UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION III

STATEMENT OF BASIS

FORMER BP OIL, INC. MARCUS HOOK REFINERY

4101 POST ROAD

TRAINER, PENNSYLVANIA

EPA ID NO. PAD071612683

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List of Acronyms

AOC	Areas of Concern
AOI	Areas of Investigation
AR	Administrative Record
AST	Above Ground Storage Tank
COC	Contaminant of Concern
CPEC	Contaminant of Potential Ecological Concern
EPA	Environmental Protection Agency
FDRTC	Final Decision Response to Comments
GPRA	Government Performance and Results Act
MCL	Maximum Contaminant Level
MSC	Medium Specific Concentration
PADEP	Pennsylvania Department of Environmental Protection
PRCP	Post Remediation Care Plan
RAO	Remedial Action Objective
RCRA	Resource Conservation and Recovery Act
RIR	Remedial Investigation Report
RSL	Regional Screening Level
SB	Statement of Basis
SHS	Pennsylvania Statewide Health Standard
SWMU	Solid Waste Management Unit
UST	Underground Storage Tank
VI	Vapor Intrusion
VOC	Volatile Organic Compound

Section 1: Introduction

The United States Environmental Protection Agency (EPA) has prepared this Statement of Basis (SB) to solicit public comment on its proposed remedy for the Former BP Oil, Inc. Marcus Hook Refinery located in Trainer, Pennsylvania (hereinafter referred to as the Facility). EPA's proposed remedy for the Facility consists of the following components: 1) maintenance of engineering controls to prevent petroleum sheening on Marcus Hook Creek and the Delaware River, 2) maintenance of surface cover to prevent direct contact exposure at five locations described in this SB, and 3) compliance with and maintenance of groundwater and land use restrictions implemented through institutional controls (ICs). This SB highlights key information relied upon by EPA in proposing its remedy for the Facility.

The Facility is subject to EPA's Corrective Action program under the Solid Waste Disposal Act, as amended, commonly referred to as the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. §§ 6901 et seq. The Corrective Action program requires that facilities subject to certain provisions of RCRA investigate and address releases of hazardous waste and hazardous constituents, usually in the form of soil or groundwater contamination, that have occurred at or from their property. The Commonwealth of Pennsylvania is not authorized for the Corrective Action Program under Section 3006 of RCRA. Therefore, EPA retains primary authority in the Commonwealth of Pennsylvania for the Corrective Action Program.

In October 2000, the BP Oil Company (BP) submitted a Letter of Commitment and Site-Wide Approach Workplan for the Facility to EPA and the Pennsylvania Department of Environmental Protection (PADEP). In September 2005, BP enrolled in EPA and PADEP's One Cleanup Program. Under the One Cleanup Program, EPA Region III's RCRA Corrective Action Program works with PADEP's Voluntary Cleanup Program under the Pennsylvania Land Recycling and Environmental Remediation Standards Act (Act 2), 35 P. S. §§ 6026.101—6026.909, to achieve cleanups that protect human health and the environment utilizing the most effective and efficient means available. PADEP approved BP's May 2018 Final Report and provided BP a release of liability under the Act 2 Program for the Site-Specific Contaminants of Concern (COCs) on August 3, 2018.

EPA is providing a thirty (30) day public comment period on this SB. EPA may modify its proposed remedy based on comments received during this period. EPA will announce its selection of a final remedy for the Facility in a Final Decision and Response to Comments (Final Decision) after the public comment period has ended.

Information on the Corrective Action program as well as a fact sheet for the Facility can be found by navigating http://www.epa.gov/reg3wcmd/correctiveaction.htm.
The Administrative Record (AR) for the Facility contains all documents, including data and quality assurance information, on which EPA's proposed remedy is based. See Section 9, Public Participation, below, for information on how the AR may be reviewed.

Section 2: Facility Background

2.1 Introduction

The Facility is located at 4101 Post Road in Trainer, Pennsylvania. Figure 1 presents a Site Location Map. The Facility has been operated as a petroleum refinery since the early 1900s and has been owned/operated by several companies including Union Petroleum Company (1900-1921), Sinclair Refining Company (1921-1969) the Atlantic Richfield Company (1969), BP Oil Company (1969-1996), Tosco Corporation (1996-2000), Phillips Petroleum Company (2000-2003), ConocoPhillips (2004-2012), and Monroe Energy (2012-Present). ConocoPhillips briefly idled the refinery in September 2011 until Monroe Energy purchased and reactivated operations in 2012. Although BP sold the Facility in 1996, it retained responsibility for certain environmental conditions that existed at the time of the sale, and consequently many of the documents contained in the AR for this SB were completed by BP.

The refinery grew in size from approximately 17 acres located west of Marcus Hook Creek in the early 1900s to its current configuration of approximately 350 acres. The refinery has historically produced gasoline, kerosene, diesel fuel, residual fuel oils, bunker C fuel, aviation fuel, and liquefied petroleum gas and has a current process capacity of approximately 200,000 barrels per day.

The Facility property is located along the Delaware River about 20 miles south of Philadelphia. The topography across the Facility property is relatively flat and gently slopes towards the River. The Facility property is surrounded by a mixture of industrial/commercial properties to the north and west and residential properties to the northwest and southwest.

A 1991 EPA-conducted RCRA Facility Assessment (RFA) identified 84 potential Solid Waste Management Unites (SWMUs) and 26 proposed Areas of Concern (AOCs). These numbers were later modified by the Agency due to reclassifying several SWMUs as AOCs and further documentation showing there was little or no potential for releases from many of the SWMUs/AOCs. EPA determined that the number of SWMUs requiring further evaluation was 24 and the number of AOCs to be further assessed was 15.

In 1998, BP submitted its Solid Waste Management Unit and Area of Concern Final Cleanup Status Report (1998 Report) to EPA, in which the 24 SWMUs and 15 AOCs were evaluated. The 1998 Report found that all of the AOCs and all but two of the SWMUs (No. 40 – oily-water sewer system and No. 88 – suspected leaded tank bottom disposal areas) had been addressed. EPA agreed with the findings of the 1998 Report and in correspondence to BP dated August 16, 1999 determined that corrective action had been completed at 22 of the 24 SWMUs and all the 15 AOCs. In February 2013 and June 2016, EPA informed BP that no further corrective action was required at SWMU No. 88 and SWMU No. 40.

2.2 Areas of Investigation

Multiple environmental investigations and remedial actions have been completed at the Facility. For site characterization purposes, the Facility was divided into nine Areas of Investigation (AOI) based on historical information, similar processes, location and potential impact on receptors. The nine AOIs are presented in the table below and more information about each AOI is described in Section 3 of this SB. Figure 2 presents the locations of the AOIs at the Facility.

No.	AOI
1	Sitewide Groundwater
2	Lube Plant Area
3	Former Alky Retention Basin
4	Gas Blending Area
5	Wastewater Treatment Facility
6	South Tank Farm
7	North Tank Farm
8	Process Area
9	Surface Water & Ecological Areas

Section 3: Summary of Environmental Investigations

For all environmental investigations conducted at the Facility, groundwater concentrations were screened against PADEP's Statewide Health Standards (SHSs), otherwise known as Medium Specific Concentrations (MSCs) for non-residential used aquifers. The MSCs for the COCs in groundwater are equivalent to the federal Maximum Contaminant Levels (MCLs) promulgated pursuant to Section 42 U.S.C. §§ 300f et seq. of the Safe Drinking Water Act and codified at 40 CFR Part 141. The MSCs for contaminants with no corresponding MCLs are within the allowable risk range afforded by EPA's Regional Screening Levels (RSL) for tap water. Soil concentrations were screened against PADEP's non-residential direct contact and soil to groundwater MSCs, which are also within the allowable risk range afforded by EPA's RSLs for workers in commercial/industrial settings.

Numerous environmental investigations have been conducted at the Facility, and reports documenting those investigations are included in the Administrative Record for this SB. EPA relied upon the following reports in order to establish its Corrective Action objectives for the Facility: the November 2011 Sitewide Remedial Investigation Report (RIR) and the May 2018 Final Report for Sitewide Soil, Groundwater and Surface Water, both of which are available for review in the AR for the Facility. The following sub-sections summarize the characterizations of the AOIs identified in Section 2.2 above. In addition to the AOIs identified above, summaries of the groundwater and soil evaluations for the former Sinclair Acid Plant, located on the Facility, and a site-wide vapor intrusion evaluation are included in Sections 3.1.1, 3.10 and 3.11, respectively.

3.1 Sitewide Groundwater

The geology beneath the Facility consists of anthropogenic fill, unconsolidated silts, sands and gravels, saprolite and competent bedrock of the Wissahickon Formation primarily containing gneiss. Groundwater at the Facility is encountered at depths ranging from 0.5 to 15.5 feet below the ground surface (bgs). The most permeable water-bearing aquifers at the Facility occur in the anthropogenic fill in the Lube Plant Area and the sand and gravel facies of the basal Cape May Formation and lower terrace deposits. Groundwater flow direction in the water table and deeper semi-confined terrace deposit water bearing zones is generally to the southeast toward the Delaware River.

No records of potable wells located within 0.5 miles from the edge of the Facility property have been identified. The Chester Water Authority, which supplies water to Trainer and Marcus Hook, is unaware of any potable wells located within those municipalities. One active industrial well was identified 0.13 miles northwest (upgradient) of the Facility property. No surface water intakes for drinking water supply exist along the Delaware River within at least 4 miles of the Facility property. The refinery utilizes an intake from the Delaware River for a source of non-contact cooling water and as a backup for fire protection only.

EPA determines that this groundwater aquifer is not a viable source of groundwater supply due to both its shallow depth and its location within fill material. In developing this proposed remedy, EPA has based cleanup objectives for groundwater beneath the Facility as recharge to the Delaware River, Marcus Hook Creek, and Stony Creek.

More than 150 monitoring wells, piezometers, monitoring points and well points have been installed at the Facility and more than 50 groundwater sampling events have been conducted to address groundwater conditions since BP sold the refinery in 1996. The following table contains a list of contaminants that have been historically detected in groundwater at the Facility at concentrations greater than PADEP's Non-Residential Used Aquifer MSCs. The groundwater data shown in the table below were obtained from the November 2011 Sitewide Remedial Investigation Report (RIR).

Volatile Organic Compounds			
Contaminant	PADEP Non-Res. MSC (µg/l)	Maximum Historic Detected Concentration (µg/l)	Sample Location
Benzene	5	24000	MW-038
Chlorobenzene	100	1110	MW-206D
Chloroform	80	140	MW-146
1,2-Dichloroethane	5	260	MW-038
2-Butanone (MEK)	4000	11000	MW-046
Ethylbenzene	700	8400	MW-144

Methyl Tertiary Butyl Ether	20	16800	MW-008
Toluene	1000	14000	MW-078
Trichloroethene	5	71	MW-035
Xylenes	10000	40700	MW-144
Semi-Volatile Organic Compounds			
Contaminant	PADEP Non-Res. MSC (µg/l)	Maximum Historic Detected Concentration (µg/l)	Sample Location
Anthracene	66	1300	MW-146
Benzo(a)anthracene	4.9	1300	MW-146
Benzo(a)pyrene	0.2	830	MW-159
Benzo(b)fluoranthene	1.2	960	MW-146
Benzo(g,h,i)perylene	0.26	540	MW-159
Bis(2-ethylhexyl)phthalate	6	2150	MW-062
Chrysene	1.9	2300	MW-146
Dibenz(a,h)anthracene	0.6	330	MW-159
2,4-Dinitrotoluene	11	12	MW046-9.5'
Fluoranthene	260	4300	MW-146
Fluorene	1900	2000	MW-146
Indeno(1,2,3-cd)pyrene	2.8	170	MW-159
2-Methylnaphthalene	470	35000	MW-146
Naphthalene	100	50000	MW-146
Phenanthrene	1100	5500	MW-146
Pyrene	130	3200	MW-146
Metals			
Contaminant	PADEP Non-Res. MSC (µg/l)	Maximum Historic Detected Concentration (µg/l)	Sample Location
Antimony	6	31.2	MW-023
Arsenic	10	660	MW-109S
Beryllium	4	16	MW-159
Cadmium	5	11.7	MW-201S
Chromium (Total)	100	94100	MW-159
Cobalt	35	1040	MW-159
Lead	5	480	MW-027
Nickel	100	39900	MW-159

Generally, groundwater impacts could not be attributed to a single source at the refinery. Exceedances of many of the MSCs appear somewhat randomly and there are no known onsite sources contributing to further groundwater degradation. Statistical evaluation of the

groundwater contamination in the 22 wells with MSC exceedances was conducted as part of the 2011 RIR which concluded that concentrations were stable or decreasing at 17 of those locations. A fluctuating trend for petroleum hydrocarbons was exhibited by two interior wells (MW-74 and MW-144) and one well in the riverfront section of the Former Lube Plant Area (MW-121). Increasing trends were noted at two well locations, one interior well in the Former Lube Plant Area (MW-116) and one well in the Gas Blending Area (MW-209S). Benzene was the COC of concern for both of these wells, with concentrations fluctuating from 0.1 µg/l to 76 µg/l between 2002 and 2010. With benzene concentrations observed historically as high as 24,000 µg/l (MW-038 in May 1996), the contamination seen in MW-116 and MW-209S is not significantly impacting the overall groundwater quality.

Subsequent to the 2011 RIR, BP agreed to conduct an additional 12 rounds of groundwater sampling over three years from a series of representative point of compliance wells (POC) to confirm that diffuse groundwater discharge from beneath the Facility property is not adversely impacting the surrounding surface water bodies. For this supplemental groundwater sampling, ten (10) representative POC wells were selected from the 52 POC wells in the initial monitoring network with the approval of PADEP and EPA. The groundwater data from these wells were used in various mass balancing equations and groundwater modelling applications as described in the bulleted list below. The methodologies for the mass balancing equations and models are described in Appendix C of the May 2018 Final Report. The results from the mass balancing equations and groundwater modelling applications were compared to the Water Quality Standards contained in Chapter 93 of Pennsylvania's Title 25 Environmental Protection regulations resulting in the following conclusions:

- Using mass balance equations, diffuse groundwater discharges from the Lube Plant Riverfront Area to the Delaware River do not represent a risk to surface water conditions in the river.

- Using PADEP's PENTOXSD surface water model, diffuse groundwater discharges from the Facility property to the Marcus Hook Creek do not represent a risk to that creek.

- Using PADEP's SWLOAD and PENTOXSD fate and transport models, discharges from the Facility property to the Stoney Creek do not represent a risk to that creek.

- Using mass balance equations, the combined diffuse groundwater discharges from the Facility property to the Marcus Hook and Stoney Creeks do not represent a risk to the Delaware River (the ultimate receptor for Facility-related diffuse groundwater discharges) as the creeks empty into the river.

- Using mass balance equations, the cumulative groundwater discharge from the entire Facility to the Delaware River (including the Site riverfront discharge for

both the Lube Plant Area and South Tank Farm Area, as well as the discharge from the two creeks) does not represent a risk to the Delaware River.

3.1.1 Former Sinclair Acid Plant Groundwater

The Former Sinclair Acid Plant is approximately 6 acres in size and is located north of the railroad tracks that separate it from the central portion of the Lube Plant Area (see Figure 2). The Former Sinclair Acid Plant received spent sulfuring acid from the refinery, where it was processed and regenerated until operations were discontinued in the 1950s. Shortly after the Former Sinclair Acid Plant was shut down, all infrastructure was razed. The 6-acre parcel has since remained unused and is currently vegetated. Access to the parcel is limited by the surrounding railroad tracks and Marcus Hook Creek to the east. No SWMUs or AOCs were ever identified by EPA on the Former Sinclair Acid Plant parcel.

In 2005, ConocoPhillips (COP) conducted an assessment of the Former Sinclair Acid Plant, which included the collection and analyses of 30 grab groundwater samples collected from 30 locations. The analytical results are available in the 2006 Site Characterization Summary Report which is included in the AR for the Facility. Petroleum-related and chlorinated organic compounds were observed in the groundwater. The chlorinated compounds are attributed to the upgradient East Tenth Street Superfund Site where similar contamination is known to be present. The areal extent of petroleum and chlorinated contaminant impacts to groundwater is limited based on sampling results from downgradient monitoring wells located within the former Lube Plant. None of the Facility-related contamination is suspected of impacting the Marcus Hook Creek or the Delaware River above Pennsylvania's Title 25, Chapter 93 surface water criteria.

Institutional controls have been implemented through a June 30, 2017 environmental covenant which restricts groundwater use and residential development of the Facility property, including the Former Sinclair Acid Plant parcel.

3.1.2 Light Non-Aqueous Phase Liquids

BP submitted a Light Non-Aqueous Phase Liquids (LNAPL) Risk Assessment Report to PADEP and EPA in December 2014. Seven petroleum-related types of LNAPL have been identified beneath the Facility property. LNAPL has been observed in the Lube Plant Area, the Gas Blending Area, the Process Area, the Northern Tank Farm and the South Tank Farm. LNAPL has historically been observed in wells located in the Wastewater Treatment Facility Area. While the presence of LNAPL appears to be relatively localized, a larger plume of LNAPL exists beneath the Lube Plant Area (LPA). BP implemented interim measures to eliminate the occasional appearance of LNAPL inside the basement of the warehouse building in the LPA (see Section 4.3 - Elimination of Potential Direct Contact Soil Exposure).

LNAPL thickness has generally remained stable or decreased over time and monitoring wells/piezometers exhibiting measurable LNAPL are delineated by non-LNAPL bearing wells and piezometers. BP conducted LNAPL baildown testing in 2012 and 2013 to demonstrate that

LNAPL beneath the Facility property is stable and/or decreasing. The results of the baildown testing indicated that LNAPL transmissivity values were low enough to indicate the plumes were stable. The LNAPL Risk Assessment Report further demonstrated that LNAPL presented no potential adverse impact to surface water conditions.

3.2 Former Lube Plant Area

The Former Lube Plant Area (LPA) occupies 67 acres in the southwestern portion of the Facility property and is separated from the majority of the Facility property by Marcus Hook Creek. For the purposes of environmental investigation, the LPA has been further subdivided into the Former Processing Area, the West Tank Farm and the Heavy Fuels Area.

The Former Processing Area contains one large structure that houses the former Lubrication Storage Building, the Compound Packaging Plant and the Warehouse. While the LPA was historically used for lube oil manufacturing, it is periodically used for material storage. One 25,000-barrel aboveground storage tank (AST), last known to store heavy fuel oil, remains in the Former Processing Area. The West Tank Farm consists of seven 150,000-barrel ASTs located in bermed areas and have been used for crude oil storage. At one time, there were suspected leaded tank bottoms (wastes generated from cleaning out leaded gasoline tanks) placement areas in the West Tank Farm. The Heavy Fuels Area is comprised of two 140,000-barrel ASTs, one 93,000-barrel AST, and several other smaller ASTs (containing less than 27,000 barrels). These ASTs have historically contained crude oil, heavy heating fuel and lube oil. Other than the ASTs, surface cover in the Heavy Fuels Area is primarily comprised of pavement with some gravel areas.

In 2004, a tar-like substance was observed seeping through the asphalt cover of the parking lot near the Marine Terminal Gate within the Heavy Fuels Area in the southwest corner of the LPA. Also, in 2004, several 55-gallon drum carcasses were discovered during installation of subsurface utilities near the Marine Terminal Gate entrance to the refinery. Ensuing investigations identified a tar-like substance present in the upper portion of the fill material, immediately below a 1-2 foot layer of fine grained soil. Any drums and miscellaneous debris encountered were shipped off-site for disposal. In 2005, a geophysical investigation was conducted in the parking lot to determine the extent of the debris and drum material. Fourteen test pits were installed as a result of the geophysical investigation. Drums or parts of drums were identified in two of the pits and were shipped off-site for disposal. Drum debris and the tar-like substance were not observed in the remaining 12 test areas. The drum debris and tar were determined to be limited to an area that was filled as part of the refinery development between 1935 and 1948. In April and May 2014, 21 borings were advanced in the parking lot and 40 soil samples were analyzed for all site-specific COCs. No COCs were detected above PADEP's Non-Residential Direct Contact MSC in any of the samples. PADEP and EPA therefore determined than no further remedial action was required at the parking lot.

Aside from the above parking lot area, more than 300 soil samples at various depths were historically collected in the remainder of the LPA with analytical results summarized in the 2011 Sitewide RIR. No exceedances of PADEP's Non-Residential Direct Contact MSCs for subsurface soils (> 2 feet depths) were observed in any of the analyzed samples. For surface soil samples (0 – 2 feet depths), benzo(a)pyrene (14 milligrams per kilogram (mg/kg)) at one sample location (TRN-S-LPA-005), arsenic (139 mg/kg) at one sample location (TRN-S-MW97D), and lead (1,250 to 39,300 mg/kg) at three sample locations (HA-02-05, TRN-S-LPA001, and TRN-S-LPA017) were detected in soil above their respective PADEP Non-Residential Direct Contact MSCs.

From November to December 2013, BP installed soil borings and collected soil samples in the immediate vicinities of the five locations described above where Non-Residential Direct Contact MSC exceedances occurred. The purpose of this investigation was to delineate the extent of the soil contamination in those areas. In four of the five locations, the historical analytical results could not be duplicated and no MSC exceedances were encountered. Therefore, PADEP and EPA determined that no further action was required at those locations. In 2013, the only location where historical contamination was encountered again was the arsenic contamination present in the vicinity of sample no. TRN-S-MW97D. (See Figure 4) A total of eight borings advanced in this area from November to December 2013 and in April 2014 were used to delineate the extent of the arsenic contamination. A description on how this area was remediated can be found in Section 4.3 (Elimination of Potential Direct Contact Soil Exposure), below.

3.3 Former Alky Retention Basin Area

The 2-acre Alky Retention Basin (ARB) Area is located in the north-central portion of the Facility property in the vicinity of the Waste Water Treatment Facility Area. The ARB Area is comprised of the ARB and the former Unnamed Impounding Pond No. 4. The ARB is no longer in use and the area has been regraded.

In 2002 and 2004, 27 soil samples were collected at various depths from 14 borings installed in the ARB Area with analytical results summarized in the 2011 Sitewide RIR. No exceedances of PADEP's Non-Residential Direct Contact MSCs for subsurface soils were observed in any of the analyzed samples. For surface soil samples, lead at concentrations ranging from 1,310 to 2,120 mg/kg, at three locations (BH-02-01, BH-02-04, and BH-02-02) was the only contaminant detected above its PADEP Non-Residential Direct Contact MSC. In November and December 2013, fourteen additional borings were advanced in the area of the lead MSC exceedances to delineate the extent of the lead contamination. A description on how the ARB Area was remediated can be found in Section 4.3 (Elimination of Potential Direct Contact Soil Exposure), below.

3.4 Gas Blending Area

The 13-acre Gas Blending Area is located in the south-central portion of the Facility property on the other side of the railroad right of way across from the Waste Water Treatment Facility Area. This area contains 12 ASTs and several process units. Surface cover in the Gas Blending Area is a mix of pavement and gravel areas.

In 2002, more than 70 soil samples were collected at various depths from 33 locations in the Gas Blending Area with analytical results summarized in the 2011 Sitewide RIR. The only MSC exceedance observed was for benzene (354 mg/kg) in a subsurface soil sample (BH-02-32). To further delineate the benzene contamination, a confirmatory soil boring was installed at the same location in November 2013. A sample collected from the same depth as the 2002 sample contained benzene at 34 mg/kg, well below the MSC of 330 mg/kg for nonresidential subsurface soils. Since the earlier exceedance could not be duplicated, PADEP and EPA determined than no further action was required at the Gas Blending Area.

3.5 Waste Water Treatment Facility (WWTF) Area

The 24-acre WWTF is located in the north central portion of the Facility property along Marcus Hook Creek. In addition to the waste water treatment plant, this area includes 49 ASTs, a closed former impoundment pond, and several process buildings. The waste water treatment plant has historically treated oily waste water associated with plant operations. Most of the ASTs in this area are associated with the waste water treatment process.

In 2002 and 2004, 79 soil samples were collected at various depths from 46 locations in the WWTF Area with analytical results summarized in the 2011 Sitewide RIR. No exceedances of any of PADEP's Non-Residential Soil Direct Contact MSCs were detected in any of the samples analyzed. Therefore, no remedial action is required for soils in the WWTF Area.

3.6 South Tank Farm Area

The 60-acre South Tank Farm encompasses the majority of the eastern portion of the Facility property and is bordered to the south by the open Dredge Spoil Area and the Delaware River. The Dredge Spoil Area is a bulkheaded open/unmanaged emergent wetland area where dredge spoils were historically deposited. Twenty-eight ASTs used to store crude, gasoline, fuel oil, jet fuel, base stock and reformate are located within the South Tank Farm.

From 1998 through 2004, more than 150 soil samples were collected at various depths from approximately 100 locations in the South Tank Farm Area with analytical results summarized in the 2011 Sitewide RIR. No exceedances of PADEP's Non-Residential Direct Contact MSCs for subsurface soils were observed in any of the analyzed samples. For surface soil samples, total xylenes (2,400,000 mg/kg) at one sample location (03-155-04), arsenic (199 mg/kg) at one sample location (HA-02-10), and lead (2,190 mg/kg) at one sample location (03-153-06) were detected above their respective PADEP Non-Residential Direct Contact MSCs.

Additional soil sampling was conducted at the three above sample locations subsequent to the 2011 Sitewide RIR to further delineate the extent of contamination. In November and December 2013, five soil samples collected from four borings in the vicinity of sample location 03-155-04 did not contain total xylenes at concentrations above PADEPs Non-Residential Direct Contact MSCs. One confirmatory soil sample collected from a boring at sample location HA-02-10 in April 2014 did not contain arsenic above its MSC. Since the earlier exceedances could not be duplicated at these two locations, PADEP and EPA determined than no further remedial action was required in the immediate vicinity of sample locations 03-155-04 and HA-02-10.

In December 2013, five borings were advanced in the Tank 153 area where soil sample No. 03-153-06 had previously exhibited an elevated lead concentration. A total of six soil samples from the five soil borings were analyzed for lead, enabling the delineation of the area impacted by the lead contamination. A description of Tank 153 area and how this area was remediated can be found below in Section 4.3 (Elimination of Potential Direct Contact Soil Exposure).

3.7 North Tank Farm Area

The 26-acre North Tank Farm Area is in the northern portion of the Facility property and contains administrative buildings, refinery parking lots and entrances, and forty ASTs of various sizes. Suspected leaded tank bottoms placement areas were believed to be located in the North Tank Farm Area.

From 1996 through 2004, more than 150 soil samples were collected at various depths from approximately 100 locations in the North Tank Farm Area with analytical results summarized in the 2011 Sitewide RIR. During a soil sampling event in 2004, the Facility collected subsurface samples, one of which (04-MPK-08) contained benzene (5,800 mg/kg), ethylbenzene (66,000 mg/kg) and total xylenes (140,000 mg/kg) above PADEP's Non-Residential Direct Contact MSCs for subsurface soils. During that same year, surface soil sample numbers MHTK113A and 04-PMP-01SS contained benzene (360 mg/kg) and benzo(a)pyrene (25 mg/kg), respectively, above PADEP's Non-Residential Direct Contact MSCs for soils 0-2 feet in depth. The 2004 soil sampling event determined that the nature and extent of subsurface benzene, ethylbenzene and total xylene contamination was limited to an approximately 15,000 square feet area within the North Tank Farm. A description of how this area was remediated can be found below in Section 4.3 (Elimination of Potential Direct Contact Soil Exposure).

In November and December 2013, the Facility conducted additional soil sampling at the two surface soil sample locations (MHTK113A and 04-PMP-01SS) to further delineate the extent of benzene and benzo(a)pyrene contamination. Two soil samples collected from a single boring installed at the 2004 sample location MHTK113A did not contain benzene above PADEPs Non-Residential Direct Contact MSC. None of the four soil samples collected from four borings in the vicinity of sample no. 04-PMP-01SS contained benzo(a)pyrene above its MSC. Since the 2004 exceedances were not present in the 2013 soil sampling event, PADEP

and EPA determined no further action was required at these two areas.

3.8 Process Area

The 80-acre Process Area occupies the majority of the northern portion of the Facility property and is located between the North Tank Farm and the railroad right of way. The Process Area contains 97 ASTs of various sizes along with cooling towers, boiler water, process area vessels and other process units. Surface cover in this area is also comprised of pavement with some gravel areas.

From 2002 through 2004, more than 220 soil samples were collected at various depths from approximately 150 locations throughout the Process Area with analytical results summarized in the 2011 Sitewide RIR. No exceedances of PADEP's Non-Residential Direct Contact MSCs for surface soils were observed in any of the analyzed samples. One subsurface soil sample (04-ARO-12) collected in 2004 at a depth of 2.5 - 3.0 feet contained total xylenes (19,000 mg/kg) and ethylbenzene (1,900 mg/kg) above PADEP's Non-Residential Direct Contact MSCs for subsurface soils.

In December 2013, additional soil sampling was conducted in the vicinity of soil sample (04-ARO-12) to further delineate the extent of the total xylenes contamination. Five soil samples collected from five borings installed in the area were used to delineate the total xylenes contamination. The additional sampling confirmed that surface soils in the vicinity of soil sample 04-ARO-12 did not contain any COCs at concentrations above PADEP's Non-Residential Direct Contact MSCs for surface soils. Therefore, the existing surficial two feet of soil provides a sufficient barrier buffer to the observed subsurface contamination, eliminating the direct contact pathway.

PADEP expressed concerns to the Facility that the total xylenes and ethyl benzene subsurface soil concentrations could pose an inhalation risk to an outdoor worker in the immediate vicinity of sample location 04-ARO-12. To satisfy this concern, BP collected an air sample at this location in February 2017. The six VOCs detected were each more than 10 times lower than the Occupational Exposure Criteria for operational portions of the refinery. Based on the above, no remedial action is required for soils in the Process Area.

3.9 Surface Water and Ecological Areas

Four areas at the Facility, specifically Marcus Hook Creek, Stony Creek, the Delaware River and the Dredge Spoils Area which is the open area behind the river bulkhead between the two creeks, were identified as potential ecological receptors/habitats in the June 2009 Ecological Evaluation Report. Marcus Hook Creek and Stony Creek are tidal tributaries to the Delaware River. The Facility property is bulk-headed along its entire boundary with the Delaware River and shoreline/riparian habitat is absent. In the Lube Plant Area, refinery infrastructure extends up to the river bulkhead. The Dredge Spoils Area consists of unmanaged upland habitat and emergent wetlands underlain by dredge spoils. The remainder of the Facility property is occupied

by refinery production and storage infrastructure lacking any natural habitat features of ecological value.

The banks of Marcus Hook Creek near its confluence with the Delaware River have been fortified with concrete to prevent erosion. During typical refinery operations, more than 95% of the flow in Marcus Hook Creek is from permitted discharges from the refinery. Stony Creek is a smaller stream that during typical refinery operations primarily conveys heated refinery non-contact cooling from the Process Area. Stony Creek is channelized for approximately 300 yards in a concrete conduit beneath the railroad right-of-way that bisects the Site. Without the discharges of the refinery non-contact cooling water to Marcus Hook Creek and Stony Creek, the limited natural water flow would provide little or no desirable habitat at the mouths of the creeks for spawning or foraging by species of concern, according to the June 2009 Ecological Evaluation Report.

Marcus Hook Creek, Stony Creek and the Delaware River are each in part recharged by groundwater discharged from the Facility property. Four quarters of surface water sampling occurred in 2007 and 2008, during which sheens were periodically observed in the Delaware River adjacent to the LPA and in Marcus Hook Creek. Sheens, to a lesser extent, have also been observed in Stony Creek; however, these sheens were shown to be naturally occurring and biological in nature, and not attributable to refinery activities in the 2015 Sheen Mitigation Final Report. Two areas of petroleum related sheening were identified on the north and south sides of the confluence of the Waste Water Treatment Plant (WWTP) discharge flume and Marcus Hook Creek.

The June 2009 Ecological Evaluation Report found that the sheens observed in the Marcus Hook Creek and Delaware River presented the most obvious potential risk to environmental receptors. No species or habitats of concern were observed on the Facility property, with the exception of the degraded emergent wetland in the Dredge Spoils Area. There is no complete migration pathway for Facility-related contaminants of potential ecological concern (CPECs) to reach the Dredge Spoils Area. The discharge of non-contact cooling water to both Markus Hook Creek and Stony Creek along with other historical industrial development in the area makes those water bodies unlikely to support species of concern. Due to the highly urbanized nature of the region around the Facility, the absence of natural habitats at the Facility property, and the high level of industrial activity in the refinery, risks to unmanaged habitats were determined to be extremely limited. Remedial measures taken to address the petroleum sheens in the Delaware River and Marcus Hook Creek are described in Sections 4.1 and 4.2, respectively.

3.10 Former Sinclair Acid Plant Soils

In 2005, ConocoPhillips conducted an assessment at the Former Sinclair Acid Plant parcel, which included the collection and analyses of 30 soil samples at various depths from the same locations at which grab groundwater samples were also collected as described in Section 3.1.1, above. The analytical results are summarized in the 2006 Site Characterization Summary

Report. No exceedances of PADEP's Non-Residential Direct Contact MSCs for subsurface soils were present in any of the analyzed samples. For surface soil samples, lead (1,880 mg/kg) at one sample location (05-ACID-16) was detected above its PADEP Non-Residential Direct Contact MSC. Benzo(a)pyrene was present at a concentration equal to the MSC of 12 mg/kg at this same sample location.

Institutional controls have been implemented through a June 30, 2017 environmental covenant which prevent human exposure to the groundwater at the Facility and also prevents residential development of the refinery property, including the Former Sinclair Acid Plant parcel.

3.11 Vapor Intrusion Evaluation

BP evaluated the vapor intrusion (VI) pathway using a 2-phased approach. As described in the August 2016 VI Phase I Risk Assessment Report, all existing structures on the Facility property, including trailers/portable-modular buildings and sheds/shipping containers were assessed against a set of physical construction and occupancy criteria for the purpose of identifying buildings with the potential for a complete VI pathway. Of the 312 structures identified on the Facility property during Phase I, 34 buildings and 15 skirted trailers were retained for further evaluation as described in the September 2017 VI Phase II Risk Assessment Report. Of the 49 buildings carried forward into the Phase II evaluation, 45 were located within refinery operational areas and four were located within non-operational areas.

Individuals working in the operational areas of the refinery participate in the Facility's Occupational Safety & Health Administration (OSHA) hazard communication program pursuant to OSHA's Hazard Communication Standard (HCS) set forth at 29 CFR 1910.1200 and are aware of the risks posed by the COCs at the Facility. Additionally, because background sources in operational areas of the refinery make attribution of indoor air contaminant concentrations to a subsurface (VI-related) source infeasible, any VI related samples collected in those areas were compared to OSHA permissible exposure limits (PELs), National Institute for Occupational Safety and Health (NIOSH) recommended exposure limits (RELs) and American Conference of Governmental Industrial Hygienists (ACGIH) threshold limit values (TLVs). In contrast, workers in non-operational areas of the refinery do not participate in the OSHA hazard communication program. VI-related samples collected in non-operational areas were compared to PADEP and EPA non-residential indoor air standards

In operational areas, COCs detected were present at concentrations more than one order of magnitude below their applicable OSHA/Industrial exposure criteria. Therefore, mitigation is not required for the retained structures that were sampled. Seven contaminants were detected in indoor air above PADEP's non-residential screening value and additionally, benzene was detected above $1/10^{th}$ of the PADEP value. All eight of these contaminants are included in the refinery's OSHA hazard communication program with their respective Material Safety Data Sheets available to site workers. These contaminants would need to be further evaluated in the future if usage of the property for something other than a refinery occurs. Site workers in operational areas are also required to take health and safety training and wear personal protective

equipment (PPE) as required. Retained structures with existing engineering controls, such as building pressurization systems, were not sampled. These types of structures, as well as blast-resistant modules, portable modular structures and skirted trailers will be periodically monitored according to the EPA-approved May 2018 Post Remediation Care Plan (PRCP) to ensure the structures remain protective of indoor air via the VI pathway.

Indoor air samples collected in non-operational areas were compared to PADEP and EPA non-residential indoor air standards. No contaminants were detected in non-operational areas above EPA's allowable risk range during two rounds of sampling in 2017. The detection limits for one contaminant (1,2-dibromoethane) in air samples from both the Smith Street and Marine Terminal Gate entrance security guard buildings (see Figure 2) were greater than its screening criteria. As part of the Phase II VI evaluation, further risk assessment for this contaminant at the above two locations concluded that its presence at the elevated detection limits would be within EPA's allowable risk range for indoor air. Based on the above, no mitigation for VI is required at any of the buildings in non-operational areas.

3.2 Environmental Indicators

Under the Government Performance and Results Act (GPRA), EPA has set national goals to address RCRA corrective action facilities. Under GPRA, EPA evaluates two key environmental clean-up indicators for each facility: (1) Current Human Exposures Under Control, and (2) Migration of Contaminated Groundwater Under Control. The Facility met both these indicators on September 12, 2000.

Section 4: Summary of Remedial Activities Completed

Remedial measures were taken by BP to address the petroleum sheens observed on the Delaware River along the LPA Riverfront Area and along Marcus Hook Creek near the discharge point for the refinery's WWTP. Further remedial measures were taken to address the occasional appearance of LNAPL in the LPA warehouse basement and soil COC impacts in various portions of the Facility as described throughout Section 3 above. These remedial measures are further described below.

4.1 Petroleum Sheening on Delaware River

In its March 2011 Remedial Investigation Report and Cleanup Plan for the LPA Riverfront Area, BP proposed the installation of a sheet pile wall to eliminate petroleum sheening on the Delaware River along portions of the 525-foot long wooden relieving platform and concrete seawall (low-deck structure) constructed in the 1920s. Between March 2011 and June 2012, a 606-foot long steel sheet pile wall was built that effectively contains sheen between the wall and the low-deck structure. The location of the sheet pile wall can be seen on Figure 3. The sheet pile wall includes an underflow piping system that allows movement of water between

the sheen containment area and the Delaware River while preventing the discharge of any petroleum sheens to the Delaware River. The sheens within the containment area are collected with absorbent booms.

The effectiveness of the sheet pile wall has been verified by BP since construction was completed through visual observation and documented in inspection records. No petroleum sheening has ever been observed on the Delaware River in the vicinity of the Lube Plant Riverfront Area since the sheet pile wall was installed. Initially, inspections were conducted by BP on a weekly basis from June 2012 through December 2016, biweekly through 2017, and monthly through 2018. The PRCP calls for quarterly monitoring thereafter. The PRCP also requires maintenance of the sheet pile wall to be performed as needed.

4.2 Petroleum Sheening on Marcus Hook Creek

In its January 2013 Cleanup Plan for Sheen Mitigation in Marcus Hook Creek and Stoney Creek, BP proposed measures to eliminate the intermittent creek bank petroleum sheening at two locations on the north and south sides of the confluence of the WWTP discharge flume and Marcus Hook Creek. The two locations are depicted on Figure 3. No remedial action was proposed along Stoney Creek, as the sheens observed along that water body were determined to be naturally occurring, rather than petroleum sheens associated with refinery releases. Area 1, located on the north side of the confluence of the WWTP discharge flume was remediated with a 55-foot steel sheet-pile wall with flowable fill backing. A layer of stone rip-rap was places along the exterior toe of the sheet pile to protect the stream bank soils from potential scouring or erosion. Area 2, located on the south side of the confluence of the WWTP discharge flume was remediated by debris removal, the application of a bentonite cap, and protection/stabilization with rip-rap/armor stone. Construction of both remedial measures occurred between August and September 2013.

The effectiveness of the two Marcus Hook Creek remedies has been verified through visual inspection by BP since construction was completed. No petroleum sheening has been observed at the confluence of the WWTP discharge flume and Marcus Hook Creek since the remedial measures were constructed. Post remedial inspections were conducted on a monthly basis through December 2017. The PRCP requires semi-annual monitoring thereafter. Any deficiencies noted during future inspections will be addressed pursuant to the PRCP.

4.3 Elimination of Potential Direct Contact Soil Exposure

BP's November 2016 Act 2 Cleanup Plan - Potential Direct Exposure to Soil, addresses the soil COC impacts in the various portions of the Facility property described in Section 3 above, as well as one area where LNAPL was intermittently observed in the LPA warehouse building basement during elevated groundwater conditions. Potential direct contact exposure to these areas will be eliminated by installing surface cover engineering controls in conjunction with associated institutional controls. The surface cover engineering controls will provide a physical barrier to prevent direct contact exposure to the soils, provide a visual demarcation of

surface cover from underlying soils, and prevent the movement of soils vertically through the surface cover barrier layer. (See Figure 4.) Inspection and maintenance requirements can be found in the PRCP. Below is a brief description of the remediation completed between September and November 2017:

- LPA, location TRN-S-MW97D: The area contaminated by elevated arsenic concentrations was approximately 2,200 sq. ft. This area was covered with a geotextile filter fabric and six (6) inches of aggregate to prevent direct contact exposure to the soils,

- Former Alky Retention Basin, locations BH-02-01, BH-02-04, and BH-02-02: The area impacted by elevated lead concentrations was approximately 18,000 sq. ft. Improvements such as the parking lot and storm water detention basin installed by Monroe Energy in a portion of the remediation area were incorporated into the remedy. A 30-mil polyethylene geomembrane covered with combinations of soil, aggregate and gravel pavement was installed over the remaining area.

- South Tank Farm, Tank 153, location 03-153-06: The area contaminated by elevated lead concentrations was approximately 1,250 sq. ft. The remedy of this area consisted of placing gravel/rip-rap over the existing course gravel to a minimum thickness of six inches. This base course was then covered with a geotextile fabric with a gravel retention grid, and then two more inches of gravel.

- North Tank Farm parking area, location 04-MPK-08: The area contaminated by elevated benzene, ethylbenzene and total xylenes concentrations was approximately 15,000 sq. ft. The entire area is located within an existing asphalt paved parking lot. The parking lot asphalt pavement plus the two feet of soils meeting PADEP's Non-Residential Direct Contact MSCs provide a buffer zone for the deeper (approximately 10 feet bgs) impacted soils. Therefore, no additional remedial action was required in this area.

- For the LPA warehouse basement, the remedy included emplacement of approximately 14 inches of a medium-strength cement and sand concrete to raise the basement floor a minimum of six inches above historical high-water levels as indicated by staining on the basement walls. Prior to pouring the concrete, the sumps were sealed with hydraulic cement to prevent recharge of groundwater.

Section 5: Corrective Action Objectives

EPA's Corrective Action Objectives for the specific environmental media at the Facility are the following:

1. Soils

EPA has determined that PADEP's Non-Residential Direct Contact MSCs are protective of human health and the environment for the COCs related to historic refinery operations.

2. Groundwater

EPA expects final remedies to return groundwater to its maximum beneficial use within a timeframe that is reasonable given the circumstances of the project. For projects where aquifers are either currently used for water supply or have the potential to be used for water supply, EPA will use the National Primary Drinking Water Standard Maximum Contaminant Levels (MCLs) promulgated pursuant to Section 42 U.S.C. §§ 300f et seq. of the Safe Drinking Water Act and codified at 40 C.F.R. Part 141. As described in Section 3.1, above, the groundwater beneath the Facility is not suitable as a drinking water source. Therefore, EPA is proposing groundwater cleanup levels based on the groundwater recharge to the surrounding surface water bodies.

Through a combination of sampling, modelling and mass balancing equations, BP has demonstrated that diffuse groundwater discharges to Marcus Hook Creek, Stony Creek and the Delaware River, as well as the cumulative discharge from the creeks and groundwater to the river, will not result in exceedances of any of PADEP's surface water criteria in those water bodies currently or in the future. EPA's Corrective Action Objective is to ensure that groundwater discharges from the Facility to its surrounding water bodies do not impact water quality above PADEP's surface water criteria.

Section 6: Proposed Remedy

The proposed remedy includes a combination of institutional controls (ICs) and engineering controls (ECs). ECs include a variety of physical devices, barriers, and management practices that contain, reduce the source of, or prevent exposure to contamination. ICs are generally non-engineered mechanisms such as administrative and/or legal controls that minimize the potential for human exposure to contamination and/or protect the integrity of a remedy.

Under this proposed remedy, some contaminants remain in the soil and groundwater at the Facility above levels appropriate for residential uses. Also, at a few locations as described above, contaminants above PADEP's direct contact non-residential MSCs remain in soils below engineered barriers. Because some contaminants remain in the soil and groundwater at the Facility above levels appropriate for residential use, EPA's proposed remedy requires the

compliance with and maintenance of soil and groundwater use restrictions, as well as the compliance with and maintenance of any engineering controls.

EPA proposes to implement the land and groundwater restrictions necessary to prevent human exposure to contaminants at the Facility through institutional controls established through environmental covenants pursuant to the Pennsylvania Uniform Environmental Covenants Act, 27 Pa.C.S. §§ 6501-6517.

An environmental covenant requiring the maintenance of the ECs associated with surface water petroleum sheen prevention remediation, soil direct contact prevention and protection of vapor intrusion pathway related indoor was filed in the land records for the Facility property on March 13, 2019. A June 30, 2017 environmental covenant filed by Monroe Energy implemented Facility-wide restrictions on groundwater usage except for wells used for groundwater monitoring or remediation. The June 30, 2017 environmental covenant also requires the entire Facility property to be used only for non-residential purposes.

The PRCP requires the operation, inspection, monitoring and maintenance of the passive remedies installed to mitigate sheening on the Delaware River and Marcus Hook Creek. The PCRP also ensures that the surface cover engineering controls continue to eliminate direct contact exposure to elevated soil COCs by requiring the inspection and maintenance of those cover systems. Also, the PCRP includes reporting, non-attainment notification and management of change requirements. Land use restrictions described in the existing environmental covenant for various media are described below.

1. Soils

BP has met PADEP's Non-Residential Direct Contact MSCs throughout the Facility property, except for the five areas described in Section 4.3, above, where surface cover engineering controls have been implemented to prevent direct contact exposure to remaining contamination and the one soil sample location in the Former Sinclair Acid Plant.

For all Facility soils, EPA's proposed remedy requires that excavation activities be managed pursuant to the PADEP-approved December 14, 2017 Soil Characterization and Onsite Soil Reuse Plan. With respect to the five areas described in Section 4.3, above, EPA's proposed remedy also requires that inspection, monitoring and maintenance of the installed surface cover engineering controls be conducted in accordance with the PRCP.

BP will eliminate potential direct soil exposure in the Former Acid Plant area by installing surface cover engineering controls in conjunction with institutional controls. The lead and benzo(a)pyrene contamination observed in 2005 at surface soil sample location 05-ACID-16 will be fully delineated through additional soil sampling to be approved by EPA. Once fully delineated, any soils containing exceedances of PADEP's non-residential direct contact MSCs will be covered with an engineered cap to prevent direct contact exposures. EPA's proposed remedy requires modification of the existing PCRP to include the inspection, maintenance and

reporting requirements associated with the engineered cover system. EPA's proposed remedy will also require modification of the March 2019 environmental covenant to include the land use restrictions for this area.

2. Groundwater

Monitoring and modelling of groundwater conditions at the Facility have shown that contamination in groundwater is not increasing and contaminant concentrations are predominantly declining over time. Therefore, the proposed remedy for groundwater requires continued adherence to the to the groundwater use restrictions contained in the June 30, 2017 environmental covenant, as well as visual inspection, monitoring and maintenance of the engineering controls surface covers that were installed to prevent petroleum oil sheening on the Marcus Hook Creek and Delaware River and ensure continuing compliance with Pennsylvania Code, Title 25, Chapter 93 surface water criteria.

3. Vapor Intrusion

While there is a potential risk to human health from exposure to vapor intrusion into occupied buildings at the Facility, air monitoring and risk analysis demonstrated there is no unacceptable risk from exposure to COCs to current or future workers at the Facility if certain existing facility engineering and institutional controls remain in place. The proposed remedy for VI include:

- The existing engineering control systems in the buildings designed to operate with pressurized systems identified in Table 1 of the PCRP will be operated, inspected and maintained as described in the PRCP. Changes to the occupancy status or engineering controls for these buildings will require re-evaluation of the vapor intrusion pathway at those locations.

- Application of OSHA/Industrial exposure criteria to indoor workers in operational areas of the Facility property.

- Adherence to the record keeping requirements set forth in the PRCP for the existing buildings subject to the VI program

- Compliance with PRCP provisions to address future potential structure construction and future potential changes to the location, physical characteristics or occupancy of structures.

Section 7: Evaluation of Proposed Remedy

This section provides a description of the criteria EPA used to evaluate the proposed remedy consistent with EPA guidance. The criteria are applied in two phases. In the first phase, EPA evaluates three decision threshold criteria as general goals. In the second phase, for those remedies which meet the threshold criteria, EPA then evaluates seven balancing criteria.

Threshold Criteria	Evaluation
1) Protect human health and the environment	EPA's proposed remedy for the Facility protects human health and the environment by eliminating, reducing, or controlling potential unacceptable risk through the implementation and maintenance of engineering controls and use restrictions. EPA is proposing to restrict land use to commercial or industrial purposes at the Facility. An existing environmental covenant which is currently in effect for the entire Facility Property limits the use of the property to non-residential use only and prohibits groundwater use. Except for soils beneath the engineered barriers described in Section 4.3 above and the one surface soil sample in the Former Sinclair Acid Plant that contained an elevated lead concentration, soils at the Facility meet PADEP's Non-Residential Direct Contact MSCs, which fall within EPA's allowable risk range for the COCs. The engineered barriers have been preventing exposures to soils containing COCs above MSCs at the five locations described in this SB since they were installed in 2017. Access to the unused Former Sinclair Acid Plant is restricted as it is surrounded by railroad tracks to the north, west and south, and by Marcus Hook Creek to the east. Therefore, no exposure to the lead contamination is expected under current use of the parcel. As part of the proposed Remedy, BP will fully delineate the extent of the lead contamination and contain it in place beneath a barrier system similar to those described in Section 4.3. With respect to groundwater, 12 rounds of sampling from ten point of compliance wells along with groundwater modelling and mass balance equations have demonstrated that groundwater discharges to Marcus Hook Creek, Stoney Creek and the Delaware River do not exceed PADEP's surface water

	criteria. In addition, the Facility and surrounding area are provided with potable water from public water supply systems that are not impacted by refinery operations. With respect to future uses, the proposed remedy requires groundwater use restrictions to minimize the potential for human exposure to contamination and protect the integrity of the remedy. Moreover, while COCs remain in groundwater in interior portions of the Facility, their concentrations will continue to decrease through natural biodegradation processes. No excessive risk to human health associated with indoor air exposures in existing buildings exist provided the Facility continues to be used as a petroleum refinery with a functioning OSHA hazard communications program for its workers. Any changes in Facility use, or changes in the use of buildings at the refinery, will require additional VI evaluation, as discussed in the PRCP. The March 2019 environmental covenant additionally requires all operational areas to include the following elements: (1) hazard communication, so that workers and others who might be exposed to all COCs have full knowledge of the chemicals' presence; (2) appropriate health and safety training; and, (3) provision of appropriate protective equipment (when needed) to prevent VI exposure.
2) Achieve media cleanup objectives	EPA's proposed remedy meet the media cleanup objectives based on assumptions regarding current and reasonably anticipated land and water resource use(s). The remedy proposed in this SB is based on the current and future anticipated land use at the Facility as commercial or industrial. The potential for direct exposures to soils containing elevated contaminant concentrations has been eliminated. The proposed remedy does not meet groundwater cleanup standards that would allow for the beneficial use of groundwater at the Facility. However, the groundwater beneath the Facility is not suitable as a drinking water source; therefore, EPA's objective is to protect the surrounding surface water bodies from unacceptable concentrations from COC impacts. Through monitoring, modelling and mass balance equations, the Facility has demonstrated that the remaining groundwater will not impact the surrounding water bodies over time.

	Furthermore, groundwater is not used as a source of potable water at the Facility or in the surrounding area. Additionally, the engineering controls that have been implemented to prevent petroleum sheening on Marcus Hook Creek and the Delaware River were successfully installed and are functioning as designed.
3) Remediating the Source of Releases	In all proposed remedies, EPA seeks to eliminate or reduce further releases of hazardous wastes and hazardous constituents that may pose a threat to human health and the environment and the Facility met this objective. No large sources of contaminants remain in Facility soils. Engineered surface covers installed in 2017 eliminate the direct contact exposure pathway and limit the potential of the underlying contamination to impact groundwater in those locations. There is currently no risk associated with Facility soils as long as land use restrictions remain in place. The proposed remedy does not reduce the concentration of contaminants in the groundwater; however, contaminant concentrations in groundwater are declining through natural attenuation. Significantly, groundwater contamination beneath the Facility has been shown to have no significant impact on the surrounding water bodies. There are no remaining large, discrete sources of waste to further impact groundwater quality. Groundwater is not used for potable purposes in the vicinity of the Facility. Therefore, EPA has determined that this criterion has been met. No unacceptable risk to human health associated with indoor air exposures in existing buildings exist provided engineering and institutional controls remain in place and the Facility continues to be used as a petroleum refinery with a functioning OSHA hazard communications program for its workers. Any changes in Facility use, or changes in the use of buildings at the refinery, will require additional VI evaluation.

Balancing Criteria	Evaluation
4) Long-term effectiveness	The PRCP contains the inspection, maintenance and record keeping requirements designed to ensure that the petroleum sheening prevention and direct contact remedies, as well as the vapor intrusion restrictions in place remain protective of human health and the environment over time. The land use restrictions in the environmental covenant requiring non-residential use of the Facility property and prohibiting groundwater usage also ensure that potential future human exposures are minimized/controlled.
5) Reduction of toxicity, mobility, or volume of the Hazardous Constituents	The reduction of toxicity, mobility and volume of hazardous constituents will continue by attenuation at the Facility. Reduction has already been achieved, as demonstrated by the data from the groundwater monitoring. In addition, periodic inspections will be performed to ensure the petroleum sheening remedies on the Marcus Hook Creek and Delaware River are operating as designed.
6) Short-term effectiveness	EPA's proposed remedy does not involve any activities, such as construction or excavation that would pose short-term risks to workers, residents, and/or the environment. The land and groundwater use restrictions pursuant to the 2017 environmental covenant, maintenance of the engineered surface cover remedies, petroleum sheening remedies, as well as the vapor intrusion related use restrictions pursuant to the 2019 environmental covenant are already in place.
7) Implementability	EPA's proposed remedy is readily implementable. The land and groundwater use restrictions are already in place pursuant to the 2017 and 2019 environmental covenants as well as the installation of engineering controls associated with the surface covers and petroleum sheening monitoring.
8) Cost	EPA's proposed remedy is cost effective. The costs associated with this proposed remedy have already been incurred and the remaining costs associated with inspection and maintenance of the installed remedies are minimal.
9) Community Acceptance	EPA will evaluate community acceptance of the proposed remedy during the public comment period, and it will be described in the Final Decision and Response to Comments.
10) State/Support Agency Acceptance	EPA will evaluate PADEP's acceptance of the proposed remedy during the public comment period, and it will be described in the Final Decision and Response to Comments.

Section 8: Financial Assurance

EPA has evaluated whether financial assurance for corrective action is necessary to implement EPA's proposed remedy at the Facility. BP has estimated the cost of routine maintenance, inspections and annual report generation as required by the PRCP to be approximately $30,000 per year. While BP will be implementing the PRCP requirements, the current refinery owner is responsible for maintaining some of the existing refinery institutional controls (e.g. OSHA compliant occupational controls) and engineering controls (e.g. building pressurization to prevent vapor intrusion) upon which the proposed remedy relies.

EPA's proposed remedy does not require any further engineering actions to remediate soil, groundwater or indoor air contamination at this time. Given that the costs of implementing institutional controls and maintaining engineering controls at the Facility will be minimal, EPA is proposing that no financial assurance be required.

Section 9: Public Participation

Interested persons are invited to comment on EPA's proposed remedy. The public comment period will last thirty (30) calendar days from the date that notice is published in a local newspaper. Comments may be submitted by mail, fax, or electronic mail to Mr. Andrew Clibanoff at the contact information listed below.

A public meeting will be held upon request. Requests for a public meeting should be submitted to Mr. Andrew Clibanoff in writing at the contact information listed below. A meeting will not be scheduled unless one is requested.

The Administrative Record contains all the information considered by EPA for the proposed remedy at this Facility. The Administrative Record is available at the following location:

U.S. EPA Region III
1650 Arch Street
Philadelphia, PA 19103
Contact: Mr. Andrew Clibanoff (3LC20)
Phone: (215) 814-3391
Fax: (215) 814 - 3113
Email: clibanoff.andrew@epa.gov

Attachments:
Figure 1: Site Location Map
Figure 2: Site Plan
Figure 3: Petroleum Sheening Mitigation Areas
Figure 4: Direct Contact Exposure Mitigation Areas

Date: 2.13.20

John A. Armstead, Director
Land, Chemicals and Redevelopment Division
US EPA, Region III

Section 10: Index to Administrative Record

OSHA Air Standards 29 CFR 1910 (Subpart Z) (2019).

OSHA Hazard Communication Standards, 29 CFR 1910.1200 (2019).

Environmental Covenant, prepared by Monroe Energy, LLC, for 4101 Post Road Property, Trainer, PA, signed by Jeffrey Warmann, Monroe Energy, LLC and Ragesh Patel, PADEP, filed at Delaware County Recorder of Deeds, March 13, 2019.

Correspondence from Ragesh Patel, Regional Manager, Environmental Cleanup and Brownfields, PADEP to Sasa Jazic, Remediation Management Services Company, Site-Specific Standard Final Report Approval, August 3, 2018.

Final Report, Sitewide Soil, Groundwater and Surface Water, BP Former Marcus Hook Refinery, Trainer, Pennsylvania, Prepared by Sovereign Consulting Inc. for Remediation Management Services Company (BP), May 2018.

Post-Remediation Care Plan, Sitewide Soil, Groundwater and Surface Water, BP Former Marcus Hook Refinery, Trainer, Pennsylvania, Prepared by Sovereign Consulting Inc. for Remediation Management Services Company (BP), May 2018.

Correspondence from Ragesh Patel, Regional Manager, Environmental Cleanup and Brownfields, PADEP to Sasa Jazic, Remediation Management Services Company, Approval of BP's September 2017 VI Phase II Risk Assessment Report & Cleanup Plan, December 22, 2017.

Soil Characterization and Onsite Soil Reuse Plan for Monroe Energy, LLC Trainer Refinery, prepared by Monroe Energy, December 14, 2017.

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Correspondence from Sachin Shankar, P.E., Assistant Regional Director, PADEP, to Sasa Jazic, Remediation Management Services Company, Approval of BP's November 2016 Act 2 Cleanup Plan – Potential Direct Contact Exposure to Soil, April 7, 2017.

Correspondence from Sasa Jazic, Project Manager, Remediation Management Services Company, to C. David Brown, PADEP, Response to PADEP Letter of Technical Deficiency

dated February 27, 2017 regarding BP's November 2016 Act 2 Cleanup Plan – Potential Direct Contact Exposure to Soil, March 24, 2017.

Correspondence from Sasa Jazic, Project Manager, Remediation Management Services Company, to C. David Brown, PADEP, Response to PADEP Comments on BP's November 2016 Act 2 Cleanup Plan – Potential Direct Contact Exposure to Soil, February 17, 2017.

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Vapor Intrusion Phase I Risk Assessment Report & Workplan, BP Former Marcus Hook Refinery, Trainer, Pennsylvania, prepared by Sovereign Consulting Inc. for Atlantic Richfield Company (BP), August 2016.

Correspondence from Andrew Clibanoff, RCRA Project Manager, EPA, to Sasa Jazic, Project Manager, Remediation Management Services Company, RCRA SMWU #40 – Oily Water Sewer Response to No Further Corrective Action Request, June 17, 2016

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Correspondence from Stephan Sinding, Regional Manager, PADEP, to Sasa Jazic, Atlantic Richfield Company, Approval of Risk Assessment Report for Sitewide LNAPL, BP Former Marcus Hook Refinery, March 12, 2015.

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Correspondence from Kevin Wheeler, Senior Hydrogeologist, Sovereign Consulting, Inc. to Paul Gotthold, Branch Chief, PA Operations, EPA, Summary of Suspected Leaded Tank Bottoms Investigation Solid Waste Management Unit 88, October 24, 2012.

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Remedial Investigation Report and Cleanup Plan, Lube Plant Riverfront Area, BP Former Marcus Hook Refinery, Trainer, Pennsylvania, prepared by Sovereign Consulting Inc. for Atlantic Richfield Company (BP), March 2011.

Ecological Evaluation Report, ConocoPhillips Trainer Refinery (Formerly BP Marcus Hook Refinery), Trainer, Pennsylvania, prepared by Sovereign Consulting Inc. for Atlantic Richfield Company (BP), June 30, 2009.

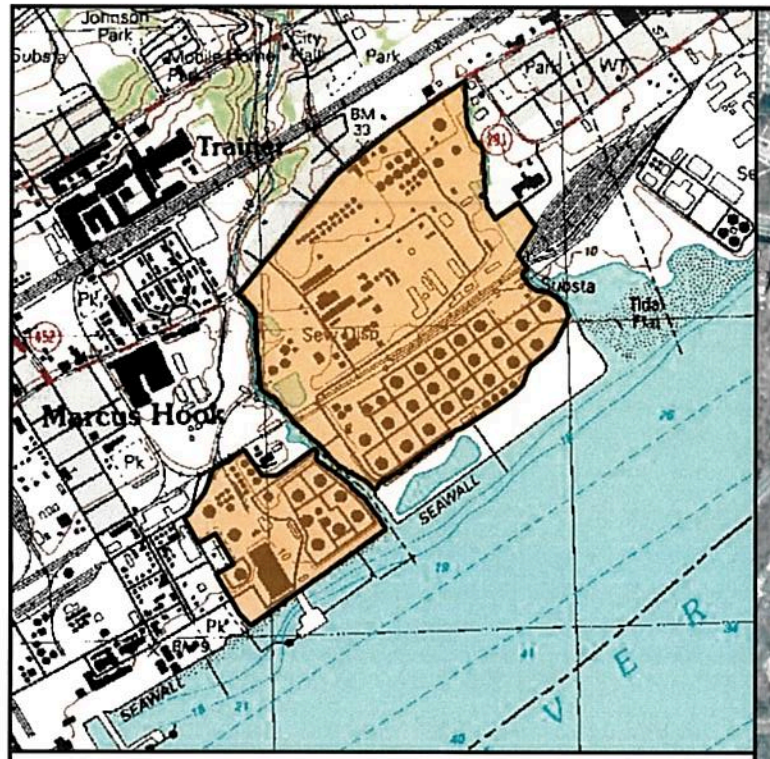
Site Characterization Summary Report (1996 through 2005), ConocoPhillips Trainer Refinery (Former BP Trainer Refinery), prepared by Sovereign Consulting Inc. for Atlantic Richfield Company (BP), May 2006.

Site Wide Approach Workplan, BP Former Marcus Hook Refinery, Marcus Hook, Pennsylvania, prepared by BP Amoco (BP) and Langan Engineering and Environmental Services, October 2000.

Solid Waste Management Unit and Area of Concern Final Cleanup Status Report, Former Marcus Hook Refinery, prepared by BP Exploration and Oil Company, September 11, 1998.

Phase II RCRA Facility Assessment of the British Petroleum Oil Company, Trainer Borough, PA, prepared by A.T. Kearney, Inc. for U.S. EPA Region 3, December 1991.

Figures



Source: USGS 7.5 Minute Topographic Quadrangle for Marcus Hook, PA-NJ-DE (1993)

0 1,000 2,000
Feet

Figure 1

Site Plan and Location

Former BP Marcus Hook Refinery
4101 Post Road
Trainer, Pennsylvania

Legend

Site Boundary

N
W E
S

0 200 400
Feet

Aerial Photo: USGS High Resolution Orthoimages for DVRPC-PA, April 2015

Spatial Projection:

Coordinate System:
PA State Plane South
FIPS Zone: 3702
Unit: US Survey Feet
Datum: NAD83

bp

SOVEREIGN CONSULTING INC.

File: 0218_PRCP_Fig1_SitePlan.mxd Date: 04/11/2018

* Adopted from May 2018 Final Report for Sitewide Soil, Groundwater and Surface Water

This figure depicts the general site/refinery layout including the Areas of Investigation (AOI) as identified in the October 2000 Facility Lead Agreement.

Figure 2.

Site Plan

Former BP Marcus Hook Refinery
4101 Post Road
Trainer, Pennsylvania

Legend

Areas of Investigation (AOI)
As identified in the October 2000 Facility Lead Agreement

1. Sitewide Groundwater (not depicted)
2. Lube Plant Area
   - Heavy Fuels Area
   - Process Area
   - West Tank Farm
3. Former Alky Retention Basin
4. Gas Blending Area
5. Wastewater Treatment Facility
6. South Tank Farm
7. North Tank Farm
8. Process Area
9. Ecological Areas
   - Includes Marcus Hook Creek, Stony Creek, Delaware River and the Dredge Spoil Area

Lube Plant Riverfront Area - Subdivision of Lube Plant Area for the March 2011 Lube Plant Riverfront Area RIR and Cleanup Plan (approved by PADEP June 2011)

Site Boundary

Ecological AOI

0 200 400
Feet

Spatial Projection:
Coordinate System:
PA State Plane South
FIPS Zone: 3702
Unit: US Survey Feet
Datum: NAD83

bp

SOVEREIGN CONSULTING INC.

File: RIR-0610-Fig2A-SitePlan_Wells_Areas.mxd Date: 08/16/2011

* Adopted from November 2011 Sitewide Remedial Investigation Report

This figure depicts the discrete areas of the Property where engineering controls mitigate petroleum sheening to the Delaware River (Lube Plant Riverfront Area Bulkhead Containment Remedy) and to Marcus Hook Creek (Marcus Hook Creek Area #1 and Area #2 streambank stabilization remedies).

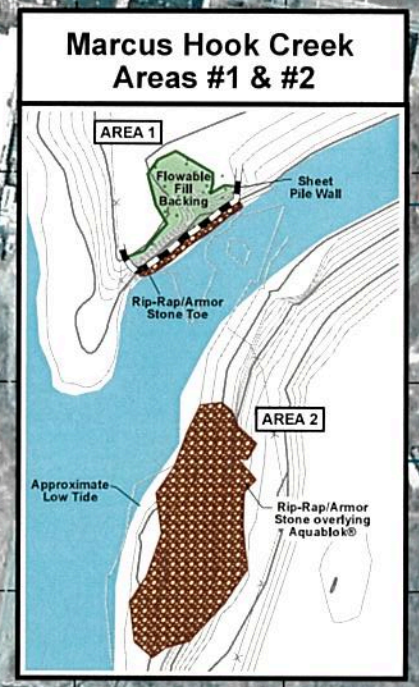


Figure 3

Discrete Areas with Engineering Controls for Petroleum Sheen Mitigation

Former BP Marcus Hook Refinery
4101 Post Road
Trainer, Pennsylvania

Legend

Site Boundary

N
W
E
S

0 200 400
Feet

Aerial Photo: USGS High Resolution Orthoimages for DVRPC-PA, April 2015

Spatial Projection:

Coordinate System:
PA State Plane South
FIPS Zone: 3702
Unit: US Survey Feet
Datum: NAD83

bp

SOVEREIGN CONSULTING INC.

File: 0218_CUP_F2_SheenMitigation.mxd Date: 04/12/2018

* Adopted from 2018 Final Report Sitewide Soil, Groundwater & Surface Water

This figure depicts five areas at the site where remedial measures were installed to mitigate potential direct contact exposure to soil and LNAPL. Remedy details are shown on individual maps provided as Figures 4 through 8.

Lead: Surface Cover Engineering Control

BH-02-01-D5
BH-02-01-DDV
BH-02-01-D4
BH-02-02-D4
BH-02-04-DDV
BH-02-02-D5
BH-02-02-D

Benzene, Ethylbenzene and Xylenes: Surface Cover Engineering Control

04-MPK-03
04-MPK-08
04-MPK-07
04-MPK-15

Arsenic: Surface Cover Engineering Control

TRN-S-MW97D-D1
TRN-S-MW97D-D6
TRN-S-MW97D-D4
TRN-S-MW97D-D7
TRN-S-MW97D-D/DV

Lead: Surface Cover Engineering Control

03-153-06-D1
03-153-06-D/DV
03-153-06-D3
03-153-06-D2

Former Compound & Packaging Plant Basement: LNAPL - Surface Cover Control

FLOSCB-ASTS-003
FLOSCB-ASTS-002
FLOSCB-ASTS-001
FLOSCB-ASTS-011
FLOSCB-ASTS-004
FLOSCB-ASTS-005
FLOSCB-ASTS-006
FLOSCB-ASTS-007
FLOSCB-ASTS-008
FLOSCB-ASTS-009
FLOSCB-ASTS-010

MTGPL-007
MTGPL-005
MTGPL-006
MTGPL-004
MTGPL-003
MTGPL-002
MTGPL-001
MTGPL-012
MTGPL-017
MTGPL-016
MTGPL-014
MTGPL-018
MTGPL-020
MTGPL-015
MTGPL-013
MTGPL-008
MTGPL-011
MTGPL-009
MTGPL-010

Marcus Hook Creek Flow

Stony Creek Flow

Delaware River

File: 0218_CUP_F3_RemedyAreas.mxd Date: 04/12/18

Figure 4

Remedy Areas
Mitigation of Direct Contact Exposure to Soil and LNAPL

Former BP Marcus Hook Refinery
4101 Post Road
Trainer, Pennsylvania

Legend

- Historical Sample above PADEP Non-Residential Direct Contact MSC (PADEP Aug 2016 update)
- Phase I November-December 2013 Soil Sample Location
- Phase II April-May 2014 Soil Sample Location
- Extent of COC above PADEP Non-Residential Direct Contact MSC (PADEP Aug 2016 update) for soil
- Visual Aid - Does not depict extent of remedies. See Figures 4 through 8 for remedy extent and detail.
- Site Boundary

0 200 400
Feet

Spatial Projection:

Coordinate System:
PA State Plane South
FIPS Zone: 3702
Unit: US Survey Feet
Datum: NAD83

bp

Sovereign Consulting Inc.

* Adopted from 2018 Final Report Sitewide Soil, Groundwater & Surface Water

Attachment 1

6/30/17 Environmental Covenant

RD BK06022-0340 DM-DEED MISCELLANEOUS
2017034282 06/30/2017 02:32:00 PM:1
RCD FEE: $151.50
DELAWARE COUNTY
24-MARCUS HOOK $0.00 THOMAS J. JUDGE SR. ROD
46-TRAINER $0.00 49-CHESTER CITY $0.00

Prepared by: Monroe Energy, LLC

After recording return to:
Monroe Energy, LLC
Attn: Legal Department
4101 Post Road
Trainer, PA 19061
(610) 364-8481

The Delaware County Folio Numbers are:

24-00-00638-05 (being Post Road, Trainer, PA);
24-00-00306-00 (being Post Road, Trainer, PA);
49-11-01310-00 (being 4th Street, Marcus Hook, PA); and
part of Folio # 46-00-00376-01 (being Delaware Ave., Chester, PA)

Property Address: 4101 Post Road, Trainer, PA 19061

Grantor: Monroe Energy, LLC

ENVIRONMENTAL COVENANT

This Environmental Covenant is executed pursuant to the Pennsylvania Uniform Environmental Covenants Act, Act No. 68 of 2007, 27 Pa. C.S. §§ 6501 – 6517 (UECA). This Environmental Covenant subjects the Property identified in Paragraph 1 to the activity and/or use limitations in this document. As indicated later in this document, this Environmental Covenant has been approved by the Pennsylvania Department of Environmental Protection (Department or DEP).

1. **Property affected**. The property affected (Property) by this Environmental Covenant is located in Trainer Borough and Marcus Hook Borough, Delaware County.

The latitude and longitude of the center of the Property is: 39.820698, -75.404661.

The Property has been known by the following name(s): BP Marcus Hook Refinery, Tosco Trainer Refinery, Conoco Trainer Refinery, ConocoPhillips Trainer Refinery, Phillips66 Trainer Refinery, Monroe Energy Trainer Refinery.
For registered tanks, the PADEP Tank Facility ID# is: 23-41511.
For other facilities, the DEP Primary Facility ID# is/are: EFACTS 747691/701029.
The RCRA Facility ID # PAD 071612683.

A complete description of the Property is attached to this Environmental Covenant as Exhibit A. A map of the Property is attached to this Environmental Covenant as Exhibit B.

2. **Property Owner / GRANTOR / GRANTEE**. Monroe Energy LLC is the owner of the Property and the GRANTOR and GRANTEE of this Environmental Covenant.

3. The mailing address of the owner is: 4101 Post Road, Trainer, PA 19061

4. **Description of Contamination & Remedy :** The subject Property has been utilized for many years as a petroleum refinery and, as a result of historical operations by multiple parties, the site conditions exhibit environmental impacts to soil and groundwater in concentrations above applicable Statewide Health Standards promulgated under Pennsylvania's Land Recycling and Environmental Remediation Standards Act (Act 2) . Chemicals of concern (COCs) in soil include petroleum hydrocarbon compounds and inorganics/metals compounds associated with historic site filling and/or petroleum refining operations. COCs associated with groundwater include volatile organic compounds (VOCs), semi-volatile organic compounds (SVOC), inorganic/metals compounds, and light non-aqueous phase liquids (LNAPL). Numerous environmental reports have been generated by owners and operators of the refinery, being British Petroleum (BP), ConocoPhillips and Phillips66, and submitted to the Department over the years documenting spills and releases as well as responses to these spills and releases. Characterization of site environmental conditions has been presented in the November 2011 Act 2 Sitewide Remedial Investigation Report (Sitewide RIR) prepared by Sovereign Consulting Inc. and submitted to the Department by BP Products North America Inc.(BP). The Sitewide RIR included an evaluation of environmental exposure pathways related to the identified environmental impacts, and identified that the remediation standards being attained are Act 2 Site Specific Standards based on pathway elimination. Other reports have been submitted to the Department in the context of environmental investigations conducted pursuant to Pennsylvania's Storage Tank and Spill Prevention Act (Tank Act) that have also relied upon pathway elimination. For example, in September of 2012, the Department approved of a Site Characterization Report (SCR) submitted by Phillips 66 in response to a release of sodium hypochlorite from a storage tank on the Property. The SCR demonstrated attainment of Act 2 Site Specific Standards through pathway elimination. Both the Sitewide RIR and SCR relied upon the activity and use limitations set forth in this environmental covenant.

Records pertaining to the contamination and remedies implemented on the Property are available for review at the Department's offices located at 2 East Main Street, Norristown, PA 19401-4915 as well as the offices of U.S. EPA, Region III, located at 1650 Arch Street, Philadelphia, PA 19103.

5. **Activity and Use Limitations**. The Property is subject to the following activity and use limitations, which the then current owner of the Property, and its tenants, agents, employees and other persons under its control, shall abide by:

a. Groundwater Exposure Restriction : No water supply wells of any kind (including, without limitation, water wells used for drinking, bathing or other

human consumption purposes and water wells used for livestock, farming or irrigation) shall be installed or used on the Property (collectively the "Groundwater Exposure Restriction"); provided, however, that the Groundwater Exposure Restriction does not prohibit the installation or use of any compliance wells or any groundwater monitoring, recovery or extraction wells or similar devices used for or related to the performance of any remediation or environmental corrective action work on the Property.

b. Residential Use Restriction: The Property shall not be used or occupied (if used or occupied at all) for residential purposes, and additionally, no part of the Property shall be used for the purpose of operating a child care or elder care facility, a nursing home facility or hospice, a medical or dental facility, a school, a church or other place of worship, a recreational area or a hospital (collectively, the "Residential Use Restriction"). If applicable State environmental laws and regulations define residential use, any use that is deemed to be a residential use by such laws and regulations will also be a residential use as the terms are used herein. Notwithstanding the forgoing, the Property shall be used only for the purposes included in the meaning of the term "nonresidential property" as such term is defined in Act 2.

6. **Notice of Limitations in Future Conveyances**. Each instrument hereafter conveying any interest in the Property subject to this Environmental Covenant shall contain a notice of the activity and use limitations set forth in this Environmental Covenant and shall provide the recorded location of this Environmental Covenant.

7. **Compliance Reporting**. After written request by the Department, the then current owner of the Property shall submit to the Department written documentation stating whether or not the activity and use limitations in this Environmental Covenant are being abided by. Within 1 month after any of the following events, the current owner of the Property shall submit to the Department written documentation: noncompliance with the activity and use limitations in this Environmental Covenant; transfer of the Property; changes in use of the Property; or filing of applications for building permits for the Property and any proposals for any site work, if the building or proposed site work will affect the contamination on the Property subject to this Environmental Covenant.

8. **Access by the Department and by the EPA**. In addition to any rights already possessed by the Department and by the EPA, this Environmental Covenant grants to the Department and to the EPA a right of reasonable access of the Property in connection with implementation or enforcement of this Environmental Covenant.

9. **Recording and Notification of Recording**. Within 30 days after the date of the Department's approval of this Environmental Covenant, Monroe Energy LLC shall file this Environmental Covenant with the Recorder of Deeds for each County in which the Property is located, and send a file-stamped copy of this Environmental Covenant to the Department within 90 days of the Department's approval of this Environmental Covenant. Within that time period, the Grantor (Monroe Energy LLC) also shall send a

file-stamped copy to each of the following: Trainer Borough and Borough of Marcus Hook, Delaware County; the EPA, and any Holder listed in Paragraph 2.

10. **Termination or Modification**.

(a) This Environmental Covenant runs with the land unless terminated or modified in accordance with 27 Pa. C.S. §§ 6509 or 6510, or in accordance with this paragraph.

(b) This Environmental Covenant may be amended or terminated as to any portion of the Property that is acquired for use as state highway right-of-way by the Commonwealth provided that: (1) the Department waives the requirements for an environmental covenant and for conversion pursuant to 27 Pa. C.S. §6517 to the same extent that this Environmental Covenant is amended or terminated; (2) the Department determines that termination or modification of this Environmental Covenant will not adversely affect human health or the environment; and (3) the Department provides 30-days advance written notice to the current property owner, each holder, and, as practicable, each person that originally signed the Environmental Covenant or successors in interest to such persons.

(c) This Environmental Covenant shall terminate upon attainment, in accordance with 35 P.S. §§ 6026.101 – 6026.908, with an unrestricted use remediation standard for the above-described contamination at the Property. The Department must approve, in writing, of such termination.

(d) In accordance with 27 Pa. C.S. § 6510(a)(3)(i), Grantor hereby waives the right to consent to any amendment or termination of the Environmental Covenant by consent; it being intended that any amendment to or termination of this Environmental Covenant by consent in accordance with this Paragraph requires only the following signatures on the instrument amending or terminating this Environmental Covenant: (i) the Holder at the time of such amendment or termination; (ii) the then current owner of the Property and (iii) the Department.

11. **EPA.**

(a) Notification. The then current owner shall provide the EPA written notice of:

(1) the pendency of any proceeding that could lead to a foreclosure as referred to in 27 Pa. C.S. § 6509(a)(4), within seven calendar days of the owner's receiving notice of the pendency of such proceeding;

(2) any judicial action referred to in 27 Pa. C.S. § 6509(a)(5), within seven calendar days of the owner's receiving notice of such judicial action;

(3) any judicial action referred to in 27 Pa. C.S. § 6509(b), within seven calendar days of the owner's receiving notice of such judicial action; and

(4) termination or amendment of this Environmental Covenant pursuant to 27 Pa. C.S. § 6510, within seven calendar days of the owner's becoming aware of such termination or amendment.

(b) Enforcement. A civil action for injunctive or other equitable relief for violating this Environmental Covenant may be maintained by the EPA.

12. The **Department's and EPA's address**. Communications with the Department and the EPA regarding this Environmental Covenant shall be sent to: Environmental Cleanup & Brownfields Manager, PA Department of Environmental Protection, 2 East Main Street, Norristown, PA 19401-4915 and Mr. Andrew Clibanoff, RCRA Project Manager, Office of Pennsylvania Remediation, Land and Chemicals Division, U.S. Environmental Protection Agency Region III, 1650 Arch Street (3LC30), Philadelphia, PA 19103.

13. **Severability**. The paragraphs of this Environmental Covenant shall be severable and should any part hereof be declared invalid or unenforceable, the remainder shall continue in full force and effect between the parties.

ACKNOWLEDGMENTS

Date: 2-16-17

Monroe Energy LLC, Grantor
By: _____
Name: Jeffrey K. Wachman
Title: CEO + President

COMMONWEALTH OF PENNSYLVANIA) [other state, if executed outside PA]
)
COUNTY OF DELAWARE) SS:

On this 15th day of FEBRUARY, 2017, before me, the undersigned officer, personally appeared JEFFREY K. WACHMAN [Owner, Grantor] who acknowledged himself/herself to be the person whose name is subscribed to this Environmental Covenant, and acknowledged that s/he executed same for the purposes therein contained.

In witness whereof, I hereunto set my hand and official seal.

COMMONWEALTH OF PENNSYLVANIA
NOTARIAL SEAL
Diane C. Flemming, Notary Public
Trainer Boro, Delaware County
My Commission Expires July 25, 2020
MEMBER, PENNSYLVANIA ASSOCIATION OF NOTARIES

Diane C. Flemming
Notary Public

Property Owner: Monroe Energy, LLC

Property Address: 4101 post Road

Trainer Borough/Marcus Hook Borough

Delaware County

APPROVED, by Commonwealth of Pennsylvania,

Department of Environmental Protection

Date: 4/27/2017 By: Sachin Shankar

Name: Sachin Shankar, P.E.

Title: Assistant Regional Director

Department of Environmental Protection

Southeast Regional Office

COMMONWEALTH OF PENNSYLVANIA

COUNTY OF MONTGOMERY

On this 27th day of April 2017, before me, the undersigned officer, personally appeared Sachin Shankar, P.E., Assistant Regional Director, of the Commonwealth of Pennsylvania, Department of Environmental Protection, Southeast Regional Office who acknowledged himself to be the person whose name is subscribed to this Environmental Covenant, and acknowledged that he executed same for the purposes therein contained.

In witness whereof, I hereunto set my hand and official seal.

Judy Lashley

Notary Public

COMMONWEALTH OF PENNSYLVANIA
NOTARIAL SEAL
Judy Lashley, Notary Public
Norristown Boro, Montgomery County
My Commission Expires July 28, 2020
MEMBER, PENNSYLVANIA ASSOCIATION OF NOTARIES

Exhibit A
Legal Description

METES AND BOUNDS DESCRIPTION
PARCEL A
PART OF FOLIO #46-00-00376-01 &
FOLIO #24-00-00638-05
LANDS NOW OR FORMERLY
MARCUS HOOK REFINING COMPANY
BOROUGH OF TRAINER, &
BOROUGH OF MARCUS HOOK, DELAWARE COUNTY
COMMONWEALTH OF PENNSYLVANIA

BEGINNING AT A POINT ON THE TITLE LINE IN THE BED OF POST ROAD (A.K.A. PHILADELPHIA AND WILMINGTON POST ROAD, A.K.A. ROUTE 13, 60 FOOT RIGHT-OF-WAY), AT THE INTERSECTION OF THE DIVIDING LINE BETWEEN FOLIO #46-00-00376-01 AND FOLIO #46-00-00436-00, SAID POINT ALSO BEING IN THE BED OF STONY CREEK, AND FROM SAID POINT OF BEGINNING RUNNING, THENCE;

THE FOLLOWING EIGHT (8) COURSES AND DISTANCES ALONG THE DIVIDING LINE BETWEEN FOLIO #46-00-00376-01 AND FOLIO #46-00-00436-00, ALSO BEING THE CENTER LINE OF STONY CREEK;

1. SOUTH 27 DEGREES - 55 MINUTES - 23 SECONDS EAST, A DISTANCE OF 37.20 FEET TO A POINT, THENCE;

2. SOUTH 04 DEGREES - 08 MINUTES - 40 SECONDS EAST, A DISTANCE OF 170.20 FEET TO A POINT, THENCE;

3. SOUTH 02 DEGREES - 20 MINUTES - 08 SECONDS EAST, A DISTANCE OF 99.20 FEET TO A POINT, THENCE;

4. SOUTH 11 DEGREES - 39 MINUTES - 16 SECONDS EAST, A DISTANCE OF 88.97 FEET TO A POINT, THENCE;

5. SOUTH 04 DEGREES - 23 MINUTES - 18 SECONDS EAST, A DISTANCE OF 74.52 FEET TO A POINT, THENCE;

6. SOUTH 10 DEGREES - 39 MINUTES - 12 SECONDS EAST, A DISTANCE OF 93.35 FEET TO A POINT, THENCE;

7. SOUTH 29 DEGREES - 44 MINUTES - 29 SECONDS EAST, A DISTANCE OF 155.84 FEET TO A POINT, THENCE;

8. SOUTH 40 DEGREES - 17 MINUTES - 46 SECONDS EAST, A DISTANCE OF 92.32 FEET TO A POINT, THENCE;

9. ALONG THE COMMON DIVIDING LINE BETWEEN FOLIO #46-00-00376-01; FOLIO #46-00-00436-00 AND FOLIO #46-00-00444-00, ALSO BEING THE CENTER LINE OF STONY CREEK, SOUTH 07 DEGREES - 26 MINUTES - 26 SECONDS EAST, A DISTANCE OF 140.13 FEET TO A POINT, THENCE;

THE FOLLOWING SEVEN (7) COURSES AND DISTANCES ALONG THE DIVIDING LINE BETWEEN FOLIO #46-00-00376-01 AND FOLIO #46-00-00444-00, ALSO BEING THE CENTER LINE OF STONY CREEK:

10. SOUTH 01 DEGREES - 55 MINUTES - 43 SECONDS WEST, A DISTANCE OF 84.37 FEET TO A POINT, THENCE;

11. SOUTH 17 DEGREES - 19 MINUTES - 53 SECONDS EAST, A DISTANCE OF 95.37 FEET TO A POINT, THENCE;

12. SOUTH 20 DEGREES - 23 MINUTES - 11 SECONDS WEST, A DISTANCE OF 85.42 FEET TO A POINT, THENCE;

13. SOUTH 05 DEGREES - 35 MINUTES - 41 SECONDS EAST, A DISTANCE OF 134.29 FEET TO A POINT, THENCE;

14. SOUTH 11 DEGREES - 42 MINUTES - 40 SECONDS EAST, A DISTANCE OF 106.53 FEET TO A POINT, THENCE;

15. SOUTH 42 DEGREES - 56 MINUTES - 09 SECONDS EAST, A DISTANCE OF 84.97 FEET TO A POINT, THENCE;

16. SOUTH 21 DEGREES - 22 MINUTES - 54 SECONDS EAST, A DISTANCE OF 30.76 FEET TO A POINT, THENCE;

THE FOLLOWING FOUR (4) COURSES AND DISTANCES ALONG THE DIVIDING LINE BETWEEN FOLIO #46-00-00376-01 AND FOLIO #46-00-00444-00:

17. NORTH 54 DEGREES - 22 MINUTES - 38 SECONDS EAST, A DISTANCE OF 740.55 FEET TO A POINT, THENCE;

18. SOUTH 35 DEGREES - 37 MINUTES - 22 SECONDS EAST, A DISTANCE OF 32.00 FEET TO A POINT, THENCE;

19. SOUTH 54 DEGREES - 22 MINUTES - 38 SECONDS WEST, A DISTANCE OF 439.46 FEET TO A POINT, THENCE;

20. SOUTH 35 DEGREES - 37 MINUTES - 22 SECONDS EAST, A DISTANCE OF 278.56 FEET TO A POINT, THENCE;

THE FOLLOWING EIGHT (8) COURSES AND DISTANCES ALONG THE DIVIDING LINE BETWEEN FOLIO #46-00-00376-01 AND LANDS NOW OR FORMERLY CONRAIL:

21. SOUTH 32 DEGREES - 42 MINUTES - 24 SECONDS WEST, A DISTANCE OF 417.68 FEET TO A POINT, THENCE;

22. SOUTH 39 DEGREES - 51 MINUTES - 37 SECONDS WEST, A DISTANCE OF 95.62 FEET TO A POINT, THENCE;

23. SOUTH 49 DEGREES - 38 MINUTES - 29 SECONDS WEST, A DISTANCE OF 125.75 FEET TO A POINT, THENCE;

24. SOUTH 54 DEGREES - 17 MINUTES - 14 SECONDS WEST, A DISTANCE OF 1480.97 FEET TO A POINT, THENCE;

25. SOUTH 58 DEGREES - 34 MINUTES - 54 SECONDS WEST, A DISTANCE OF 641.86 FEET TO A POINT, THENCE;

PARCEL C
PART OF FOLIO #46-00-00376-01,
FOLIO #24-00-00306-00 &
FOLIO #49-11-01310-00
LANDS NOW OR FORMERLY
MARCUS HOOK REFINING, COMPANY
BOROUGH OF TRAINER, CITY OF CHESTER &
BOROUGH OF MARCUS HOOK, DELAWARE COUNTY
COMMONWEALTH OF PENNSYLVANIA

BEGINNING AT A POINT ON THE TITLE LINE IN THE BED OF FOURTH STREET (50 FOOT WIDE RIGHT-OF-WAY), AT THE INTERSECTION WITH THE SOUTHEASTERLY RIGHT-OF-WAY LINE OF CHURCH STREET EXTENDED (33 FOOT WIDE RIGHT-OF-WAY), AND FROM SAID POINT OF BEGINNING RUNNING, THENCE;

THE FOLLOWING TWO (2) COURSES AND DISTANCES ALONG THE TITLE LINE IN THE BED OF FOURTH STREET:

1. NORTH 59 DEGREES - 03 MINUTES - 55 SECONDS EAST, A DISTANCE OF 108.50 FEET TO A POINT, THENCE;

2. NORTH 10 DEGREES - 31 MINUTES - 55 SECONDS EAST, A DISTANCE OF 8.40 FEET TO A POINT OF CURVATURE, THENCE;

THE FOLLOWING SIX (6) COURSES AND DISTANCES ALONG THE DIVIDING LINE BETWEEN FOLIO #24-00-00306-00 AND LANDS NOW OR FORMERLY CONRAIL:

3. ALONG THE ARC OF A NON-TANGENT CIRCLE CURVING TO THE LEFT, HAVING A RADIUS OF 603.71 FEET, A CENTRAL ANGLE OF 29 DEGREES - 52 MINUTES - 10 SECONDS , AN ARC LENGTH OF 314.73 FEET, A CHORD BEARING NORTH 35 DEGREES - 00 MINUTES - 45 SECONDS EAST AND A CHORD DISTANCE OF 311.17 FEET TO A POINT, THENCE;

4. NORTH 16 DEGREES - 04 MINUTES - 23 SECONDS EAST, A DISTANCE OF 129.32 FEET TO A POINT, THENCE;

5. NORTH 35 DEGREES - 03 MINUTES - 03 SECONDS EAST, A DISTANCE OF 58.00 FEET TO A POINT, THENCE;

6. NORTH 43 DEGREES - 59 MINUTES - 23 SECONDS EAST, A DISTANCE OF 40.41 FEET TO A POINT, THENCE;

7. NORTH 68 DEGREES - 27 MINUTES - 24 SECONDS EAST, A DISTANCE OF 134.36 FEET TO A POINT, THENCE;

8. NORTH 58 DEGREES - 41 MINUTES - 57 SECONDS EAST, A DISTANCE OF 212.30 FEET TO A POINT, THENCE;

THE FOLLOWING FOUR (4) COURSES AND DISTANCES ALONG THE DIVIDING LINE BETWEEN FOLIO #24-00-00306-00 AND FOLIO #24-00-00032-04:

9. SOUTH 34 DEGREES - 49 MINUTES - 06 SECONDS EAST, A DISTANCE OF 312.92 FEET TO A POINT, THENCE;

10. SOUTH 87 DEGREES - 40 MINUTES - 41 SECONDS EAST, A DISTANCE OF 156.28 FEET TO A POINT, THENCE;

15. NORTH 21 DEGREES - 40 MINUTES - 36 SECONDS WEST, A DISTANCE OF 12.35 FEET TO A POINT, THENCE;

16. NORTH 58 DEGREES - 36 MINUTES - 24 SECONDS EAST, A DISTANCE OF 60.87 FEET TO A POINT, THENCE;

17. SOUTH 21 DEGREES - 40 MINUTES - 36 SECONDS EAST, A DISTANCE OF 11.21 FEET TO A POINT, THENCE;

18. NORTH 57 DEGREES - 34 MINUTES - 11 SECONDS EAST, A DISTANCE OF 610.38 FEET TO A POINT, THENCE;

19. NORTH 58 DEGREES - 36 MINUTES - 24 SECONDS EAST, A DISTANCE OF 774.67 FEET TO A POINT OF CURVATURE, THENCE;

20. ALONG THE ARC OF A CIRCLE CURVING TO THE LEFT, HAVING A RADIUS OF 5789.65 FEET, A CENTRAL ANGLE OF 03 DEGREES - 48 MINUTES - 00 SECONDS, AN ARC LENGTH OF 383.98 FEET, A CHORD BEARING NORTH 56 DEGREES - 42 MINUTES - 24 SECONDS EAST AND A CHORD DISTANCE OF 383.91 FEET TO A POINT, THENCE;

21. NORTH 54 DEGREES - 48 MINUTES - 23 SECONDS EAST, A DISTANCE OF 234.48 FEET TO A POINT, THENCE;

22. NORTH 54 DEGREES - 59 MINUTES - 15 SECONDS EAST, A DISTANCE OF 1269.99 FEET TO A POINT, THENCE;

23. NORTH 39 DEGREES - 59 MINUTES - 15 SECONDS EAST, A DISTANCE OF 901.18 FEET TO A POINT, THENCE;

24. ALONG THE DIVIDING LINE BETWEEN FOLIO #49-11-01310-00 AND FOLIO #49-11-01316-00, SOUTH 52 DEGREES - 39 MINUTES - 33 SECONDS EAST, A DISTANCE OF 1583.09 FEET TO A POINT ON THE BULKHEAD LINE (ESTABLISHED BY THE SECRETARY OF WAR, SEPTEMBER 10, 1940) OF THE DELAWARE RIVER (NAVIGABLE WATERS - BY LAW, TIDAL WATERS), THENCE;

THE FOLLOWING FOUR (4) COURSES AND DISTANCES ALONG THE BULKHEAD LINE OF THE DELAWARE RIVER:

THE FOLLOWING FOUR (4) COURSES AND DISTANCES ALONG THE BULKHEAD LINE OF THE DELAWARE RIVER:

25. SOUTH 46 DEGREES - 25 MINUTES - 39 SECONDS WEST, A DISTANCE OF 568.35 FEET TO A POINT, THENCE;

26. SOUTH 54 DEGREES - 39 MINUTES - 13 SECONDS WEST, A DISTANCE OF 1064.73 FEET TO A POINT, THENCE;

27. SOUTH 54 DEGREES - 40 MINUTES - 40 SECONDS WEST, A DISTANCE OF 987.61 FEET TO A POINT, THENCE;

28. SOUTH 54 DEGREES - 29 MINUTES - 18 SECONDS WEST, A DISTANCE OF 4008.46 FEET TO A POINT ON THE NORTHEASTERLY RIGHT-OF-WAY LINE OF CHURCH STREET EXTENDED, THENCE;

29. ALONG THE NORTHEASTERLY RIGHT-OF-WAY LINE OF CHURCH STREET EXTENDED, NORTH 30 DEGREES - 03 MINUTES - 05 SECONDS WEST, A DISTANCE OF 663.48 FEET TO A POINT, THENCE;

THE FOLLOWING THREE (3) COURSES AND DISTANCES ALONG THE DIVIDING LINE BETWEEN FOLIO #24-00-00306-00 AND FOLIO #24-00-00095-01:

30. NORTH 59 DEGREES - 39 MINUTES - 55 SECONDS EAST, A DISTANCE OF 213.20 FEET TO A POINT, THENCE;

31. NORTH 30 DEGREES - 25 MINUTES - 05 SECONDS WEST, A DISTANCE OF 370.60 FEET TO A POINT, THENCE;

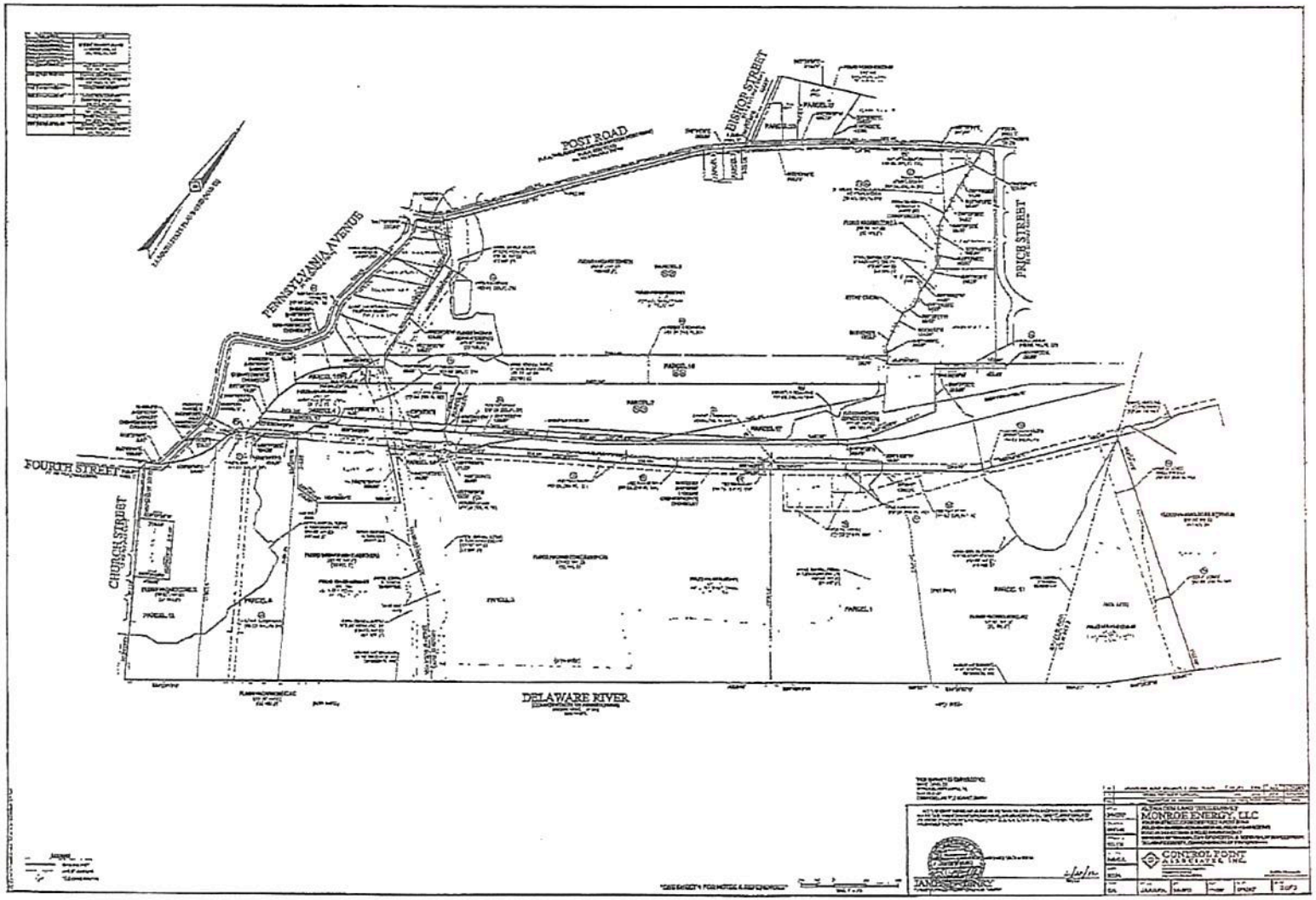
32. SOUTH 59 DEGREES - 57 MINUTES - 55 SECONDS WEST, A DISTANCE OF 210.80 FEET TO A POINT ON THE NORTHEASTERLY RIGHT-OF-WAY LINE OF CHURCH STREET, THENCE;

33. ALONG THE NORTHEASTERLY RIGHT-OF-WAY LINE OF CHURCH STREET, NORTH 30 DEGREES - 03 MINUTES - 05 SECONDS WEST, A DISTANCE OF 357.77 FEET TO THE POINT AND PLACE OF BEGINNING.

ALSO BEING KNOWN AS PARCELS 1, 3, 6, 10, 11, AND 12

CONTAINING 8,855,474 SQUARE FEET OR 203.294 ACRES

Exhibit B
Property Map


POST ROAD
BISHOP STREET
PRICH STREET
PENNSYLVANIA AVENUE
FOURTH STREET
CHURCH STREET
DELAWARE RIVER
MONROE ENERGY, LLC
CONTROL POINT ASSOCIATES, INC.

bcc: S:\HSE\!ENVIRONMENTAL\05 REMEDIATION\Environmental Covenant

After printing this label:
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Attachment 2

3/13/19 Environmental Covenant

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Change History	Click here to view history		

Submitter Address:

MONROE ENERGY
4101 POST ROAD
TRAINER PA 19061

Return Address:

MONROE ENERGY
4101 POST ROAD
TRAINER PA 19061

- Parties

DIRECT		INDIRECT	
Name/Company	**AKA**	**Name/Company**	**AKA**
MONROE ENERGY LLC		MONROE ENERGY LLC	

- Parcel Numbers

Parcel Number	Address	Parcel Number	Address
24-00-00638-05	POST RD 00000000	24-00-00306-00	4TH ST W00000000/ENVIRONMENTAL COVENANT
46-00-00376-01	POST RD 00000000/ENVIRONMENTAL COVENANT	46-00-00429-00	POST RD 00000000
49-11-01310-00	DELAWARE AVE 00000000/ENVORONMENTAL COVENANT		

Created by TeamIA, Lexington, South Carolina

Delaware County Public Access Home Page

December 5, 2018

Prepared by: Monroe Energy, LLC

After recording return to:
Monroe Energy, LLC
Attn: Legal Department
4101 Post Road
Trainer, PA 19061
(610) 364-8481

The Delaware County Folio Numbers are:

24-00-00638-05; 24-00-00306-00; 49-11-01310-00;
and part of Folio # 46-00-00376-01;

Property Address: 4101 Post Road, Trainer, PA 19061

Grantor: Monroe Energy, LLC

ENVIRONMENTAL COVENANT

This Environmental Covenant is executed pursuant to the Pennsylvania Uniform Environmental Covenants Act, Act No. 68 of 2007, 27 Pa. C.S. §§ 6501 – 6517 (UECA). This Environmental Covenant subjects the Property identified in Paragraph 1 to the activity and/or use limitations in this document. As indicated later in this document, this Environmental Covenant has been approved by the Pennsylvania Department of Environmental Protection (Department or DEP).

1. **Property affected**. The property affected (Property) by this Environmental Covenant is located in Trainer Borough, Marcus Hook Borough, and City of Chester, Delaware County.

The latitude and longitude of the center of the Property is: 39.820698, -75.404661.

The Property has been known by the following name(s): BP Marcus Hook Refinery, Tosco Trainer Refinery, Conoco Trainer Refinery, ConocoPhillips Trainer Refinery, Phillips66 Trainer Refinery, Monroe Energy Trainer Refinery.
For registered tanks, the PADEP Tank Facility ID# is: 23-41511.
For other facilities, the DEP Primary Facility eFACTS ID# is/are: 617983, 747691, 765004.
The RCRA Facility ID # PAD 071612683.

A complete description of the Property is attached to this Environmental Covenant as Exhibit A. A map of the Property is attached to this Environmental Covenant as Exhibit

B. Exhibit C depicts the discrete areas of the Property where engineering controls are installed for mitigation of petroleum hydrocarbon sheening to Delaware River and Marcus Hook Creek surface water, and said controls are subject to activity and use limitations set forth in this Environmental Covenant. Exhibit D depicts the discrete areas of the Property where engineering controls are installed for soil direct contact exposure pathway elimination, and said controls are subject to activity and use limitations set forth in this Environmental Covenant. Exhibit E depicts the operational and non-operational areas of the facility that are subject to activity and use limitations set forth in this Environmental Covenant to ensure elimination of potential vapor intrusion exposure.

The Property, or certain portions of it, is also subject to the following prior environmental covenant of record:

a. That certain Environmental Covenant of Monroe Energy, LLC dated April 27, 2017 restricting groundwater use and residential use and recorded in the Office of the Recorder of Deeds of Delaware County, Pennsylvania on June 30, 2017 at Deed Book Volume 6022, Page 340 [as Instrument No. 2017034282].

2. **Property Owner / GRANTOR / GRANTEE**. Monroe Energy LLC is the owner of the Property and the GRANTOR and GRANTEE of this Environmental Covenant.

3. The mailing address of the owner is: 4101 Post Road, Trainer, PA 19061

4. **Description of Contamination & Remedy :** The subject Property has been utilized for many years as a petroleum refinery and, as a result of historical operations by multiple parties, the site conditions exhibit environmental impacts to soil and groundwater in concentrations above applicable Statewide Health Standards promulgated under Pennsylvania's Land Recycling and Environmental Remediation Standards Act (Act 2). Chemicals of concern (COC) in soil include petroleum hydrocarbon compounds and inorganics/metals associated with historic site filling and/or petroleum refining operations. COCs associated with groundwater include volatile organic compounds (VOC), semi-volatile organic compounds (SVOC), inorganics/metals, and light non-aqueous phase liquids (LNAPL). Numerous environmental reports have been generated by owners and operators of the refinery, being BP Exploration & Oil Inc. (now known as BP Products North America Inc.) (BP), ConocoPhillips and Phillips66, and submitted to the Department over the years documenting spills and releases as well as responses to these spills and releases. Characterization of site environmental conditions has been presented in the November 2011 Act 2 *Sitewide Remedial Investigation Report* (*Sitewide RIR*) submitted to the Department by BP Products North America Inc. The *Sitewide RIR* included an evaluation of environmental exposure pathways related to the identified environmental impacts, and identified that the remediation standards are being attained by a combination of the Act 2 Statewide Health Standard and Act 2 Site-Specific Standard (pathway

elimination). As documented in the May 2018 Act 2 *Final Report – Sitewide Soil, Groundwater and Surface Water* (*Sitewide Final Report*) certain pathways were eliminated based on absence of receptors or absence of COCs above applicable PADEP Statewide health standards and remaining potential exposure pathways were eliminated based on risk assessments and/or elimination of the exposure pathway through engineering and institutional controls (Site-Specific Standard). PADEP approved this final report on August 3, 2018.

Other reports have been submitted to the Department in the context of environmental investigations conducted pursuant to Pennsylvania's Storage Tank and Spill Prevention Act (Tank Act) that have also relied upon pathway elimination.

a) As depicted in the Exhibit C, the three discrete areas of the Property where engineering controls are installed to address petroleum sheening of surface water that are the subject to activity and use limitations set forth in this Environmental Covenant are located in: (1) the riverfront portion of the Lube Plant Area; and (2) the western part of the facility at the confluence of the advanced waste water treatment plant (AWWTP) discharge flume with Marcus Hook Creek. Engineering controls have been constructed within these areas to mitigate petroleum hydrocarbon sheening of surface water in the Delaware River and Marcus Hook Creek, respectively. In the riverfront portion of the Lube Plant Area an engineered bulkhead containment remedy was installed along the Delaware River in accordance with the March 2011, Act 2 *Remedial Investigation Report and Cleanup Plan – Lube Plant Riverfront Area* and as documented in the December 2015, Act 2 *Final Report - Lube Plant Riverfront Area*. PADEP approved this final report on May 4, 2016. Engineered streambank stabilization measures were constructed at two locations at the confluence of Marcus Hook Creek and the AWWTP discharge flume, in accordance with the January 2013, Act 2 *Cleanup Plan – Sheen Mitigation, Marcus Hook Creek and Stony Creek* and as documented in the November 2015, Act 2 *Final Report – Sheen Mitigation, Marcus Hook Creek.* PADEP approved this final report on February 11, 2016.

b) The five discrete areas of the Property where engineering controls are installed to eliminate potential direct contact exposure to soil that are subject to activity and use limitations set forth in this Environmental Covenant are depicted in Exhibit D. Surface cover engineering controls were installed in these areas to provide a physical barrier to prevent site worker direct contact exposure to COCs identified in the *Sitewide RIR*, as described in: (1) the November 2016 Act 2 *Cleanup Plan – Potential Direct Contact Exposure to Soil;* and, (2) the May 2018 Act 2 *Sitewide Final Report.*

c) Evaluation of potential worker exposure to vapor-phase intrusion of site-specific COC associated with subsurface impacts to soil and groundwater to indoor air and outdoor air at the site was conducted in accordance with the Department's Land Recycling Program Technical Guidance Manual for Vapor Intrusion into

Buildings from Groundwater and Soil under Act 2 (hereafter "PADEP VI Guidance"). The evaluation is documented in: (1) the August 31, 2016 *Phase I Vapor Intrusion Risk Assessment Report & Workplan*; (2) the September 21, 2017 Act 2 *Vapor Intrusion Phase II Risk Assessment and Cleanup Plan;* and, (3) the May 2018 Act 2 *Sitewide Final Report.* As described in these reports and as depicted in Exhibit E, the facility has been divided into operational and non-operational areas.

Operational Areas
Within operational areas (depicted on Exhibit E), the facility uses the same chemicals as COC identified in the *Sitewide RIR* and has elements of Occupational Safety and Health Administration (OSHA) requirements in place to ensure workers safety in regard to potential exposure to COCs. In accordance with the Department's VI Guidance, within operational areas BP's vapor intrusion evaluation included comparison of indoor and outdoor air sampling results to occupational exposure reference criteria. The occupational exposure criteria comprised of OSHA Permissible Exposure Limits (PEL), NIOSH (National Institute for Occupational Safety and Health) Recommended Exposure Limits (REL) and ACGIH (American Conference Government Industrial Hygienists) Threshold Limit Values (TLV). Certain buildings were not sampled as the vapor intrusion exposure pathway is eliminated based on operation of existing facility engineering controls (building pressurization systems). The evaluation of sampled structures identified no unacceptable exposure risks and identified no buildings, trailers or portable-modular buildings (collectively "structures") in operational areas that require additional mitigation of vapors beyond the engineering and institutional controls in place. Continued elimination of the vapor intrusion pathway includes operation, monitoring, and maintenance of the engineering controls in certain buildings (depicted on Exhibit E and listed in the current *Post-Remediation Care Plan*), and continued implementation of the facility OSHA compliance program elements (institutional controls) described in Section 5 below and in the current *Post-Remediation Care Plan.*

Non-Operational Areas
Within non-operational areas, the vapor intrusion evaluation included comparison of indoor air sampling results to PADEP's non-residential screening values and risk assessment. The evaluation identified no unacceptable exposure risks and identified no structures in non-operational areas requiring mitigation of vapors.

Records pertaining to the contamination and remedies implemented on the Property are available for review at the Department's offices located at 2 East Main Street, Norristown, PA 19401-4915 as well as the offices of U.S. EPA, Region III, located at 1650 Arch Street, Philadelphia, PA 19103.

5. **Activity and Use Limitations**. The Property is subject to the following activity and use limitations, which the then current owner of the Property, and its tenants, agents, employees and other persons under its control, shall abide by:

a. Petroleum Sheen on Surface Water Mitigation Engineering Controls: Inspection, monitoring and maintenance of: (1) the bulkhead containment remedy installed along the Lube Plant Area riverfront to prevent petroleum sheening of Delaware River surface water; and, (2) two stabilization streambank remedies installed at the confluence of the AWWTP discharge flume with Marcus Hook Creek to prevent erosion and petroleum sheening of Marcus Hook Creek surface water. Inspection, monitoring and maintenance activities include: (a) visual inspections at least quarterly to verify no petroleum sheening emanating from the remedied area on the Delaware River; (b) visual inspections at least semiannually to verify no petroleum sheening emanating from remedied areas on the banks of Marcus Hook Creek; (c) periodic changing of absorbent materials within the containment area of the bulkhead containment remedy; and (d) maintenance of the remedies as required. The inspection, monitoring and maintenance shall be conducted as described in the current *Post Remediation Care Plan.*

b. Soil Direct Contact Engineering Controls: inspection, monitoring and maintenance of the surface cover engineering controls installed in five discrete areas depicted on Exhibit D to prevent direct contact exposure with the soil COC identified in the *Sitewide RIR*. Inspection, monitoring and maintenance activities include: (a) visual inspections at least annually to verify the competency of the controls; (b) maintenance if required (e.g. gravel addition or asphalt pothole repairs); (c) water level monitoring in two sumps in the Lube Plant warehouse building basement (through February 2019); and (d) visual inspections at least annually of the Lube Plant warehouse building basement for the presence of LNAPL. The inspection, monitoring and maintenance shall be conducted as described in the current *Post Remediation Care Plan.*

c. Vapor Intrusion Engineering Controls: as described in the current *Post-Remediation Care Plan*: (a) existing engineering control systems in certain buildings (Exhibit E) shall be operated to maintain a positive pressure within the buildings and tested semiannually, (b) the vapor intrusion pathway shall be re-evaluated for changes to the occupancy status or engineering controls for these buildings; and, (c) sealed portable modular buildings staged on the ground shall be inspected annually to verify their structural integrity as a barrier against vapor intrusion.

d. Vapor Intrusion Institutional Control: as described in the current *Post-Remediation Care Plan*, the elements of the facility operations, health and safety programs that meet the requirements of PADEP's VI Guidance, are being utilized as institutional controls in the operational areas of the facility (depicted on Exhibit E) to ensure worker's protection measures are satisfied and to demonstrate compliance and attainment of the Site-Specific Standard (pathway elimination). These elements are: (1) hazard communication, so that workers and others who might be exposed to all COC have full knowledge of the chemicals' presence; (2) appropriate health and safety training; and, (3) provision of appropriate protective

equipment (when needed) to prevent VI exposure. Additionally, to ensure continued elimination of the vapor intrusion pathway, the current *Post-Remediation Care Plan* includes provisions to: (a) address future potential structure construction and future potential changes to the location, physical characteristics or occupancy of structures; and (b) to re-evaluate the vapor intrusion pathway should the use of an operational area or areas change resulting in OSHA regulations applicable to operation of the facility as a petroleum refinery no longer being applicable.

6. **Notice of Limitations in Future Conveyances**. Each instrument hereafter conveying any interest in the Property subject to this Environmental Covenant shall contain a notice of the activity and use limitations set forth in this Environmental Covenant and shall provide the recorded location of this Environmental Covenant.

7. **Compliance Reporting**. By the end of every October following the Department's approval of this Environmental Covenant, the then current owner of the Property shall submit to the Department, the EPA and any Holder listed in Paragraph 3, written documentation stating whether or not the activity and use limitations in this Environmental Covenant are being abided by. In addition, within 21 days after a) written request by DEP or EPA, b) transfer of title of the Property or any part of the Property affected by this Environmental Covenant, c) noncompliance within paragraph 5 (Activity and Use Limitations), or d) an application for a permit or other approval for any building or site work that could affect contamination on any part of the Property, the then current owner will send a report to the DEP, the EPA and any Holder. The Report will state whether or not there is compliance with paragraph 5. If there is non-compliance, the report will state the actions that will be taken to assure compliance.

8. **Access by the Department and by the EPA**. In addition to any rights already possessed by the Department and by the EPA, this Environmental Covenant grants to the Department and to the EPA a right of reasonable access of the Property in connection with implementation or enforcement of this Environmental Covenant.

9. **Recording and Notification of Recording**. Within 30 days after the date of the Department's approval of this Environmental Covenant, Monroe Energy LLC shall file this Environmental Covenant with the Recorder of Deeds for each County in which the Property is located, and send a file-stamped copy of this Environmental Covenant to the Department within 90 days of the Department's approval of this Environmental Covenant. Within that time period, the Grantor (Monroe Energy LLC) also shall send a file-stamped copy to each of the following: Trainer Borough and Borough of Marcus Hook, Delaware County; the EPA, and any Holder listed in Paragraph 2.

10. **Termination or Modification**.

(a) This Environmental Covenant runs with the land unless terminated or modified in accordance with 27 Pa. C.S. §§ 6509 or 6510, or in accordance with this paragraph.

(b) This Environmental Covenant may be amended or terminated as to any portion of the Property that is acquired for use as state highway right-of-way by the Commonwealth provided that: (1) the Department waives the requirements for an environmental covenant and for conversion pursuant to 27 Pa. C.S. §6517 to the same extent that this Environmental Covenant is amended or terminated; (2) the Department determines that termination or modification of this Environmental Covenant will not adversely affect human health or the environment; and (3) the Department provides 30-days advance written notice to the current property owner, each holder, and, as practicable, each person that originally signed the Environmental Covenant or successors in interest to such persons.

(c) This Environmental Covenant shall terminate upon attainment, in accordance with 35 P.S. §§ 6026.101 – 6026.908, with an unrestricted use remediation standard for the above-described contamination at the Property. The Department must approve, in writing, of such termination.

(d) In accordance with 27 Pa. C.S. § 6510(a)(3)(i), Grantor hereby waives the right to consent to any amendment or termination of the Environmental Covenant by consent; it being intended that any amendment to or termination of this Environmental Covenant by consent in accordance with this Paragraph requires only the following signatures on the instrument amending or terminating this Environmental Covenant: (i) the Holder at the time of such amendment or termination; (ii) the then current owner of the Property and (iii) the Department.

(e) Nothing in this Environmental Covenant is intended, nor shall be deemed, to terminate, modify, rescind, release, amend, change or otherwise affect in any manner existing environmental covenants on the Property, including those identified in Paragraph 1 above.

11. **EPA.**

(a) Notification. The then current owner shall provide the EPA written notice of:

(1) the pendency of any proceeding that could lead to a foreclosure as referred to in 27 Pa. C.S. § 6509(a)(4), within seven calendar days of the owner's receiving notice of the pendency of such proceeding;

(2) any judicial action referred to in 27 Pa. C.S. § 6509(a)(5), within seven calendar days of the owner's receiving notice of such judicial action;

(3) any judicial action referred to in 27 Pa. C.S. § 6509(b), within seven calendar days of the owner's receiving notice of such judicial action; and

(4) termination or amendment of this Environmental Covenant pursuant to 27 Pa. C.S. § 6510, within seven calendar days of the owner's becoming aware of such termination or amendment.

(b) Enforcement. A civil action for injunctive or other equitable relief for violating this Environmental Covenant may be maintained by the EPA.

12. **Department's and EPA's address**. Communications with the Department and the EPA regarding this Environmental Covenant shall be sent to: Environmental Cleanup & Brownfields Manager, PA Department of Environmental Protection, 2 East Main Street, Norristown, PA 19401-4915 and Mr. Andrew Clibanoff, RCRA Project Manager, Office of Pennsylvania Remediation, Land and Chemicals Division, U.S. Environmental Protection Agency Region III, 1650 Arch Street (3LC30), Philadelphia, PA 19103.

13. **Severability**. The paragraphs of this Environmental Covenant shall be severable and should any part hereof be declared invalid or unenforceable, the remainder shall continue in full force and effect between the parties.

ACKNOWLEDGMENTS

Date: 2/19/19

Monroe Energy, LLC, Grantor
By: _____
Name: Jeffrey K. Warmann
Title: CEO + President

COMMONWEALTH OF PENNSYLVANIA) [other state, if executed outside PA]
)
COUNTY OF Delaware) SS:

On this 19 day of February, 2019, before me, the undersigned officer, personally appeared Jeffrey Warmann [Owner, Grantor] who acknowledged himself/herself to be the person whose name is subscribed to this Environmental Covenant, and acknowledged that s/he executed same for the purposes therein contained.

In witness whereof, I hereunto set my hand and official seal.

R Keesler
Notary Public

Commonwealth of Pennsylvania - Notary Seal
Robert Keesler, Notary Public
Delaware County
My commission expires June 20, 2022
Commission number 1334541
Member, Pennsylvania Association of Notaries

APPROVED, by Commonwealth of Pennsylvania, Department of Environmental Protection

Date:

By: _____
Name: _____
Title: _____

COMMONWEALTH OF PENNSYLVANIA)
)
COUNTY OF _____) SS:

On this ___ day of _____, 20__, before me, the undersigned officer, personally appeared _____, who acknowledged himself/herself to be the _____ [Title] of the Commonwealth of Pennsylvania, Department of Environmental Protection, _____ [insert name of regional office], whose name is subscribed to this Environmental Covenant, and acknowledged that s/he executed same for the purposes therein contained.

In witness whereof, I hereunto set my hand and official seal.

_____
Notary Public

Property Owner: Monroe Energy, LLC

Property Address: 4101 Post Road

Trainer, PA 19061

Trainer Borough/Marcus Hook Borough/City of Chester

Delaware County

APPROVED, by Commonwealth of Pennsylvania,

Department of Environmental Protection

Date: 1.24.2019 **By:** _____

Name: Ragesh R. Patel

Title: Environmental Cleanup & Brownfields Program Manager

PA DEP - Southeast Regional Office

COMMONWEALTH OF PENNSYLVANIA

COUNTY OF MONTGOMERY

On this 24th day of JANUARY, 2019, before me, the undersigned officer, personally appeared Ragesh R. Patel who acknowledged himself to be the person whose name is subscribed to this Environmental Covenant, and acknowledged that he executed same for the purposes therein contained.

In witness whereof, I hereunto set my hand and official seal.

_____

Notary Public

COMMONWEALTH OF PENNSYLVANIA
NOTARIAL SEAL
Judy Lashley, Notary Public
Norristown Boro, Montgomery County
My Commission Expires July 28, 2020
MEMBER, PENNSYLVANIA ASSOCIATION OF NOTARIES

Exhibit A
Property Legal Description

METES AND BOUNDS DESCRIPTION
PARCEL A
PART OF FOLIO #46-00-00376-01 &
FOLIO #24-00-00638-05
LANDS NOW OR FORMERLY
MARCUS HOOK REFINING COMPANY
BOROUGH OF TRAINER, &
BOROUGH OF MARCUS HOOK, DELAWARE COUNTY
COMMONWEALTH OF PENNSYLVANIA

BEGINNING AT A POINT ON THE TITLE LINE IN THE BED OF POST ROAD (A.K.A. PHILADELPHIA AND WILMINGTON POST ROAD, A.K.A. ROUTE 13, 60 FOOT RIGHT-OF-WAY), AT THE INTERSECTION OF THE DIVIDING LINE BETWEEN FOLIO #46-00-00376-01 AND FOLIO #46-00-00436-00, SAID POINT ALSO BEING IN THE BED OF STONY CREEK, AND FROM SAID POINT OF BEGINNING RUNNING, THENCE;

THE FOLLOWING EIGHT (8) COURSES AND DISTANCES ALONG THE DIVIDING LINE BETWEEN FOLIO #46-00-00376-01 AND FOLIO #46-00-00436-00, ALSO BEING THE CENTER LINE OF STONY CREEK;

1. SOUTH 27 DEGREES - 55 MINUTES - 23 SECONDS EAST, A DISTANCE OF 37.20 FEET TO A POINT, THENCE;

2. SOUTH 04 DEGREES - 08 MINUTES - 40 SECONDS EAST, A DISTANCE OF 170.20 FEET TO A POINT, THENCE;

3. SOUTH 02 DEGREES - 20 MINUTES - 08 SECONDS EAST, A DISTANCE OF 99.20 FEET TO A POINT, THENCE;

4. SOUTH 11 DEGREES - 39 MINUTES - 16 SECONDS EAST, A DISTANCE OF 88.97 FEET TO A POINT, THENCE;

5. SOUTH 04 DEGREES - 23 MINUTES - 18 SECONDS EAST, A DISTANCE OF 74.52 FEET TO A POINT, THENCE;

6. SOUTH 10 DEGREES - 39 MINUTES - 12 SECONDS EAST, A DISTANCE OF 93.35 FEET TO A POINT, THENCE;

7. SOUTH 29 DEGREES - 44 MINUTES - 29 SECONDS EAST, A DISTANCE OF 155.84 FEET TO A POINT, THENCE;

8. SOUTH 40 DEGREES - 17 MINUTES - 46 SECONDS EAST, A DISTANCE OF 92.32 FEET TO A POINT, THENCE;

9. ALONG THE COMMON DIVIDING LINE BETWEEN FOLIO #46-00-00376-01, FOLIO #46-00-00436-00 AND FOLIO #46-00-00444-00, ALSO BEING THE CENTER LINE OF STONY CREEK, SOUTH 07 DEGREES - 26 MINUTES - 26 SECONDS EAST, A DISTANCE OF 140.13 FEET TO A POINT, THENCE;

THE FOLLOWING SEVEN (7) COURSES AND DISTANCES ALONG THE DIVIDING LINE BETWEEN FOLIO #46-00-00376-01 AND FOLIO #46-00-00444-00, ALSO BEING THE CENTER LINE OF STONY CREEK:

10. SOUTH 01 DEGREES - 55 MINUTES - 43 SECONDS WEST, A DISTANCE OF 84.37 FEET TO A POINT, THENCE;

11. SOUTH 17 DEGREES - 19 MINUTES - 53 SECONDS EAST, A DISTANCE OF 95.37 FEET TO A POINT, THENCE;

12. SOUTH 20 DEGREES - 23 MINUTES - 11 SECONDS WEST, A DISTANCE OF 85.42 FEET TO A POINT, THENCE;

13. SOUTH 05 DEGREES - 35 MINUTES - 41 SECONDS EAST, A DISTANCE OF 134.29 FEET TO A POINT, THENCE;

14. SOUTH 11 DEGREES - 42 MINUTES - 40 SECONDS EAST, A DISTANCE OF 106.53 FEET TO A POINT, THENCE;

15. SOUTH 42 DEGREES - 56 MINUTES - 09 SECONDS EAST, A DISTANCE OF 84.97 FEET TO A POINT, THENCE;

16. SOUTH 21 DEGREES - 22 MINUTES - 54 SECONDS EAST, A DISTANCE OF 30.76 FEET TO A POINT, THENCE;

THE FOLLOWING FOUR (4) COURSES AND DISTANCES ALONG THE DIVIDING LINE BETWEEN FOLIO #46-00-00376-01 AND FOLIO #46-00-00444-00:

17. NORTH 54 DEGREES - 22 MINUTES - 38 SECONDS EAST, A DISTANCE OF 740.55 FEET TO A POINT, THENCE;

18. SOUTH 35 DEGREES - 37 MINUTES - 22 SECONDS EAST, A DISTANCE OF 32.00 FEET TO A POINT, THENCE;

19. SOUTH 54 DEGREES - 22 MINUTES - 38 SECONDS WEST, A DISTANCE OF 439.46 FEET TO A POINT, THENCE;

20. SOUTH 35 DEGREES - 37 MINUTES - 22 SECONDS EAST, A DISTANCE OF 278.56 FEET TO A POINT, THENCE;

THE FOLLOWING EIGHT (8) COURSES AND DISTANCES ALONG THE DIVIDING LINE BETWEEN FOLIO #46-00-00376-01 AND LANDS NOW OR FORMERLY CONRAIL:

21. SOUTH 32 DEGREES - 42 MINUTES - 24 SECONDS WEST, A DISTANCE OF 417.68 FEET TO A POINT, THENCE;

22. SOUTH 39 DEGREES - 51 MINUTES - 37 SECONDS WEST, A DISTANCE OF 95.62 FEET TO A POINT, THENCE;

23. SOUTH 49 DEGREES - 38 MINUTES - 29 SECONDS WEST, A DISTANCE OF 125.75 FEET TO A POINT, THENCE;

24. SOUTH 54 DEGREES - 17 MINUTES - 14 SECONDS WEST, A DISTANCE OF 1480.97 FEET TO A POINT, THENCE;

25. SOUTH 58 DEGREES - 34 MINUTES - 54 SECONDS WEST, A DISTANCE OF 641.86 FEET TO A POINT, THENCE;

26. SOUTH 54 DEGREES - 01 MINUTES - 21 SECONDS WEST, A DISTANCE OF 172.57 FEET TO A POINT, THENCE;

27. SOUTH 58 DEGREES - 36 MINUTES - 24 SECONDS WEST, A DISTANCE OF 348.71 FEET TO A POINT, THENCE;

28. SOUTH 31 DEGREES - 23 MINUTES - 36 SECONDS EAST, A DISTANCE OF 6.50 FEET TO A POINT, THENCE;

29. PARTLY ALONG FOLIO 46-00-00376-01 AND PARTLY ALONG FOLIO 24-00-00638-05 AND LANDS NOW OR FORMERLY CONRAIL, AND CROSSING MARCUS HOOK CREEK, SOUTH 58 DEGREES - 36 MINUTES - 24 SECONDS WEST, A DISTANCE OF 470.45 FEET TO A POINT, THENCE;

THE FOLLOWING EIGHT (8) COURSES AND DISTANCES ALONG THE DIVIDING LINE BETWEEN FOLIO #24-00-00638-05 AND LANDS NOW OR FORMERLY CONRAIL:

30. NORTH 31 DEGREES - 23 MINUTES - 36 SECONDS WEST, A DISTANCE OF 6.50 FEET TO A POINT, THENCE;

31. SOUTH 58 DEGREES - 36 MINUTES - 24 SECONDS WEST, A DISTANCE OF 479.20 FEET TO A POINT, THENCE;

32. NORTH 03 DEGREES - 10 MINUTES - 51 SECONDS EAST, A DISTANCE OF 59.86 FEET TO A POINT, THENCE;

33. NORTH 01 DEGREES - 16 MINUTES - 58 SECONDS WEST, A DISTANCE OF 11.11 FEET TO A POINT OF CURVATURE, THENCE;

34. ALONG THE ARC OF A CIRCLE CURVING TO THE RIGHT, HAVING A RADIUS OF 600.00 FEET, A CENTRAL ANGLE OF 24 DEGREES - 45 MINUTES - 58 SECONDS, AN ARC LENGTH OF 259.35 FEET, A CHORD BEARING NORTH 11 DEGREES - 06 MINUTES - 01 SECONDS EAST AND A CHORD DISTANCE OF 257.34 FEET TO A POINT, THENCE;

35. NORTH 68 DEGREES - 30 MINUTES - 36 SECONDS WEST, A DISTANCE OF 17.35 FEET TO A POINT OF CURVATURE, THENCE;

36. ALONG THE ARC OF A NON-TANGENT CIRCLE CURVING TO THE RIGHT, HAVING A RADIUS OF 543.69 FEET, A CENTRAL ANGLE OF 32 DEGREES - 32 MINUTES - 51 SECONDS , AN ARC LENGTH OF 308.85 FEET, A CHORD BEARING NORTH 38 DEGREES - 04 MINUTES - 29 SECONDS EAST AND A CHORD DISTANCE OF 304.71 FEET TO A POINT, THENCE;

37. NORTH 54 DEGREES - 20 MINUTES - 54 SECONDS EAST, A DISTANCE OF 256.00 FEET TO A POINT, THENCE;

THE FOLLOWING FIVE (5) COURSES AND DISTANCES ALONG THE COMMON DIVIDING LINE BETWEEN FOLIO #46-00-00376-01; FOLIO #24-00-00638-18; FOLIO #24-00-00638-12; FOLIO #24-00-00638-17; FOLIO #24-00-00638-15; FOLIO #24-00-00638-14; FOLIO #24-00-00638-13 AND RUNNING IN THE BED OF MARCUS HOOK CREEK, BEING THE MUNICIPAL BOUNDARY BETWEEN MARCUS HOOK BOROUGH AND TRAINER BOROUGH:

38. NORTH 35 DEGREES - 39 MINUTES - 06 SECONDS WEST, A DISTANCE OF 80.04 FEET TO A POINT, THENCE;

39. NORTH 02 DEGREES - 39 MINUTES - 31 SECONDS WEST, A DISTANCE OF 160.77 FEET TO A POINT, THENCE;

40. NORTH 03 DEGREES - 32 MINUTES - 28 SECONDS WEST, A DISTANCE OF 151.35 FEET TO A POINT, THENCE;

41. NORTH 02 DEGREES - 39 MINUTES - 31 SECONDS WEST, A DISTANCE OF 457.09 FEET TO A POINT, THENCE;

42. NORTH 41 DEGREES - 17 MINUTES - 28 SECONDS WEST, A DISTANCE OF 252.66 FEET TO A POINT ON THE TITLE LINE IN THE BED OF POST ROAD, THENCE;

THE FOLLOWING SIX (6) COURSES AND DISTANCES ALONG THE TITLE LINE IN THE BED OF POST ROAD;

43. NORTH 41 DEGREES - 02 MINUTES - 54 SECONDS EAST, A DISTANCE OF 105.70 FEET TO A POINT, THENCE;

44. NORTH 39 DEGREES - 02 MINUTES - 54 SECONDS EAST, A DISTANCE OF 1552.04 FEET TO A POINT, THENCE;

45. NORTH 49 DEGREES - 31 MINUTES - 33 SECONDS EAST, A DISTANCE OF 243.98 FEET TO A POINT, THENCE;

46. NORTH 52 DEGREES - 00 MINUTES - 54 SECONDS EAST, A DISTANCE OF 532.73 FEET TO A POINT, THENCE;

47. NORTH 55 DEGREES - 24 MINUTES - 54 SECONDS EAST, A DISTANCE OF 566.20 FEET TO A POINT, THENCE;

48. NORTH 57 DEGREES - 17 MINUTES - 54 SECONDS EAST, A DISTANCE OF 387.40 FEET TO A POINT AND PLACE OF BEGINNING.

TOGETHER WITH AND INCLUDING, HOWEVER, RIGHT OF WAY AS IN DEED BOOK 739 PAGE 1 AND (A) THE THREE SEPARATE RIGHTS OF WAYS OVER THE TRACT OF LAND CONVEYED TO THE DELAWARE COUNTY ELECTRIC COMPANY BY DEED DATED JANUARY 8, 1923, RECORDED IN DEED BOOK 562 PAGE 82 SUFFICIENT IN WIDTH FOR BUILDING, MAINTAINING AND OPERATING THREE SEPARATE RAILROAD SIDINGS WITH TWO RAILS EACH AS SET FORTH IN THE SAID DEED; AND (B) A RIGHT OF WAY IN COMMON WITH OTHERS 60' IN WIDTH DIRECTLY OPPOSITE CLAYTON STREET AND BEING THE BED OF CLAYTON STREET AS EXTENDED AND PRODUCED RUNNING SOUTHWARD FROM FRONT STREET TO THE 40' RIGHT OF WAY NEXT HEREAFTER MENTIONED AND (C) A RIGHT OF WAY 40' IN WIDTH LEADING FROM CLAYTON STREET EXTENDED AND PRODUCED AS AFORESAID TO THE LAND HEREIN CONVEYED AND EXTENDING ALONG THE NORTHERLY END OF THE LANDS CONVEYED TO THE CITY OF CHESTER BY THE DEED RECORDED IN DEED BOOK 739 PAGE 1.

ALSO BEING KNOWN AS PARCELS 2, 4, 5, 7, 8, 9, 15, 16 AND 17

CONTAINING 5,862,116 SQUARE FEET OR 134.576 ACRES

PARCEL C
PART OF FOLIO #46-00-00376-01,
FOLIO #24-00-00306-00 &
FOLIO #49-11-01310-00
LANDS NOW OR FORMERLY
MARCUS HOOK REFINING, COMPANY
BOROUGH OF TRAINER, CITY OF CHESTER &
BOROUGH OF MARCUS HOOK, DELAWARE COUNTY
COMMONWEALTH OF PENNSYLVANIA

BEGINNING AT A POINT ON THE TITLE LINE IN THE BED OF FOURTH STREET (50 FOOT WIDE RIGHT-OF-WAY), AT THE INTERSECTION WITH THE SOUTHEASTERLY RIGHT-OF-WAY LINE OF CHURCH STREET EXTENDED (33 FOOT WIDE RIGHT-OF-WAY), AND FROM SAID POINT OF BEGINNING RUNNING, THENCE;

THE FOLLOWING TWO (2) COURSES AND DISTANCES ALONG THE TITLE LINE IN THE BED OF FOURTH STREET:

1. NORTH 59 DEGREES - 03 MINUTES - 55 SECONDS EAST, A DISTANCE OF 108.50 FEET TO A POINT, THENCE;

2. NORTH 10 DEGREES - 31 MINUTES - 55 SECONDS EAST, A DISTANCE OF 8.40 FEET TO A POINT OF CURVATURE, THENCE;

THE FOLLOWING SIX (6) COURSES AND DISTANCES ALONG THE DIVIDING LINE BETWEEN FOLIO #24-00-00306-00 AND LANDS NOW OR FORMERLY CONRAIL:

3. ALONG THE ARC OF A NON-TANGENT CIRCLE CURVING TO THE LEFT, HAVING A RADIUS OF 603.71 FEET, A CENTRAL ANGLE OF 29 DEGREES - 52 MINUTES - 10 SECONDS , AN ARC LENGTH OF 314.73 FEET, A CHORD BEARING NORTH 35 DEGREES - 00 MINUTES - 45 SECONDS EAST AND A CHORD DISTANCE OF 311.17 FEET TO A POINT, THENCE;

4. NORTH 16 DEGREES - 04 MINUTES - 23 SECONDS EAST, A DISTANCE OF 129.32 FEET TO A POINT, THENCE;

5. NORTH 35 DEGREES - 03 MINUTES - 03 SECONDS EAST, A DISTANCE OF 58.00 FEET TO A POINT, THENCE;

6. NORTH 43 DEGREES - 59 MINUTES - 23 SECONDS EAST, A DISTANCE OF 40.41 FEET TO A POINT, THENCE;

7. NORTH 68 DEGREES - 27 MINUTES - 24 SECONDS EAST, A DISTANCE OF 134.36 FEET TO A POINT, THENCE;

8. NORTH 58 DEGREES - 41 MINUTES - 57 SECONDS EAST, A DISTANCE OF 212.30 FEET TO A POINT, THENCE;

THE FOLLOWING FOUR (4) COURSES AND DISTANCES ALONG THE DIVIDING LINE BETWEEN FOLIO #24-00-00306-00 AND FOLIO #24-00-00032-04:

9. SOUTH 34 DEGREES - 49 MINUTES - 06 SECONDS EAST, A DISTANCE OF 312.92 FEET TO A POINT, THENCE;

10. SOUTH 87 DEGREES - 40 MINUTES - 41 SECONDS EAST, A DISTANCE OF 158.28 FEET TO A POINT, THENCE;

15. NORTH 21 DEGREES - 40 MINUTES - 36 SECONDS WEST, A DISTANCE OF 12.35 FEET TO A POINT, THENCE;

16. NORTH 58 DEGREES - 36 MINUTES - 24 SECONDS EAST, A DISTANCE OF 60.87 FEET TO A POINT, THENCE;

17. SOUTH 21 DEGREES - 40 MINUTES - 36 SECONDS EAST, A DISTANCE OF 11.21 FEET TO A POINT, THENCE;

18. NORTH 57 DEGREES - 34 MINUTES - 11 SECONDS EAST, A DISTANCE OF 610.38 FEET TO A POINT, THENCE;

19. NORTH 58 DEGREES - 36 MINUTES - 24 SECONDS EAST, A DISTANCE OF 774.67 FEET TO A POINT OF CURVATURE, THENCE;

20. ALONG THE ARC OF A CIRCLE CURVING TO THE LEFT, HAVING A RADIUS OF 5789.65 FEET, A CENTRAL ANGLE OF 03 DEGREES - 48 MINUTES - 00 SECONDS, AN ARC LENGTH OF 383.98 FEET, A CHORD BEARING NORTH 56 DEGREES - 42 MINUTES - 24 SECONDS EAST AND A CHORD DISTANCE OF 383.91 FEET TO A POINT, THENCE;

21. NORTH 54 DEGREES - 48 MINUTES - 23 SECONDS EAST, A DISTANCE OF 234.45 FEET TO A POINT, THENCE;

22. NORTH 54 DEGREES - 59 MINUTES - 15 SECONDS EAST, A DISTANCE OF 1269.99 FEET TO A POINT, THENCE;

23. NORTH 39 DEGREES - 59 MINUTES - 15 SECONDS EAST, A DISTANCE OF 901.18 FEET TO A POINT, THENCE;

24. ALONG THE DIVIDING LINE BETWEEN FOLIO #49-11-01310-00 AND FOLIO #49-11-01315-00, SOUTH 52 DEGREES - 39 MINUTES - 33 SECONDS EAST, A DISTANCE OF 1583.09 FEET TO A POINT ON THE BULKHEAD LINE (ESTABLISHED BY THE SECRETARY OF WAR, SEPTEMBER 10, 1940) OF THE DELAWARE RIVER (NAVIGABLE WATERS - BY LAW, TIDAL WATERS), THENCE;

THE FOLLOWING FOUR (4) COURSES AND DISTANCES ALONG THE BULKHEAD LINE OF THE DELAWARE RIVER:

THE FOLLOWING FOUR (4) COURSES AND DISTANCES ALONG THE BULKHEAD LINE OF THE DELAWARE RIVER:

25. SOUTH 46 DEGREES - 25 MINUTES - 39 SECONDS WEST, A DISTANCE OF 568.35 FEET TO A POINT, THENCE;

26. SOUTH 54 DEGREES - 39 MINUTES - 13 SECONDS WEST, A DISTANCE OF 1064.73 FEET TO A POINT, THENCE;

27. SOUTH 54 DEGREES - 40 MINUTES - 40 SECONDS WEST, A DISTANCE OF 987.61 FEET TO A POINT, THENCE;

28. SOUTH 54 DEGREES - 29 MINUTES - 10 SECONDS WEST, A DISTANCE OF 4008.46 FEET TO A POINT ON THE NORTHEASTERLY RIGHT-OF-WAY LINE OF CHURCH STREET EXTENDED, THENCE;

29. ALONG THE NORTHEASTERLY RIGHT-OF-WAY LINE OF CHURCH STREET EXTENDED, NORTH 30 DEGREES - 03 MINUTES - 05 SECONDS WEST, A DISTANCE OF 663.48 FEET TO A POINT, THENCE;

THE FOLLOWING THREE (3) COURSES AND DISTANCES ALONG THE DIVIDING LINE BETWEEN FOLIO #24-00-00306-00 AND FOLIO #24-00-00095-01:

30. NORTH 59 DEGREES - 39 MINUTES - 55 SECONDS EAST, A DISTANCE OF 213.20 FEET TO A POINT, THENCE;

31. NORTH 30 DEGREES - 25 MINUTES - 05 SECONDS WEST, A DISTANCE OF 378.60 FEET TO A POINT, THENCE;

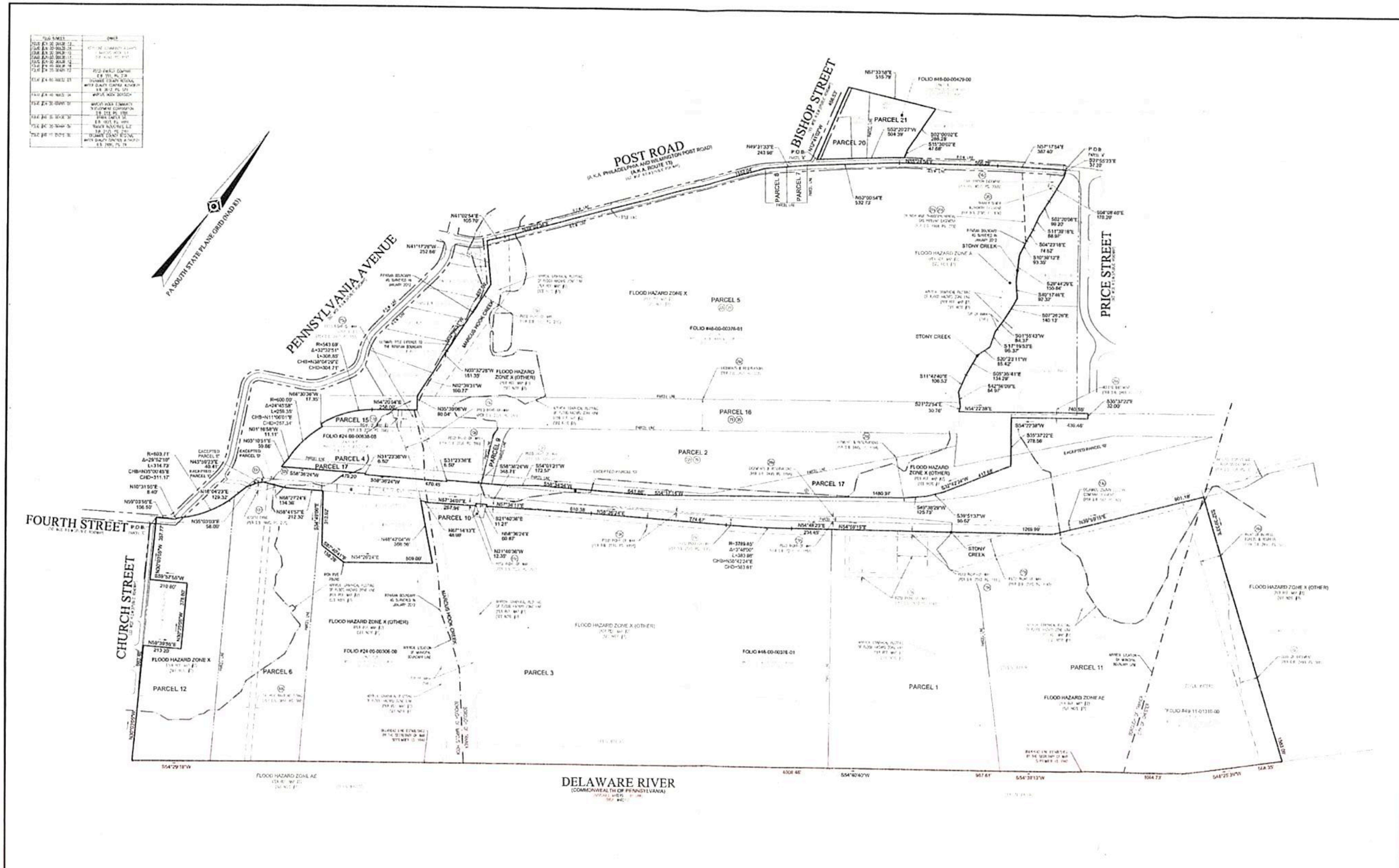
32. SOUTH 59 DEGREES - 57 MINUTES - 55 SECONDS WEST, A DISTANCE OF 210.80 FEET TO A POINT ON THE NORTHEASTERLY RIGHT-OF-WAY LINE OF CHURCH STREET, THENCE;

33. ALONG THE NORTHEASTERLY RIGHT-OF-WAY LINE OF CHURCH STREET, NORTH 30 DEGREES - 03 MINUTES - 05 SECONDS WEST, A DISTANCE OF 357.77 FEET TO THE POINT AND PLACE OF BEGINNING.

ALSO BEING KNOWN AS PARCELS 1, 3, 6, 10, 11, AND 12

CONTAINING 8,855,474 SQUARE FEET OR 203.294 ACRES

Exhibit B
Property Map


PA SOUTH STATE PLANE GRID (NAD 83)
POST ROAD
(A.K.A. PHILADELPHIA AND WILMINGTON POST ROAD)
(A.K.A. ROUTE 13)
BISHOP STREET
PENNSYLVANIA AVENUE
PRICE STREET
FOURTH STREET
CHURCH STREET
DELAWARE RIVER
(COMMONWEALTH OF PENNSYLVANIA)
PARCEL 1
PARCEL 2
PARCEL 3
PARCEL 4
PARCEL 5
PARCEL 6
PARCEL 7
PARCEL 8
PARCEL 9
PARCEL 10
PARCEL 11
PARCEL 12
PARCEL 15
PARCEL 16
PARCEL 17
PARCEL 20
PARCEL 21
FLOOD HAZARD ZONE X
FLOOD HAZARD ZONE X (OTHER)
FLOOD HAZARD ZONE A
FLOOD HAZARD ZONE AE
STONY CREEK
MARCUS HOOK CREEK
FOLIO #48-00-00376-01
FOLIO #24-00-00306-00
FOLIO #24-00-00638-05
FOLIO #48-00-00429-00
FOLIO #49-11-01310-00
LEGEND

THIS SURVEY IS CERTIFIED TO

JAMES E. HENRY

6/21/12
DATE

SEE SHEET 1 FOR NOTES & REFERENCES

2-1-2012	ALTA/ACSM LAND TITLE SURVEY MONROE ENERGY, LLC FOURTH STREET, CHURCH STREET & POST ROAD FOLIO #24-00-00306-00/24-00-00638-05, FOLIO #48-00-00376-01 FOLIO #49-11-01310-00 & FOLIO #48-00-00429-00 BOROUGH OF TRAINER, CITY OF CHESTER & BOROUGH OF MARCUS HOOK DELAWARE COUNTY, COMMONWEALTH OF PENNSYLVANIA
CP11-06	
152-158	
R.S./C.S.	CONTROL POINT ASSOCIATES, INC.
S.C.H.	
S.H.	J.A.A./J.F.H. | 2-9-2012 | 1"=200' | CP12007 | 2 OF 3

Taylor Wiseman & Taylor
ENGINEERS I SURVEYORS I SCIENTISTS
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856-235-7200 phone 856-722-9250 fax
www.taylorwiseman.com

DESCRIPTION OF PROPERTY

LUBE PLANT RIVERFRONT AREA BULKHEAD CONTAINMENT REMEDY

BP Former Marcus Hook Refinery / Monroe Energy Trainer Refinery

ALL THAT CERTAIN tract or parcel of land situated in the Borough of Marcus Hood, the County of Delaware, and the Commonwealth of Pennsylvania, being more particularly described as follows:

BEGINNING at a point located on a course bearing S 48°01'24" E, a distance of 1,419.81' as measured from a point formed by the intersection of the centerlines of East 4th Street and Church Street, said Beginning Point having Pennsylvania (South Zone) State Plane Grid Coordinates (NAD83 – 2011) North 183,509.56 East 2,626,195.39; and from said Beginning Point commences, thence (1) N 54°31'29" E a distance of 536.12' to a point; thence (2) S 35°31'35" E a distance of 10.70' to a point; thence (3) S 54°21'56" W a distance of 535.84' to a point; thence (4) N 36°50'57" W a distance of 12.19' to the point and PLACE OF BEGINNING.

Said above described tract of land containing with said bounds 6132 square feet.

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
DONALD LEE MACKAY
LAND SURVEYOR SU-046510-R

Donald L. MacKay, P.L.S.
PA Professional Land Surveyor No. SU046510R

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Exhibit C

Map and Legal Description
For
Discrete Areas of the Property
Subject to Activity and Use Limitations
In this Environmental Covenant
For
Mitigation of Petroleum Hydrocarbon Sheening of
Delaware River and Marcus Hook Creek Surface Water

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DESCRIPTION OF PROPERTY

MARCUS HOOK CREEK AREA 2 RIP RAP REMEDY

BP Former Marcus Hook Refinery / Monroe Energy Trainer Refinery

ALL THAT CERTAIN tract or parcel of land situated in the Borough of Trainer, the County of Delaware, and the Commonwealth of Pennsylvania, being more particularly described as follows:

BEGINNING at a point located on a course bearing S 38°34'09" E, a distance of 706.59' as measured from a point formed by the intersection of the centerlines of Penn Avenue/Walnut Street and Post Road, said Beginning Point having Pennsylvania (South Zone) State Plane Grid Coordinates (NAD83 – 2011) North 186,206.72 East 2,626,003.49; and from said Beginning Point commences, thence (1) S 08°40'47" E a distance of 54.39' to a point; thence (2) S 46°42'48" W a distance of 41.63' to a point; thence (3) N 01°10'10" E a distance of 52.99' to a point; thence (4) N 35°36'45" E a distance of 36.08' to the point and PLACE OF BEGINNING.

Said above described tract of land containing with said bounds 1,472 square feet.

Donald L. MacKay, P.L.S.
PA Professional Land Surveyor No. SU046510R

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DESCRIPTION OF PROPERTY

MARCUS HOOK CREEK AREA 1 SHEETPILE WALL REMEDY

BP Former Marcus Hook Refinery / Monroe Energy Trainer Refinery

ALL THAT CERTAIN tract or parcel of land situated in the Borough of Trainer, the County of Delaware, and the Commonwealth of Pennsylvania, being more particularly described as follows:

BEGINNING at a point located on a course bearing S 39°00'04" E, a distance of 650.85' as measured from a point formed by the intersection of the centerlines of Penn Avenue/Walnut Street and Post Road, said Beginning Point having Pennsylvania (South Zone) State Plane Grid Coordinates (NAD83 – 2011) North 186,253.37 East 2,625,972.57; and from said Beginning Point commences, thence (1) N 57°22'44" E a distance of 42.47' to a point; thence (2) S 02°37'46" W a distance of 4.43' to a point; thence (3) S 53°26'47" W a distance of 38.86' to a point; thence (4) N 42°55'46" W a distance of 6.39' to the point and PLACE OF BEGINNING.

Said above described tract of land containing with said bounds 200 square feet.

Donald L. MacKay, P.L.S.
PA Professional Land Surveyor No. SU046510R

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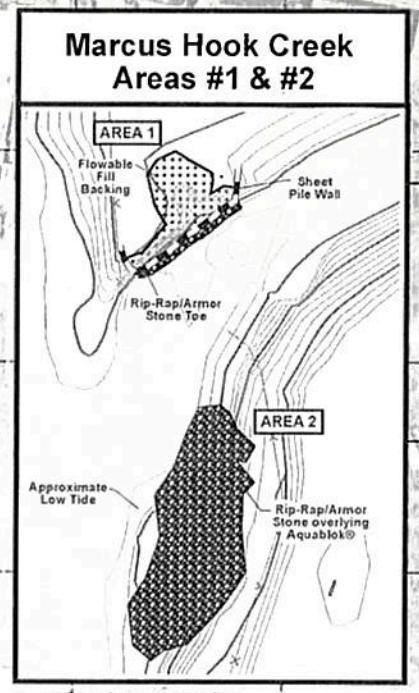
This figure depicts the discrete areas of the Property where engineering controls mitigate petroleum sheening to the Delaware River (Lube Plant Riverfront Area Bulkhead Containment Remedy) and to Marcus Hook Creek (Marcus Hook Creek Area #1 and Area #2 streambank stabilization remedies). The engineering and institutional controls will be implemented in accordance with the current *Post Remediation Care Plan*.



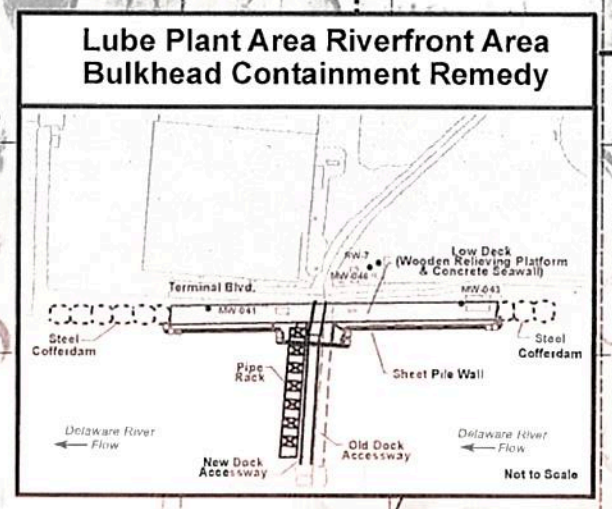


Exhibit C

Discrete Areas with Engineering Controls for Petroleum Sheen Mitigation

Former BP Marcus Hook Refinery
4101 Post Road
Trainer, Pennsylvania

Legend

Site Boundary

N
W
E
S

0 200 400
Feet

Aerial Photo: USGS High Resolution Orthoimages for DVRPC-PA, April 2015

Spatial Projection:

Coordinate System:
PA State Plane South
FIPS Zone: 3702
Unit: US Survey Feet
Datum: NAD83

bp

SOVEREIGN CONSULTING INC.

File: 0918_Report_Ex_C_SheenMitigation.mxd Date: 10/02/2018

Exhibit D

Map and Legal Description
For
Discrete Areas of the Property
Subject to Activity and Use Limitations
In this Environmental Covenant
For
Soil Direct Contact Potential Exposure Pathway Elimination

This figure depicts the discrete areas of the Property where engineering controls mitigate direct contact exposure to chemicals of concern in soil. The engineering and institutional controls will be implemented in accordance with the current *Post Remediation Care Plan.*

North Tank Farm Parking Lot

Former Alky Retention Basin Soil Cover Area

South Tank Farm Soil Cover Area

Former Lube Plant Soil Cover Area

LPA Building Basement Cover

Marcus Hook Creek Flow

Stony Creek Flow

Delaware River Flow

Exhibit D

Discrete Areas with Engineering Controls for Direct Contact Mitigation

Former BP Marcus Hook Refinery
4101 Post Road
Trainer, Pennsylvania

Legend

Engineering Control

Site Boundary

Aerial Photo: USGS High Resolution Orthoimages for DVRPC-PA, April 2015

0 200 400
Feet

Spatial Projection:

Coordinate System:
PA State Plane South
FIPS Zone: 3702
Unit: US Survey Feet
Datum: NAD83

bp

File: 0118_Report_Ex_D_Soil_LNAPL_DCM.mxd Date: 04/12/18

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856-235-7200 phone 856-722-9250 fax
www.taylorwiseman.com

DESCRIPTION OF PROPERTY

FORMER ALKY RETENTION BASIN SOIL COVER AREA

BP Former Marcus Hook Refinery / Monroe Energy Trainer Refinery

ALL THAT CERTAIN tract or parcel of land situated in the Borough of Trainer, the County of Delaware, and the Commonwealth of Pennsylvania, being more particularly described as follows:

BEGINNING at a point located on a course bearing S 58°05'31" E, a distance of 471.10' as measured from a point formed by the intersection of the centerlines of Penn Avenue/Walnut Street and Post Road, said Beginning Point having Pennsylvania (South Zone) State Plane Grid Coordinates (NAD83 – 2011) North 186,510.17 East 2,625,962.88; and from said Beginning Point commences, thence (1) S 56°44'27" E a distance of 18.66' to a point; thence (2) S 58° 09' 50" E a distance of 37.16' to a point; thence (3) S 57° 02' 04" E a distance of 53.08' to a point; thence (4) S 54° 11' 59" E a distance of 73.82' to a point; thence (5) S 52° 05' 21" E a distance of 71.22' to a point; thence (6) S 54° 57' 02" W a distance of 40.10' to a point; thence (7) S 65° 16' 20" W a distance of 40.59' to a point; thence (8) S 70° 25' 48" W a distance of 27.62' to a point; thence (9) S 55° 01' 05" W a distance of 14.02' to a point; thence (10) S 65° 23' 04" W a distance of 32.07' to a point; thence (11) N 87° 57' 11" W a distance of 12.60' to a point; thence (12) N 00° 48' 22" W a distance of 4.19' to a point; thence (13) S 78° 26' 24" W a distance of 51.45' to a point; thence (14) N 02° 09' 06" W a distance of 222.14' to the point and PLACE OF BEGINNING.

Said above described tract of land containing with said bounds 25,184 square feet.

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL DONALD LEE MACKAY SURVEYOR SU-046510-R

Donald L. MacKay, P.L.S.
PA Professional Land Surveyor No. SU046510R

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Taylor Wiseman & Taylor
ENGINEERS I SURVEYORS I SCIENTISTS
124 Gaither Drive, Suite 150, Mt. Laurel, NJ 08054
856-235-7200 phone 856-722-9250 fax
www.taylorwiseman.com

DESCRIPTION OF PROPERTY

NORTH TANK FARM AREA – EMPLOYEE AND VISITOR PARKING LOT

BP Former Marcus Hook Refinery / Monroe Energy Trainer Refinery

ALL THAT CERTAIN tract or parcel of land situated in the Borough of Trainer, the County of Delaware, and the Commonwealth of Pennsylvania, being more particularly described as follows:

BEGINNING at a point located on a course bearing S 05°47'00" E, a distance of 319.02' as measured from a point formed by the intersection of the centerlines of Bishop Street and Post Road, said Beginning Point having Pennsylvania (South Zone) State Plane Grid Coordinates (NAD83 – 2011) North 188,013.64 East 2,627,030.85; and from said Beginning Point commences, thence (1) S 63°36'32" W a distance of 326.80' to a point; thence (2) N 11°52'03" W a distance of 102.82' to a point; thence (3) N 81°54'18" E a distance of 317.04' to the point and PLACE OF BEGINNING.

Said above described tract of land containing with said bounds 16,263 square feet.

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
DONALD LEE MACKAY
LAND SURVEYOR SU-046510-R

Donald L. MacKay, P.L.S.
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DESCRIPTION OF PROPERTY

FORMER LUBE PLANT SOIL COVER AREA

BP Former Marcus Hook Refinery / Monroe Energy Trainer Refinery

ALL THAT CERTAIN tract or parcel of land situated in the Borough of Marcus Hook, the County of Delaware, and the Commonwealth of Pennsylvania, being more particularly described as follows:

BEGINNING at a point located on a course bearing N 68°58'39" E, a distance of 1,107.15' as measured from a point formed by the intersection of the centerlines of East 4th Street and Church Street, said Beginning Point having Pennsylvania (South Zone) State Plane Grid Coordinates (NAD83 – 2011) North 184,856.34 East 2,626,173.34; and from said Beginning Point commences, thence (1) N 54°47'05" E a distance of 137.83' to a point; thence (2) S 36°55'17" E a distance of 43.84' to a point; thence (3) S 55°12'35" W a distance of 137.93' to a point; thence (4) N 36°49'27" W a distance of 42.81' to the point and PLACE OF BEGINNING.

Said above described tract of land containing with said bounds 5970 square feet.

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
DONALD LEE MACKAY
LAND SURVEYOR SU-046510-R

Donald L. MacKay, P.L.S.
PA Professional Land Surveyor No. SU046510R

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DESCRIPTION OF PROPERTY

SOUTH TANK FARM SOIL COVER AREA

BP Former Marcus Hook Refinery / Monroe Energy Trainer Refinery

ALL THAT CERTAIN tract or parcel of land situated in the Borough of Trainer, the County of Delaware, and the Commonwealth of Pennsylvania, being more particularly described as follows:

BEGINNING at a point located on a course bearing S 31°54'59" E, a distance of 2,243.99' as measured from a point formed by the intersection of the centerlines of Bishop Street and Post Road, said Beginning Point having Pennsylvania (South Zone) State Plane Grid Coordinates (NAD83 – 2011) North 186,426.29 East 2,628,185.06; and from said Beginning Point commences, thence (1) S 67°39'17" E a distance of 59.59' to a point; thence (2) S 05°49'59" W a distance of 6.34' to a point; thence (3) S 00°26'35" E a distance of 6.73' to a point; thence (4) S 14°22'06" W a distance of 10.59' to a point; thence (5) S 33°27'09" W a distance of 14.45' to a point; thence (6) S 65°38'35" W a distance of 4.47' to a point; thence (7) S 65°28'34" W a distance of 6.94' to a point; thence (8) S 49°56'21" W a distance of 8.53' to a point; thence (9) S 87°28'23" W a distance of 8.71' to a point; thence (10) N 84°13'04" W a distance of 8.69' to a point; thence (11) N 08°07'30" W a distance of 68.41' to the point and PLACE OF BEGINNING.

Said above described tract of land containing with said bounds 2,478 square feet.

Donald L. MacKay, P.L.S.
PA Professional Land Surveyor No. SU046510R

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Exhibit E

Map Depicting
Facility Operational and Non-Operational Areas
Subject to Activity and Use Limitations
In this Environmental Covenant and
Structures with Engineering Controls (Pressurized Buildings)
For
Potential Vapor Intrusion Exposure Pathway Elimination

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DESCRIPTION OF PROPERTY

LPA BUILDING BASEMENT CONCRETE CAP

BP Former Marcus Hook Refinery / Monroe Energy Trainer Refinery

ALL THAT CERTAIN tract or parcel of land situated in the Borough of Marcus Hook, the County of Delaware, and the Commonwealth of Pennsylvania, being more particularly described as follows:

BEGINNING at a point located on a course bearing S 55°53'24" E, a distance of 1,008.65' as measured from a point formed by the intersection of the centerlines of East 4th Street and Church Street, said Beginning Point having Pennsylvania (South Zone) State Plane Grid Coordinates (NAD83 – 2011) North 183,893.54 East 2,625,975.01; and from said Beginning Point commences, thence (1) N 59°02'43" E a distance of 200.00' to a point; thence (2) S 30°57'17" E a distance of 122.00' to a point; thence (3) S 59°02'43" W a distance of 200.00' to a point; thence (4) N 30°57'17" W a distance of 122.00' the point and PLACE OF BEGINNING.

Said above described tract of land containing with said bounds 24,400 square feet.

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL DONALD LEE MACKAY LAND SURVEYOR SU-046510-R

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This figure depicts Operational and Non-Operational Areas of the facility and structures with engineering controls (pressurized buildings). Vapor Intrusion engineering and institutional controls will be implemented in accordance with the current *Post Remediation Care Plan*.

A B C D E F G H I J K L

1 2 3 4 5 6 7 8 9

Post Road

108

13

186

1

23

68

10

7

Stony Creek (Flow)

Marcus Hook Creek (Flow)

River Road

Delaware Ave

Delaware River (Flow)

Exhibit E

Operational and Non-Operational Areas

Former BP Marcus Hook Refinery
4101 Post Road
Trainer, Pennsylvania

Legend

- Operational Areas
- Non-Operational Areas
- Site Boundary
- Structures with engineering controls (8 pressurized buildings). Refer to the current *Post Remediation Care* Plan for additional information using building IDs shown.

N W E S

0 200 400
Feet

Aerial Photo: USGS High Resolution Orthoimages for DVRPC-PA, April 2015

Spatial Projection:

Coordinate System:
PA State Plane South
FIPS Zone: 3702
Unit: US Survey Feet
Datum: NAD83

bp

SOVEREIGN CONSULTING INC.

File: 0918_Report_Ex_E_Operational.mxd Date: 09/21/2018