical Method: TO-15 / TO-17 / other: _____ Cert. Laboratory: _____

Sample locations

Field ID # 4025-AA-16-004

Description of sample Location A-183

Sample height 6

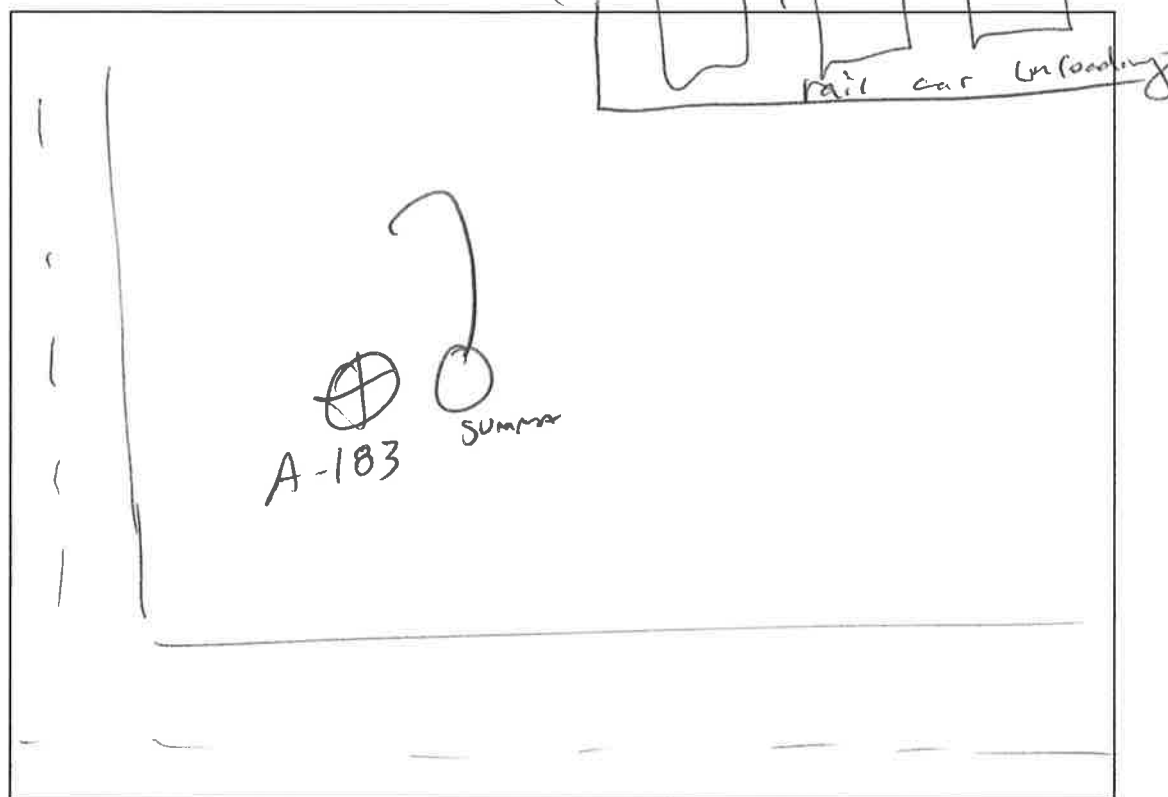
SUMA Canister Number 972

Flow Control Number 1011

Starting Time and Pressure -30 0915

Ending Time and Pressure -6 1715

Provide Drawing of Sample Location(s)



Part V - Meteorological Conditions

Was there significant precipitation within 12 hours prior to (or during) the sampling event? Yes / No

Describe the general weather conditions: 54°F at cloudy passing light
rain 7-8 mph SE winds

Part VI - General Observations

Provide any information that may be pertinent to the sampling event and may assist in the data interpretation process.

(NJDEP 1997; NHDES 1998; VDOH 1993; MassDEP 2002; NYSDOH 2005; CalEPA 2005)

OUTDOOR AIR SURVEY and SAMPLING FORM

Preparer's name: Luke Morych Date: 5-3-16
 Preparer's affiliation: AQUATERRA Phone #: _____
 Site Name: Philly Ref Case #: _____
 Area and Description: AOIS

Part I - Outside Contaminant Sources

Description of area and worker activities: near river, docks, boats & trailers
 Stationary sources nearby (gas stations, emission stacks, etc.): N/A
 Heavy vehicular traffic nearby (or other mobile sources): light p/c truck traffic
 Tanks or storage areas nearby: N/A
 Monitoring wells nearby: NA WPA

Part II - Outdoor Contaminant Sources

Identify all potential outdoor sources found around the working area, the location of the source, and whether the item was removed prior to outdoor air sampling event.

Potential Sources	Location(s)	Removed (Yes / No / NA)
Gasoline storage cans		<u>N/A</u>
Gas-powered equipment		
Kerosene storage cans		
Paints / thinners / strippers		
Cleaning solvents		
Other house cleaning products		
Polishes / waxes		
Insecticides		

Potential Sources	Location(s)	Removed (Yes / No / NA)
Other:		<u>N/A</u>

Part III – Miscellaneous Items

Have any pesticides/herbicides been applied in the area? Yes / No

If so, when and which chemicals? _____

Has there ever been a fire in the area? Yes / No If yes, when? _____

Has painting or staining been done in the area in the last 6 months? Yes / No

If yes, when _____ and where? _____

Part IV – Sampling Information

Sample Technician: Leke Molyck Phone number: (484) 832-7776

Sample Source: Outdoor Air / Sub-Slab / Near Slab Soil Gas / Exterior Soil Gas

Sampler Type: Tedlar bag / Sorbent / Stainless Steel Canister / Other (specify): _____

Analytical Method: TO-15 / TO-17 / other: _____ Cert. Laboratory: _____

Sample locations

Field ID # A015-AA-16-005

Description of sample Location near WP-A

Sample height 6'

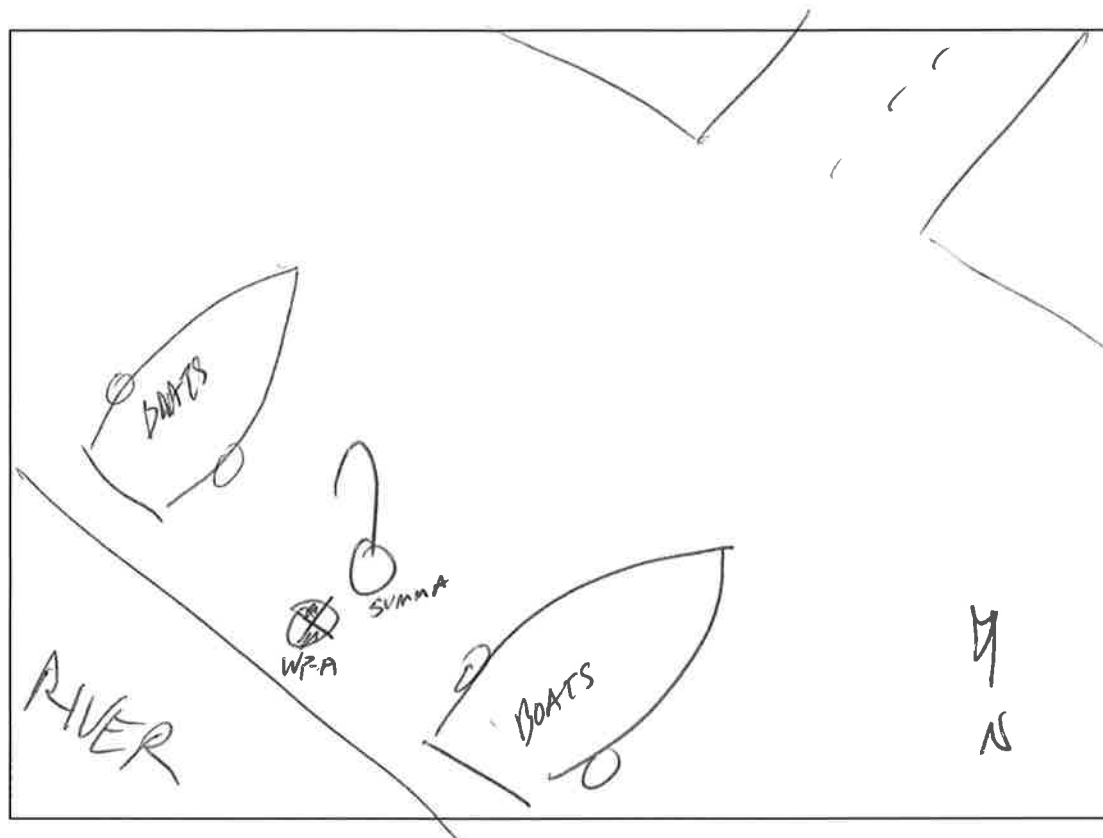
SUMA Canister Number 2652

Flow Control Number 1017

Starting Time and Pressure -32 0845

Ending Time and Pressure -5 1645

Provide Drawing of Sample Location(s)



Part V - Meteorological Conditions

Was there significant precipitation within 12 hours prior to (or during) the sampling event? Yes / No

Describe the general weather conditions: 54° F ~~rain~~ cloudy
passing rain light 7-8 mph SE winds

Part VI - General Observations

Provide any information that may be pertinent to the sampling event and may assist in the data interpretation process.

(NJDEP 1997; NHDES 1998; VDOH 1993; MassDEP 2002; NYSDOH 2005; CalEPA 2005)

OUTDOOR AIR SURVEY and SAMPLING FORM

Preparer's name: Luke Molycki Date: 5-3-16
 Preparer's affiliation: A20A TERRA Phone #: 610 931 5773
 Site Name: Philly Ref Case #: _____
 Area and Description: AOIS

Part I - Outside Contaminant Sources

Description of area and worker activities: Near Hazardous waste storage pad
 Stationary sources nearby (gas stations, emission stacks, etc.): N/A
 Heavy vehicular traffic nearby (or other mobile sources): N/A
 Tanks or storage areas nearby: N/A
 Monitoring wells nearby: NA A-134

Part II - Outdoor Contaminant Sources

Identify all potential outdoor sources found around the working area, the location of the source, and whether the item was removed prior to outdoor air sampling event.

Potential Sources	Location(s)	Removed (Yes / No / NA)
Gasoline storage cans		<u>N/A</u>
Gas-powered equipment		
Kerosene storage cans		
Paints / thinners / strippers		
Cleaning solvents		
Other house cleaning products		
Polishes / waxes		
Insecticides		

Potential Sources	Location(s)	Removed (Yes / No / NA)
Other:		
<u>Various tanks and drums less than 500 gal nearby in Haz pad</u>	<u>15 yds East</u>	<u>No</u>

Part III – Miscellaneous Items

Have any pesticides/herbicides been applied in the area? Yes / No

If so, when and which chemicals? _____

Has there ever been a fire in the area? Yes / No If yes, when? _____

Has painting or staining been done in the area in the last 6 months? Yes / No

If yes, when _____ and where? _____

Part IV – Sampling Information

Sample Technician: Luke Mohr Phone number: (984) 832-7476

Sample Source: Outdoor Air / Sub-Slab / Near Slab Soil Gas / Exterior Soil Gas

Sampler Type: Tedlar bag / Sorbent / Stainless Steel Canister / Other (specify): _____

Analytical Method: TO-15 / TO-17 / other: _____ Cert. Laboratory: _____

Sample locations

Field ID # ADIS-AA-16-006

Description of sample Location A-134

Sample height 6'

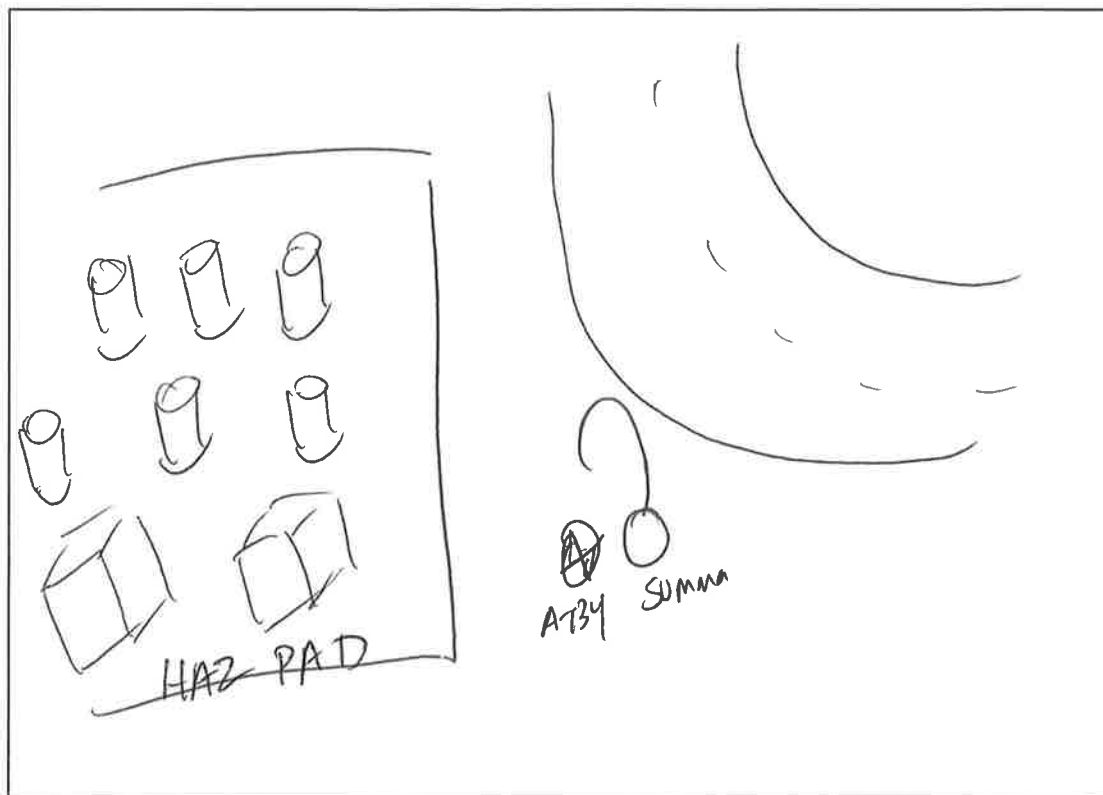
SUMA Canister Number 2657

Flow Control Number 0119

Starting Time and Pressure -31 0830

Ending Time and Pressure -5 1630

Provide Drawing of Sample Location(s)



Part V - Meteorological Conditions

Was there significant precipitation within 12 hours prior to (or during) the sampling event? Yes / No

Describe the general weather conditions: 57°F cloudy rain passing
winds SE 7-8 mph

Part VI – General Observations

Provide any information that may be pertinent to the sampling event and may assist in the data interpretation process.

(NJDEP 1997; NHDES 1998; VDOH 1993; MassDEP 2002; NYSDOH 2005; CalEPA 2005)

18

Table 9
Summary of Outdoor Worker Air Quality Analytical Results
AOI 5 Remedial Investigations Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Analyte	CAS Number	NIOSH RELs	ACGIH TLVs	Location	Near BH-13-29					Near A-136					Near A-183					Near WP-A					Near A-134				
				Sample	AOI5-AA-16-002-20160503					AOI5-AA-16-003-20160503					AOI5-AA-16-004-20160503					AOI5-AA-16-005-20160503					AOI5-AA-16-006-20160503				
				Date	5/6/2016					5/6/2016					5/6/2016					5/6/2016					5/6/2016				
				Collected By	Aquaterra					Aquaterra					Aquaterra					Aquaterra					Aquaterra				
				Unit	Result	Q	MDL	RL	DF	Result	Q	MDL	RL	DF	Result	Q	MDL	RL	DF	Result	Q	MDL	RL	DF	Result	Q	MDL	RL	DF
1,2,4-Trimethylbenzene	95-63-6	125,000	123,000	ug/m3	2.6	J	0.21	4.2	1.68	3.5	J	0.2	4.0	1.61	2.9	J	0.2	4.0	1.61	3.0	J	0.19	3.9	1.55	2.3	J	0.2	4.0	1.61
1,2-Dibromoethane	106-93-4	346	NS	ug/m3	ND	U	1.3	2.6	1.68	ND	U	1.2	2.5	1.61	ND	U	1.2	2.5	1.61	ND	U	1.2	2.4	1.55	ND	U	1.2	2.5	1.61
1,2-Dichloroethane	107-06-2	4,000	40,500	ug/m3	ND	U	0.34	0.69	1.68	ND	U	0.33	0.66	1.61	ND	U	0.33	0.66	1.61	ND	U	0.32	0.64	1.55	ND	U	0.33	0.66	1.61
1,3,5-Trimethylbenzene	108-67-8	125,000	123,000	ug/m3	1.1	J	0.31	1.7	1.68	1.3	J	0.29	1.6	1.61	1	J	0.29	1.6	1.61	1.2	J	0.28	1.5	1.55	1.1	J	0.29	1.6	1.61
Benzene	71-43-2	319	1,600	ug/m3	0.45	J	0.2	1.1	1.68	1.9		0.2	1.0	1.61	0.63	J	0.2	1.0	1.61	1.9		0.19	1	1.55	2.3		0.2	1.0	1.61
Ethylbenzene	100-41-4	435,000	86,800	ug/m3	1.70	J	0.71	3.7	1.68	2.1	J	0.68	3.6	1.61	1.9	J	0.68	3.6	1.61	1.7	J	0.66	3.4	1.55	1.7	J	0.68	3.6	1.61
Isopropyl Benzene (Cumene)	98-82-8	245,000	246,000	ug/m3	482		4.6	84	33.6	ND	U	0.22	4.0	1.61	7.6		0.22	4.0	1.61	ND	U	0.21	3.9	1.55	ND	U	0.22	4.0	1.61
Methyl Tert-Butyl Ether	1634-04-4	NS	180,000	ug/m3	ND	U	0.51	6.2	1.68	ND	U	0.49	5.9	1.61	ND		0.49	5.9	1.61	ND	U	0.47	5.7	1.55	ND	U	0.49	5.9	1.61
Naphthalene	91-20-3	50,000	52,000	ug/m3	2.9	J	0.51	9	1.68	2.9	J	0.49	8.6	1.61	4	J	0.49	8.6	1.61	2.6	J	0.47	8.3	1.55	2.5	J	0.49	8.6	1.61
Toluene	108-88-3	375,000	75,400	ug/m3	1.5		0.26	1.3	1.68	3.4		0.25	1.2	1.61	3.3		0.25	1.2	1.61	2.2		0.24	1.2	1.55	1.6		0.25	1.2	1.61
Xylenes (Total)	1330-20-7	435,000	434,000	ug/m3	2.8	J	1.3	3	1.68	1.18	J	1.3	2.8	1.61	3.3		1.3	2.8	1.61	2.9		1.2	2.7	1.55	2.7	J	1.3	2.8	1.61

Note:
CAS - Chemical Abstract Number
ug/m3 - Micrograms per cubic meter
Q - Qualifier
MDL - Method detection limit
RL - Reporting limit
DF - Dilution factor
ND - Not detected
NS - No standard
NIOSH RELs - National Institute for Occupational Safety and Health Recommended Exposure Limits.
ACGIH TLVs - American Conference of
NIOSH RELs and ACGIH TLVs from GHD's Air Data Evaluation Letter (Reference No. 11109626), November 9, 2016.

Qualifiers:
U - Compound analyzed but not detected
J- Estimated Value. Result between method detection and reporting limits

21



Pennsylvania Fish & Boat Commission

Division of Environmental Services

Natural Diversity Section

450 Robinson Lane

Bellefonte, PA 16823

814-359-5237

April 2, 2015

IN REPLY REFER TO

SIR# 44011

Langan Engineering & Environmental Services, Inc.

Jason Gilmore

2700 Kelly Road

Warrington, Pennsylvania 18976

**RE: Species Impact Review (SIR) – Rare, Candidate, Threatened and Endangered Species
PNDI Search No. 20150312489658
Evergreen/PES AOI 5
PHILADELPHIA County: Philadelphia City**

Dear Jason Gilmore:

This responds to your inquiry about a Pennsylvania Natural Diversity Inventory (PNDI) Internet Database search “potential conflict” or a threatened and endangered species impact review. These projects are screened for potential conflicts with rare, candidate, threatened or endangered species under Pennsylvania Fish & Boat Commission jurisdiction (fish, reptiles, amphibians, aquatic invertebrates only) using the Pennsylvania Natural Diversity Inventory (PNDI) database and our own files. These species of special concern are listed under the Endangered Species Act of 1973, the Wild Resource Conservation Act, and the Pennsylvania Fish & Boat Code (Chapter 75), or the Wildlife Code.

According to this submission and our records there have been no changes in the project or on-site biological information; therefore, the Commission’s comments regarding potential impacts to rare, candidate, threatened, or endangered species under our jurisdiction, as detailed in our letter of July 15, 2013 for SIR# 41012, remain unchanged.

This response represents the most up-to-date summary of the PNDI data and our files and is valid for two (2) years from the date of this letter. An absence of recorded species information does not necessarily imply species absence. Our data files and the PNDI system are continuously being updated with species occurrence information. Should project plans change or additional information on listed or proposed species become available, this determination may be reconsidered, and consultation shall be re-initiated.

Our Mission:

www.fish.state.pa.us

To protect, conserve and enhance the Commonwealth’s aquatic resources and provide fishing and boating opportunities.

If you have any questions regarding this review, please contact Kathy Gipe at 814-359-5186 and refer to the SIR # 44011. Thank you for your cooperation and attention to this important matter of species conservation and habitat protection.

Sincerely,

A handwritten signature in black ink that reads "Christopher A. Urban". The signature is written in a cursive, flowing style.

Christopher A. Urban, Chief
Natural Diversity Section

CAU/KDG/dn



Pennsylvania Fish & Boat Commission

**Division of Environmental Services
Natural Diversity Section**
450 Robinson Lane
Bellefonte, PA 16823-9620
(814) 359-5237 Fax: (814) 359-5175

July 15, 2013

IN REPLY REFER TO
SIR# 41012

LINDA KENNEY
LANGAN ENGINEERING AND ENVIRONMENTAL SERVICES
PO BOX 1569
DOYLESTOWN, PA 18901-0219

**RE: Species Impact Review (SIR) – Rare, Candidate, Threatened and Endangered Species
PNDI Search No. 20130115386609
PHILADELPHIA AO1-5
UPDATE TO SIR #37591
PHILADELPHIA Township, PHILADELPHIA County, Pennsylvania**

Dear Ms. KENNEY:

I have examined the map accompanying your recent correspondence which shows the location for the above referenced project. Based on records maintained in the Pennsylvania Natural Diversity Inventory (PNDI) database and our own files, the state threatened eastern redbelly turtle (*Pseudemys rubriventris*) is known from the vicinity of the project site.

The eastern redbelly turtle is one of Pennsylvania's largest native aquatic turtles. This turtle species is known to inhabit relatively large, deep streams, rivers, ponds, lakes and marshes with permanent water and ample basking sites. Redbelly turtles are restricted to the southcentral and southeastern regions of the Commonwealth. The existence of this turtle species is threatened by habitat destruction, poor water quality, and competition with aggressive non-native turtle species that share its range and habitat (e.g., red-eared slider, *Trachemys scripta elegans*).

Redbelly turtles are known from near the project area. It is possible that they could also occur in any wetlands and water bodies on-site. **Therefore, if wetlands with open water areas, streams, or ponds are to be disturbed from the project activity**, we will need to conduct a more thorough evaluation of the potential adverse impacts to the redbelly turtle. Items **such as:** basic project plans, project narrative, general habitat descriptions, and color photographs keyed to a site map or diagram of the project area, wetlands identification and delineation, stream characterization (flow velocity, width, depth, substrate type, pools and riffles, identification of basking areas, logs, woody debris, presence of aquatic vegetation) would expedite our review process. Pending the review of information, a survey for targeting the presence of the species of concern may be warranted.

However, if wetlands or water bodies are not to be disturbed in any way by the proposed activity, and provided that best management practices are employed and strict erosion and sedimentation measures are maintained, I do not foresee any adverse impacts to eastern redbelly turtle or any other rare or protected species under Pennsylvania Fish and Boat Commission jurisdiction.

Our Mission:

www.fishandboat.com

To protect, conserve and enhance the Commonwealth's aquatic resources and provide fishing and boating opportunities.

Note that this office performed no field inspection of the project area. Consequently, comments in this letter are not meant to address other issues or concerns that might arise concerning matters under Pennsylvania Fish and Boat Commission jurisdiction or that of other authorities. If you have any questions regarding this response, please contact Kathy Gipe at 814-359-5186 and **refer to the SIR number at the top of this letter**. Thank you for your cooperation and attention to this matter of endangered species conservation and habitat protection.

Sincerely,

A handwritten signature in dark ink, appearing to read "Christopher A. Urban". The signature is fluid and cursive, with a large initial "C" and "U".

Christopher A. Urban, Chief
Natural Diversity Section

CAU/KDG/kn

24

Table 8
Summary of Indoor Air Quality Analytical Results
AOI 5 Remedial Investigations Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Analyte	CAS Number	PADEP VI	1/10th PADEP VI	OSHA PEL TWA	EPA RSL Cancer Risk = 10 ⁻⁵ HQ = 0.1	EPA RSL Cancer Risk = 10 ⁻⁶ HQ = 0.1	NIOSH RELs	ACGIH TLVs	Location	B&S Office Building					B&S Office Building, Outside					Wharf on Building Dock, Outside					Control Room				
									Sample	Sample 1					Sample 2					AOI5-AA-16-001					AOI5-AI-16-001				
									Date	10/24/2012					10/24/2012					3/28/2016					3/28/2016				
									Collected By	Stantec					Stantec					GHD					GHD				
									Unit	Result	Q	MDL	RL	DF	Result	Q	MDL	RL	DF	Result	Q	MDL	RL	DF	Result	Q	MDL	RL	DF
1,2,4-Trimethylbenzene	95-63-6	31	3.1	NS	3.1	3.1	125,000	123,000	ug/m3	1.5		0.85		1.69	1.3		1.1		2.27	ND	U	0.98	4.9	1	ND	U	0.98	4.9	1
1,2-Dibromoethane	106-93-4	0.2	0.02	153,700	0.2	0.02	346	NS	ug/m3	ND		0.85		1.69	ND		1.1		2.27	ND	U	1.5	7.7	1	ND	U	1.5	7.7	1
1,2-Dichloroethane	107-06-2	4.7	0.47	202,400	3.1	0.47	4,000	40,500	ug/m3	ND	U	0.85		1.69	ND	U	1.1		2.27	ND	U	0.81	4	1	ND	U	0.81	4	1
1,3,5-Trimethylbenzene	108-67-8	31	3.1	NS	NS	NS	125,000	123,000	ug/m3	ND	U	0.85		1.69	ND	U	1.1		2.27	ND	U	0.98	4.9	1	ND	U	0.98	4.9	1
Benzene	71-43-2	16	1.6	3,190	13	1.6	319	1,600	ug/m3	4.3		0.85		1.69	3.9		1.1		2.27	2.4	J	0.64	3.2	1	1.4	J	0.64	3.2	1
Ethylbenzene	100-41-4	49	4.9	435,000	49	4.9	435,000	86,800	ug/m3	1.3		0.85		1.69	ND	U	1.1		2.27	1.6	J	0.87	4.3	1	1.3	J	0.87	4.3	1
Isopropyl Benzene (Cumene)	98-82-8	1,800	180	245,000	180	180	245,000	246,000	ug/m3	2.1		0.85		1.69	2.0		1.1		2.27	2.5	J	0.98	4.9	1	9.8		0.98	4.9	1
Methyl Tert-Butyl Ether	1634-04-4	470	47	NS	470	47	NS	180,000	ug/m3	ND	U	0.85		1.69	ND	U	1.1		2.27	ND	U	0.72	3.6	1	ND	U	0.72	3.6	1
Naphthalene	91-20-3	3.6	0.36	50,000	1.3	0.36	50,000	52,000	ug/m3	NA					NA					ND	U	2.6	5.2	1	ND	U	2.6	5.2	1
Toluene	108-88-3	22,000	2,200	754,000	2,200	2,200	375,000	75,400	ug/m3	7.4		0.85		1.69	6.5		1.1		2.27	1.7	J	0.75	3.8	1	3.1	J	0.75	3.8	1
Total Xylenes	1330-20-7	440	44	435,000	44	44	435,000	434,000	ug/m3	6.1		1.7		1.69	5.1		2.3		2.27	2.5	J	0.87	4.3	1	4.9	J	0.87	4.3	1

Note:
PADEP VI- Pennsylvania Department of Environmental Protection Vapor intrusion Screening Value. Indoor Air Statewide Health Standard Non-Residential Vapor Intrusion Screening Level (January 2017).
OSHA PEL TWA - Occupational Safety and Health Administration Time-Weighted Average Permissible Exposure Limit .
EPA RSL - United States Environmental Protection Agency Industrial Regional Screening Level.
HQ - Hazard Quotient
NIOSH RELs - National Institute for Occupational Safety and Health Recommended Exposure Limits.
ACGIH TLVs - American Conference of Governmental Industrial Hygienists Threshold Limit Value.
The RSL for 1,2,4 and 1,3,5- trimethylbenzene were calculated using the September 2016 final IRIS RfC.
OSHA PELs, NIOSH RELs, and ACGIH TLVs from GHD's Air Data Evaluation Letter (Reference No. 11109626), November 9, 2016.
CAS - Chemical Abstract Registry Number
ug/m3 - Micrograms per cubic meter
Q - Qualifier
MDL - Method detection limit
RL - Reporting limit
DF - Dilution factor
ND - Not detected
NS - No standard
NA - Not analyzed

Qualifiers:
U - Compound analyzed but not detected
J - Compound detected below below the reporting limit (the value given is an estimate).

- Exceedances:**
- 10

- Result exceeds PA VI
- 10

- Result exceeds 1/10th PA VI
- 10

- Result exceeds OSHA PEL TWA
- 10

- Result exceeds EPA RSL (HQ = 0.1, Target Cancer Risk = 10-5)
- 10

- Result exceeds EPA RSL (HQ = 0.1, Target Cancer Risk = 10-6)
- 10

- Result exceeds NIOSH REL
- 10

- Result exceeds ACGIH TLVs
- 15

- MDL exceeds standard

Table 8
Summary of Indoor Air Quality Analytical Results
AOI 5 Remedial Investigations Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Analyte	CAS Number	PADEP VI	1/10th PADEP VI	OSHA PEL TWA	EPA RSL Cancer Risk = 10 ⁻⁵ HQ = 0.1	EPA RSL Cancer Risk = 10 ⁻⁶ HQ = 0.1	NIOSH RELs	ACGIH TLVs	Location	Dock Wharf Office, 2nd Floor					Dock Wharf Office, 1st Floor					Dock Office				
									Sample	AOI5-AI-16-002					AOI5-AI-16-003					AOI5-AI-16-004				
									Date	3/28/2016					3/28/2016					3/28/2016				
									Collected By	GHD					GHD					GHD				
									Unit	Result	Q	MDL	RL	DF	Result	Q	MDL	RL	DF	Result	Q	MDL	RL	DF
1,2,4-Trimethylbenzene	95-63-6	31	3.1	NS	3.1	3.1	125,000	123,000	ug/m3	ND	U	0.98	4.9	1	ND	U	0.98	4.9	1	ND	U	0.98	4.9	1
1,2-Dibromoethane	106-93-4	0.2	0.02	153,700	0.2	0.02	346	NS	ug/m3	ND	U	1.5	7.7	1	ND	U	1.5	7.7	1	ND	U	1.5	7.7	1
1,2-Dichloroethane	107-06-2	4.7	0.47	202,400	3.1	0.47	4,000	40,500	ug/m3	ND	U	0.81	4	1	ND	U	0.81	4	1	ND	U	0.81	4	1
1,3,5-Trimethylbenzene	108-67-8	31	3.1	NS	NS	NS	125,000	123,000	ug/m3	ND	U	0.98	4.9	1	ND	U	0.98	4.9	1	ND	U	0.98	4.9	1
Benzene	71-43-2	16	1.6	3,190	13	1.6	319	1,600	ug/m3	4.3		0.64	3.2	1	2.6	J	0.64	3.2	1	4.4		0.64	3.2	1
Ethylbenzene	100-41-4	49	4.9	435,000	49	4.9	435,000	86,800	ug/m3	ND	U	0.87	4.3	1	1.2	J	0.87	4.3	1	1.1	J	0.87	4.3	1
Isopropyl Benzene (Cumene)	98-82-8	1,800	180	245,000	180	180	245,000	246,000	ug/m3	18		0.98	4.9	1	8.6		0.98	4.9	1	ND	U	0.98	4.9	1
Methyl Tert-Butyl Ether	1634-04-4	470	47	NS	470	47	NS	180,000	ug/m3	ND	U	0.72	3.6	1	ND	U	0.72	3.6	1	ND	U	0.72	3.6	1
Naphthalene	91-20-3	3.6	0.36	50,000	1.3	0.36	50,000	52,000	ug/m3	ND	U	2.6	5.2	1	ND	U	2.6	5.2	1	ND	U	2.6	5.2	1
Toluene	108-88-3	22,000	2,200	754,000	2,200	2,200	375,000	75,400	ug/m3	5		0.75	3.8	1	7.9		0.75	3.8	1	15		0.75	3.8	1
Total Xylenes	1330-20-7	440	44	435,000	44	44	435,000	434,000	ug/m3	1.7	J	0.87	4.3	1	4.1	J	0.87	4.3	1	3.8	J	0.87	4.3	1

Note:
PADEP VI- Pennsylvania Department of Environmental Protection Vapor intrusion Screening Value. Indoor Air Statewide Health Standard Non-Residential Vapor Intrusion Screening Level (January 2017).
OSHA PEL TWA - Occupational Safety and Health Administration Time-Weighted Average Permissible Exposure Limit .
EPA RSL - United States Environmental Protection Agency Industrial Regional Screening Level.
HQ - Hazard Quotient
NIOSH RELs - National Institute for Occupational Safety and Health Recommended Exposure Limits.
ACGIH TLVs - American Conference of Governmental Industrial Hygienists Threshold Limit Value.
The RSL for 1,2,4 and 1,3,5- trimethylbenzene were calculated using the September 2016 final IRIS RfC.
OSHA PELs, NIOSH RELs, and ACGIH TLVs from GHD's Air Data Evaluation Letter (Reference No. 11109626), November 9, 2016.
CAS - Chemical Abstract Registry Number
ug/m3 - Micrograms per cubic meter
Q - Qualifier
MDL - Method detection limit
RL - Reporting limit
DF - Dilution factor
ND - Not detected
NS - No standard
NA - Not analyzed

Qualifiers:
U - Compound analyzed but not detected
J - Compound detected below below the reporting limit (the value given is an estimate).

- Exceedances:**
- 10

- Result exceeds PA VI
- 10

- Result exceeds 1/10th PA VI
- 10

- Result exceeds OSHA PEL TWA
- 10

- Result exceeds EPA RSL (HQ = 0.1, Target Cancer Risk = 10-5)
- 10

- Result exceeds EPA RSL (HQ = 0.1, Target Cancer Risk = 10-6)
- 10

- Result exceeds NIOSH REL
- 10

- Result exceeds ACGIH TLVs
- 15

- MDL exceeds standard

Table 8
Summary of Indoor Air Quality Analytical Results
AOI 5 Remedial Investigations Report
Philadelphia Energy Solutions Facility
Philadelphia, Pennsylvania

Analyte	CAS Number	PADEP VI	1/10th PADEP VI	OSHA PEL TWA	EPA RSL Cancer Risk = 10 ⁻⁵ HQ = 0.1	EPA RSL Cancer Risk = 10 ⁻⁶ HQ = 0.1	NIOSH RELs	ACGIH TLVs	Location	GP2 Dock Building					Blending & Shipping Trailer					Field Blank				
									Sample	AOI5-AI-16-005					AOI5-AI-16-006					FIELD_BLANK				
									Date	3/28/2016					3/28/2016					3/29/2016				
									Collected By	GHD					GHD					GHD				
									Unit	Result	Q	MDL	RL	DF	Result	Q	MDL	RL	DF	Result	Q	MDL	RL	DF
1,2,4-Trimethylbenzene	95-63-6	31	3.1	NS	3.1	3.1	125,000	123,000	ug/m3	1.1	J	0.98	4.9	1	12		0.98	4.9	1	ND	U		0.982	
1,2-Dibromoethane	106-93-4	0.2	0.02	153,700	0.2	0.02	346	NS	ug/m3	ND	U	1.5	7.7	1	ND	U	1.5	7.7	1	ND	U		1.54	
1,2-Dichloroethane	107-06-2	4.7	0.47	202,400	3.1	0.47	4,000	40,500	ug/m3	ND	U	0.81	4	1	ND	U	0.81	4	1	ND	U		0.81	
1,3,5-Trimethylbenzene	108-67-8	31	3.1	NS	NS	NS	125,000	123,000	ug/m3	ND	U	0.98	4.9	1	3.2	J	0.98	4.9	1	ND	U		0.982	
Benzene	71-43-2	16	1.6	3,190	13	1.6	319	1,600	ug/m3	1.8	J	0.64	3.2	1	1.8	J	0.64	3.2	1	ND	U		0.639	
Ethylbenzene	100-41-4	49	4.9	435,000	49	4.9	435,000	86,800	ug/m3	1.9	J	0.87	4.3	1	1.9	J	0.87	4.3	1	ND	U		0.867	
Isopropyl Benzene (Cumene)	98-82-8	1,800	180	245,000	180	180	245,000	246,000	ug/m3	ND	U	0.98	4.9	1	1.5	J	0.98	4.9	1	ND	U		0.983	
Methyl Tert-Butyl Ether	1634-04-4	470	47	NS	470	47	NS	180,000	ug/m3	ND	U	0.72	3.6	1	ND	U	0.72	3.6	1	ND	U		0.721	
Naphthalene	91-20-3	3.6	0.36	50,000	1.3	0.36	50,000	52,000	ug/m3	ND	U	2.6	5.2	1	ND	U	2.6	5.2	1	ND	U		3.3	
Toluene	108-88-3	22,000	2,200	754,000	2,200	2,200	375,000	75,400	ug/m3	3.1	J	0.75	3.8	1	4.6		0.75	3.8	1	ND	U		0.753	
Total Xylenes	1330-20-7	440	44	435,000	44	44	435,000	434,000	ug/m3	7.7	J	0.87	4.3	1	11		0.87	4.3	1	ND	U		1.73	

Note:
PADEP VI- Pennsylvania Department of Environmental Protection Vapor intrusion Screening Value. Indoor Air Statewide Health Standard Non-Residential Vapor Intrusion Screening Level (January 2017).
OSHA PEL TWA - Occupational Safety and Health Administration Time-Weighted Average Permissible Exposure Limit .
EPA RSL - United States Environmental Protection Agency Industrial Regional Screening Level.
HQ - Hazard Quotient
NIOSH RELs - National Institute for Occupational Safety and Health Recommended Exposure Limits.
ACGIH TLVs - American Conference of Governmental Industrial Hygienists Threshold Limit Value.
The RSL for 1,2,4 and 1,3,5- trimethylbenzene were calculated using the September 2016 final IRIS RfC.
OSHA PELs, NIOSH RELs, and ACGIH TLVs from GHD's Air Data Evaluation Letter (Reference No. 11109626), November 9, 2016.
CAS - Chemical Abstract Registry Number
ug/m3 - Micrograms per cubic meter
Q - Qualifier
MDL - Method detection limit
RL - Reporting limit
DF - Dilution factor
ND - Not detected
NS - No standard
NA - Not analyzed

Qualifiers:
U - Compound analyzed but not detected
J - Compound detected below below the reporting limit (the value given is an estimate).

- Exceedances:**
- 10

- Result exceeds PA VI
- 10

- Result exceeds 1/10th PA VI
- 10

- Result exceeds OSHA PEL TWA
- 10

- Result exceeds EPA RSL (HQ = 0.1, Target Cancer Risk = 10-5)
- 10

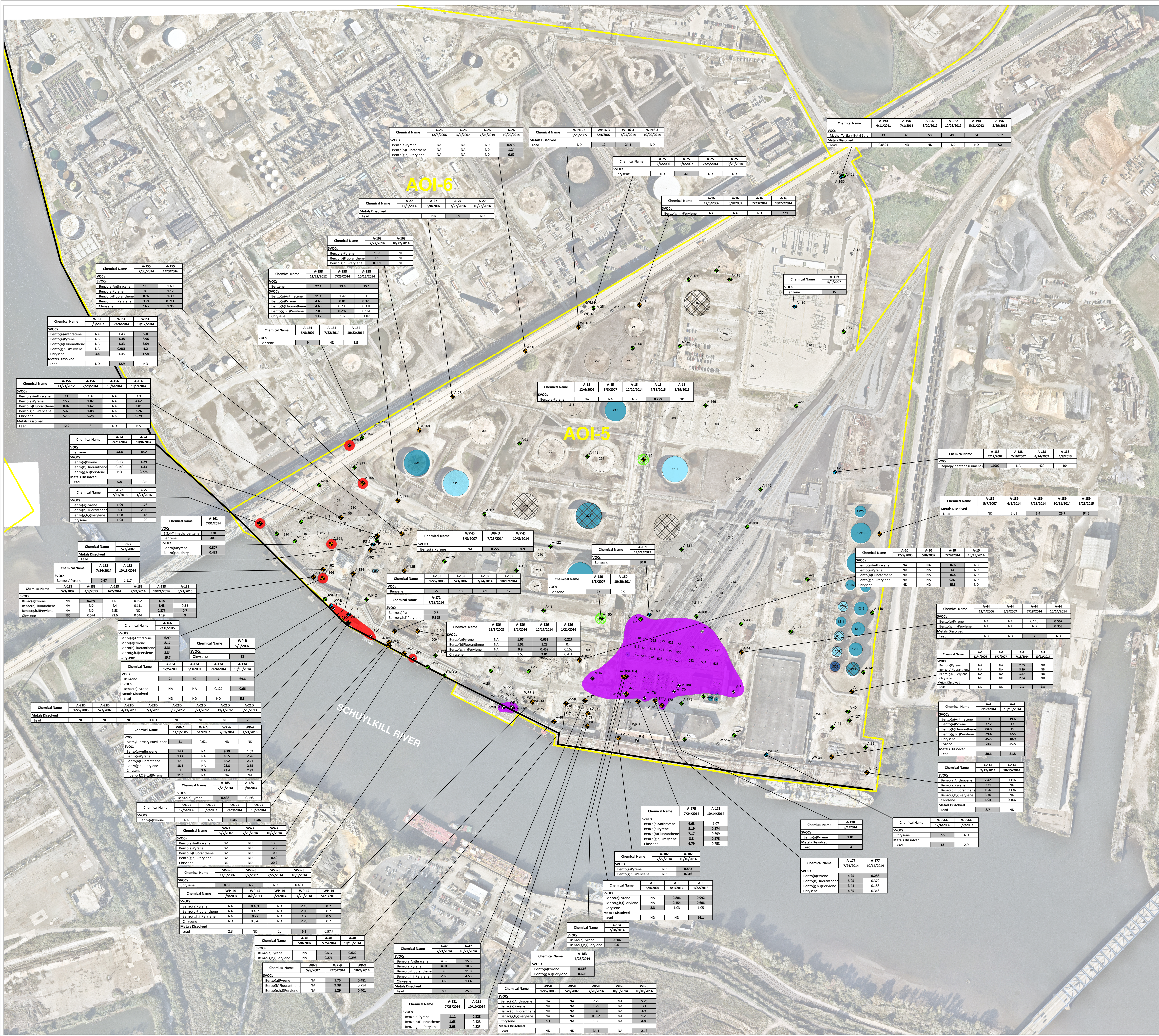
- Result exceeds EPA RSL (HQ = 0.1, Target Cancer Risk = 10-6)
- 10

- Result exceeds NIOSH REL
- 10

- Result exceeds ACGIH TLVs
- 15

- MDL exceeds standard

25



Legend

- Groundwater Sample with an Exceedance between 2014 - 2016
- Groundwater Sample with No Exceedance between 2014 - 2016
- Groundwater Sample with an Exceedance not Sampled Between 2014-2016
- Lower Aquifer Monitoring Well
- Unconfined Aquifer Monitoring Well
- Unconfined Aquifer Piezometer
- Unconfined Aquifer Recovery Well
- Monitoring Well Abandoned/Damaged/Unable to Locate
- Sheet Pile Wall
- Closed in Place
- Closed in Place Tank With Open Incident
- Active Tank With Open Incident
- Removed Tank With Open Incident
- Tank Currently Out of Service
- Tank In Service
- Removed Tank
- AOIs
- Result Exceeds PADEP Non-Residential Used Aquifer MSC TDS<2500 mg/L
- LNAPL Types
 - Middle Distillate
 - Heavy Distillate
 - Unknown

Groundwater Screening Criteria

Chemical Name	CAS No.	PADEP Non-Residential Used Aquifer TDS <2,500 mg/L Groundwater MSCs (ug/L)
Volatile Organic Compounds		
1,2,4-Trimethylbenzene	95-63-6	
Benzene	71-43-2	5
Isopropylbenzene (cumene)	98-82-8	3500
Methyl Tertiary Butyl Ether	1634-04-4	20
Semi-Volatile Organic Compounds		
Benzo(a)anthracene	56-55-3	4.9
Benzo(a)pyrene	50-32-8	0.2
Benzo(b)fluoranthene	205-99-2	1.2
Benzo(g,h,i)perylene	191-24-2	0.26
Chrysene	218-01-9	1.9
Indeno(1,2,3-c,d)pyrene	193-39-5	3.6
Pyrene	129-00-0	130
Metals Dissolved		
Lead	7439-92-1	5

Notes:
1. Aerial imagery provided by Bingmaps.com as is dated 07/28/15.
2. Area of interest boundaries referenced from 2011 ALTA/ACSM Land Title Survey, prepared for Sunoco Inc. (R&S).
3. Groundwater exceedances or criteria displayed in micrograms per liter (ug/L).

Figure 10: Summary of Groundwater Sample Exceedances
AOI-5 Remedial Investigation Report
PES Philadelphia Refinery
Philadelphia, Pennsylvania



Philadelphia Refinery Operations
A Series of Evergreen Resources
Group, LLC.
2 Righter Parkway, Suite 200
Wilmington, DE 19803

0 140 280 Feet

SCALE: 1" = 100' (AS SHOWN)
DATE: 08/11/2016
JOB NO: 1010001
DRAWN BY: JLD

27

ANALYTICAL RESULTS

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

Conestoga-Rovers & Associates
2055 Niagara Falls Blvd.
Suite #3
Niagara Falls NY 14304

Report Date: April 21, 2016

Project: Philadelphia Refinery

Submittal Date: 04/04/2016

Group Number: 1646959

SDG: MHF24

PO Number: 11102524

State of Sample Origin: PA

Client Sample DescriptionIA-AOI3-TRAILER13 Air
IA-AOI3-OUTDOOR Air
IA-AOI5-625 Air
IA-AOI5-526-2 Air
IA-AOI5-526-1 Air
IA-AOI5-501 Air
IA-AOI5-GP DOCK 2 Air
IA-AOI5-034A/B Air
IA-AOI5-OUTDOOR Air
IA-AOI2-011 Air
IA-AOI6-475 Air
IA-AOI6-745 Air
IA-AOI6-6627 Air
IA-AOI6-6636 Air
IA-AOI6-739 Air
IA-AOI6-OUTDOOR 739 Air

Lancaster Labs

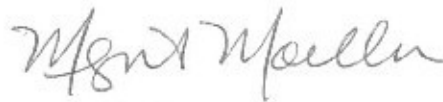
(LL) #8316882
8316883
8316884
8316885
8316886
8316887
8316888
8316889
8316890
8316891
8316892
8316893
8316894
8316895
8316896
8316897

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

Regulatory agencies do not accredit laboratories for all methods, analytes, and matrices. Our scopes of accreditation can be viewed at <http://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/resources/certifications/>.

Electronic Copy To GHD, Inc.
Electronic Copy To GHDAttn: Dave Steele
Attn: Paul McMahon

Respectfully Submitted,



Megan A. Moeller
Senior Specialist

(717) 556-7261

Sample Description: IA-AOI3-TRAILER13 Air
SUMMA# 1355
Philadelphia Refinery

LL Sample # AQ 8316882
LL Group # 1646959
Account # 10177

Project Name: Philadelphia Refinery

Collected: 03/28/2016 07:47 by RB
through 03/28/2016 15:35
Submitted: 04/04/2016 16:30
Reported: 04/21/2016 16:18

Conestoga-Rovers & Associates
2055 Niagara Falls Blvd.
Suite #3
Niagara Falls NY 14304

24M01 SDG#: MHF24-01

CAT No.	Analysis Name	CAS Number	Final Result	LOQ	Final Result	LOQ	DF
Volatiles in Air		EPA TO-15	ppb (v)	ppb (v)	ug/m3	ug/m3	
05298	Benzene	71-43-2	0.55 J	1.0	1.8 J	3.2	1
05298	Cumene	98-82-8	N.D.	1.0	N.D.	4.9	1
05298	1,2-Dibromoethane	106-93-4	N.D.	1.0	N.D.	7.7	1
05298	1,2-Dichloroethane	107-06-2	N.D.	1.0	N.D.	4.0	1
05298	Ethylbenzene	100-41-4	N.D.	1.0	N.D.	4.3	1
05298	Methyl t-Butyl Ether	1634-04-4	N.D.	1.0	N.D.	3.6	1
05298	Naphthalene	91-20-3	N.D.	1.0	N.D.	5.2	1
05298	Toluene	108-88-3	1.1	1.0	4.0	3.8	1
05298	1,2,4-Trimethylbenzene	95-63-6	N.D.	1.0	N.D.	4.9	1
05298	1,3,5-Trimethylbenzene	108-67-8	N.D.	1.0	N.D.	4.9	1
05298	m/p-Xylene	n.a.	0.62 J	1.0	2.7 J	4.3	1
05298	o-Xylene	95-47-6	0.28 J	1.0	1.2 J	4.3	1

LOQ = Limit of Quantitation

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
05298	TO 15 VOA Ext. List	EPA TO-15	1	E1610530AA	04/15/2016 09:52	Jacob E Bailey	1

Sample Description: IA-AOI3-OUTDOOR Air
SUMMA# 1387
Philadelphia Refinery

LL Sample # AQ 8316883
LL Group # 1646959
Account # 10177

Project Name: Philadelphia Refinery

Collected: 03/28/2016 07:58 by RB
through 03/28/2016 15:40
Submitted: 04/04/2016 16:30
Reported: 04/21/2016 16:18

Conestoga-Rovers & Associates
2055 Niagara Falls Blvd.
Suite #3
Niagara Falls NY 14304

24M02 SDG#: MHF24-02

CAT No.	Analysis Name	CAS Number	Final Result	LOQ	Final Result	LOQ	DF
Volatiles in Air		EPA TO-15	ppb (v)	ppb (v)	ug/m3	ug/m3	
05298	Benzene	71-43-2	0.47 J	1.0	1.5 J	3.2	1
05298	Cumene	98-82-8	N.D.	1.0	N.D.	4.9	1
05298	1,2-Dibromoethane	106-93-4	N.D.	1.0	N.D.	7.7	1
05298	1,2-Dichloroethane	107-06-2	N.D.	1.0	N.D.	4.0	1
05298	Ethylbenzene	100-41-4	N.D.	1.0	N.D.	4.3	1
05298	Methyl t-Butyl Ether	1634-04-4	N.D.	1.0	N.D.	3.6	1
05298	Naphthalene	91-20-3	N.D.	1.0	N.D.	5.2	1
05298	Toluene	108-88-3	1.2	1.0	4.5	3.8	1
05298	1,2,4-Trimethylbenzene	95-63-6	N.D.	1.0	N.D.	4.9	1
05298	1,3,5-Trimethylbenzene	108-67-8	N.D.	1.0	N.D.	4.9	1
05298	m/p-Xylene	n.a.	0.61 J	1.0	2.7 J	4.3	1
05298	o-Xylene	95-47-6	0.26 J	1.0	1.1 J	4.3	1

LOQ = Limit of Quantitation

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
05298	TO 15 VOA Ext. List	EPA TO-15	1	E1610530AA	04/15/2016 10:24	Jacob E Bailey	1

Sample Description: IA-AOI5-625 Air
SUMMA# 1385
Philadelphia Refinery

LL Sample # AQ 8316884
LL Group # 1646959
Account # 10177

Project Name: Philadelphia Refinery

Collected: 03/28/2016 08:27 by RB
through 03/28/2016 15:57
Submitted: 04/04/2016 16:30
Reported: 04/21/2016 16:18

Conestoga-Rovers & Associates
2055 Niagara Falls Blvd.
Suite #3
Niagara Falls NY 14304

24M03 SDG#: MHF24-03

CAT No.	Analysis Name	CAS Number	Final Result	LOQ	Final Result	LOQ	DF
Volatiles in Air		EPA TO-15	ppb (v)	ppb (v)	ug/m3	ug/m3	
05298	Benzene	71-43-2	0.43 J	1.0	1.4 J	3.2	1
05298	Cumene	98-82-8	2.0	1.0	9.8	4.9	1
05298	1,2-Dibromoethane	106-93-4	N.D.	1.0	N.D.	7.7	1
05298	1,2-Dichloroethane	107-06-2	N.D.	1.0	N.D.	4.0	1
05298	Ethylbenzene	100-41-4	0.31 J	1.0	1.3 J	4.3	1
05298	Methyl t-Butyl Ether	1634-04-4	N.D.	1.0	N.D.	3.6	1
05298	Naphthalene	91-20-3	N.D.	1.0	N.D.	5.2	1
05298	Toluene	108-88-3	0.83 J	1.0	3.1 J	3.8	1
05298	1,2,4-Trimethylbenzene	95-63-6	N.D.	1.0	N.D.	4.9	1
05298	1,3,5-Trimethylbenzene	108-67-8	N.D.	1.0	N.D.	4.9	1
05298	m/p-Xylene	n.a.	0.78 J	1.0	3.4 J	4.3	1
05298	o-Xylene	95-47-6	0.35 J	1.0	1.5 J	4.3	1

LOQ = Limit of Quantitation

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
05298	TO 15 VOA Ext. List	EPA TO-15	1	E1610530AA	04/15/2016 10:56	Jacob E Bailey	1

Sample Description: IA-AOI5-526-2 Air
SUMMA# 1386
Philadelphia Refinery

LL Sample # AQ 8316885
LL Group # 1646959
Account # 10177

Project Name: Philadelphia Refinery

Collected: 03/28/2016 08:45 by RB
through 03/28/2016 16:17
Submitted: 04/04/2016 16:30
Reported: 04/21/2016 16:18

Conestoga-Rovers & Associates
2055 Niagara Falls Blvd.
Suite #3
Niagara Falls NY 14304

24M04 SDG#: MHF24-04

CAT No.	Analysis Name	CAS Number	Final Result	LOQ	Final Result	LOQ	DF
Volatiles in Air		EPA TO-15	ppb (v)	ppb (v)	ug/m3	ug/m3	
05298	Benzene	71-43-2	1.3	1.0	4.3	3.2	1
05298	Cumene	98-82-8	3.7	1.0	18	4.9	1
05298	1,2-Dibromoethane	106-93-4	N.D.	1.0	N.D.	7.7	1
05298	1,2-Dichloroethane	107-06-2	N.D.	1.0	N.D.	4.0	1
05298	Ethylbenzene	100-41-4	N.D.	1.0	N.D.	4.3	1
05298	Methyl t-Butyl Ether	1634-04-4	N.D.	1.0	N.D.	3.6	1
05298	Naphthalene	91-20-3	N.D.	1.0	N.D.	5.2	1
05298	Toluene	108-88-3	1.3	1.0	5.0	3.8	1
05298	1,2,4-Trimethylbenzene	95-63-6	N.D.	1.0	N.D.	4.9	1
05298	1,3,5-Trimethylbenzene	108-67-8	N.D.	1.0	N.D.	4.9	1
05298	m/p-Xylene	n.a.	0.39 J	1.0	1.7 J	4.3	1
05298	o-Xylene	95-47-6	N.D.	1.0	N.D.	4.3	1

LOQ = Limit of Quantitation

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
05298	TO 15 VOA Ext. List	EPA TO-15	1	E1610530AA	04/15/2016 11:28	Jacob E Bailey	1

Sample Description: IA-AOI5-526-1 Air
SUMMA# 1360
Philadelphia Refinery

LL Sample # AQ 8316886
LL Group # 1646959
Account # 10177

Project Name: Philadelphia Refinery

Collected: 03/28/2016 08:52 by RB
through 03/28/2016 17:17
Submitted: 04/04/2016 16:30
Reported: 04/21/2016 16:18

Conestoga-Rovers & Associates
2055 Niagara Falls Blvd.
Suite #3
Niagara Falls NY 14304

24M05 SDG#: MHF24-05

CAT No.	Analysis Name	CAS Number	Final Result	LOQ	Final Result	LOQ	DF
Volatiles in Air		EPA TO-15	ppb (v)	ppb (v)	ug/m3	ug/m3	
05298	Benzene	71-43-2	0.81 J	1.0	2.6 J	3.2	1
05298	Cumene	98-82-8	1.7	1.0	8.6	4.9	1
05298	1,2-Dibromoethane	106-93-4	N.D.	1.0	N.D.	7.7	1
05298	1,2-Dichloroethane	107-06-2	N.D.	1.0	N.D.	4.0	1
05298	Ethylbenzene	100-41-4	0.28 J	1.0	1.2 J	4.3	1
05298	Methyl t-Butyl Ether	1634-04-4	N.D.	1.0	N.D.	3.6	1
05298	Naphthalene	91-20-3	N.D.	1.0	N.D.	5.2	1
05298	Toluene	108-88-3	2.1	1.0	7.9	3.8	1
05298	1,2,4-Trimethylbenzene	95-63-6	N.D.	1.0	N.D.	4.9	1
05298	1,3,5-Trimethylbenzene	108-67-8	N.D.	1.0	N.D.	4.9	1
05298	m/p-Xylene	n.a.	0.66 J	1.0	2.9 J	4.3	1
05298	o-Xylene	95-47-6	0.27 J	1.0	1.2 J	4.3	1

LOQ = Limit of Quantitation

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
05298	TO 15 VOA Ext. List	EPA TO-15	1	E1610930AA	04/18/2016 18:06	Jacob E Bailey	1

Sample Description: IA-AOI5-501 Air
SUMMA# 1388
Philadelphia Refinery

LL Sample # AQ 8316887
LL Group # 1646959
Account # 10177

Project Name: Philadelphia Refinery

Collected: 03/28/2016 09:04 by RB
through 03/28/2016 16:31
Submitted: 04/04/2016 16:30
Reported: 04/21/2016 16:18

Conestoga-Rovers & Associates
2055 Niagara Falls Blvd.
Suite #3
Niagara Falls NY 14304

24M06 SDG#: MHF24-06

CAT No.	Analysis Name	CAS Number	Final Result	LOQ	Final Result	LOQ	DF
Volatiles in Air		EPA TO-15	ppb (v)	ppb (v)	ug/m3	ug/m3	
05298	Benzene	71-43-2	1.4	1.0	4.4	3.2	1
05298	Cumene	98-82-8	N.D.	1.0	N.D.	4.9	1
05298	1,2-Dibromoethane	106-93-4	N.D.	1.0	N.D.	7.7	1
05298	1,2-Dichloroethane	107-06-2	N.D.	1.0	N.D.	4.0	1
05298	Ethylbenzene	100-41-4	0.26 J	1.0	1.1 J	4.3	1
05298	Methyl t-Butyl Ether	1634-04-4	N.D.	1.0	N.D.	3.6	1
05298	Naphthalene	91-20-3	N.D.	1.0	N.D.	5.2	1
05298	Toluene	108-88-3	4.1	1.0	15	3.8	1
05298	1,2,4-Trimethylbenzene	95-63-6	N.D.	1.0	N.D.	4.9	1
05298	1,3,5-Trimethylbenzene	108-67-8	N.D.	1.0	N.D.	4.9	1
05298	m/p-Xylene	n.a.	0.63 J	1.0	2.7 J	4.3	1
05298	o-Xylene	95-47-6	0.26 J	1.0	1.1 J	4.3	1

LOQ = Limit of Quantitation

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
05298	TO 15 VOA Ext. List	EPA TO-15	1	E1610930AA	04/18/2016 19:47	Jacob E Bailey	1

Sample Description: IA-AOI5-GP DOCK 2 Air
SUMMA# 1359
Philadelphia Refinery

LL Sample # AQ 8316888
LL Group # 1646959
Account # 10177

Project Name: Philadelphia Refinery

Collected: 03/28/2016 09:23 by RB
through 03/28/2016 17:01
Submitted: 04/04/2016 16:30
Reported: 04/21/2016 16:18

Conestoga-Rovers & Associates
2055 Niagara Falls Blvd.
Suite #3
Niagara Falls NY 14304

24M07 SDG#: MHF24-07

CAT No.	Analysis Name	CAS Number	Final Result	LOQ	Final Result	LOQ	DF
Volatiles in Air		EPA TO-15	ppb (v)	ppb (v)	ug/m3	ug/m3	
05298	Benzene	71-43-2	0.57 J	1.0	1.8 J	3.2	1
05298	Cumene	98-82-8	N.D.	1.0	N.D.	4.9	1
05298	1,2-Dibromoethane	106-93-4	N.D.	1.0	N.D.	7.7	1
05298	1,2-Dichloroethane	107-06-2	N.D.	1.0	N.D.	4.0	1
05298	Ethylbenzene	100-41-4	0.44 J	1.0	1.9 J	4.3	1
05298	Methyl t-Butyl Ether	1634-04-4	N.D.	1.0	N.D.	3.6	1
05298	Naphthalene	91-20-3	N.D.	1.0	N.D.	5.2	1
05298	Toluene	108-88-3	0.81 J	1.0	3.1 J	3.8	1
05298	1,2,4-Trimethylbenzene	95-63-6	0.23 J	1.0	1.1 J	4.9	1
05298	1,3,5-Trimethylbenzene	108-67-8	N.D.	1.0	N.D.	4.9	1
05298	m/p-Xylene	n.a.	1.2	1.0	5.3	4.3	1
05298	o-Xylene	95-47-6	0.56 J	1.0	2.4 J	4.3	1

LOQ = Limit of Quantitation

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
05298	TO 15 VOA Ext. List	EPA TO-15	1	E1610930AA	04/18/2016 18:38	Jacob E Bailey	1

Sample Description: IA-AOI5-034A/B Air
SUMMA# 1381
Philadelphia Refinery

LL Sample # AQ 8316889
LL Group # 1646959
Account # 10177

Project Name: Philadelphia Refinery

Collected: 03/28/2016 09:36 by RB
through 03/28/2016 17:30
Submitted: 04/04/2016 16:30
Reported: 04/21/2016 16:18

Conestoga-Rovers & Associates
2055 Niagara Falls Blvd.
Suite #3
Niagara Falls NY 14304

24M08 SDG#: MHF24-08

CAT No.	Analysis Name	CAS Number	Final Result	LOQ	Final Result	LOQ	DF
Volatiles in Air		EPA TO-15	ppb (v)	ppb (v)	ug/m3	ug/m3	
05298	Benzene	71-43-2	0.55 J	1.0	1.8 J	3.2	1
05298	Cumene	98-82-8	0.30 J	1.0	1.5 J	4.9	1
05298	1,2-Dibromoethane	106-93-4	N.D.	1.0	N.D.	7.7	1
05298	1,2-Dichloroethane	107-06-2	N.D.	1.0	N.D.	4.0	1
05298	Ethylbenzene	100-41-4	0.43 J	1.0	1.9 J	4.3	1
05298	Methyl t-Butyl Ether	1634-04-4	N.D.	1.0	N.D.	3.6	1
05298	Naphthalene	91-20-3	N.D.	1.0	N.D.	5.2	1
05298	Toluene	108-88-3	1.2	1.0	4.6	3.8	1
05298	1,2,4-Trimethylbenzene	95-63-6	2.4	1.0	12	4.9	1
05298	1,3,5-Trimethylbenzene	108-67-8	0.65 J	1.0	3.2 J	4.9	1
05298	m/p-Xylene	n.a.	1.8	1.0	7.6	4.3	1
05298	o-Xylene	95-47-6	0.81 J	1.0	3.5 J	4.3	1

LOQ = Limit of Quantitation

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
05298	TO 15 VOA Ext. List	EPA TO-15	1	E1610930AA	04/18/2016 19:10	Jacob E Bailey	1

Sample Description: IA-AOI5-OUTDOOR Air
SUMMA# 1356
Philadelphia Refinery

LL Sample # AQ 8316890
LL Group # 1646959
Account # 10177

Project Name: Philadelphia Refinery

Collected: 03/28/2016 09:45 by RB
through 03/28/2016 17:08
Submitted: 04/04/2016 16:30
Reported: 04/21/2016 16:18

Conestoga-Rovers & Associates
2055 Niagara Falls Blvd.
Suite #3
Niagara Falls NY 14304

24M09 SDG#: MHF24-09

CAT No.	Analysis Name	CAS Number	Final Result	LOQ	Final Result	LOQ	DF
Volatiles in Air		EPA TO-15	ppb (v)	ppb (v)	ug/m3	ug/m3	
05298	Benzene	71-43-2	0.76 J	1.0	2.4 J	3.2	1
05298	Cumene	98-82-8	0.50 J	1.0	2.5 J	4.9	1
05298	1,2-Dibromoethane	106-93-4	N.D.	1.0	N.D.	7.7	1
05298	1,2-Dichloroethane	107-06-2	N.D.	1.0	N.D.	4.0	1
05298	Ethylbenzene	100-41-4	0.37 J	1.0	1.6 J	4.3	1
05298	Methyl t-Butyl Ether	1634-04-4	N.D.	1.0	N.D.	3.6	1
05298	Naphthalene	91-20-3	N.D.	1.0	N.D.	5.2	1
05298	Toluene	108-88-3	0.46 J	1.0	1.7 J	3.8	1
05298	1,2,4-Trimethylbenzene	95-63-6	N.D.	1.0	N.D.	4.9	1
05298	1,3,5-Trimethylbenzene	108-67-8	N.D.	1.0	N.D.	4.9	1
05298	m/p-Xylene	n.a.	0.58 J	1.0	2.5 J	4.3	1
05298	o-Xylene	95-47-6	N.D.	1.0	N.D.	4.3	1

LOQ = Limit of Quantitation

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
05298	TO 15 VOA Ext. List	EPA TO-15	1	E1610930AA	04/18/2016 20:18	Jacob E Bailey	1

Sample Description: IA-AOI2-011 Air
SUMMA# 1357
Philadelphia Refinery

LL Sample # AQ 8316891
LL Group # 1646959
Account # 10177

Project Name: Philadelphia Refinery

Collected: 03/28/2016 10:07 by RB
through 03/28/2016 17:42
Submitted: 04/04/2016 16:30
Reported: 04/21/2016 16:18

Conestoga-Rovers & Associates
2055 Niagara Falls Blvd.
Suite #3
Niagara Falls NY 14304

24M10 SDG#: MHF24-10

CAT No.	Analysis Name	CAS Number	Final Result	LOQ	Final Result	LOQ	DF
Volatiles in Air		EPA TO-15	ppb (v)	ppb (v)	ug/m3	ug/m3	
05298	Benzene	71-43-2	0.42 J	1.0	1.3 J	3.2	1
05298	Cumene	98-82-8	N.D.	1.0	N.D.	4.9	1
05298	1,2-Dibromoethane	106-93-4	N.D.	1.0	N.D.	7.7	1
05298	1,2-Dichloroethane	107-06-2	N.D.	1.0	N.D.	4.0	1
05298	Ethylbenzene	100-41-4	N.D.	1.0	N.D.	4.3	1
05298	Methyl t-Butyl Ether	1634-04-4	N.D.	1.0	N.D.	3.6	1
05298	Naphthalene	91-20-3	N.D.	1.0	N.D.	5.2	1
05298	Toluene	108-88-3	1.1	1.0	4.3	3.8	1
05298	1,2,4-Trimethylbenzene	95-63-6	0.25 J	1.0	1.2 J	4.9	1
05298	1,3,5-Trimethylbenzene	108-67-8	N.D.	1.0	N.D.	4.9	1
05298	m/p-Xylene	n.a.	0.65 J	1.0	2.8 J	4.3	1
05298	o-Xylene	95-47-6	0.26 J	1.0	1.1 J	4.3	1

LOQ = Limit of Quantitation

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
05298	TO 15 VOA Ext. List	EPA TO-15	1	E1610930AA	04/18/2016 20:50	Jacob E Bailey	1

Sample Description: IA-AOI6-475 Air
SUMMA# 1362
Philadelphia Refinery

LL Sample # AQ 8316892
LL Group # 1646959
Account # 10177

Project Name: Philadelphia Refinery

Collected: 03/28/2016 10:23 by RB
through 03/28/2016 18:23
Submitted: 04/04/2016 16:30
Reported: 04/21/2016 16:18

Conestoga-Rovers & Associates
2055 Niagara Falls Blvd.
Suite #3
Niagara Falls NY 14304

24M11 SDG#: MHF24-11

CAT No.	Analysis Name	CAS Number	Final Result	LOQ	Final Result	LOQ	DF
Volatiles in Air		EPA TO-15	ppb (v)	ppb (v)	ug/m3	ug/m3	
05298	Benzene	71-43-2	1.7	1.0	5.5	3.2	1
05298	Cumene	98-82-8	1.8	1.0	9.1	4.9	1
05298	1,2-Dibromoethane	106-93-4	N.D.	1.0	N.D.	7.7	1
05298	1,2-Dichloroethane	107-06-2	N.D.	1.0	N.D.	4.0	1
05298	Ethylbenzene	100-41-4	0.25 J	1.0	1.1 J	4.3	1
05298	Methyl t-Butyl Ether	1634-04-4	N.D.	1.0	N.D.	3.6	1
05298	Naphthalene	91-20-3	N.D.	1.0	N.D.	5.2	1
05298	Toluene	108-88-3	1.0	1.0	3.9	3.8	1
05298	1,2,4-Trimethylbenzene	95-63-6	0.27 J	1.0	1.4 J	4.9	1
05298	1,3,5-Trimethylbenzene	108-67-8	N.D.	1.0	N.D.	4.9	1
05298	m/p-Xylene	n.a.	0.81 J	1.0	3.5 J	4.3	1
05298	o-Xylene	95-47-6	0.29 J	1.0	1.2 J	4.3	1

LOQ = Limit of Quantitation

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
05298	TO 15 VOA Ext. List	EPA TO-15	1	E1610930AA	04/18/2016 21:22	Jacob E Bailey	1

Sample Description: IA-AOI6-745 Air
SUMMA# 1363
Philadelphia Refinery

LL Sample # AQ 8316893
LL Group # 1646959
Account # 10177

Project Name: Philadelphia Refinery

Collected: 03/28/2016 10:33 by RB
through 03/28/2016 18:00
Submitted: 04/04/2016 16:30
Reported: 04/21/2016 16:18

Conestoga-Rovers & Associates
2055 Niagara Falls Blvd.
Suite #3
Niagara Falls NY 14304

24M12 SDG#: MHF24-12

CAT No.	Analysis Name	CAS Number	Final Result	LOQ	Final Result	LOQ	DF
Volatiles in Air		EPA TO-15	ppb (v)	ppb (v)	ug/m3	ug/m3	
05298	Benzene	71-43-2	0.40 J	1.0	1.3 J	3.2	1
05298	Cumene	98-82-8	N.D.	1.0	N.D.	4.9	1
05298	1,2-Dibromoethane	106-93-4	N.D.	1.0	N.D.	7.7	1
05298	1,2-Dichloroethane	107-06-2	N.D.	1.0	N.D.	4.0	1
05298	Ethylbenzene	100-41-4	N.D.	1.0	N.D.	4.3	1
05298	Methyl t-Butyl Ether	1634-04-4	N.D.	1.0	N.D.	3.6	1
05298	Naphthalene	91-20-3	N.D.	1.0	N.D.	5.2	1
05298	Toluene	108-88-3	0.58 J	1.0	2.2 J	3.8	1
05298	1,2,4-Trimethylbenzene	95-63-6	N.D.	1.0	N.D.	4.9	1
05298	1,3,5-Trimethylbenzene	108-67-8	N.D.	1.0	N.D.	4.9	1
05298	m/p-Xylene	n.a.	0.51 J	1.0	2.2 J	4.3	1
05298	o-Xylene	95-47-6	0.25 J	1.0	1.1 J	4.3	1

LOQ = Limit of Quantitation

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
05298	TO 15 VOA Ext. List	EPA TO-15	1	E1610930AA	04/18/2016 22:02	Jacob E Bailey	1

Sample Description: IA-AOI6-6627 Air
SUMMA# 1361
Philadelphia Refinery

LL Sample # AQ 8316894
LL Group # 1646959
Account # 10177

Project Name: Philadelphia Refinery

Collected: 03/28/2016 10:42 by RB
through 03/28/2016 18:08
Submitted: 04/04/2016 16:30
Reported: 04/21/2016 16:18

Conestoga-Rovers & Associates
2055 Niagara Falls Blvd.
Suite #3
Niagara Falls NY 14304

24M13 SDG#: MHF24-13

CAT No.	Analysis Name	CAS Number	Final Result	LOQ	Final Result	LOQ	DF
Volatiles in Air		EPA TO-15	ppb (v)	ppb (v)	ug/m3	ug/m3	
05298	Benzene	71-43-2	11	1.0	36	3.2	1
05298	Cumene	98-82-8	1.6	1.0	7.8	4.9	1
05298	1,2-Dibromoethane	106-93-4	N.D.	1.0	N.D.	7.7	1
05298	1,2-Dichloroethane	107-06-2	N.D.	1.0	N.D.	4.0	1
05298	Ethylbenzene	100-41-4	0.46 J	1.0	2.0 J	4.3	1
05298	Methyl t-Butyl Ether	1634-04-4	N.D.	1.0	N.D.	3.6	1
05298	Naphthalene	91-20-3	N.D.	1.0	N.D.	5.2	1
05298	Toluene	108-88-3	3.5	1.0	13	3.8	1
05298	1,2,4-Trimethylbenzene	95-63-6	0.72 J	1.0	3.6 J	4.9	1
05298	1,3,5-Trimethylbenzene	108-67-8	0.27 J	1.0	1.3 J	4.9	1
05298	m/p-Xylene	n.a.	1.9	1.0	8.3	4.3	1
05298	o-Xylene	95-47-6	0.84 J	1.0	3.6 J	4.3	1

LOQ = Limit of Quantitation

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
05298	TO 15 VOA Ext. List	EPA TO-15	1	E1611030AA	04/19/2016 22:31	Jacob E Bailey	1

Sample Description: IA-AOI6-6636 Air
SUMMA# 1384
Philadelphia Refinery

LL Sample # AQ 8316895
LL Group # 1646959
Account # 10177

Project Name: Philadelphia Refinery

Collected: 03/28/2016 10:57 by RB
through 03/28/2016 18:18
Submitted: 04/04/2016 16:30
Reported: 04/21/2016 16:18

Conestoga-Rovers & Associates
2055 Niagara Falls Blvd.
Suite #3
Niagara Falls NY 14304

24M14 SDG#: MHF24-14

CAT No.	Analysis Name	CAS Number	Final Result	LOQ	Final Result	LOQ	DF
Volatiles in Air		EPA TO-15	ppb (v)	ppb (v)	ug/m3	ug/m3	
05298	Benzene	71-43-2	0.66 J	1.0	2.1 J	3.2	1
05298	Cumene	98-82-8	N.D.	1.0	N.D.	4.9	1
05298	1,2-Dibromoethane	106-93-4	N.D.	1.0	N.D.	7.7	1
05298	1,2-Dichloroethane	107-06-2	N.D.	1.0	N.D.	4.0	1
05298	Ethylbenzene	100-41-4	0.50 J	1.0	2.1 J	4.3	1
05298	Methyl t-Butyl Ether	1634-04-4	N.D.	1.0	N.D.	3.6	1
05298	Naphthalene	91-20-3	N.D.	1.0	N.D.	5.2	1
05298	Toluene	108-88-3	0.68 J	1.0	2.6 J	3.8	1
05298	1,2,4-Trimethylbenzene	95-63-6	0.23 J	1.0	1.1 J	4.9	1
05298	1,3,5-Trimethylbenzene	108-67-8	N.D.	1.0	N.D.	4.9	1
05298	m/p-Xylene	n.a.	1.3	1.0	5.8	4.3	1
05298	o-Xylene	95-47-6	0.91 J	1.0	4.0 J	4.3	1

LOQ = Limit of Quantitation

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
05298	TO 15 VOA Ext. List	EPA TO-15	1	E1611030AA	04/19/2016 23:35	Jacob E Bailey	1

Sample Description: IA-AOI6-739 Air
SUMMA# 1382
Philadelphia Refinery

LL Sample # AQ 8316896
LL Group # 1646959
Account # 10177

Project Name: Philadelphia Refinery

Collected: 03/28/2016 11:10 by RB
through 03/28/2016 18:33
Submitted: 04/04/2016 16:30
Reported: 04/21/2016 16:18

Conestoga-Rovers & Associates
2055 Niagara Falls Blvd.
Suite #3
Niagara Falls NY 14304

24M15 SDG#: MHF24-15

CAT No.	Analysis Name	CAS Number	Final Result	LOQ	Final Result	LOQ	DF
Volatiles in Air		EPA TO-15	ppb (v)	ppb (v)	ug/m3	ug/m3	
05298	Benzene	71-43-2	1.4	1.0	4.5	3.2	1
05298	Cumene	98-82-8	0.56 J	1.0	2.8 J	4.9	1
05298	1,2-Dibromoethane	106-93-4	N.D.	1.0	N.D.	7.7	1
05298	1,2-Dichloroethane	107-06-2	N.D.	1.0	N.D.	4.0	1
05298	Ethylbenzene	100-41-4	0.74 J	1.0	3.2 J	4.3	1
05298	Methyl t-Butyl Ether	1634-04-4	N.D.	1.0	N.D.	3.6	1
05298	Naphthalene	91-20-3	N.D.	1.0	N.D.	5.2	1
05298	Toluene	108-88-3	1.0	1.0	3.9	3.8	1
05298	1,2,4-Trimethylbenzene	95-63-6	N.D.	1.0	N.D.	4.9	1
05298	1,3,5-Trimethylbenzene	108-67-8	N.D.	1.0	N.D.	4.9	1
05298	m/p-Xylene	n.a.	2.0	1.0	8.8	4.3	1
05298	o-Xylene	95-47-6	1.2	1.0	5.3	4.3	1

LOQ = Limit of Quantitation

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
05298	TO 15 VOA Ext. List	EPA TO-15	1	E1611030AA	04/20/2016 00:07	Jacob E Bailey	1

Sample Description: IA-AOI6-OUTDOOR 739 Air
SUMMA# 1383
Philadelphia Refinery

LL Sample # AQ 8316897
LL Group # 1646959
Account # 10177

Project Name: Philadelphia Refinery

Collected: 03/28/2016 11:15 by RB
through 03/28/2016 18:29
Submitted: 04/04/2016 16:30
Reported: 04/21/2016 16:18

Conestoga-Rovers & Associates
2055 Niagara Falls Blvd.
Suite #3
Niagara Falls NY 14304

24M16 SDG#: MHF24-16

CAT No.	Analysis Name	CAS Number	Final Result	LOQ	Final Result	LOQ	DF
Volatiles in Air		EPA TO-15	ppb (v)	ppb (v)	ug/m3	ug/m3	
05298	Benzene	71-43-2	0.56 J	1.4	1.8 J	4.4	1.38
05298	Cumene	98-82-8	0.31 J	1.4	1.5 J	6.8	1.38
05298	1,2-Dibromoethane	106-93-4	N.D.	1.4	N.D.	11	1.38
05298	1,2-Dichloroethane	107-06-2	N.D.	1.4	N.D.	5.6	1.38
05298	Ethylbenzene	100-41-4	N.D.	1.4	N.D.	6.0	1.38
05298	Methyl t-Butyl Ether	1634-04-4	N.D.	1.4	N.D.	5.0	1.38
05298	Naphthalene	91-20-3	0.78 J	1.4	4.1 J	7.2	1.38
05298	Toluene	108-88-3	0.55 J	1.4	2.1 J	5.2	1.38
05298	1,2,4-Trimethylbenzene	95-63-6	N.D.	1.4	N.D.	6.8	1.38
05298	1,3,5-Trimethylbenzene	108-67-8	N.D.	1.4	N.D.	6.8	1.38
05298	m/p-Xylene	n.a.	0.54 J	1.4	2.3 J	6.0	1.38
05298	o-Xylene	95-47-6	0.32 J	1.4	1.4 J	6.0	1.38

LOQ = Limit of Quantitation

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
05298	TO 15 VOA Ext. List	EPA TO-15	1	E1611030AA	04/20/2016 00:47	Jacob E Bailey	1.38

Quality Control Summary

Client Name: Conestoga-Rovers & Associates
Reported: 04/21/2016 16:18

Group Number: 1646959

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Method Blank

Analysis Name	Result	LOQ
	ppb (v)	ppb (v)
Batch number: E1610530AA	Sample number(s): 8316882-8316885	
Benzene	N.D.	1.0
Cumene	N.D.	1.0
1,2-Dibromoethane	N.D.	1.0
1,2-Dichloroethane	N.D.	1.0
Ethylbenzene	N.D.	1.0
Methyl t-Butyl Ether	N.D.	1.0
Naphthalene	N.D.	1.0
Toluene	N.D.	1.0
1,2,4-Trimethylbenzene	N.D.	1.0
1,3,5-Trimethylbenzene	N.D.	1.0
m/p-Xylene	N.D.	1.0
o-Xylene	N.D.	1.0
Batch number: E1610930AA	Sample number(s): 8316886-8316893	
Benzene	N.D.	1.0
Cumene	N.D.	1.0
1,2-Dibromoethane	N.D.	1.0
1,2-Dichloroethane	N.D.	1.0
Ethylbenzene	N.D.	1.0
Methyl t-Butyl Ether	N.D.	1.0
Naphthalene	N.D.	1.0
Toluene	N.D.	1.0
1,2,4-Trimethylbenzene	N.D.	1.0
1,3,5-Trimethylbenzene	N.D.	1.0
m/p-Xylene	N.D.	1.0
o-Xylene	N.D.	1.0
Batch number: E1611030AA	Sample number(s): 8316894-8316897	
Benzene	N.D.	1.0
Cumene	N.D.	1.0
1,2-Dibromoethane	N.D.	1.0
1,2-Dichloroethane	N.D.	1.0
Ethylbenzene	N.D.	1.0
Methyl t-Butyl Ether	N.D.	1.0
Naphthalene	N.D.	1.0
Toluene	N.D.	1.0
1,2,4-Trimethylbenzene	N.D.	1.0
1,3,5-Trimethylbenzene	N.D.	1.0
m/p-Xylene	N.D.	1.0
o-Xylene	N.D.	1.0

*- Outside of specification

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: Conestoga-Rovers & Associates
Reported: 04/21/2016 16:18

Group Number: 1646959

LCS/LCSD

Analysis Name	LCS Spike Added ppb (v)	LCS Conc ppb (v)	LCSD Spike Added ppb (v)	LCSD Conc ppb (v)	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: E1610530AA	Sample number(s): 8316882-8316885								
Benzene	10	9.40	10	9.52	94	95	70-130	1	25
Cumene	10	9.55	10	9.80	95	98	70-130	3	25
1,2-Dibromoethane	10	8.94	10	8.98	89	90	65-126	0	25
1,2-Dichloroethane	10	9.78	10	9.80	98	98	70-130	0	25
Ethylbenzene	10	9.34	10	9.37	93	94	70-130	0	25
Methyl t-Butyl Ether	10	9.20	10	9.29	92	93	52-129	1	25
Naphthalene	10	9.20	10	9.25	92	93	35-153	1	25
Toluene	10	9.46	10	9.52	95	95	70-130	1	25
1,2,4-Trimethylbenzene	10	9.65	10	9.80	97	98	60-128	2	25
1,3,5-Trimethylbenzene	10	9.79	10	10.03	98	100	61-132	2	25
m/p-Xylene	10	9.34	10	9.46	93	95	70-130	1	25
o-Xylene	10	9.69	10	9.82	97	98	70-130	1	25
Batch number: E1610930AA	Sample number(s): 8316886-8316893								
Benzene	10	10.14	10	10.09	101	101	70-130	1	25
Cumene	10	9.54	10	8.97	95	90	70-130	6	25
1,2-Dibromoethane	10	9.31	10	9.13	93	91	65-126	2	25
1,2-Dichloroethane	10	11.6	10	11.61	116	116	70-130	0	25
Ethylbenzene	10	9.57	10	9.41	96	94	70-130	2	25
Methyl t-Butyl Ether	10	9.46	10	9.43	95	94	52-129	0	25
Naphthalene	10	6.54	10	7.90	65	79	35-153	19	25
Toluene	10	9.83	10	9.72	98	97	70-130	1	25
1,2,4-Trimethylbenzene	10	9.67	10	9.68	97	97	60-128	0	25
1,3,5-Trimethylbenzene	10	9.36	10	9.45	94	95	61-132	1	25
m/p-Xylene	10	9.42	10	9.37	94	94	70-130	1	25
o-Xylene	10	9.64	10	9.62	96	96	70-130	0	25
Batch number: E1611030AA	Sample number(s): 8316894-8316897								
Benzene	10	9.84	10	9.67	98	97	70-130	2	25
Cumene	10	10.37	10	10.05	104	101	70-130	3	25
1,2-Dibromoethane	10	9.24	10	9.41	92	94	65-126	2	25
1,2-Dichloroethane	10	10.07	10	10.02	101	100	70-130	0	25
Ethylbenzene	10	10.09	10	9.92	101	99	70-130	2	25
Methyl t-Butyl Ether	10	9.47	10	9.59	95	96	52-129	1	25
Naphthalene	10	10.23	10	10.85	102	109	35-153	6	25
Toluene	10	10	10	10	100	100	70-130	0	25
1,2,4-Trimethylbenzene	10	10.84	10	10.77	108	108	60-128	1	25
1,3,5-Trimethylbenzene	10	10.4	10	10.52	104	105	61-132	1	25
m/p-Xylene	10	10.24	10	10.27	102	103	70-130	0	25
o-Xylene	10	10.58	10	10.57	106	106	70-130	0	25

*- Outside of specification

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: Conestoga-Rovers & Associates
Reported: 04/21/2016 16:18

Group Number: 1646959

*- Outside of specification

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Summa Canister Field Test Data/Chain of Custody



Lancaster Laboratories
Environmental

Acct. # 10177 Group # 1646959 For Eurofins Lancaster Laboratories Environmental use only Sample # 8316282-97 Bottle Order (SCR) # _____

Client Information					Turnaround Time Requested (TAT) (circle one)				Analyses Requested							
Client <u>Evergreen</u>		Account #			☒ Standard ☐ Rush (specify) _____				☐ EPA 18 ☐ MTBE ☐ EPA 25 (select range below) ☐ Helium as tracer ☐ O2/CO2 ☐ Library Search							
Project Name/# <u>PES</u>		P.O. #			Data Package Required?		EDD Required?									
Project Manager <u>PAVE STEELE</u>		Quote #			Yes No		Yes No									
Sampler <u>Rich Buins</u>																
Name of state where samples were collected <u>PA</u>					Temperature (F)		Pressure (H _g)									
					Start Stop		Start Stop									
					Ambient											
					Maximum											
					Minimum											
Sample Identification	3.28.16 Start Date/Time (24-hour clock)	3.28.16 Stop Date/Time (24-hour clock)	Canister Pressure In Field (H _g) (Start)	Canister Pressure In Field (H _g) (Stop)	Interior Temp. (F) (Start)	Interior Temp. (F) (Stop)	Flow Reg. ID	Can ID	Can Size (L)	Controller Flowrate (mL/min)	EPA TO - 15	EPA 18	EPA 25	Helium as tracer	O2/CO2	Library Search
IA-A013-TRAILER 13	0747	1535	-29.5	-7	72.5	74	329459	1355	6		X					
IA-A013-OUTDOOR	0758	1540	-29.5	-1			415304	1387	6		X					
IA-A015-625	0827	1557	-30	-9	69	74	415274	1385	6		X					
IA-A015-526-2	0845	1617	-30	-9	69	74	824844	1386	6		X					
IA-A015-526-1	0852	1717	-30	-10	63	70	710536	1360	6		X					
IA-A015-501	0904	1631	-30	-6.5	70	80	710595	1388	6		X					
IA-A015-GP DOCK 2	0923	1701	-30	-9	72	83	415275	1359	6		X					
IA-A015-034A/B	0936	1730	-30	-7	68	70	824845	1381	6		X					
IA-A015-OUTDOOR	0945	1708	-30	-7			333046	1366	6		X					
IA-A012-011	1007	1742	-28.5	-7	67	73	993910	1357	6		X					
IA-A012-475 + mmm	1023	1823	-30	-10	68	71	809827	1362	6		X					

Instructions/QC Requirements & Comments
see SSOW for petroleum short list.
Page 1 of 2
6 boxes

EPA 25 (check one) ☐ C1 - C4 ☐ C2 - C10
☐ C1 - C10 ☐ C4 - C10 (GRO)
☐ C2 - C4

Canisters Shipped by: <u>W. Buins</u>	Date/Time: <u>3/18/16</u>	Canisters Received by: <u>Warehouse</u>	Date/Time: <u>4.1.16</u>	Relinquished by: <u>W. Buins</u>	Date/Time: <u>4.1.16</u>	Received by: <u>W. Buins</u>	Date/Time: <u>4/1/16</u>
Relinquished by: <u>W. Buins</u>	Date/Time: <u>4.1.16</u>	Received by: <u>Warehouse</u>	Date/Time: <u>4.1.16</u>	Relinquished by: <u>W. Buins</u>	Date/Time: <u>4.1.16</u>	Received by: <u>W. Buins</u>	Date/Time: <u>4/1/16</u>
Relinquished by: <u>W. Buins</u>	Date/Time: <u>4/1/16</u>	Received by: <u>Warehouse</u>	Date/Time: <u>4/1/16</u>	Relinquished by: <u>W. Buins</u>	Date/Time: <u>4/1/16</u>	Received by: <u>W. Buins</u>	Date/Time: <u>4/1/16</u>

Eurofins Lancaster Laboratories Environmental, LLC • 2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300

The white copy should accompany samples to Eurofins Lancaster Laboratories Environmental. The yellow copy should be retained by the client.

7056 17

eurofins

Acct. # 10177

Group # 1646959 For Euro

For Eurofins Lancaster Laboratories Environmental use only

ins Lancaster Laboratories Environment
Sample # 8316887-97

____ Bottle Order (SCR) #

Client Information					Turnaround Time Requested (TAT) (circle one)					Analyses Requested						
Client <i>Evergreen</i>		Account #			<u>Standard</u> Rush (specify) _____					EPA TO - 15 EPA 18 ☐ BTEX ☐ MTBE EPA 25 (select range below) Helium as tracer O2/C02 Library Search						
Project Name/## <i>BES</i>					Data Package Required?		EDD Required?									
Project Manager <i>Dave Steele</i>		P.O. #			Yes No		Yes No									
Sampler <i>Rick Brins</i>		Quote #														
Name of state where samples were collected <i>WA</i>																
Sample Identification	3.28.16 Start Date/Time (24-hour clock)	3.28.16 Stop Date/Time (24-hour clock)	Canister Pressure In Field ("Hg) (Start)	Canister Pressure In Field ("Hg) (Stop)	Interior Temp. (F) (Start)	Interior Temp. (F) (Stop)	Flow Reg. ID	Can ID	Can Size (L)	Controller Flowrate (mL/min)						
IA-A016-745	1033	1800	-30	-9.5	68	68	824836	1363	6		X					
IA-A016-6627	1042	1808	-30	-8	65	72	303421	1361	6		X					
IA-A016-6636	1057	1818	-30	-2	64	70	342379	1384	6		X					
IA-A016-739	1110	1833	-30	-8.5	66	67	710628	1382	6		X					
IA-A016-OUTDOOR 739	1115	1829	-23	-23	-	-	824856	1383	6		X					
									6							
									6							
									6							
Instructions/QC Requirements & Comments <i>see ssow for petroleum shortlist</i> <i>Page 2 of 2</i>							EPA 25 (check one) ☐ C1 - C4 ☐ C2 - C10 ☐ C1 - C10 ☐ C4 - C10 (GRO) ☐ C2 - C4									
Canisters Shipped by: <i>W. Brins</i>		Date/Time: <i>3/18/16</i>		Canisters Received by:		Date/Time:		Relinquished by:		Date/Time:		Received by:		Date/Time:		
Relinquished by: <i>Rick Brins</i>		Date/Time: <i>4/1/16</i>		Received by: <i>W. Brins</i>		Date/Time: <i>4/1/16</i>		Relinquished by:		Date/Time:		Received by:		Date/Time:		
Relinquished by: <i>W. Brins</i>		Date/Time: <i>4/1/16</i>		Received by: <i>W. Brins</i>		Date/Time: <i>4/1/16</i>		Relinquished by:		Date/Time: <i>4/1/16</i>		Received by: <i>W. Brins</i>		Date/Time: <i>4/1/16</i>		

Eurofins Lancaster Laboratories Environmental, LLC • 2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300

The white copy should accompany samples to Eurofins Lancaster Laboratories Environmental. The yellow copy should be retained by the client.

7056 10

Client: Evergreen

Delivery and Receipt Information

Delivery Method:	<u>ELLE Courier</u>	Arrival Timestamp:	<u>04/04/2016 16:30</u>
Number of Packages:	<u>6</u>	Number of Projects:	<u>1</u>
State/Province of Origin:	<u>PA</u>		

Arrival Condition Summary

Shipping Container Sealed:	Yes	Sample IDs on COC match Containers:	Yes
Custody Seal Present:	No	Sample Date/Times match COC:	No
Samples Chilled:	N/A	VOA Vial Headspace $\geq$ 6mm:	N/A
Paperwork Enclosed:	Yes	Total Trip Blank Qty:	0
Samples Intact:	Yes	Air Quality Samples Present:	Yes
Missing Samples:	No	Air Quality Flow Controllers Present:	Yes
Extra Samples:	No	Flow Controller Quantity:	16
Discrepancy in Container Qty on COC:	No	Air Quality Returns:	No

Unpacked by Patrick Engle (3472) at 17:28 on 04/04/2016

Sample Date/Time Discrepancy Details

<u>Sample ID on COC</u>	<u>Date/Time on Label</u>	<u>Comments</u>
IA-A013-OUTDOOR	3/28/2016 --	End Time on Summa = 1535, End Time on COC = 1540
IA-A012-011	3/28/2016 --	End Time on Summa = 1542, End Time on COC = 1742

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

RL	Reporting Limit	BMQL	Below Minimum Quantitation Level
N.D.	none detected	MPN	Most Probable Number
TNTC	Too Numerous To Count	CP Units	cobalt-chloroplatinate units
IU	International Units	NTU	nephelometric turbidity units
umhos/cm	micromhos/cm	ng	nanogram(s)
C	degrees Celsius	F	degrees Fahrenheit
meq	milliequivalents	lb.	pound(s)
g	gram(s)	kg	kilogram(s)
µg	microgram(s)	mg	milligram(s)
mL	milliliter(s)	L	liter(s)
m3	cubic meter(s)	µL	microliter(s)
		pg/L	picogram/liter
<	less than		
>	greater than		
ppm	parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg) or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/L), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.		
ppb	parts per billion		
Dry weight basis	Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.		

Laboratory Data Qualifiers:

- B - Analyte detected in the blank
- C - Result confirmed by reanalysis
- E - Concentration exceeds the calibration range
- J (or G, I, X) - estimated value $\geq$ the Method Detection Limit (MDL or DL) and $<$ the Limit of Quantitation (LOQ or RL)
- P - Concentration difference between the primary and confirmation column $>40\%$. The lower result is reported.
- U - Analyte was not detected at the value indicated
- V - Concentration difference between the primary and confirmation column $>100\%$. The reporting limit is raised due to this disparity and evident interference...

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods. Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" are not performed within 15 minutes.

WARRANTY AND LIMITS OF LIABILITY - In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. THE FOREGOING EXPRESS WARRANTY IS EXCLUSIVE AND IS GIVEN IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. WE DISCLAIM ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING A WARRANTY OF FITNESS FOR PARTICULAR PURPOSE AND WARRANTY OF MERCHANTABILITY. IN NO EVENT SHALL EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC BE LIABLE FOR INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF PROFIT OR GOODWILL REGARDLESS OF (A) THE NEGLIGENCE (EITHER SOLE OR CONCURRENT) OF EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL AND (B) WHETHER EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL HAS BEEN INFORMED OF THE POSSIBILITY OF SUCH DAMAGES. We accept no legal responsibility for the purposes for which the client uses the test results. No purchase order or other order for work shall be accepted by Eurofins Lancaster Laboratories Environmental which includes any conditions that vary from the Standard Terms and Conditions, and Eurofins Lancaster Laboratories Environmental hereby objects to any conflicting terms contained in any acceptance or order submitted by client.