September 11, 2024

Via eComment Portal:
http://www.ahs.dep.pa.gov/eComment

Environmental Quality Board
P.O. Box 8477
Harrisburg, PA 17105-8477

Re: Comments on the Environmental Quality Board's Proposed Rulemaking —Administration of the Land Recycling Program [25 PA. CODE CH. 250]

To Whom It May Concern:

Clean Air Council, Mountain Watershed Association, Citizens for Pennsylvania's Future ("PennFuture"), CREATE Lab, and The Breathe Project (collectively, "Commenters") respectfully submit the following comments on the proposed changes to the Land Recycling Program, Pennsylvania Code Chapter 250 ("proposed Chapter 250").[1] Commenters appreciate the Department's diligent work in developing the revised standards. Commenters particularly appreciate the Department's proposed changes to the direct contact soil medium-specific concentrations ("MSCs") for lead, which are soundly grounded in EPA's models and data, and thus appropriate and necessary to protect public health.

However, Commenters found several other issues which the Department must address before finalizing the proposed revisions, including:

1. The Department should reduce the proposed PFAS MSCs for soil to groundwater and direct contact soil to reflect the reduced MSCs for PFAS in groundwater, which the Department swiftly set in response to EPA's National Primary Drinking Water Regulations for PFAS. The Department should also add soil to groundwater and direct

[1] Administration of the Land Recycling Program, 54 Pa.B. 3937 (proposed July 13, 2024) (to be codified at 25 Pa. Code Ch. 250), *available at:* https://www.pacodeandbulletin.gov/Display/pabull?file=/secure/pabulletin/data/vol54/54-28/982.html.

contact soil MSCs for PFNA and PFHxS for which the Department currently provides only groundwater MSCs.

2. The direct contact soil MSCs for six carcinogenic Polycyclic Aromatic Hydrocarbons (cPAHs) are unlawfully high, and the method the Department used to calculate the direct contact soil MSCs for cPAHs results in unlawfully high cancer risks from cPAH mixtures from direct contact soil.

ABOUT THE COMMENTERS

Clean Air Council is a nonprofit environmental health organization with offices in Philadelphia and Pittsburgh, Pennsylvania. The Council has been working to protect everyone's right to a clean and healthy environment for over 50 years. The Council has members throughout Pennsylvania and the Mid-Atlantic region who support its mission.

Mountain Watershed Association is the home of the Youghiogheny Riverkeeper. MWA is a nonprofit, citizen-led, environmental organization that works to protect, preserve and restore the Indian Creek and greater Youghiogheny River watersheds. MWA represents over 2,500 members, many of whom are impacted by soil and groundwater pollution..

Citizens for Pennsylvania's Future (PennFuture) is a member-supported, statewide environmental advocacy nonprofit and watchdog fighting against potential threats to PA's clean air, pure water, and healthy climate. Since 1998, PennFuture has combined legislative advocacy and legal enforcement at the local, state, and federal levels, educational outreach, and civic engagement support for just and equitable environmental outcomes that improve the quality of life.

The Breathe Project is a coalition of citizens, environmental advocates, public health professionals and academics working to improve air quality, eliminate climate pollution and make Southwestern Pennsylvania a healthy and prosperous place to live through science-based work and a community outreach platform.

The Community Robotics, Education and Technology Empowerment Lab (CREATE Lab) at Carnegie Mellon University explores socially civic technology innovation and data

understanding and communication, in partnership with the community, and in support of community goals.

INTRODUCTION

The Pennsylvania Department of Environmental Protection (the "Department") has made many changes to Statewide Health Standards ("SHS"), proposing changes to medium-specific concentration ("MSC") in the different environmental media of soil and groundwater. The goal of these changes is to reflect up to date science regarding public health.[2]

Some of the proposed changes would better protect public health. Perhaps the most important of these are the more stringent direct contact soil MSCs for lead. As has been clearly established, there is no safe level for lead, and its impact on the development of children can be devastating and life-long. Lead pollution is prevalent in the Commonwealth of Pennsylvania, and the updated standards would reduce exposure in both fetuses of pregnant workers through the non-residential standard, and in children via the residential direct contact soil MSC.

Several proposed changes, however, would increase public exposure to toxic pollutants. Most are based on updated Environmental Protection Agency (EPA) and Centers for Disease Control and Prevention (CDC) toxicity data. However, in two categories they are not consistent with the guidelines of Chapter 250 or the Land Recycling Program Act 2, and need to be revised:

Per and polyfluoroalkyl substances (PFAS); In April 2024 the Environmental Protection Agency set strict limits on six PFAS compounds in drinking water through the National Primary Drinking Water Regulations (NPDWR). The Department is to be commended for the swift action enacting these EPA standards in June 2024 as MSCs for groundwater. This action is both protective of public health and should reduce the burden on public water providers. However, the proposed MSCs for PFAS in soil to groundwater and direct contact soil disagree with either the updated groundwater MSCs or the toxicity measures that led to their derivation. To protect the public and drinking water sources, the Department should revise the direct contact soil MSCs and soil to groundwater MSCs for perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA).

[2] 25 Pa. Code § 250.11.

Also, the Department should add MSCs for direct contact soil and soil to groundwater for perfluorohexanoic acid (PFHxS) and perfluorononanoic acid (PFNA).

Carcinogenic Polycyclic Aromatic Hydrocarbons (cPAHs); The proposed changes include a substantial increase in the MSCs for six cPAHs. These chemicals are highly prevalent in polluted sites, posing substantial cancer risk to public health. Although the methodology used to calculate these standards is consistent with Chapter 250 and EPA guidelines, the result is direct contact soil MSCs that pose a cancer risk much higher than the target risk of 1 in 100,000 for each compound. Moreover, their combined cancer risk is much higher than the Land Recycling Program Act 2 legislation's *least* stringent upper bound for carcinogens of 1 in 10,000, meaning that one person in 10,000 is expected to contract cancer due to lifelong exposure to the compound at the specified concentration. The Department needs to revise the cPAH standards to comply with Act 2.

COMMENTS

1. **The proposed changes to the Direct Contact soil MSCs for lead are appropriate and based on the current EPA models and data. The Department should enact them to ensure protection of Pennsylvania residents by reducing routes of lead absorption by fetuses and children.**

The harmful and long lasting effects of lead pollution, especially on children, are well established.[3] Studies have demonstrated that exposure to even low levels of lead in the blood of fetuses and children causes lifelong cognitive impairments.[4] Consequently, the U.S. Centers for Disease Control (CDC) determined that "[n]o safe level of lead in children has been identified. Even low levels of lead in blood can hurt a child's ability to learn, pay attention, and do well in school."[5]

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[3] Childhood Lead Poisoning Prevention Program, *Risk Factors and Children*, CDC, https://www.cdc.gov/lead-prevention/risk-factors/children.html#:~:text=These%20effects%20include%20damage%20to,about%20a%20blood%20lead%20tet (last visited Sept. 8, 2024) [hereinafter "Childhood Risk Factors"].

[4] *See, e.g.,* David C. Bellinger, Karen M. Stiles, & Herbert L. Needleman HL, *Low-Level Lead Exposure, Intelligence and Academic Achievement: A Long-Term Follow-Up Study*, 90(6) PEDIATRICS 855 (Dec. 1992), https://doi.org/10.1542/peds.90.6.855; Joseph, Boyle, Deniz Yeter, Michael Aschner, & David C. Wheeler, *Estimated IQ Points and Lifetime Earnings Lost to Early Childhood Blood Lead Levels in the United States*, 778 SCI. TOTAL ENV'T 146307, https://doi.org/10.1016/j.scitotenv.2021.146307 (July 2021).

[5] CDC, Childhood Risk Factors, *supra* note 3.

The Department is proposing to update the direct contact resident soil MSC (0–15ft) from 500 mg/kg to 200 mg/kg,[6] and the non resident surface soil (0–2ft) level from 1,000 mg/kg to 1,100 mg/kg, stating that:

> This proposed rulemaking includes the updated models published by the EPA, which are the Integrated Exposure Uptake Biokinetic (IEUBK) Model for Children that will be used to calculate the residential values and the Adult Lead Model (ALM) that will be used to calculate the nonresidential values. In addition to updating the models, the TBLL is proposed to be reduced from the current values of 10 µg/dL for residential calculations and 20 µg/dL for nonresidential calculations to 5 µg/dL for both residential and nonresidential calculations, which is the default value used in the EPA models.[7]

The receptors (target population) of the models are children under seven years old for the IEUBK, and fetuses of pregnant workers for the ALM.[8] The proposed direct contact soil MSCs would therefore better protect children from exposure to lead in residential settings, and workers' fetuses in non-residential environments.[9]

Commenters commend the Cleanup Standards Scientific Advisory Board ("CSSAB")'s lead working group on their thorough and careful analysis[10] that based the proposed standards on the EPA's current model for non-residential soil (the Adult Lead Model ("ALM")), and on

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[6] This value is also in agreement with EPA's Office of Land and Emergency Management's ("OLEM") guidance. OLEM, *Updated Residential Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities* (2024), *available at:* https://semspub.epa.gov/work/HQ/100003435.pdf.

[7] 54 Pa.B. 3937 ("TBLL" means target blood lead level).

[8] TRW Lead Committee, *Training on the IEUBK Model, Adult Lead Methodology, and Recent Lead Risk Assessment Update*, EPA, https://semspub.epa.gov/work/HQ/176285.pdf (last visited Sept. 10, 2024). Note that this presentation does not include the updated TBLL.

[9] The ALM model was developed to protect "the most sensitive receptor [who] is the fetus of a worker who develops a body burden as a result of non-residential exposure to lead." *Lead at Superfund Sites: Frequent Questions from Risk Assessors on the Adult Lead Methodology*, EPA, https://www.epa.gov/superfund/lead-superfund-sites-frequent-questions-risk-assessors-adult-lead-methodology (last updated Jan. 17, 2024).

[10] DEP CSSAB, *Report of the Lead Workgroup to the Cleanup Standards Scientific Advisory Board* (July 27, 2022), *available at:* https://files.dep.state.pa.us/PublicParticipation/Public%20Participation%20Center/PubPartCenterPortalFiles/Environmental%20Quality%20Board/2024/Mar_12_2024/04b_7-575_Ch%20250_Proposed_CSSAB%20Lead.pdf [hereinafter CSSAB Report].

updating the TBLL ("Target Blood Lead Level") from higher values that have not been used by the CDC and EPA since 2012[11] and 2017, respectively.[12]

Reducing lead exposure is essential in the Commonwealth of Pennsylvania because many children have an elevated BLL which substantially impairs their development, the BLLs of children in minority and low-income communities are higher, and the lead contamination being addressed is widespread.

a. ***Many children in Pennsylvania have an elevated BLL.***

An extensive study by Hauptman, et al. finds that 5% of children in Pennsylvania have a blood lead level (BLL) higher than 5µg/dL, which is the third highest percentage in the nation.[13] This level is more than three times the percentage found in neighboring states such as New Jersey and New York (1.7% and 1.6% respectively).[14] The Pennsylvania Department of Health found a slightly lower rate of 3.5% of tested children with elevated BLL defined as levels higher than 5µg/dL.[15] However, even this lower occurrence rate indicates a large number of children with high lead levels. The recent U.S. Census shows approximately 650,000 children in Pennsylvania.[16] Therefore, even applying the lower percentage, approximately 22,750 children (3.5%) under 5 are expected to have BLLs higher than 5µg/dL. Estimating a birth cohort of 120,000–130,000 births per year[17] means the annual addition of more than 4,000 children with elevated BLL to these numbers.

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[11] Childhood Lead Poisoning Prevention Program, *CDC Updates Blood Lead Reference Value*, CDC, https://www.cdc.gov/lead-prevention/php/news-features/updates-blood-lead-reference-value.html (last visited Sept. 8, 2024) [hereinafter "Updated BLRV"].

[12] Memorandum from Schatzi Fitz-James, Acting Director, Assessment and Remediation Division, EPA, to Superfund National Policy Managers, Regions 1-10, OLEM Directive 9285.6-56, (May 17, 2017), *available at:* https://semspub.epa.gov/work/HQ/196766.pdf.

[13] Marissa Hauptman, et al., *Individual- and Community-Level Factors Associated with Detectable and Elevated Blood Lead Levels in US Children: Results from a National Clinical Laboratory*, 175 JAMA PEDIATR. 1252 (Sept. 27, 2021), https://doi.org/10.1001/jamapediatrics.2021.3518.

[14] *Id.*, at Figure 1.

[15] Childhood Lead Poisoning Prevention Program, PA Dep't Health, *2020 Childhood Lead Surveillance Annual Report* 11 (Jan. 2022), *available at:* https://www.health.pa.gov/topics/Documents/Environmental%20Health/2020%20Childhood%20Lead%20Surveillance%20Annual%20Report.pdf.

[16] The recent U.S. census found that 5.1% of the PA population of 13,002,700 are aged under 5, namely approximately 650,000. U.S. Census Bureau, *QuickFacts: Pennsylvania* (2023), https://www.census.gov/quickfacts/fact/table/PA/INC110219 [hereinafter PA Census].

[17] National Center for Health Statistics, *Pennsylvania*, CDC (May 28, 2024) https://www.cdc.gov/nchs/pressroom/states/pennsylvania/pa.htm.

b. *Elevated BLLs (above 5µg/dL) substantially reduce children's development and lifelong success.*

BLLs higher than 5µg/dL have a measurable detrimental effect on children's development and lifelong success. Studies find a reduction in children's Intelligence Quotient/IQ (used as a measure for cognitive abilities) of order 0.6–1.0 IQ points per 1µg/dL BLL.[18] Therefore, children with BLL of 5µg/dL will have, on average, an IQ loss of 1.8–3 points when compared to children with the EPA's standard for BLL of 2 µg/dL.[19] Children with BLLs that are higher than 5µg/dL will suffer even larger cognitive function reduction when compared to their peers.

The effects of lower cognitive abilities (as exemplified by lower IQ) persist into adulthood and correlate with lower socio-economic status.[20] EPA estimated that a loss of 1 IQ point translates to 1.76%–2.379% loss in earnings.[21] Therefore, an IQ reduction of 1.8–3 points translates to an income loss of order 3.2–7%. Using the Pennsylvania annual median income of $36,585[22] means an annual loss of $1,170–$2,560 for such a person when compared to peers whose BLL as children was 2µg/dL.

c. *There are large disparities in the prevalence of lead exposure: Minority and low-income children are more likely to have elevated BLLs.*

Exposure to lead is a ubiquitous problem. However, there are substantial racial and income disparities in the prevalence of elevated BLLs in children nationwide.[23]

This national trend is also found in Pennsylvania. An extensive analysis based on area zipcodes found in Philadelphia a strong correlation between the percentage of children with

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[18] EPA Office of Air Quality Planning and Standards Health and Environmental Impacts Division Air Benefits and Costs Group, *Proposed Lead NAAQS Regulatory Impact Analysis*, § 5.9 (June 2008), *available at:* https://www3.epa.gov/ttnecas1/regdata/RIAs/pb_ria_6-25-08_proposal.pdf [hereinafter Lead NAAQS RIA].
[19] *See id.*
[20] Aaron Reuben, et al., *Association of Childhood Blood Lead Levels with Cognitive Function and Socioeconomic Status at Age 38 Years and with IQ Change and Socioeconomic Mobility between Childhood and Adulthood*, 317 JAMA 1244 (Mar. 28, 2017), https://doi.org/10.1001/jama.2017.1712.
[21] Lead NAAQS RIA at § 5.9.
[22] The median household income for Pennsylvania is $73,170, or $36,585 per person. PA Census, *supra* note 16.
[23] *See, e.g.*, Deniz Yeter, et al., *Disparity in Risk Factor Severity for Early Childhood Blood Lead among Predominantly African-American Black Children: The 1999 to 2010 US NHANES*, 17(5) INT'L J. ENV'T RSCH. PUB. HEALTH 1552 (Feb. 28, 2020), https://doi.org/10.3390/ijerph17051552; Marissa Hauptman, et al., *Neighborhood Disparities and the Burden of Lead Poisoning*, 94 PEDIATRIC RSCH. 826 (March 10, 2023), https//doi.org/10.1038/s41390-023-02476-7.

elevated BLL and the percent of minority population. The percentage of children with elevated BLL also increased with the percent of children in poverty.[24]

Another study by Chen, et al.[25] examining Pennsylvania infants born in 2015 and 2016 found that non-Hispanic black children had the highest percentage of elevated BLLs (4.4%), more than twice the rate for non-Hispanic white children (1.9%–2.1%). The prevalence of elevated BLLs in children of mothers with less than high-school education or those living in neighborhoods in the lower quartiles of household income (and higher quartiles of poverty and old housing) was highest. Therefore, reducing the risk of elevated BLL in children is essential for the protection of vulnerable populations.

d. Lead pollution of soil in Pennsylvania is widespread.

Soil pollution with lead is prevalent in Pennsylvania. For example, O'Shea, et al.[26] reviewed more than 2,500 soil samples from Philadelphia and found a large number of areas with high lead levels. Many of the zip codes with high lead levels in soil correspond to areas with a large number of children. For example, in the 19125 zip codes (Kensington), where approximately 4,000 children under 14 live,[27] O'Shea, et al. found a mean soil lead concentration of approximately 700mg/kg, with many samples exceeding 1,500mg/kg.[28] Sampling of residential soil in Wilkinsburg, PA found an average lead concentration of 1,500mg/kg, with a maximum of 14,000mg/kg.[29]

High lead levels are found in many Act 2 sites.[30] For example, lead pollution in the Brown Battery site (Shoemakersville, Berks County PA) was so high that it required evacuation

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[24] *See* Michael J. O'Shea, et al.. *Lead Pollution, Demographics, and Environmental Health Risks: The Case of Philadelphia, USA*, 18 INT'L J. ENV'T RSCH. PUB. HEALTH 9055 (Aug. 27, 2021), https://doi.org/10.3390/ijerph18179055 [hereinafter O'Shea 2021].
[25] *See* Yeh-Hsin Chen, et al., *Effects of Individual and Neighborhood Characteristics on Childhood Blood Lead Testing and Elevated Blood Lead Levels, A Pennsylvania Birth Cohort Analysis*, J. PRIMARY CARE & CMTY. HEALTH (May 19, 2021), https://doi.org/10.1177/21501327211017780.
[26] *See* O'Shea 2021.
[27] *United States Zip Codes* (2024), https://www.unitedstateszipcodes.org/19125/.
[28] O'Shea 2021 at Fig. 5.
[29] Get the Lead Out, Pittsburgh, *Get the Lead Out,Wilkinsburg: A Study Focused on Identifying Lead Hazards* (Apr. 2021), https://gettheleadoutpgh.org/wp-content/uploads/2021/07/Wilkinsburg-Full-Report-2.pdf.
[30] *See, e.g.*, CSSAB Report at § 6, *supra* note 10.

of residents.[31] Other historical superfund sites in Pennsylvania were also found to have excessive lead concentrations.[32] Lead pollution is also found in ongoing Act 2 remediation sites, such as the former Philadelphia Refinery.[33]

e. Children in Pennsylvania are exposed to high lead concentrations from multiple sources, underscoring the need to control lead pollution in residential soil.

Lead can be absorbed and accumulated in the body from a variety of sources.[34] In Pennsylvania, children are exposed to high lead levels not only through polluted soil, but via other routes. Two of them are most prevalent: drinking water in schools, and lead paint in old housing.

A voluntary testing program by the Pennsylvania Department of Education received more than 1200 reports of elevated lead concentrations in school drinking water between January 2019 and April 2024.[35] Since the program is voluntary, it is likely that many other schools have similar elevated lead levels in their water.

Another source of lead exposure is lead-based paint in old housing, a source that may predominantly impact families in low income communities. For example, the CDC finds that

> An estimated 95% of housing units in Philadelphia might contain lead-based paint because they were built before 1978. Of these units, 930 are operated as family-licensed childcares, where an owner uses their primary residence to care for up to six children who are not relatives. Family childcares in Philadelphia are used mainly by families who are from racial and ethnic minority communities. Children that spend time in these units are at higher

[31] Abraham Ferdas, Hazardous Site Cleanup Division, EPA, *Superfund Preliminary Site Closeout Report: Browns Battery Breaking Superfund Site* (Nov. 3, 2003), https://semspub.epa.gov/work/03/2008946.pdf (EPA ID: PAD980831812).
[32] Superfund Redevelopment Program, *Superfund Sites in Reuse in Pennsylvania*, EPA, https://www.epa.gov/superfund-redevelopment/superfund-sites-reuse-pennsylvania (last updated Sept. 4, 2024).
[33] *See, e.g.*, Act 2 RIRs for the Philadelphia Refinery located at https://phillyrefinerycleanup.info/act-2-documents/; Former Tank Car RIR, *supra*, note 78, at Table 2. Note that many of the reports were filed based on a site specific standard for direct contact lead of 2,240mh/kg and did therefore flag only exceedances over this value.
[34] Agency for Toxic Substances and Disease Registry, *Toxicological Profile for Lead* 1 (Aug. 2020), *available at:* https://www.atsdr.cdc.gov/toxprofiles/tp13.pdf.
[35] Schools are required to either test drinking water for lead annually or discuss lead issues at a public meeting. PA Dep't Educ., *Lead in Drinking Water*, https://www.education.pa.gov/Schools/safeschools/resources/Pages/Lead-in-Drinking-Water.aspx (last visited Sept. 11, 2024).

> risk of lead poisoning. Family childcare providers may operate their services from older homes that are more likely to have lead-based paint. If the paint in these properties is in poor condition or has not been properly maintained, it can increase the risk of lead exposure.[36]

f. To reduce the risk of elevated BLL in fetuses and children, addressing lead pollution in all media is essential. The proposed direct contact soil MSCs for lead is therefore essential to protect their health

As noted above, lead can be absorbed and accumulated in the body from a variety of sources.[37] The exposure of Pennsylvania residents, in particular pregnant workers and children, to lead from sources such as school drinking water or lead paint underscores the need to reduce their exposure to lead from soil.

The models used by the CSSAB to determine the direct contact soil MSCs account for lead exposure from other sources (such as water or food).[38] The soil MSC is set by these models to prevent the likelihood that the cumulative lead exposure from all sources will cause elevated BLL (above the TBLL) in more than 5% of the target receptors, namely fetuses and children. That is, assuming intake of lead from other sources, the calculated MSCs for soil are such that 95% of the target population will have BLL less than the target value of 5µg/dL. (Note that these models cannot account for excess lead exposure such as that shown above)

In sum, to ensure that fetuses and children do not develop elevated BLLs that can affect their cognitive abilities and lifelong achievements, the Department must enact the proposed direct contact soil MSCs.

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[36] Childhood Lead Poisoning Prevention Program, *Philadelphia, Pennsylvania*, CDC, https://www.cdc.gov/lead-prevention/success-stories-by-state/philadelphia-pa.html (last visited Sept. 11, 2024).
[37] Agency for Toxic Substances and Disease Registry, *Toxicological Profile for Lead* 1 (Aug. 2020), *available at:* https://www.atsdr.cdc.gov/toxprofiles/tp13.pdf.
[38] CSSAB Report at 10, *supra* note 10.

2. **Commenters commend the Department for the swift action in enacting the revised National Primary Drinking Water Regulations (NPDWR) for six per and polyfluoroalkyl substances (PFAS) as groundwater MSC. However, the proposed MSCs for soil to groundwater and direct contact soil do not reflect these revisions. To protect public health and drinking water sources, the Department should revise the soil to groundwater and direct contact soil MSCs for perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA). Also, the Department should add perfluorohexanoic acid (PFHxS), and perfluorononanoic acid (PFNA) to the regulated substances.**

Per and polyfluoroalkyl substances ("PFAS") are synthetic compounds that are not found in nature. Any contamination of soil or water with PFAS is due to pollution from either industrial facilities or the use of PFAS-based firefighting foams. Because of their specific chemical structure, PFAS are not susceptible to common environmental degradation processes.[39]

The harmful effects of PFAS have come into focus in recent years. Pennsylvania was one of the first states to propose and enact drinking water standards for two such compounds (perfluorooctane sulfonate ("PFOS"), and perfluorooctanoic acid (PFOA)).[40] In addition, the Department included a number of PFAS species in the proposed Chapter 250: PFOA, PFOS, Hexafluoropropylene oxide dimer acid or salt ("HFPO-DA/Gen X"), Perfluorobutanoic acid ("PFBA"), Perfluorohexanoic acid ("PFHxA"), and Perfluorobutanesulfonic acid ("PFBS").

The PA drinking water regulations were superseded in 2024 by the National Primary Drinking Water Regulations ("NPDWR") that set Maximum Contaminant Level "(MCL") for five species: PFOA, PFOS, perfluorohexanoic acid ("PFHxS"), perfluorononanoic acid ("PFNA"), and hexafluoropropylene oxide dimer acid ("HFPO-DA/GenX"). The rule also sets a limit of PFAS mixtures of PFHxS, PFNA, HFPO-DA, and PFBS using a Hazard Index that accounts for their combined toxicity.[41]

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[39] *See, e.g.,* Ian T. Cousins, et al., *The High Persistence of PFAS is Sufficient for their Management as a Chemical Class*, 22(12) ENV'T SCI. PROCESS IMPACTS 2307, 2307 (Dec. 16, 2020), *available at:* https://doi.org/10.1039/d0em00355g.

[40] Safe Drinking Water PFAS MCL Rule, 53 Pa.B. 333 (finalized Jan. 14, 2023) (codified at 25 Pa. Code Ch. 109), https://www.pacodeandbulletin.gov/Display/pabull?file=/secure/pabulletin/data/vol53/53-2/46.html.

[41] *Per- and Polyfluoroalkyl Substances (PFAS): Final PFAS National Primary Drinking Water Regulation*, EPA, https://www.epa.gov/sdwa/and-polyfluoroalkyl-substances-pfas (last updated July 12, 2024).

Because of their resistance to environmental degradation, protecting the public from harmful exposure to PFAS requires remediation of polluted sites. Additionally, environmental standards are required so that the burden of ensuring drinking water safety from PFAS does not end up solely on water providers that need to comply with the NPDWR to ensure public health.

In a quick response to the changes in NPDWR, the Department adopted EPA's MCL as MSCs for groundwater (GW), effective June 2024:

> The United States Environmental Protection Agency (EPA) has established maximum contaminant levels (MCL) for the per- and polyfluoroalkyl substances (PFAS) compounds listed below. These MCLs will become the Statewide health standard medium-specific concentration (MSC) values for groundwater effective June 25, 2024.[42]

The specific MSCs are (where 1µg/L=1000ng/L) are shown in the table below:[43]

Regulated Substance	CASRN	Used Aquifers								Nonuse Aquifers			
		TDS ≤ 2500				TDS > 2500							
		R		NR		R		NR		R		NR	
HEXAFLUOROPROPYLENE OXIDE (HFPO) DIMER ACID (Gen-X)*	13252-13-6	0.01	M	0.01	M	1	M	1	M	0.01	M	0.01	M
PERFLUOROBUTANE SULFONIC ACID (PFBS) *	375-73-5	2	H	2	H	200	H	20	H	2	H	2	H
PERFLUOROHEXANE SULFONIC ACID (PFHxS) *	108427-53-8	0.01	M	0.01	M	1	M	1	M	0.01	M	0.01	M
PERFLUORONONAOIC ACID (PFNA) *	72007-68-2	0.01	M	0.01	M	1	M	1	M	0.01	M	0.01	M
PERFLUOROOCTANE SULFONATE (PFOS)	1763-23-1	0.004	M	0.004	M	0.4	M	0.4	M	0.004	M	0.004	M
PERFLUOROOCTANOIC ACID (PFOA)	335-67-1	0.004	M	0.004	M	0.4	M	0.4	M	0.004	M	0.004	M

* In addition to meeting the individual MSC, if more than one of the marked compounds (Gen-X, PFBS, PFHxS, PFNA) are detected at any concentration in a sample, a Hazard Index (HI) must be calculated using the equation below. The HI MSC is met in this case by maintaining a rolling average HI of less than one for the most recent four quarters of samples utilizing the equation:

$$HI = \left(\frac{C_{Gen\text{-}X}}{0.01}\right) + \left(\frac{C_{PFBS}}{2}\right) + \left(\frac{C_{PFNA}}{0.01}\right) + \left(\frac{C_{PFHxS}}{0.01}\right)$$

Where: All concentrations are in µg/L

$C_{Gen\text{-}X}$ = concentration of Gen-X
C_{PFBS} = concentration of PFBS
C_{PFNA} = concentration of PFNA
C_{PFHxS} = concentration of PFHxS

(The PFBS NR TDS>2500 used aquifer value of 20µg/L in the above table is an error.[44])

[42] Statewide Health Standards, PA DEP, https://www.dep.pa.gov/Business/Land/LandRecycling/Standards-Guidance-Procedures/Pages/Statewide-Health-Standards.aspx (effective June 25, 2024),
[43] *Id.*
[44] As per Chapter 250.304(e): "If the groundwater in aquifers used or currently planned for use at the site has naturally occurring background total dissolved solids concentrations greater than 2,500 milligrams per liter, the Statewide health standard for a regulated substance dissolved in the groundwater may be adjusted by multiplying the MSC for groundwater in aquifers by 100." 25 PA. Code Ch. 250.304(e).

These values are *not* reflected in the proposed revisions to Chapter 250, which were published in the PA Bulletin on July 13, 2024.[45] Commenters acknowledge that the period between the adoption of EPA's MCLs as the new GW MSCs and the publication of the proposed Chapter 250 revisions was potentially too short to reflect these changes. However, to avoid confusion, the Department should ensure that the final revised MSC tables reflect the newly enacted PFAS MSCs.

a. Environmental pollution by PFAS is prevalent in Pennsylvania.

A survey of PA public water system entry points undertaken by the Department in preparation for the Safe Drinking Water PFAS MCL Rule shows that more than one fourth of them are contaminated by PFAS. For example, PFOA was detected in 27% of the samples, and PFOS in 25%.[46] 13 samples had a mix of other PFAS regulated by the NPDWR.

Breitmeyer, et al.[47] analyzed data collected by Duris, et al.[48] in 2019 from the surface water of 161 PA streams. 123 streams, namely 76%, showed detectable levels of 12 PFAS (out of 33 species samples), at concentrations that ranged up to 102 ng/L (=ppt). PFOA was found in 70% of the streams (up to 16ppt, namely, 4 times the June 2024 GW MSC); PFOS was found in 47% at concentrations up to 23ppt, nearly 6 times the June 2024 MSC).

PFAS pollution is also evident in sites being remediated under Act 2. For example, PFAS testing in the former PES Refinery in Philadelphia conducted in 2021–2022 on six PFAS species (PFOA, PFOS, PFNA, PFHxS, PFHpA, and PFBS) showed their presence in multiple locations of the remediation system effluent, shallow aquifer, lower aquifer, and soil.[49] In several samples PFAS levels were extremely elevated. For example, the shallow aquifer sample B-173_20220110 (Oct 1, 2022) contained 120ng/L=120ppt of PFBS, 130ng/L PFHpA, 8500ng/L PFHxS, 3100 ng/L PFNA, 3300 ng/L PFOS, and 2800ng/L PFOA. Although this sample is an outlier, levels

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[45] 54 Pa.B. 3937, Appendix A.
[46] 53 Pa.B. 333, Table 1.
[47] Sara E. Breitmeyer et al., *Per- And Polyfluorinated Alkyl Substances (PFAS) in Pennsylvania Surface Waters: A Statewide Assessment, Associated Sources, and Land-Use Relations*, 888 SCI. TOTAL ENV'T. 164161 (Aug. 25, 2023), https://doi.org/10.1016/j.scitotenv.2023.164161.
[48] J.W. Duris,et al., *Per-and Polyfluorinated Alkyl Substances (PFAS) and Associated Ancillary Data from the Commonwealth of Pennsylvania, USA*, 2019 (March 12, 2021), https://doi.org/10.5066/P9L4AHN2 (U.S. Geological Survey data release).
[49] *See, generally*, Philadelphia Refinery Act 2 documents regarding PFAS, https://phillyrefinerycleanup.info/pfas/.

exceeding 100ng/L of the different species were found in other shallow aquifer samples.[50] The effluent samples also show the presence of all PFAS species, including PFHxS and PFNA, some at extremely high levels, as shown in the table below.[51]

Table 1 - Groundwater Remediation System Effluent
Analytical Summary - PFAS Sampling
Former PES Refinery
Philadelphia, PA

Remediation System	Date Sampled	Perfluorooctanoic Acid (PFOA) (ng/L)	Perfluorooctanesulfonic Acid (PFOS) (ng/L)	Perfluorononanoic Acid (PFNA) (ng/L)	Perfluorohexanesulfonic Acid (PFHxS) (ng/L)	Perfluoroheptanoic Acid (PFHpA) (ng/L)	Perfluorobutanesulfonic Acid (PFBS) (ng/L)
Belmont Loading Rack Effluent	02/17/21	**510**	**1,200**	140	190	740	ND (<19)
PGW Border Effluent	02/17/21	45	7.4	23	5.9	37	69
Maiden Lane (Verizon) Effluent	02/17/21	9.1	6.2	3.7	2.4	4.3	2.5
Pollack Street HW-1 Effluent	02/17/21	17	23	39	4.6	10	22
Pollack Street HW-2 Effluent	02/17/21	13	7.4	ND (<1.8)	3.1	7.7	4.6
Pollack Street HW-3 Effluent	02/17/21	16	42	40	7.5	6.9	16
26th Street North Effluent	02/17/21	**210**	**1,700**	ND (<1.8)	370	220	24
EPA UCMR 3 Minimum Reporting Limits		20	40	20	30	10	90

b. The Department needs to re-calculate the soil to GW MSCs and the direct contact soil MSCs for PFOA and PFOS, based on the newly updated GW MSCs the EPA toxicity values used to calculate them.

<u>i) Soil to GW:</u>

The current GW MSCs for PFOA and PFOS are much lower than the values listed in the proposed Chapter 250, as shown in this table for used aquifer (TDS<2500). R represents residential, and NR non residential:[52]

[50] Memorandum from Andrew Buchy and Colleen Costello, Sanborn Head & Assoc., to Tiffani Doerr, P.G., Evergreen Res. Mgmt., *January 2022 Shallow Aquifer PFAS Sampling Results*, (April 7, 2022), https://phillypipweb.wpenginepowered.com/wp-content/uploads/2022/04/PFAS-Shallow-Aquifer-Sampling-Summary_04-08-2022.pdf.

[51] Tiffani Doerr, P.G., Evergreen Res. Mgmt., *Summary of February 17, 2021 PFAS Sampling Results: Former Philadelphia Refining Complex* (March 22, 2021), *available at:* https://phillypipweb.wpenginepowered.com/wp-content/uploads/2021/09/20210322_PFAS-Sampling-Summary_System-Effluent.pdf.

[52] The values for nonuse aquifer are the same as those listed here for the used aquifer (TDS<2500); for used aquifer where TDS>2500 they are 100 times these values.

Substance	CAS no	Chapter 250 proposed GW µg/L [53]		Current GW MSC* µg/L		Chapter 250 proposed soil to GW** [54] mg/Kg		100Xcurrent GW soil to GW MSC mg/kg	
		R	NR	R	NR	R	NR	R	NR
PFOS	1763-23-1	0.018	0.018	0.004	0.004	0.0018	0.0018	0.0004	0.0004
PFOA	335-67-1	0.014	0.014	0.004	0.004	0.0014	0.0014	0.0004	0.0004

* Effective June 2024 [55]
** 100 times GW MSC

The soil to GW MSC is applied so as to prevent GW contamination from polluted soil. For PFOA and PFOS, the soil to GW is calculated as 100 times the applicable MSC for GW.[56] The soil to GW MSC in the revised Chapter 250 should be reduced to match the June 2024 GW MSC, which requires a reduction by a factor of 4.5 for PFOS and 3.5 for PFOA.

ii) Direct contact soil MSCs:

Chapter 250.306 presents the equations for calculating direct contact soil MSCs. Since PFOA and PFOS are not listed as mutagens in 250.301(b), the basis for determining their direct contact soil MSCs is their RfD_o.[57]

In the proposed Chapter 250 revision,[58] the RfD_0 for PFOA are listed as 3.9×10^{-6} and for PFOS it is 3.1×10^{-6} mg/kg/D. However, EPA sets an RfD_o for PFOA of 3×10^{-8} mg/kg/day and for PFOS 1×10^{-7} mg/kg/day (as given in the RSL tables[59]). The Department used EPA's values to derive the NPDWR MCLs.[60] These EPA RfD_o are therefore the basis for the current (June 2024) GW MSCs in Pennsylvania.

[53] *Id.*
[54] *Id.*
[55] Statewide Health Standards, PADEP (2024), https://www.dep.pa.gov/Business/Land/LandRecycling/Standards-Guidance-Procedures/Pages/Statewide-Health-Standards.aspx
[56] 25 Pa. Code § 250.308(a)(1).
[57] 25 Pa Code § 250.306.
[58] 54 Pa.B. 3937, Table 5.
[59] *Regional Screening Level (RSLs) - Generic Tables*, EPA (May 2024), https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables.
[60] *See PFAS National Primary Drinking Water Regulation Rulemaking*, 88 Fed. Reg. 18638 (proposed March 29, 2023) (codified at 40 CFR Parts 141–42), *available at:* https://www.govinfo.gov/content/pkg/FR-2023-03-29/pdf/2023-05471.pdf.

Applying these updated RfD_o set by EPA will reduce the direct contact soil MSCs by 1–2 orders of magnitude for PFOA and PFOS. For example, the PFOA residential direct contact MSC (0-15ft) based on the outdated RfD_0 ($3.9 \cdot 10^{-6}$ mg/kg/D) is 0.86mg/kg, as listed in the proposed Chapter 250.[61] However, applying EPA's updated RfD_o (3×10^{-8} mg/kg/day) to 250.306 yields a value of 0.0066mg/kg.

In sum, the direct contact soil MSCs listed in the proposed Chapter 250 are 1–2 orders of magnitude higher that those they should be. The Department needs to revise the direct contact soil MSCs for PFOA and PFOS using the updated EPA RfD_o values.

c. The newly enacted GW MSCs include PFNA and PFHxS, but the proposed Chapter 250 does not list MSCs for these species in any media category. The Department needs to add soil to GW and direct contact soil MSCs for these two species.

The risk to public health posed by PHFxS and PFNA was determined by EPA when setting their MCLs for drinking water,[62] and acknowledged by the Department when enacting the new GW MSCs.[63] The need to address pollution by PFNA and PFHxS is not theoretical. In the survey of PA public water system entry points, 6% contained detectable levels of PFNA. 13% of the samples contained PFHxS. 13 samples had an HI > 1.[64] A survey by Breitmeyer, et al found that 13% of sampled streams in PA had detectable levels of PFNA (ranging up to 16ng/L) and 25% contained PFHxS (up to 9.1ng/L).[65]

The Department must account for water pollution by PFAS by PFNA and PFHxS in Pennsylvania. The Department can easily calculate the MSCs for PFNA and PFHxS by following

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[61] 54 Pa.B. 3937, Table 3.
[62] *Per- and Polyfluoroalkyl Substances (PFAS): Final PFAS National Primary Drinking Water Regulation*, EPA, https://www.epa.gov/sdwa/and-polyfluoroalkyl-substances-pfas (last updated July 12, 2024).
[63] *Statewide Health Standards*, PADEP (effective June 25, 2024), https://www.dep.pa.gov/Business/Land/LandRecycling/Standards-Guidance-Procedures/Pages/Statewide-Health-Standards.aspx.
[64] 53 Pa.B. 333, Table 1.
[65] Sara E. Breitmeyer et al., *Per- And Polyfluorinated Alkyl Substances (PFAS) in Pennsylvania Surface Waters: A Statewide Assessment, Associated Sources, and Land-Use Relations*, 888 SCI. TOTAL ENV'T. 164161 (Aug. 25, 2023), https://doi.org/10.1016/j.scitotenv.2023.164161.

the process applied for the other PFAS (e.g. PFOA and PFOS), namely using the 100xGW for soil to GW, [66] and EPA's RfD_o for direct contact soil MSCs.[67]

PFNA and PFHxS are regulated by the newly enacted GW MSCs. For consistency, public health and to prevent GW contamination from these compounds, the Department needs to derive and add soil to GW and direct contact soil MSCs for PFNA and PFHxS.

Summary:

The quick application of the 2024 NPDWR to Chapter 250 GW MSCs for six PFAS species is commendable. However, to protect public health, regulatory consistency, and especially to protect Pennsylvania's waterways and drinking water sources, the Department needs to update the proposed soil to GW and direct contact soil MSCs using the updated GW MSCs and RfD_o. Including these changes in the current revision of Chapter 250 is lawful and necessary to prevent confusion or inadequate remediation.

3. **The cancer risk posed by the proposed direct contact MSCs for six Carcinogenic Polycyclic Aromatic Hydrocarbons (cPAHs) in residential and non residential surface soils is unlawful because it substantially exceeds the Act 2 least strict upper bound limit of 1 in 10,000.**

Polycyclic aromatic hydrocarbons (PAHs) are organic compounds that consist of multiple benzene rings. They are typically produced from incomplete combustion of organic compounds, or in or high-pressure processes.[68]

Human exposure to PAHs occurs from all environmental media (air, water, and soil) through inhalation, ingestion and dermal contact.[69] The main health risk of PAHs is cancer. EPA designates as carcinogens a number of PAH (denoted "cPAHs") that were found to increase the incidences of lung, skin, and bladder cancers.[70] In addition, animal studies show that some PAHs

[66] 25 Pa. Code § 250.308(1).
[67] *Regional Screening Level (RSLs) - Generic Tables*, EPA (May 2024), https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables.
[68] *Polycyclic Aromatic Hydrocarbons (PAHs)*, CDC (Nov. 2009), https://www.epa.gov/sites/default/files/2014-03/documents/pahs_factsheet_cdc_2013.pdf.
[69] ATSDR, *Polycyclic Aromatic Hydrocarbons (PAHs):Exposure Pathways*, CDC (May 25, 2023), https://www.atsdr.cdc.gov/csem/polycyclic-aromatic-hydrocarbons/routes_of_exposure.html#:~:text=PAH%20exposure%20through%20air%2C%20water,occupational%20and%20non%2Doccupational%20settings.
[70] IRIS, *IRIS Toxicological Review of Benzo[A]Pyrene (Final Report)*, EPA (Jan. 2017), https://cfpub.epa.gov/ncea/iris_drafts/recordisplay.cfm?deid=329750#:~:text=Studies%20in%20multiple%20animal%20species,by%20all%20%20routes%20of%20%20exposure; *Other Carcinogenic Polycyclic Aromatic Hydrocarbons*, EPA,

affect systems such as the hematopoietic, immune, reproductive, or neurologic systems and affect development.[71]

PAHs in general, and cPAHs in particular, are prevalent in sites processing coal and coal tar, industrial waste incineration (including tire burning), coke oven emissions, or petroleum processing.[72] However, high levels of cPAHs are present in many other types of Pennsylvania Superfund or Act 2 brownfield sites, as demonstrated below.[73] Therefore, ensuring that the SHS and MSCs used to regulate their levels are protective of public health is essential.

a. cPAH multi-compound mixtures are prevalent in soil and groundwater in Pennsylvania. Limiting exposure to these mixtures is therefore essential to protect public health.

The Department defined seven PAH as carcinogens (cPAHs): Benzo[a]Pyrene (BaP), Benzo[a]anthracene, Benzo[b]fluoranthene, Benzo[k]fluoranthene, Chrysene, Dibenz[a,h]-anthracene, and Indeno[1,2,3-c,d]pyrene.[74]

cPAH pollution is ubiquitous in all environmental media: soil, water, and air (in particulates). The prevalence of cPAHs contamination can be seen in the Pennsylvania sites on the Federal National Priorities List for 2021[75] and the Department's "Cleanup Activities by Responsible Parties (RPs) for 2021" document.[76]

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www.epa.gov/risk/other-carcinogenic-polycyclic-aromatic-hydrocarbons (last updated May 23, 2024) (linking *Other Carcinogenic PAHs*, EPA (1993), https://www.epa.gov/sites/default/files/2015-11/documents/othercarcpahs.pdf.

[71] Kailun Sun, et al., *A Review of Human and Animals Exposure to Polycyclic Aromatic Hydrocarbons: Health Risk and Adverse Effects, Photo-Induced Toxicity and Regulating Effect of Microplastics*, 773 SCI. TOTAL ENV'T 145403 (June 15, 2021), https://doi.org/10.1016/j.scitotenv.2021.145403; ATSDR, *Toxicological Profile for Polycyclic Aromatic Hydrocarbons*, CDC (Aug. 19950), *available at:* https://www.atsdr.cdc.gov/toxprofiles/tp69.pdf.

[72] ATSDR, *Polycyclic Aromatic Hydrocarbons (PAHs):Where Found?*, CDC (May 25, 2023), https://www.atsdr.cdc.gov/csem/polycyclic-aromatic-hydrocarbons/where_are_pahs_found.html#:~:text=man%2Dmade%20processes.-,PAHs%20are%20found%20in%20industries%20that%20produce%20or%20use%20coal,an%20environmental%20indicator%20for%20PAHs

[73] *Appendix D: Pennsylvania Sites on the Federal National Priorities List*, PADEP (2021), https://files.dep.state.pa.us/EnvironmentalCleanupBrownfields/SiteRemediation/SiteRemediationPortalFiles/2022HSCAAnnualReport/Appendices/Appendix%20D%20NPL%20FY21.pdf (compiled from from EPA's National Priority List) [hereinafter PA NPL Sites].

[74] 54 Pa.B. 3937 at 3938.

[75] PA NPL Sites, *supra*, note 73.

[76] *Appendix B: Cleanup Activities by Responsible Parties (RPs)*, PADEP (2021), https://files.dep.state.pa.us/EnvironmentalCleanupBrownfields/SiteRemediation/SiteRemediationPortalFiles/2022HSCAAnnualReport/Appendices/Appendix%20B%20RP%20FY21.pdf.

Since PAHs are formed by incomplete pyrolytic processes, cPAHs are practically always present in the environment as mixtures. For example, in a recent Remedial Investigation Report for Belmont Terminal (a section of the Act 2 Philadelphia Refinery site), soil sampling from 2023 shows the presence of 10 PAHs, four of which are in the cPAH category, listed under the Semi-Volatile Organic Compounds ("SVOC") category in the table below.[77]

Table 3-5a
Soil Analytical Results Summary, Medium Specific Concentrations
Belmont Terminal
Philadelphia Refinery Operations, a series of Evergreen Resources Group, LLC

Sample Location													S-330			
Sample Date					BT-BH-23-01 4-Aug-23	BT-BH-23-02 4-Aug-23	BT-BH-23-03 4-Aug-23	BT-BH-23-04 4-Aug-23	BT-BH-23-05 4-Aug-23	9-May-11	9-May-11	16-May-11	16-May-11	16-May-11	16-May-11	16-May-11
Sample ID					BT-BH-23-01-0-2	BT-BH-23-02-0-2	BT-BH-23-03-0-2	BT-BH-23-04-0-2	BT-BH-23-05-0-2	S-330 (1.5-2)	S-330 (6-6.5)	S-330 (10-10.5)	S-330 (15-15.5)	S-330 (20-20.5)	S-330 (25-25.5)	S-330 (27-27.5)
Sample Depth					0 - 2 ft	0 - 2 ft	0 - 2 ft	0 - 2 ft	0 - 2 ft	1.5 - 2 ft	6 - 6.5 ft	10 - 10.5 ft	15 - 15.5 ft	20 - 20.5 ft	25 - 25.5 ft	27 - 27.5 ft
Sampling Company					STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC
Laboratory					SGS	SGS	SGS	SGS	SGS	LL	LL	LL	LL	LL	LL	LL
Laboratory Work Order					JD70550	JD70550	JD70550	JD70550	JD70550	1246013	1246013	1247263	1247263	1247263	1247263	1247263
Laboratory Sample ID	Units	MSC-PA A	MSC-PA B	MSC-PA C	JD70550-1	JD70550-2	JD70550-3	JD70550-4	JD70550-5	6281302	6281303	6289561	6289562	6289563	6289564	6289565
Volatile Organic Compounds																
BENZENE	mg/kg	280	330	0.5	ND (0.00055)	ND (0.00068)	ND (0.00077)	ND (0.00078)	ND (0.00064)	0.002 J	ND (0.0006)	ND (0.0006)	0.007	ND (0.027)	0.003 J	0.082 J
1,2-DIBROMOETHANE (EDB)	mg/kg	3.7	4.2	0.005	-	-	-	-	-	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)
1,2-DICHLOROETHANE (EDC)	mg/kg	85	98	0.5	ND (0.0011)	ND (0.0014)	ND (0.0015)	ND (0.0016)	ND (0.0013)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.054)	ND (0.001)	ND (0.056)
ETHYLBENZENE	mg/kg	880	1,000	70	ND (0.0011)	ND (0.0014)	ND (0.0015)	ND (0.0016)	ND (0.0013)	ND (0.001)	ND (0.001)	ND (0.001)	0.009	ND (0.054)	0.006	ND (0.056)
ISOPROPYLBENZENE (CUMENE)	mg/kg	10,000	10,000	2,500	ND (0.0022)	ND (0.0027)	ND (0.0031)	ND (0.0031)	ND (0.0026)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.054)	ND (0.001)	1.3
METHYL TERTIARY BUTYL ETHER	mg/kg	8,500	9,800	2	ND (0.0011)	ND (0.0014)	ND (0.0015)	ND (0.0016)	ND (0.0013)	ND (0.0006)	ND (0.0006)	ND (0.0006)	ND (0.0005)	ND (0.027)	ND (0.0005)	ND (0.028)
TERT-BUTYL ALCOHOL	mg/kg	n/v	n/v	n/v	-	-	-	-	-	-	-	-	-	-	-	-
TOLUENE	mg/kg	10,000	10,000	100	ND (0.0011)	ND (0.0014)	ND (0.0015)	ND (0.0016)	ND (0.0013)	ND (0.001)	ND (0.001)	ND (0.001)	0.150	ND (0.054)	0.061	ND (0.056)
1,2,4-TRIMETHYLBENZENE	mg/kg	4,700	5,400	300	ND (0.0022)	ND (0.0027)	ND (0.0031)	ND (0.0031)	ND (0.0026)	-	-	-	-	-	-	-
1,3,5-TRIMETHYLBENZENE	mg/kg	4,700	5,400	93	ND (0.0022)	ND (0.0027)	ND (0.0031)	ND (0.0031)	ND (0.0026)	-	-	-	-	-	-	-
XYLENES, TOTAL (DIMETHYLBENZENE)	mg/kg	7,900	9,100	1,000	ND (0.0011)	ND (0.0014)	ND (0.0015)	ND (0.0016)	ND (0.0013)	ND (0.001)	ND (0.001)	ND (0.001)	0.055	ND (0.054)	0.033	ND (0.056)
Semi-Volatile Organic Compounds																
ANTHRACENE	mg/kg	190,000	190,000	350	0.134	0.149	ND (0.043)	0.138	0.0961	0.037	0.0015 J	0.0016 J	ND (0.00078)	0.0046	0.0033	ND (0.094)
BENZO(A)ANTHRACENE	mg/kg	130	190,000	340	0.516	0.564	0.0189 J	0.589	0.476	0.170	0.0046	0.0057	ND (0.00039)	0.014	0.015	0.019
BENZO(A)PYRENE	mg/kg	91	190,000	46	0.499	0.671	ND (0.043)	0.513	0.596	0.210	0.0043	0.0073	0.0005 J	0.018	0.020	0.012
BENZO(B)FLUORANTHENE	mg/kg	76	190,000	170	0.661	0.741	0.0224 J	0.634	0.829	0.170	0.0030	0.0083	0.00063 J	0.021	0.022	0.0083
BENZO(G,H,I)PERYLENE	mg/kg	190,000	190,000	180	0.345	0.475	ND (0.043)	0.303	0.431	0.310	0.0061 J	0.011	ND (0.0023)	0.028	0.030	0.011
CHRYSENE	mg/kg	760	190,000	230	0.496	0.567	0.0186 J	0.554	0.529	0.270	0.042	0.016	ND (0.0035)	0.044	0.036	0.057
FLUORENE	mg/kg	130,000	190,000	3,800	0.0450	0.0211 J	ND (0.043)	0.0325 J	0.0226 J	ND (0.039)	ND (0.0041)	ND (0.0039)	ND (0.0039)	ND (0.0038)	0.0046 J	0.140
NAPHTHALENE	mg/kg	66	77	25	0.0462	0.0946	0.0912	0.0375	0.0359 J	-	-	-	-	-	-	-
PHENANTHRENE	mg/kg	190,000	190,000	10,000	0.570	0.314	0.0305 J	0.574	0.437	0.200	ND (0.0025)	0.020	0.0027 J	0.046	0.045	0.420
PYRENE	mg/kg	96,000	190,000	2,200	0.809	0.963	0.0300 J	0.844	0.902	0.360	ND (0.024)	0.020	ND (0.0039)	0.049	0.050	ND (0.270)
Metals																
LEAD, Total	mg/kg	1,000	190,000	450	78.1	563[C]	181	254	223	188	6.54	8.15	11.1	5.25	5.40	2.41

(The above is a section of the relevant Table. The full results are attached as Attachment A.)

It is important to note that Act 2 sites test only for a limited list of contaminants. It is very likely that the other cPAHs are present onsite, but since they were not included in the "contaminants of concern" list, there is no data regarding their prevalence and pollution level.

Data for the Former Tank Car Corporation of America Site (Springfield Township, Montgomery County), presented in the below table from the Land Recycling Program report (2610-FM-BECB0023, 7/2014) for the site, similarly shows the presence of multiple PAHs in soil, including all seven cPAH.[78]

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[77] Stantec Consulting Serv., *Remedial Investigation Report: Belmont Terminal*, Table 3.5a (prepared for Evergreen) (June 12, 2024), *available at:* https://phillypipweb.wpenginepowered.com/wp-content/uploads/2024/06/Belmont-Terminal_RIR_Part-1_Txt-Tbls-Figs.pdf (Part 1 (text/tables/figures)) (attached as AttachmentA). [hereinafter Belmont Terminal 2024 RIR].

[78] Randy Shick, BL Companies, *Remedial Investigation Report and Cleanup Plan: Former Tank Car Corporation of America Site*, (prepared for PADEP) April 5, 2022), *available at:* https://www.springfieldmontco.org/media/4455/n-rpt-17l5438-springfield-township_tcca-site-act-2-rir-cp-2022-04-05.pdf [hereinafter Former Tank Car Corp. RIR]. For clarity, a PDF of Table 2 (shown on the following page) is attached as Attachment B..

Table 2
Summary of 2020 Soil Analytical Results
Former Tank Car Corporation of America Site
1725 Walnut Avenue
Springfield Twp., Montgomery County, PA
BL Project No. 17L5438

Sample ID:			Residential		Non Res	Non Res	B-1A	B-1B	B-2A	B-2B	B3-A	B-3B	B-4A	B-4B	B-5A	B-5B	B-6A	B-6B	B-7A	B-7B	B-8A	B-8B	B-9A	B-9B	B-10A	B-10B	B-11A	B-12A	B-12B	B-13A	B-13B	B-14A	B-14B	B-15A	B-15B	B-16A	B-16B
Depth:			Direct		Direct	Direct	1-2'	12-13'	1-2'	9-10'	0.5-1.5'	6-7'	0.5-1.5'	5-6'	0.5-1.5'	3-4'	1-2'	5-6'	0-1'	4.5-5.5'	0.5-1.5'	3.5-4.5'	1-2'	2.5-3.5'	1-2'	2-3'	1-2'	1-2'	5-6'	1-2'	4.5-5.5'	1-2'	1-2'	12-13'	1-2'	5-6'	1-2'	5-6'
Date Sampled:		Residetnial	Contact	Non Res	Direct	Contact	9/28/20	9/28/20	9/28/20	9/28/20	9/28/20	9/28/20	9/28/20	9/28/20	9/28/20	9/28/20	9/28/20	9/28/20	9/28/20	9/28/20	9/28/20	9/28/20	9/29/20	9/29/20	9/29/20	9/29/20	9/29/20	9/29/20	9/29/20	9/29/20	9/29/20	9/29/20	9/29/20	9/29/20	9/29/20	9/29/20	9/29/20	9/29/20	9/29/20
	Units	Soil to GW	0-15 ft	Soil to GW	0-2 ft	2-15 ft																															
Volatile Organic Compounds																																					
Acetone	mg/kg	3100	10000	8800	10000	10000	<0.016	0.010 J	<0.012	<0.011	<0.012	0.0058 J	<0.0094	<0.012	<0.010	0.184	<0.015	<0.012	<0.011	0.0173	<0.0093	0.0213	0.0378	<18	<0.017	<0.011	<2.5	0.0275	<0.012	0.0162	<0.013	<0.017	<0.018	<0.015	<0.011	<0.016	<0.011
2-Butanone (MEK)	mg/kg	400	10000	400	10000	10000	<0.016 [c]	<0.011 [c]	<0.012 [c]	<0.011 [c]	<0.012	<0.0097	<0.0094	<0.012	<0.010	0.0277	<0.015	<0.012	<0.011	<0.00056	<0.0093	<0.020	<0.016	<18	<0.017	<0.011	<2.5	<0.022	<0.012	<0.015	<0.013	<0.017	<0.018	<0.015	<0.011	<0.016	<0.011
Benzene	mg/kg	0.5	57	0.5	280	330	<0.00079	<0.00055	<0.00060	<0.00056	<0.00061	<0.00049	<0.00047	<0.00060	<0.00052	<0.00052	<0.00075	<0.00059	<0.00055	<0.00056	<0.00047	<0.0010	<0.00082	<0.91	<0.00084	<0.00055	0.361	<0.0011	<0.00061	<0.00077	<0.00067	<0.00086	<0.00091	<0.00074	<0.00056	<0.00078	<0.00057
Carbon disulfids	mg/kg	150	10000	620	10000	10000	<0.0031	<0.0022	<0.0024	<0.0022	<0.0024	<0.0019	<0.0019	<0.0024	<0.0021	0.003	<0.0030	<0.0024	<0.0022	<0.0023	<0.0019	<0.0041	<0.0033	<3.7	<0.0034	<0.0022	<0.49	<0.0044	<0.0024	<0.0031	<0.0027	<0.0035	<0.0037	<0.0030	<0.0022	<0.0031	<0.0023
Chloroform	mg/kg	8	19	8	96	110	<0.0031	<0.0022	<0.0024	<0.0022	<0.0024	<0.0019	<0.0019	<0.0024	<0.0021	<0.0021	<0.0030	<0.0024	<0.0022	<0.0023	<0.0019	<0.0041	<0.0033	<3.7	<0.0034	<0.0022	<0.49	<0.0044	<0.0024	<0.0031	<0.0027	0.0012 J	<0.0037	<0.0030	<0.0022	<0.0031	<0.0023
Ethylbenzene	mg/kg	70	180	70	880	1000	<0.0016	<0.0011	<0.0012	<0.0011	<0.0012	<0.00097	<0.00094	<0.0012	<0.0010	<0.0010	<0.0015	<0.0012	<0.0011	<0.0011	<0.00093	<0.0020	<0.0016	4.35	<0.0017	<0.0011	1.69	<0.0022	<0.0012	<0.0015	<0.0013	<0.0017	<0.0018	<0.0015	<0.0011	<0.0016	<0.0011
Styrene	mg/kg	24	10000	24	10000	10000	<0.0031	<0.0022	<0.0024	<0.0022	<0.0024	<0.0019	<0.0019	<0.0024	<0.0021	<0.0021	<0.0030	<0.0024	<0.0022	<0.0023	<0.0019	<0.0041	<0.0033	3.09 J	<0.0034	<0.0022	1.14	<0.0044	<0.0024	<0.0031	<0.0027	<0.0035	<0.0037	<0.0030	<0.0022	<0.0031	<0.0023
Toluene	mg/kg	100	10000	100	10000	10000	<0.0016	<0.0011	<0.0012	<0.0011	<0.0012	<0.00097	<0.00094	<0.0012	<0.0010	<0.0010	<0.0015	<0.0012	<0.0011	<0.0011	<0.00093	<0.0020	<0.0016	2.72	<0.0017	<0.0011	1.32	<0.0022	<0.0012	<0.0015	<0.0013	<0.0017	<0.0018	<0.0015	<0.0011	<0.0016	<0.0011
Xylenes (total)	mg/kg	1000	1900	1000	7900	9100	<0.0016	<0.0011	<0.0012	<0.0011	<0.0012	<0.00097	<0.00094	<0.0012	<0.0010	<0.0010	<0.0015	<0.0012	<0.0011	<0.0011	<0.00093	<0.0020	<0.0016	22.4	<0.0017	<0.0011	8.78	<0.0022	<0.0012	<0.0015	<0.0013	<0.0017	<0.0018	<0.0015	<0.0011	<0.0016	<0.0011
Semivolatile Organic Compounds																																					
Acenaphthene	mg/kg	2600	13000	4700	190000	190000	<0.036	<0.038	<0.038	<0.039	<0.038	0.0166 J	0.657	0.0194 J	<0.039	0.773	<0.040	<0.039	<0.038	<0.040	<0.033	<0.040	42.3	10.4	0.0361 J	<0.040	4.04	0.102 J	<0.041	0.0275 J	0.0273 J	0.0149 J	<0.041	<0.039	<0.039	<0.039	<0.039
Acenaphthylene	mg/kg	2400	13000	6600	190000	190000	<0.036	<0.038	<0.038	<0.039	0.0399	0.138	0.698	<0.038	<0.039	0.958	<0.040	<0.039	<0.038	<0.040	<0.033	<0.040	25.7	7.88	0.3	<0.040	1.17	0.186 J	<0.041	0.295	0.115	0.177	<0.041	<0.039	<0.039	<0.039	<0.039
Anthracene	mg/kg	350	66000	350	190000	190000	<0.036	<0.038	<0.038	<0.039	0.0416	0.118	2.74	0.0446	<0.039	21.8	<0.040	0.0302 J	<0.038	<0.040	<0.033	<0.040	288	36.5	0.306	<0.040	6.77	0.341	<0.041	0.274	0.134	0.23	<0.041	<0.039	<0.039	<0.039	<0.039
Benzo(a)anthracene	mg/kg	26	6.1	340	130	190000	0.0966	<0.038	<0.038	<0.039	0.127	0.421	**10.3**	0.114	0.0126 J	3.08	<0.040	0.0613	0.0153 J	0.0200 J	0.0924	0.0200 J	**151**	**30.1**	1.02	<0.040	**8.09**	0.756	0.0177 J	0.751	0.461	0.681	0.0211 J	0.0388 J	<0.039	0.0655	<0.039
Benzo(a)pyrene	mg/kg	46	4.2	46	91	190000	0.1	<0.038	<0.038	<0.039	0.117	0.369	**11.4**	0.118	<0.039	3.34	<0.040	0.0714	<0.038	0.0224 J	0.135	<0.040	**110**	**23.8**	1.13	<0.040	**6.51**	0.791	<0.041	0.914	0.515	0.814	<0.041	0.0427	<0.039	0.0718	<0.039
Benzo(b)fluoranthene	mg/kg	25	3.5	170	79	190000	0.14	<0.038	<0.038	<0.039	0.107	0.376	**13.1**	0.148	<0.039	**3.94**	<0.040	0.0808	0.0173 J	0.0301 J	0.173	0.0191 J	**144**	**29.5**	1.55	<0.040	**7.98**	1.22	0.0211 J	1.42	0.714	1.09	<0.041	0.0456	<0.039	0.0935	<0.039
Benzo(g,h,i)perylene	mg/kg	180	13000	1800	190000	190000	0.0595	<0.038	<0.038	<0.039	0.0602	0.242	7.55	0.0686	<0.039	1.94	<0.040	0.0408	<0.038	0.0222 J	0.117	<0.040	53.5	11.9	0.837	<0.040	3.18	0.806	0.0406 J	1.25	0.408	0.598	<0.041	0.0327 J	<0.039	0.0573	<0.039
Benzo(k)fluoranthene	mg/kg	200	3.5	610	76	190000	0.0521	<0.038	<0.038	<0.039	0.0319 J	0.109	**4.96**	0.0528	<0.039	1.55	<0.040	0.0342 J	<0.038	<0.040	0.0659	<0.040	**55.3**	**8.81**	0.514	<0.040	3.1	0.449	<0.041	0.455	0.217	0.348	<0.041	<0.039	<0.039	0.0323 J	<0.039
Chrysene	mg/kg	220	35	230	760	190000	0.112	<0.038	<0.038	<0.039	0.149	0.476	10.3	0.113	<0.039	3.34	<0.040	0.0694	0.0124 J	0.0215 J	0.12	0.0203 J	**147**	26	1.33	<0.040	8.19	1.02	0.0171 J	0.925	0.541	0.731	0.0147 J	0.0364 J	<0.039	0.0793	<0.039
Dibenzo(a,h)anthracene	mg/kg	23	1	270	22	190000	<0.036	<0.038	<0.038	<0.039	<0.038	0.0516	**1.76**	<0.038	<0.039	0.464	<0.040	<0.039	<0.038	<0.040	0.0180 J	<0.040	**17.3**	**3.48**	0.191	<0.040	0.867	0.189 J	<0.041	0.214	0.0838	0.14	<0.041	<0.039	<0.039	<0.039	<0.039
Fluoranthene	mg/kg	3200	8800	3200	130000	190000	0.216	<0.038	<0.038	<0.039	0.17	0.494	18.1	0.255	<0.039	5.93	<0.040	0.111	0.0205 J	0.0335 J	0.17	0.0343 J	434	79.1	2.13	<0.040	23.2	2	0.0281 J	1.52	0.862	1.12	0.0387 J	0.0581	<0.039	0.154	<0.039
Fluorene	mg/kg	2800	8800	3800	130000	190000	<0.036	<0.038	<0.038	<0.039	0.0264 J	0.0524	0.799	0.0195 J	<0.039	2.58	<0.040	<0.039	<0.038	<0.040	<0.033	<0.040	100	30.1	0.0756	<0.040	7.84	0.141 J	0.0261 J	0.0448	0.0514	0.0300 J	<0.041	<0.039	<0.039	<0.039	<0.039
Indeno(1,2,3-cd)pyrene	mg/kg	1400	3.5	18000	76	190000	0.0617	<0.038	<0.038	<0.039	0.0538	0.208	**8.11**	0.0797	<0.039	2.16	<0.040	0.0437	<0.038	0.0223 J	0.107	<0.040	**51.1**	**10.8**	0.684	<0.040	2.88	0.628	<0.041	0.907	0.332	0.519	<0.041	0.0234 J	<0.039	0.0451	<0.039
Naphthalene	mg/kg	25	13	25	66	77	<0.036	<0.038	<0.038	<0.039	0.0152 J	0.0351 J	0.22	0.0134 J	<0.039	1.57	<0.040	0.0168 J	<0.038	<0.040	<0.033	<0.040	12.7	**22.1**	0.0767	<0.040	8.58	0.206	0.0126 J	0.155	1.13	0.0673	<0.041	<0.039	<0.039	<0.039	<0.039
Phenanthrene	mg/kg	10000	66000	10000	190000	190000	0.0926	<0.038	<0.038	<0.039	0.165	0.293	9.77	0.183	<0.039	8.36	<0.040	0.0679	<0.038	<0.040	0.0703	0.0307 J	393	86.4	1.09	0.0143 J	19	1.53	0.0256 J	0.743	0.455	0.374	<0.041	0.0350 J	<0.039	0.072	<0.039
Pyrene	mg/kg	2200	6600	2200	96000	190000	0.195	<0.038	<0.038	<0.039	0.314	1.01	21.5	0.225	0.0138 J	6.28	<0.040	0.111	0.0189 J	0.0300 J	0.19	0.0369 J	322	66.8	1.91	<0.040	16.7	1.49	0.0217 J	1.23	0.758	0.926	0.0289 J	0.0681	<0.039	0.13	<0.039
Priority Pollutant List Metals																																					
Antimony	mg/kg	27	88	27	1300	190000	<2.2	<2.3	<2.3	<2.3	<2.4	<2.3	4.5	<2.3	<2.5	<11 [e]	<2.5	<2.3	<2.4	<2.4	<2.1	<2.5	14.3	**124** [d]	2.6	<2.5	<2.7	<24 [e]	<12 [e]	<12 [e]	<12 [e]	<12 [e]	<12 [e]	<2.3	<2.4	<2.3	<2.4
Arsenic	mg/kg	29	12	29	61	190000	7.1 [e]	<12 [e]	7.9 [e]	<4.6 [e]	8.3 [e]	<11 [e]	<11 [e]	<11 [e]	<2.5	**12.9** [d]	<13 [e]	<12 [e]	<12 [e]	<12 [e]	6.6 [e]	8.8 [e]	**58.2**	**296** [d]	**15.5**	9.0 [e]	**101** [d]	<24 [e]	<12 [e]	**16.2** [d]	<12 [e]	<12 [e]	<12 [e]	6.7	9.4 [e]	6.1	4.7
Beryllium	mg/kg	320	440	320	6400	190000	0.91 [e]	8.2 [e]	1.1 [e]	2.0 [e]	1.6 [e]	4.0 [e]	14.2 [e]	2.2 [e]	1.6	43.1 [e]	4.3 [e]	7.5 [e]	2.4 [e]	13.3 [e]	8.3 [e]	1.5 [e]	0.43	<7.2 [e]	0.71	1.9	1.1	11.0 [e]	6.1 [e]	6.0 [e]	2.9 [e]	2.4 [e]	<1.2 [e]	1	1	1.1	1.2
Cadmium	mg/kg	38	110	38	1600	190000	<1.1 [e]	<2.9 [e]	<1.1 [e]	<1.2 [e]	<1.2 [e]	<2.8 [e]	<2.9 [e]	<2.8 [e]	<0.62	<2.7 [e]	<3.1 [e]	<2.9 [e]	<2.9 [e]	<3.0 [e]	<1.6 [e]	<1.2 [e]	<0.66	<18 [e]	3	<1.3 [e]	<1.3 [e]	11.8 [e]	<3.1 [e]	7.0 [e]	<3.1 [e]	<3.0 [e]	<3.0 [e]	<0.58	<1.2 [e]	<0.58	<0.60
Chromium, Total	mg/kg	-	-	-	-	-	28.8	23.4	32.7	20.7	30.1	16	57.2	25.2	4.2	73.9	15.6	41.9	15.1	30.4 [d]	22.2	38.2	21.4	20.7	49.3	23.2	20.9	267	17.4	253	42.1	21.0 [e]	<6.1 [e]	37.5	46.2	19.3	19.5
Copper	mg/kg	43000	7200	43000	100000	190000	12.5 [e]	41.9 [e]	18.8 [e]	9.7 [e]	30.7 [e]	14.1 [e]	574 [e]	35.5 [e]	13.1	1570 [e]	198 [e]	159 [e]	62.9 [e]	487 [e]	449 [e]	22.5 [e]	60	476 [e]	61.7	20.3 [e]	31.4 [e]	5760 [e]	118 [e]	643 [e]	81.7 [e]	<15 [e]	<15 [e]	34.7	20.4 [e]	9.9	14.2
Lead	mg/kg	450	500	450	1000	190000	13.2 [d]	105 [e]	13.3 [e]	8.9 [e]	19.1 [e]	<11 [e]	440 [e]	17.9 [e]	<12 [e]	**793** [d]	75.7 [e]	66.0 [e]	23.5 [e]	153 [e]	223 [e]	14.0 [e]	**790**	**1200**	**578**	15.5 [e]	258 [e]	**4010** [d]	47.0 [e]	**1306** [d]	298 [e]	20.7	13	15.1	10.5 [e]	27.7	9.2
Mercury	mg/kg	10	35	10	510	190000	<0.037	<0.035	0.052	0.049	0.053	<0.035	0.11	<0.037	0.14	0.24	0.11	<0.038	<0.037	<0.038	<0.033	<0.041	0.79	0.18	0.12	<0.033	0.15	1.2	0.062	0.35	0.064	<0.033	<0.039	<0.031	<0.039	<0.037	<0.038
Nickel	mg/kg	650	4400	650	64000	190000	17	32.7	20.2	27.1	21.6	41.8	70.2	25.1	8.6	127	44.6	52.9	28.9	74.8	81.5	23.3	18.7	24.9	17.3	22.8	14.8	108	38.8	69.5	25.7	<24 [e]	<24 [e]	16.3	17.1	13.1	22.5
Selenium	mg/kg	26	1100	26	16000	190000	<4.4 [d]	<12 [d]	<4.6 [d]	<4.6 [d]	<4.7 [d]	<11 [d]	<11 [d]	<11 [d]	<2.5	<11 [d]	<13 [d]	<12 [d]	<12 [d]	<12 [d]	<6.3 [d]	<5.0 [d]	3.8	<72 [d]	<2.3	<5.1 [d]	8.6 [d]	<24 [d]	<12 [d]	<12 [d]	<12 [d]	<12 [d]	<12 [d]	<2.3	<4.7 [d]	<2.3	<2.4
Silver	mg/kg	84	1100	84	16000	190000	<1.1 [e]	<2.9 [e]	<1.1 [e]	1.6 [e]	<1.2 [e]	<2.8 [e]	<2.9 [e]	<2.8 [e]	<0.62	2.9 [e]	<3.1 [e]	<2.9 [e]	<2.9 [e]	3.4 [e]	1.8 [e]	1.2 [e]	<0.66	<18 [e]	<0.58	<1.3 [e]	<1.3 [e]	<6.0 [e]	<3.1 [e]	<2.9 [e]	<3.1 [e]	<3.0 [e]	<3.0 [e]	<0.58	<1.2 [e]	<0.58	<0.60
Zinc	mg/kg	12000	66000	12000	190000	190000	41.8	256	50	68.2	122	185	3640 [e]	111	56.3	11800	250	753	117	2260 [e]	2100 [e]	73.5	168	982	392	102	199	9180 [e]	210	4420 [e]	318	<120 [e]	<120 [e]	48.5	46.6	41.6	50.1
General Chemistry																																					
Solids, Percent	%	-	-	-	-	-	88.4	83.9	85	84.7	85.9	88.7	90	86.1	80.7	92.6	81.4	83.3	86.8	82.3	97.3	81.7	74.7	69.4	85.1	81.5	76.9	82	80.4	87.5	81.1	80.3	80.4	82.1	83.3	82.3	82.8

Footnotes:
Only detected compounds shown
Bolded and Shaded Value indicates exceedence of an applicable Act 2 Statewide Health Standard or Screening Value.
[a] Associated CCV outside of control limits low.
[b] Associated CCV outside of control limits high, sample was ND. This compound in blank spike is outside in house QC limits bias high.
[c] Associated CCV outside of control limits high, sample was ND.
[d] Elevated detection limit due to dilution required for high interfering element.
[e] Elevated detection limit due to dilution required for matrix interference (indicated by failing internal standard on original analysis).

(Each bolded and shaded value in the above table indicates an exceedance of an applicable Act 2 Statewide Health Standard or Screening Value, and a PDF of the Table is attached as Attachment B.)

The presence of multiple cPAH species on such sites underscores the need to ensure that the cumulative cancer risk posed by the mixture, as defined by EPA,[79] complies with Act 2. Moreover, the cancer risk from cPAHs in soil is exacerbated by their prevalence in other media on the same sites. For example, groundwater in the Belmont Terminal site of the Philadelphia refinery is also heavily contaminated with the cPAH (as well as other PAH compounds), as shown in the below table from the Belmont Terminal 2024 Remedial Investigation Report:[80]

Table 3-4a
Groundwater Analytical Results Summary and Stabilized Purged Parameters, Unconfined Aquifer
Belmont Terminal
Philadelphia Refinery Operations, a series of Evergreen Resources Group, LLC

Sample Location			MW-44							OW-2				OW-13				
Sample Date			1-Aug-18	1-Jul-19	12-Nov-19	23-Apr-21	27-Oct-21	25-Apr-22	28-Mar-23	17-Jul-12	27-May-14	17-Dec-14	13-Aug-18	17-Jul-12	27-May-14	18-Dec-14	14-Aug-18	19-Oc
Sample ID			MW-44_20180801	MW-44_20190701	MW-44_20191112	MW-44_20210423	MW-44_20211027	MW-44_SL_20220425	MW-44_20230328	OW2_071712	OW-2	OW-2-20141217	OW-2-20180813	OW13_071712	OW-13	OW-13-20141218	OW_13_20180814	OW 13_2021
Laboratory		MSC-PA	STANTEC ESC	STANTEC LL	STANTEC LL	STANTEC LANCASTER	STANTEC LANCASTER	STANTEC SGSA	STANTEC SGS	UNKNOWN LL	STANTEC ACCUTEST	STANTEC ACCUTEST	STANTEC ESC	UNKNOWN LL	STANTEC ACCUTEST	STANTEC ACCUTEST	STANTEC ESC	GEOSYI PAC
Laboratory Work Order	Units	A	L1014699	2052178	2074487	410-37313-1	410-61053-1	JD43905	JD63001	1323260	JB67921	JB84509	L1017387	1323260	JB67921	JB84819	L1017806	L1548
Field Parameters																		
DISSOLVED OXYGEN, FIELD MEASURED	mg/L	n/v	0	0.61	1.59	0.01	0	2.64 SL	0	-	0.70	0.68	0.31	-	1.04	0.41	0.39	-
OXIDATION REDUCTION POTENTIAL, FIELD MEASURED	mV	n/v	22	-30	11	-41	-102	-76 SL	-14	-	-105	-97	-98	-	-131	-112	-56	-
pH, FIELD MEASURED	S.U.	n/v	6.15	5.53	6.42	5.2	6.07	6.57 SL	5.67	-	6.80	7.02	6.93	-	6.93	7.31	6.67	-
SPECIFIC CONDUCTANCE FIELD	mS/cm	n/v	1.25	1.11	0.079	1.7	1.46	0.775 SL	1.9	-	2.23	2.51	2.83	-	1.93	1.9	1.88	-
TEMPERATURE, FIELD MEASURED	deg c	n/v	20.4	21.1	15.32	15.51	20.95	18.56 SL	18.41	-	19.22	19.53	21.58	-	18.99	18.29	20.62	-
TOTAL DISSOLVED SOLIDS, FIELD MEASURED	mg/L	n/v	-	0.722	0.046	-	-	-	-	-	1.47	-	-	-	1.19	-	-	-
TURBIDITY	NTU	n/v	89.3	30.7	174	102	38.9	296 SL	41.1	-	244	74.2	21.3	-	681	88.3	47.1	-
Volatile Organic Compounds																		
BENZENE	µg/L	5	**8,870[A]**	**8,700[A]**	**3,000[A]**	**11,000[A]**	**12,000[A]**	**4,320 SL[A]**	**15,400[A]**	**1,700[A]**	**5,500[A]**	**26,700[A]**	**333[A]**	**75,000[A]**	**55,900[A]**	**72,700[A]**	**39,600[A]**	**42,7**
1,2-DIBROMOETHANE (EDB)	µg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-DICHLOROETHANE (EDC)	µg/L	5	*ND (36.1)*	ND (2)	ND (2)	ND (3.0)	ND (3.0)	*ND (6.0) SL*	*ND (60)*	ND (5)	ND (3.0)	*ND (30)*	ND (1.00)	ND (0.5)	*ND (150)*	*ND (60)*	*ND (36.1)*	-
ETHYLBENZENE	µg/L	700	**1,740[A]**	**990[A]**	500	**1,400[A]**	**1,300[A]**	**1,060 SL[A]**	**1,600[A]**	25	204	531	10.3	**910[A]**	**987[A]**	**1,310[A]**	**709[A]**	**1,29**
ISOPROPYLBENZENE (CUMENE)	µg/L	3,500	ND (100)	43 J	22 J	55	54	57.7 SL	ND (100)	39	40.7	33.0 J	20.7	43 J	ND (500)	80.2 J	ND (100)	-
METHYL TERTIARY BUTYL ETHER	µg/L	20	**345[A]**	**120[A]**	**50[A]**	**160[A]**	**480[A]**	**99.6 SL[A]**	**645[A]**	**650[A]**	**117[A]**	**153[A]**	2.34	**79[A]**	*ND (130)*	**171 J[A]**	*ND (36.7)*	ND (1
NAPHTHALENE	µg/L	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TERT-BUTYL ALCOHOL	µg/L	n/v	3,500	740	350	1,400	9,200	935 SL	6,430	-	-	-	-	-	-	-	-	-
TOLUENE	µg/L	1,000	**1,330[A]**	220	320	390	200	216 SL	155	140	**1,080[A]**	**4,520[A]**	3.16	**13,000[A]**	**13,400[A]**	**20,200[A]**	**8,280[A]**	**11,5**
1,2,4-TRIMETHYLBENZENE	µg/L	530	**1,700[A]**	**1,200[A]**	**690[A]**	**1,500[A]**	**1,300[A]**	**1,570 SL[A]**	**1,660[A]**	**750[A]**	**946[A]**	**875[A]**	9.95	**1,300[A]**	**2,020[A]**	**1,740[A]**	**913[A]**	-
1,3,5-TRIMETHYLBENZENE	µg/L	530	496	360	220	450	410	451 SL	477	290	368	319	ND (1.00)	440	**680 J[A]**	**548[A]**	295	-
XYLENES, TOTAL (DIMETHYLBENZENE)	µg/L	10,000	**10,500[A]**	5,300	3,800	7,900	5,200	6,830 SL	8,660	2,800	3,120	5,080	22.9	10,000	**12,400[A]**	**13,500[A]**	7,970	**11,9**
Semi-Volatile Organic Compounds																		
ANTHRACENE	µg/L	66	1.15	0.7	2	1.0	0.88	5.20 SL	1.46	0.9	0.273	0.193	0.213	1	1.54	0.242	0.112	-
BENZO(A)ANTHRACENE	µg/L	3.9	ND (0.500)	0.7	3	1.9	0.33 J	**7.46 SL[A]**	1.92	0.6	0.109	0.164	ND (0.0500)	0.8	2.14	0.119	ND (0.100)	-
BENZO(A)PYRENE	µg/L	0.2	ND (0.116)	**1[A]**	**4[A]**	**3.0[A]**	**0.43 J[A]**	**9.38 SL[A]**	**2.04[A]**	**0.7[A]**	0.138	0.181	ND (0.0500)	**0.7[A]**	**1.39[A]**	ND (0.10)	ND (0.100)	-
BENZO(B)FLUORANTHENE	µg/L	1.2	0.846	**2[A]**	**8[A]**	**4.8[A]**	0.73	**17.3 SL[A]**	**4.48[A]**	0.9	0.171	0.268	ND (0.0500)	1	**3.27[A]**	0.144	ND (0.100)	-
BENZO(G,H,I)PERYLENE	µg/L	0.26	ND (0.0227)	**0.9[A]**	**4[A]**	**2.0[A]**	**0.42 J[A]**	**8.19 SL[A]**	**2.12[A]**	**0.8[A]**	0.226	0.214	ND (0.0500)	**0.6[A]**	**1.92[A]**	ND (0.10)	ND (0.100)	-
CHRYSENE	µg/L	1.9	0.748	**2[A]**	**7[A]**	**4.5[A]**	0.57	**14.9 SL[A]**	**3.16[A]**	0.7	0.144	0.219	ND (0.0500)	1	**2.24[A]**	0.132	ND (0.100)	-
FLUORENE	µg/L	1,900	7.07	4	6	4.6	5.3	14.3 SL	3.85	4	1.57	1.42	0.437	3	4.55	1.17	0.724	-
NAPHTHALENE	µg/L	100	**594[A]**	**270[A]**	**120[A]**	**330[A]**	**320[A]**	**565 SL[A]**	**230[A]**	23	27.6	77.1	0.870	**370[A]**	**333[A]**	**200[A]**	**165[A]**	-
PHENANTHRENE	µg/L	1,100	8.22	6	12	8.7	6.5	36.8 SL	9.88	5	1.44	1.33	0.0714	6	8.89	1.39	0.641	-
PYRENE	µg/L	130	1.85	3	-	6.5	1.3	22.9 SL	6.36	3	0.444	0.480	0.331	6	7.67	0.484	0.160	-

(The orange highlights indicate exceedance above PA's current MSC. (This is a section of the relevant Table. The full results are attached in a PDF as Attachment C.))

[79] Risk Assessment Forum Panel, *Supplementary Guidance for Conducting Health Risk Assessment of Chemical Mixtures* 104–05, EPA (Aug. 2000), *available at:* https://ofmpub.epa.gov/eims/eimscomm.getfile?p_download_id=4486.

[80] Belmont Terminal 2024 RIR, Table 3-4a, attached as Attachment C.

Similarly, water at the Former Tank Car Corporation of America Site (Springfield Township, Montgomery County) is also contaminated with multiple cPAH, as shown in Table 4 of the related Act 2 report, shown below and attached as Attachment D.[81]

Residential Used Aquifer		38,000	5	1,500	100	80	13,000	0.2	600	600	75	31	5	5	70	7.3	NS	700	63	840	3,300	42,000
Non-Residential Used Aquifer		110,000	5	6,200	100	80	53,000	0.2	600	600	75	160	5	5	70	34	NS	700	260	3,500	9,300	120,000
		Semi-Volatile Organic Compounds																				
Sample ID	Sample Date	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(e)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	1,1-Biphenyl	Bis(2-ethylhexyl)phthalate	Carbazole	Dibenzofuran	Chrysene	Dibenzo(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	2-Methylnaphthalene	4-Methylphenol (p-cresol)	Naphthalene	Phenanthrene
TW-01	11/19/2008	73	110 J	**210**	**11**	**6.8**	**9.3**	**4.2 J**	**3.5 J**	43	<5.0	**440**	**110 J**	**21**	**1.2 J**	49	120 J	**4.2 J**	**390 J**	**1000**	**5200**	180
TW-02	11/19/2008	110 J	72	51	**12**	**6.7**	**8.1**	**3.1 J**	**3.0 J**	39	<5.0	**430 J**	**95 J**	**10**	<5.0	53	140 J	**3.0 J**	**440 J**	**7700**	**5900**	210 J
TW-06	11/20/2008	16	1.4 J	3.2 J	**1.0 J**	**0.88 J**	**1.2 J**	**0.60 J**	<5.0	3.5 J	0.62 J	16	8.6	1.1 J	<5.0	3.7 J	12	<5.0	21	10	**420**	9.7
TW-09	11/20/2008	220 J	9.7	23	**20**	**14**	**18**	**8.5**	**8.1**	52	1.3 J	**100 J**	**120 J**	**18**	**2.4 J**	69	120 J	**8.6**	96 J	<5.0	**2500**	160 J
ACT 2 STATEWIDE HEALTH STANDARDS																						
Residential Used Aquifer		2,500	2,500	66	0.32	0.2	0.19	0.26	0.19	91	6	37	42	1.9	0.055	260	1,700	0.19	170	210	100	1,100
Non-Residential Used Aquifer		3,800	7,000	66	4.9	0.2	1.2	0.26	0.55	430	6	170	120	1.9	0.6	260	1,900	2.8	470	580	100	1,100

(Bolded values in the above table meet or exceed the PADEP Residential Statewide Health Standard; Bolded and shaded values meet or exceed the PADEP Residential and Non-Residential Statewide Health Standards.)

b. Although the proposed changes to cPAHs Direct Contact Soil MSC follow Pennsylvania Chapter 250 and EPA guidelines, they result in very high values that exceed Chapter 250's cancer target risk

The proposed rulemaking sets new, very high direct contact soil MSCs for six cPAH compounds. The methodology applied to calculate these proposed soil MSCs is based on 'relative potency factors' (RPF) using as the index compound Benzo[a]Pyrene (BaP):

> Additionally, this proposed rulemaking includes a change in the method of determining the toxicity values for six carcinogenic polycyclic aromatic hydrocarbon (PAH) compounds (Benzo[a]anthracene, Benzo[b]fluor-anthene, Benzo[k]fluoranthene, Chrysene, Dibenz[a,h]- anthracene and Indeno[1,2,3-c,d]pyrene). The EPA's guidance recommends the application of relative potency factors (RPF) to assess the carcinogenic hazard from oral exposure to carcinogenic PAHs. **RPFs are comparative risk estimates of**

[81] Former Tank Car Corp. RIR, *supra*, note 78, Table 4. For clarity, a PDF of the Table is attached as Attachment D.

> **the relative potency of each carcinogenic PAH as compared to benzo[a]pyrene (BaP).** BaP is a commonly found PAH that has a significantly higher number of documented toxicity studies than the other six PAHs. When the EPA updated the toxicity value for BaP in IRIS in January 2017, the supporting documents specifically referred to the EPA's 1993 guidance document on the use of RPFs for determining the toxicity of six other PAH compounds. The Board proposes to use the EPA's RPFs as toxicity values to more accurately calculate MSCs for **these six carcinogenic PAHs**.[82]

The Department applied the guidelines of Pennsylvania's Chapter 250 Administration of Land Recycling Program[83] and used toxicity data from EPA's 2017 Integrated Risk Information System (IRIS) assessment[84] when it revised the direct contact soil MSCs for BaP in 2021.[85] However, the resulting MSCs for residential soil (0–15ft) and non residential surface soil (0–2ft) are much higher than BaP standards for soil in other states; the table below shows New Jersey's, Maryland's, Ohio's, and New York's values as examples, as well as the EPA regional screening levels ("RSL"):

[82] 54 Pa.B. 3937 at 3938 (emphasis added).
[83] 25 Pa. Code Ch. 250.
[84] IRIS, *IRIS Toxicological Review of Benzo[A]Pyrene (Final Report)*, EPA (Jan. 2017), https://cfpub.epa.gov/ncea/iris_drafts/recordisplay.cfm?deid=329750#:~:text=Studies%20in%20multiple%20animal%20species,by%20all%20%20routes%20of%20%20exposure (using SF_0 of 1 per mg/kg-day).
[85] "On November 20, 2021, revisions to the regulations found at 25 Pa. Code Chapter 250, Administration of the Land Recycling Program (Act 2 cleanup standards), became effective." Statewide Health Standards, PA DEP, https://www.dep.pa.gov/Business/Land/LandRecycling/Standards-Guidance-Procedures/Pages/Statewide-Health-Standards.aspx (effective June 25, 2024),

Agency	Effective date	Residential (mg/kg)	Non-Residential (mg/kg)
PADEP	11/2021	4.2	91
EPA/RSL * [86]	05/2024	0.11	2.1
NJ-NJDEP [87]	05/2024	0.51	2.3
NY-NYDEC [88]	12/2023	1	3.7**
MD-MDE [89]	10/2018 (amended 04/2022)	0.11	2.1
OH -OHDEP [90]	10/2019	2.3	62***

* EPA Regional Screening Levels, representing a cancer risk of 1 in 1,000,000.
** NY has two non-residential standards: Commercial and industrial. This value is for the less stringent industrial standard.
*** Commercial or industrial use (Table III)

Using the RPF methodology based on these very high BaP soil MSCs result in a very large increase in the proposed MSCs for the six other cPAH, as shown below:

Substance	CASRN	Residential 0–15ft (mg/kg)			Non-Residential 0–2ft (mg/kg)	
		Current	Proposed		Current	Proposed
BENZO[A]PYRENE*	**50-32-8**	**4.2**	**4.2**		**91**	**91**
BENZO[A]ANTHRACENE	56-55-3	6.1	42		130	910
BENZO[B]FLUORANTHENE	205-99-2	3.5	42		76	910
BENZO[K]FLUORANTHENE	207-08-9	3.5	420		76	9100
CHRYSENE	218-01-9	35	4200		760	91000
DIBENZO[A,H]ANTHRACENE	53-70-3	1	4.2		22	91
INDENO[1,2,3-CD]PYRENE	193-39-5	3.5	42		76	910

*Index compound; MSCs are current since 2021

The risk posed by these cPAH MSCs is evaluated by calculating the lifetime cancer risk that these values pose.[91] EPA sets Regional Screening Levels ("RSL") to represent a lifetime

[86] *Regional Screening Level (RSLs) - Generic Tables*, EPA (May 2024), https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables.
[87] N.J. Admin. Code § 7:26D, Appendix 1, Tables 1,2 (last amended May 6, 2024) (remediation standards), https://dep.nj.gov/wp-content/uploads/rules/rules/njac7_26d.pdf.
[88] Proposed amendments to 6 NYCRR Part 375, Table 375-6.8(b), Environmental Remediation Programs, (2023), https://dec.ny.gov/sites/default/files/2024-02/Part375_ExpressTerms.2023.12.06.3.pdf.
[89] MD Dep't Env't, Cleanup Standards for Soil and Groundwater, Interim Final Guidance, Update 3, at 23, Table 1, https://mde.maryland.gov/programs/land/MarylandBrownfieldVCP/Documents/www.mde.state.md.us/assets/document/MDE%20Soil%20and%20Groundwater%20Cleanup%20Standards%2010-2018%20Interim%20Final%20Update%203-2.pdf.
[90] Ohio Admin. Code 3745-300-08-App A, Tables 1, 3 (2019) https://codes.ohio.gov/assets/laws/administrative-code/pdfs/3745/0/300/3745-300-08_PH_FF_N_APP1_20191007_1302.pdf.
[91] EPA Risk Assessment Forum, *Guidelines for Carcinogen Risk Assessment*, §4-2 (March 2005), *available at:* https://www.epa.gov/sites/default/files/2013-09/documents/cancer_guidelines_final_3-25-05.pdf.

cancer risk of 10^{-6}, or 1 in 1,000,000. The ratio between the proposed MSC and the RSL therefore yields the cancer risk times 10^{-6}:[92]

REGULATED SUBSTANCE	CASRN	Residential 0–15ft			Non Residential 0–2ft		
		PADEP proposed MSC (mg/kg)	EPA RSL (mg/kg)	PADEP cancer risk ** ($*10^{-6}$)	PADEP MSC * (mg/kg)	EPA RSL (mg/kg)	PADEP cancer risk ** ($*10^{-6}$)
BENZO[A]PYRENE	50-32-8	4.2 *	0.11	38.182	91	2.1	43.333
BENZO[A]ANTHRACENE	56-55-3	42	1.10	38.182	910	21.0	43.333
BENZO[B]FLUORANTHENE	205-99-2	42	1.10	38.182	910	21.0	43.333
BENZO[K]FLUORANTHENE	207-08-9	420	11.0	38.182	9100	210.0	43.333
CHRYSENE	218-01-9	4200	110.0	38.182	91000	2100.0	43.333
DIBENZO[A,H]ANTHRACENE	53-70-3	4.2	0.11	38.182	91	2.1	43.333
INDENO[1,2,3-CD]PYRENE	193-39-5	42	1.10	38.182	910	21.0	43.333

* Current value

** The EPA RSLs are calculated to represent a 1 in 1,000,000 risk. Dividing PADEP's MSC by the RSL yields the risk per 1,000,000, or times 10^{-6}.

Specifically, the cancer risk from each of the seven cPAH (not accounting for the presence of any other carcinogen) is approximately $4*10^{-5}$, or 4 in 100,000.

Act 2 defines the limits for cancer risk by carcinogens:

> For a regulated substance which is a carcinogen, the medium-specific concentration is the concentration which represents an excess **upper bound lifetime cancer target risk** of between 1 in **10,000** and 1 in **1,000,000**.[93]

Therefore, the cancer risk for each of the seven cPAH is within this range. However, Chapter 250 defines the target cancer risk (TR) as $1x10^{-5}$, namely 1 in 100,000.[94] The rationale for this level was given in the Cleanup Standards Scientific Advisory Board ("CSSAB") PAH group discussion document:

> The regulations implementing Act 2 at 25 Pa Code Chapter 250 show that the MSCs are calculated based on a 1 in 100,000 excess cancer risk level. As has been discussed by members of the Cleanup Standards Scientific Advisory Board ("CSSAB"), **the ten-fold reduction in allowable carcinogenic risk from 1 in**

[92] "All tables are presented with target **cancer risk (TR) of 1E-06.**" *Regional Screening Level (RSLs) - Generic Tables*, EPA (May 2024), https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables (emphasis added).
[93] Land Recycling and Environmental Remediation Standards Act of May 19, 1995 ("Act 2"), § 303(c)(1), https://www.legis.state.pa.us/WU01/LI/LI/US/PDF/1995/0/0002..PDF (emphasis added).
[94] 25 Pa. Code § 250.306.

> **10,000 ($1x10^{-4}$) to 1 in 100,000 ($1x10^{-5}$) is an acknowledgement that multiple regulated substances may be detected at a site at concentrations at or near their MSCs** (assuming those MSCs are based on direct contact numeric values rather than soil-to-groundwater numeric values), which could result in **unacceptable cumulative cancer risks** if the MSCs were calculated based on a 1x10-4 target risk. **The MSCs are derived at a target cancer risk level that is ten times more conservative to safeguard against this possibility of adverse cumulative risk.**[95]

The cancer risk posed by the proposed direct contact soil MSC for each of the seven cPAH compounds is approximately 4 times higher than the target $1x10^{-5}$ for both residential and non residential surface soils, well above the Chapter 250 target.

c. EPA defines the seven cPAHs as a mixture for which the cancer risk is cumulative. The proposed direct contact sol MSCs for the seven cPAHs present a cancer risk that exceeds Act 2's least stringent upper bound.

Act 2 sets the limits for cancer risk by carcinogens between 1 in 10,000 and 1in 1,000,000.[96]

The cancer risk from direct contact soil MSC (residential and surface non residential) for each of the seven cPAH falls within this range. However, this is not sufficiently protective of public health. Chapter 250 sets the cancer risk target at 1 in 100,000 so that (as explained by the CSSAB PAH group):

> **The MSCs are derived at a target cancer risk level that is ten times more conservative to safeguard against this possibility of adverse cumulative risk.** [97]

Yet, as calculated above the cancer risk for each of the cPAH is four times the target value, and their cumulative risk is seven times the individual compound cancer risk, which means $2.3*10^{-4}$ for residential and $3*10^{-4}$ for non residential direct contact surface soil. Namely,

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[95] PADEP PAH Workgroup, *Relative Potency Factors For Carcinogenic Polycyclic Aromatic Hydrocarbons: Discussion and Recommendations for Consideration by the Cleanup Standards Scientific Advisory Board* 8 (June 2022), https://files.dep.state.pa.us/PublicParticipation/Public%20Participation%20Center/PubPartCenterPortalFiles/Environmental%20Quality%20Board/2024/Mar_12_2024/04c_7-575_Ch%20250_Proposed_CSSAB%20PAH.PDF (emphasis added) [hereinafter PAH Workgroup Report].

[96] Act 2 § 303(c)(1).

[97] PAH Workgroup Report, *supra*, note 95, at 8 (emphasis added).

these seven carcinogens (and not ten as assumed in Chapter 240) pose a cancer risk that is three times higher than the least stringent upper bound of 1 in 10,000 specified in Act 2.

The CSSAB determined that cPAH should be treated like all other carcinogens:

> … **there is nothing about the application of RPFs to derive toxicity values and calculate MSCs that would necessitate a different approach for cPAHs.** [98]

However, this argument is faulty. The EPA RPF approach was developed to calculate the *cumulative* cancer risk from mixtures of carcinogens;

> **RPF approach**, an exposure equivalent to the index compound is the product of the measured concentration of the mixture component and the RPF. These dose equivalents are summed to express the mixture exposure in terms of an equivalent exposure to the index compound; **risk can be quantified by comparing the mixture's equivalent dose in terms of the index compound to the dose-response assessment of the index compound**.[99]

Namely, in mixtures where RPF applies, an 'effective mixture concentration' (expressed as the index compound concentration) should be used to calculate the cancer risk. cPAHs are one of the explicitly designated classes of such mixtures, with BaP as the index compound:

> To date, the Agency has developed three examples of RPFs that estimate the toxicity of a mixture of related compounds... The three classes of compounds for which relative potency approaches have been examined by EPA are the dioxins, the polychlorinated biphenyls (PCBs), and **the polycyclic aromatic hydrocarbons (PAHs).**[100]

Equation 4-18,[101] below, defines how to calculate the equivalent BaP concentration for the mix:

$$C_{BaP}(mix) = \Sigma\, C_k * RPF_k$$

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[98] *Id.* (emphasis added).
[99] Risk Assessment Forum Panel, *Supplementary Guidance for Conducting Health Risk Assessment of Chemical Mixtures* 104, EPA (Aug. 2000), *available at:* https://ofmpub.epa.gov/eims/eimscomm.getfile?p_download_id=4486 (emphasis added).
[100] *Id.*, at 105 (emphasis added).
[101] *Id.*

In the equation, $C_{BaP}(mix)$ is the mixture concentration as index in terms of BaP concentration, C_k the concentration of the k^{th} component, and RPF_k this compound RPF. For the index compound BaP, $RPF_k=1$. Applying this equation to the proposed PAH standards yields the equivalent BaP concentration that will be considered an adequate protection of public health:

Substance	CASRN	RPF	Residential 0–15ft Residential soil		Non-Residential 0–2ft Non residential surface soil	
			Proposed MSC (mg/kg)	BaP equiv. * (mg/kg)	Proposed MSC (mg/kg)	BaP equiv. * (mg/kg)
BENZO[A]PYRENE	50-32-8	1	4.2	4.2	91	91
BENZO[A]ANTHRACENE	56-55-3	0.1	42	4.2	910	91
BENZO[B]FLUORANTHENE	205-99-2	0.1	42	4.2	910	91
BENZO[K]FLUORANTHENE	207-08-9	0.01	420	4.2	9100	91
CHRYSENE	218-01-9	0.001	4200	4.2	91000	91
DIBENZO[A,H]ANTHRACENE	53-70-3	1.0	4.2	4.2	91	91
INDENO[1,2,3-CD]PYRENE	193-39-5	0.1	42	4.2	910	91
SUM (equivalent BaP concentration)				29.4		637

*MSC times RPF

Comparing the equivalent mix BaP concentration to EPA's RSL, they represent cancer risks of $2.3*10^{-4}$ for residential and $3*10^{-4}$ for non residential surface soil. Clearly, this cumulative risk is well above the Act 2 *least stringent* upper bound limit of 1 in 10,000.[102] Act 2 allows for cancer risk between 1 in 1,000,000 and 1 in 10,000. Exceeding this range by a factor of 2 or 3 poses an unacceptable risk to public health.

The proposed MSCs for both residential and non-residential soil pose a cancer risk that is three times the **least stringent upper bound** target risk required by Act 2 and must be reduced.

Summary:

cPAH mixtures are carcinogenic. The cancer risk posed by Benzo[a]anthracene, Benzo[b]fluoranthene, Benzo[k]fluoranthene, Chrysene, Dibenz[a,h]- anthracene and Indeno[1,2,3-c,d]pyrene is calculated by using an index compound (Benzo[a]pyrene, BaP) and relative potency factors (RPF). Because the MSC for resident soil and non resident surface soil

[102] Act 2 § 303(c)(1).

for BaP, as calculated following Chapter 250's guidelines, are high, the cancer risk for cPAH mixtures exceed the Act 2's least stringent upper bound cancer risk of 1 in 10,000. PADEP should reconsider the methodology used to calculate the soil MSCs for BaP, which clearly does not account for the cumulative risk of PAH mixtures as defined by EPA's RPF method.

CONCLUSION

Commenters appreciate the opportunity to submit these comments on the proposed Chapter 250 revisions. Commenters ask the Department to ensure that the MSCs are sufficiently protective of public health and comply with Act 2 by addressing the issues detailed in the above comments.

Respectfully submitted,

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Table 3-5a
Soil Analytical Results Summary, Medium Specific Concentrations
Belmont Terminal
Philadelphia Refinery Operations, a series of Evergreen Resources Group, LLC

Sample Location										S-330						
Sample Date					4-Aug-23	4-Aug-23	4-Aug-23	4-Aug-23	4-Aug-23	9-May-11	9-May-11	16-May-11	16-May-11	16-May-11	16-May-11	16-May-11
Sample ID					BT-BH-23-01-0-2	BT-BH-23-02-0-2	BT-BH-23-03-0-2	BT-BH-23-04-0-2	BT-BH-23-05-0-2	S-330 (1.5-2)	S-330 (6-6.5)	S-330 (10-10.5)	S-330 (15-15.5)	S-330 (20-20.5)	S-330 (25-25.5)	S-330 (27-27.5)
Sample Depth					0 - 2 ft	0 - 2 ft	0 - 2 ft	0 - 2 ft	0 - 2 ft	1.5 - 2 ft	6 - 6.5 ft	10 - 10.5 ft	15 - 15.5 ft	20 - 20.5 ft	25 - 25.5 ft	27 - 27.5 ft
Sampling Company					STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC
Laboratory					SGS	SGS	SGS	SGS	SGS	LL	LL	LL	LL	LL	LL	LL
Laboratory Work Order		MSC-PA	MSC-PA	MSC-PA	JD70550	JD70550	JD70550	JD70550	JD70550	1246013	1246013	1247263	1247263	1247263	1247263	1247263
Laboratory Sample ID	Units	A	B	C	JD70550-1	JD70550-2	JD70550-3	JD70550-4	JD70550-5	6281302	6281303	6289561	6289562	6289563	6289564	6289565
Volatile Organic Compounds																
BENZENE	mg/kg	280	330	0.5	ND (0.00055)	ND (0.00068)	ND (0.00077)	ND (0.00078)	ND (0.00064)	0.002 J	ND (0.0006)	ND (0.0006)	0.007	ND (0.027)	0.003 J	0.082 J
1,2-DIBROMOETHANE (EDB)	mg/kg	3.7	4.2	0.005	-	-	-	-	-	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)
1,2-DICHLOROETHANE (EDC)	mg/kg	85	98	0.5	ND (0.0011)	ND (0.0014)	ND (0.0015)	ND (0.0016)	ND (0.0013)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.054)	ND (0.001)	ND (0.056)
ETHYLBENZENE	mg/kg	880	1,000	70	ND (0.0011)	ND (0.0014)	ND (0.0015)	ND (0.0016)	ND (0.0013)	ND (0.001)	ND (0.001)	ND (0.001)	0.009	ND (0.054)	0.006	ND (0.056)
ISOPROPYLBENZENE (CUMENE)	mg/kg	10,000	10,000	2,500	ND (0.0022)	ND (0.0027)	ND (0.0031)	ND (0.0031)	ND (0.0026)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.054)	ND (0.001)	1.3
METHYL TERTIARY BUTYL ETHER	mg/kg	8,500	9,800	2	ND (0.0011)	ND (0.0014)	ND (0.0015)	ND (0.0016)	ND (0.0013)	ND (0.0006)	ND (0.0006)	ND (0.0006)	ND (0.0005)	ND (0.027)	ND (0.0005)	ND (0.028)
TERT-BUTYL ALCOHOL	mg/kg	n/v	n/v	n/v	-	-	-	-	-	-	-	-	-	-	-	-
TOLUENE	mg/kg	10,000	10,000	100	ND (0.0011)	ND (0.0014)	ND (0.0015)	ND (0.0016)	ND (0.0013)	ND (0.001)	ND (0.001)	ND (0.001)	0.150	ND (0.054)	0.061	ND (0.056)
1,2,4-TRIMETHYLBENZENE	mg/kg	4,700	5,400	300	ND (0.0022)	ND (0.0027)	ND (0.0031)	ND (0.0031)	ND (0.0026)	-	-	-	-	-	-	-
1,3,5-TRIMETHYLBENZENE	mg/kg	4,700	5,400	93	ND (0.0022)	ND (0.0027)	ND (0.0031)	ND (0.0031)	ND (0.0026)	-	-	-	-	-	-	-
XYLENES, TOTAL (DIMETHYLBENZENE)	mg/kg	7,900	9,100	1,000	ND (0.0011)	ND (0.0014)	ND (0.0015)	ND (0.0016)	ND (0.0013)	ND (0.001)	ND (0.001)	ND (0.001)	0.055	ND (0.054)	0.033	ND (0.056)
Semi-Volatile Organic Compounds																
ANTHRACENE	mg/kg	190,000	190,000	350	0.134	0.149	ND (0.043)	0.138	0.0961	0.037	0.0015 J	0.0016 J	ND (0.00078)	0.0046	0.0033	ND (0.094)
BENZO(A)ANTHRACENE	mg/kg	130	190,000	340	0.516	0.564	0.0189 J	0.589	0.476	0.170	0.0046	0.0057	ND (0.00039)	0.014	0.015	0.019
BENZO(A)PYRENE	mg/kg	91	190,000	46	0.499	0.671	ND (0.043)	0.513	0.596	0.210	0.0043	0.0073	0.0005 J	0.018	0.020	0.012
BENZO(B)FLUORANTHENE	mg/kg	76	190,000	170	0.661	0.741	0.0224 J	0.634	0.829	0.170	0.0030	0.0083	0.00063 J	0.021	0.022	0.0083
BENZO(G,H,I)PERYLENE	mg/kg	190,000	190,000	180	0.345	0.475	ND (0.043)	0.303	0.431	0.310	0.0061 J	0.011	ND (0.0023)	0.028	0.030	0.011
CHRYSENE	mg/kg	760	190,000	230	0.496	0.567	0.0186 J	0.554	0.529	0.270	0.042	0.016	ND (0.0035)	0.044	0.036	0.057
FLUORENE	mg/kg	130,000	190,000	3,800	0.0450	0.0211 J	ND (0.043)	0.0325 J	0.0226 J	ND (0.039)	ND (0.0041)	ND (0.0039)	ND (0.0039)	ND (0.0038)	0.0046 J	0.140
NAPHTHALENE	mg/kg	66	77	25	0.0462	0.0946	0.0912	0.0375	0.0359 J	-	-	-	-	-	-	-
PHENANTHRENE	mg/kg	190,000	190,000	10,000	0.570	0.314	0.0305 J	0.574	0.437	0.200	ND (0.0025)	0.020	0.0027 J	0.046	0.045	0.420
PYRENE	mg/kg	96,000	190,000	2,200	0.809	0.963	0.0300 J	0.844	0.902	0.360	ND (0.024)	0.020	ND (0.0039)	0.049	0.050	ND (0.270)
Metals																
LEAD, Total	mg/kg	1,000	190,000	450	78.1	**563**[C]	181	254	223	188	6.54	8.15	11.1	5.25	5.40	2.41

Notes:

MSC-PA	Pennsylvania Department of Environmental Protection - 2021
A	MSC for Organic/Inorganic Regulated Substances in Soil – Non-Residential Direct Contact Surface Soil (0-2 ft)
B	MSC for Organic/Inorganic Regulated Substances in Soil – Non-Residential Direct Contact Surface Soil (2-15 ft)
C	MSC for Organic/Inorganic Regulated Substances in Soil – Non-Residential Soil to Groundwater (unsaturated)
563[C]	Concentration exceeds standard C.
11,200[BC]	Concentration exceeds standards B and C.
ND (0.03)	Concentration not detected above the laboratory reporting limit (in parentheses) except when the reporting limit is greater than the applicable standard in which case the method detection limit is listed in parentheses.
ND (0.50)	Indicates the laboratory method detection limit (if available) was above the applicable standard. The reporting limit is shown if the laboratory method detection limit is not available.
15.2	Measured concentration did not exceed the indicated standard.
mg/kg	milligrams per kilogram
n/v	No standard/guideline value.
ft	feet
-	Parameter not analyzed / not available.
B	Indicates the analyte is detected in the associated blank as well as in the sample.
F2	MS/MSD relative percent difference exceeds control limits.
H	Sample was prepped or analyzed beyond the specified holding time.
J	Indicates an estimated value
TL	Internal standard (ISTD) response or retention time outside acceptable limits.

Table 3-5a
Soil Analytical Results Summary, Medium Specific Concentrations
Belmont Terminal
Philadelphia Refinery Operations, a series of Evergreen Resources Group, LLC

Sample Location					S-331				S-332						
Sample Date					16-May-11	16-May-11	17-May-11	17-May-11	9-May-11	9-May-11	18-May-11	18-May-11	18-May-11	19-May-11	19-May-11
Sample ID					S-331 (10-10.5)	S-331 (15-15.5)	S-331 (20-20.5)	S-331 (25-25.5)	S-332 (3-3.5)	S-332 (6-6.5)	S-332 (12-12.5)	S-332 (15-15.5)	S-332 (20-20.5)	S-332 (25-25.5)	S-332 (26.5-27)
Sample Depth					10 - 10.5 ft	15 - 15.5 ft	20 - 20.5 ft	25 - 25.5 ft	3 - 3.5 ft	6 - 6.5 ft	12 - 12.5 ft	15 - 15.5 ft	20 - 20.5 ft	25 - 25.5 ft	26.5 - 27 ft
Sampling Company					STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC
Laboratory					LL	LL	LL	LL	LL	LL	LL	LL	LL	LL	LL
Laboratory Work Order		MSC-PA	MSC-PA	MSC-PA	1247263	1247263	1247263	1247263	1246013	1246013	1247750	1247750	1247750	1247750	1247750
Laboratory Sample ID	Units	A	B	C	6289566	6289567	6289568	6289569	6281300	6281301	6292908	6292909	6292910	6292911	6292912
Volatile Organic Compounds															
BENZENE	mg/kg	280	330	0.5	ND (0.0006)	ND (0.0005)	ND (0.0005)	0.001 J	ND (0.0006)	ND (0.0005)	0.036 J	0.092	0.062	0.013	**0.940 J[C]**
1,2-DIBROMOETHANE (EDB)	mg/kg	3.7	4.2	0.005	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)
1,2-DICHLOROETHANE (EDC)	mg/kg	85	98	0.5	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.057)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.240)
ETHYLBENZENE	mg/kg	880	1,000	70	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	0.100 J	ND (0.001)	0.003 J	0.002 J	0.650 J
ISOPROPYLBENZENE (CUMENE)	mg/kg	10,000	10,000	2,500	ND (0.001)	ND (0.001)	ND (0.001)	0.001 J	ND (0.001)	ND (0.001)	0.093 J	ND (0.001)	0.006	0.007	4.9
METHYL TERTIARY BUTYL ETHER	mg/kg	8,500	9,800	2	ND (0.0006)	ND (0.0005)	ND (0.0005)	0.0008 J	ND (0.0006)	ND (0.0005)	ND (0.028)	ND (0.0007)	ND (0.0006)	ND (0.0005)	ND (0.120)
TERT-BUTYL ALCOHOL	mg/kg	n/v	n/v	n/v	-	-	-	-	-	-	-	-	-	-	-
TOLUENE	mg/kg	10,000	10,000	100	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.057)	0.003 J	ND (0.001)	ND (0.001)	ND (0.240)
1,2,4-TRIMETHYLBENZENE	mg/kg	4,700	5,400	300	-	-	-	-	-	-	-	-	-	-	-
1,3,5-TRIMETHYLBENZENE	mg/kg	4,700	5,400	93	-	-	-	-	-	-	-	-	-	-	-
XYLENES, TOTAL (DIMETHYLBENZENE)	mg/kg	7,900	9,100	1,000	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	0.190 J	ND (0.001)	0.005 J	0.003 J	0.700 J
Semi-Volatile Organic Compounds															
ANTHRACENE	mg/kg	190,000	190,000	350	0.780	0.013	0.970	0.930	ND (0.00082)	ND (0.00081)	0.0035	0.0015 J	0.0010 J	0.0010 J	0.150
BENZO(A)ANTHRACENE	mg/kg	130	190,000	340	0.260	0.0048	0.310	0.360	0.0031	0.0033	0.0023	0.0020	0.00083 J	0.00058 J	0.022
BENZO(A)PYRENE	mg/kg	91	190,000	46	0.150	0.0033	0.170	0.190	0.0056	0.0097	0.0021	0.0078	ND (0.0035)	0.0019	0.012
BENZO(B)FLUORANTHENE	mg/kg	76	190,000	170	0.130	0.0025	0.160	0.180	0.0042	0.0049	0.0018	ND (0.013)	ND (0.0040)	ND (0.00080)	0.0099
BENZO(G,H,I)PERYLENE	mg/kg	190,000	190,000	180	0.150	0.0065 J	0.170	0.190	0.0097 J	0.038	0.0030 J	ND (0.0026)	ND (0.0024)	ND (0.0023)	0.011
CHRYSENE	mg/kg	760	190,000	230	0.340	0.0058 J	0.410	0.460	ND (0.0057)	0.0073	0.0055 J	0.014	0.0046 J	0.0037 J	0.100
FLUORENE	mg/kg	130,000	190,000	3,800	1.1	0.014 J	1.6	1.8	ND (0.0041)	ND (0.0040)	ND (0.0037)	ND (0.0043)	ND (0.0040)	ND (0.0038)	0.700
NAPHTHALENE	mg/kg	66	77	25	-	-	-	-	-	-	-	-	-	-	-
PHENANTHRENE	mg/kg	190,000	190,000	10,000	3.0	0.049	3.9	4.4	0.0034 J	0.0035 J	0.0085	0.0053 J	0.0040 J	0.0043 J	0.590
PYRENE	mg/kg	96,000	190,000	2,200	0.990	0.019	1.2	1.4	ND (0.0041)	ND (0.0040)	0.0056 J	ND (0.018)	ND (0.012)	0.0048 J	ND (0.380)
Metals															
LEAD, Total	mg/kg	1,000	190,000	450	11.8	10.6	9.12	11.0	17.7	9.38	3.01	11.5	8.39	9.02	7.46

Notes:

MSC-PA	Pennsylvania Department of Environmental Protection - 2021
A	MSC for Organic/Inorganic Regulated Substances in Soil – Non-Residential Direct Contact Surface Soil (0-2 ft)
B	MSC for Organic/Inorganic Regulated Substances in Soil – Non-Residential Direct Contact Surface Soil (2-15 ft)
C	MSC for Organic/Inorganic Regulated Substances in Soil – Non-Residential Soil to Groundwater (unsaturated)
563[C]	Concentration exceeds standard C.
11,200[BC]	Concentration exceeds standards B and C.
ND (0.03)	Concentration not detected above the laboratory reporting limit (in parentheses) except when the reporting limit is greater than the applicable standard in which case the method detection limit is listed in parentheses.
ND (0.50)	Indicates the laboratory method detection limit (if available) was above the applicable standard. The reporting limit is shown if the laboratory method detection limit is not available.
15.2	Measured concentration did not exceed the indicated standard.
mg/kg	milligrams per kilogram
n/v	No standard/guideline value.
ft	feet
-	Parameter not analyzed / not available.
B	Indicates the analyte is detected in the associated blank as well as in the sample.
F2	MS/MSD relative percent difference exceeds control limits.
H	Sample was prepped or analyzed beyond the specified holding time.
J	Indicates an estimated value
TL	Internal standard (ISTD) response or retention time outside acceptable limits.

Table 3-5a
Soil Analytical Results Summary, Medium Specific Concentrations
Belmont Terminal
Philadelphia Refinery Operations, a series of Evergreen Resources Group, LLC

Sample Location					S-393D		S-452_CD	S-453_CD			S-454_CD		S-455_CD
Sample Date					4-Feb-14	4-Feb-14	1-Dec-20	2-Dec-20	3-Dec-20	3-Dec-20	8-Dec-20	8-Dec-20	10-Dec-20
Sample ID					S-393D_14-15_020414	S-393D_27-28_020414	BT-02B-S-10-20201201	BT-11A-S-8-20201202	BT-11A-S-32-20201203	BT-11B-S-8-20201203	BT-11B-S-50-20201208	BT-11B-S-78-20201208	BT-05-S-9-20201210
Sample Depth					14 - 15 ft	27 - 28 ft	10 ft	8 ft	32 ft	8 ft	50 ft	78 ft	9 ft
Sampling Company					AQUATERRA PACE	AQUATERRA PACE	STANTEC LANCASTER	STANTEC LANCASTER	STANTEC LANCASTER	STANTEC LANCASTER	STANTEC LANCASTER	STANTEC LANCASTER	STANTEC LANCASTER
Laboratory													
Laboratory Work Order					30113107/30113108	30113107/30113108	410-22543-1	410-22720-1	410-22720-1	410-22930-1	410-23184-1	410-23368-1	410-23573-1
Laboratory Sample ID	Units	MSC-PA A	MSC-PA B	MSC-PA C	[illegible]	[illegible]	410-22543-1	410-22720-1	410-22720-3	410-22930-1	410-23184-2	410-23368-1	410-23573-1
Volatile Organic Compounds													
BENZENE	mg/kg	280	330	0.5	**11,200 BC**	**98.8 C**	0.0042 H	0.29 J	**0.66 H C**	ND (0.33)	**4.5 H C**	0.0024 J	**1.2 C**
1,2-DIBROMOETHANE (EDB)	mg/kg	3.7	4.2	0.005	*ND (1.71)*	*ND (0.131)*	ND (0.0042) H	*ND (0.024)*	ND (0.00043)	*ND (0.027)*	ND (0.0044)	ND (0.0048)	*ND (0.024)*
1,2-DICHLOROETHANE (EDC)	mg/kg	85	98	0.5	*ND (0.595)*	ND (0.251)	ND (0.0042) H	ND (0.30)	0.0049 J	ND (0.33)	0.0024 J	ND (0.0048)	ND (0.31)
ETHYLBENZENE	mg/kg	880	1,000	70	31.6	0.583	ND (0.0042) H	0.029 J	0.0075	0.055 J	1.3 H	0.0028 J	6.6
ISOPROPYLBENZENE (CUMENE)	mg/kg	10,000	10,000	2,500	88.7	1.56	ND (0.0042) H	0.64	0.010	4.2	0.023	0.00078 J	11
METHYL TERTIARY BUTYL ETHER	mg/kg	8,500	9,800	2	ND (0.465)	ND (0.251)	0.0024 J H	ND (0.30)	0.24	ND (0.33)	0.11	0.00091 J	ND (0.31)
TERT-BUTYL ALCOHOL	mg/kg	n/v	n/v	n/v	-	-	0.35 H	ND (6.0)	61 H	ND (6.7)	160 H	0.094 J	ND (6.1)
TOLUENE	mg/kg	10,000	10,000	100	**1,010 C**	10.4	0.00068 J H	ND (0.30)	ND (0.0053)	ND (0.33)	0.027	ND (0.0048)	0.61
1,2,4-TRIMETHYLBENZENE	mg/kg	4,700	5,400	300	5.95	0.213 J	ND (0.0042) H	ND (0.30)	0.0022 J	0.036 J	0.059	0.0037 J	0.15 J
1,3,5-TRIMETHYLBENZENE	mg/kg	4,700	5,400	93	4.86	ND (0.251)	ND (0.0042) H	ND (0.30)	0.00098 J	0.035 J	0.018	0.00089 J	5.3
XYLENES, TOTAL (DIMETHYLBENZENE)	mg/kg	7,900	9,100	1,000	138	2.47	ND (0.0085) H	ND (0.60)	0.0016 J	0.14 J	0.52	0.0034 J	6.4
Semi-Volatile Organic Compounds													
ANTHRACENE	mg/kg	190,000	190,000	350	1.03 J	0.0194	ND (0.019)	ND (0.021)	ND (0.021)	0.044	0.0043 J	ND (0.020)	ND (0.020)
BENZO(A)ANTHRACENE	mg/kg	130	190,000	340	1.34 J	0.0191	ND (0.019)	0.013 J	ND (0.021)	0.012 J	ND (0.020)	ND (0.020)	0.0087 J
BENZO(A)PYRENE	mg/kg	91	190,000	46	ND (3.98)	0.0122	ND (0.019)	0.011 J	ND (0.021)	0.0082 J	ND (0.020)	ND (0.020)	ND (0.020)
BENZO(B)FLUORANTHENE	mg/kg	76	190,000	170	ND (3.98)	0.0140	ND (0.019)	0.010 J	ND (0.021)	0.0074 J	0.0058 J	ND (0.020)	0.0097 J
BENZO(G,H,I)PERYLENE	mg/kg	190,000	190,000	180	ND (3.98)	0.0060 J	ND (0.019)	ND (0.021)	ND (0.021)	0.0046 J	ND (0.020)	ND (0.020)	ND (0.020)
CHRYSENE	mg/kg	760	190,000	230	1.04 J	0.0184	ND (0.019)	0.020 J	ND (0.021)	0.0089 J	0.0054 J	ND (0.020)	0.011 J
FLUORENE	mg/kg	130,000	190,000	3,800	1.07 J	0.0272	ND (0.019)	1.8	ND (0.021)	0.66	0.0054 J	ND (0.020)	0.027
NAPHTHALENE	mg/kg	66	77	25	3.67 J	0.0744	ND (0.019)	ND (0.021)	ND (0.021)	ND (0.020)	0.45	0.010 J	2.6
PHENANTHRENE	mg/kg	190,000	190,000	10,000	4.79	0.0936	ND (0.019)	3.9	0.0056 J	0.35	0.017 J	0.0091 J	0.058
PYRENE	mg/kg	96,000	190,000	2,200	2.45 J	0.0495	ND (0.019)	0.055	ND (0.021)	0.031	0.0082 J	ND (0.020)	0.022
Metals													
LEAD, Total	mg/kg	1,000	190,000	450	23.2	5.5	8.4	9.8	22	11	14	2.7	9.9

Notes:

MSC-PA	Pennsylvania Department of Environmental Protection - 2021
A	MSC for Organic/Inorganic Regulated Substances in Soil – Non-Residential Direct Contact Surface Soil (0-2 ft)
B	MSC for Organic/Inorganic Regulated Substances in Soil – Non-Residential Direct Contact Surface Soil (2-15 ft)
C	MSC for Organic/Inorganic Regulated Substances in Soil – Non-Residential Soil to Groundwater (unsaturated)
563 C	Concentration exceeds standard C.
11,200 BC	Concentration exceeds standards B and C.
ND (0.03)	Concentration not detected above the laboratory reporting limit (in parentheses) except when the reporting limit is greater than the applicable standard in which case the method detection limit is listed in parentheses.
ND (0.50)	Indicates the laboratory method detection limit (if available) was above the applicable standard. The reporting limit is shown if the laboratory method detection limit is not available.
15.2	Measured concentration did not exceed the indicated standard.
mg/kg	milligrams per kilogram
n/v	No standard/guideline value.
ft	feet
-	Parameter not analyzed / not available.
B	Indicates the analyte is detected in the associated blank as well as in the sample.
F2	MS/MSD relative percent difference exceeds control limits.
H	Sample was prepped or analyzed beyond the specified holding time.
J	Indicates an estimated value
TL	Internal standard (ISTD) response or retention time outside acceptable limits.

Table 3-5a
Soil Analytical Results Summary, Medium Specific Concentrations
Belmont Terminal
Philadelphia Refinery Operations, a series of Evergreen Resources Group, LLC

Sample Location					S-456_CD		S-457_CD			S-458_CD		
Sample Date					14-Dec-20	15-Dec-20	16-Dec-20	28-Dec-20	29-Dec-20	29-Dec-20	29-Dec-20	30-Dec-20
Sample ID					BT-02A-S-10-20201214	BT-02A-S-37-20201215	BT-09-S-22-20201216	BT-09-S-8-20201228	BT-09-S-47-20201229	BT-19-S-15-20201229	BT-19-S-40-20201229	BT-19-S-50-20201230
Sample Depth					10 ft	37 ft	22 ft	8 ft	47 ft	15 ft	40 ft	50 ft
Sampling Company					STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC
Laboratory					LANCASTER	LANCASTER	LANCASTER	LANCASTER	LANCASTER	LANCASTER	LANCASTER	LANCASTER
Laboratory Work Order		MSC-PA	MSC-PA	MSC-PA	410-24132-1	410-24132-1	410-24240-1	410-25174-1	410-25174-1	410-25174-1	410-25255-1	410-25255-1
Laboratory Sample ID	Units	A	B	C	410-24132-1	410-24132-2	410-24240-2	410-25174-1	410-25174-3	410-25174-4	410-25255-1	410-25255-4
Volatile Organic Compounds												
BENZENE	mg/kg	280	330	0.5	ND (0.055)	0.021	0.23 J	ND (0.28)	**6.6**[C]	ND (0.32)	0.0032 J	0.0047 J
1,2-DIBROMOETHANE (EDB)	mg/kg	3.7	4.2	0.005	*ND (0.044)*	ND (0.0050)	*ND (0.026)*	*ND (0.022)*	*ND (0.026)*	*ND (0.026)*	ND (0.0050)	ND (0.00046)
1,2-DICHLOROETHANE (EDC)	mg/kg	85	98	0.5	ND (0.066)	ND (0.0050)	ND (0.33)	ND (0.28)	ND (0.33)	ND (0.32)	ND (0.0050)	ND (0.0057)
ETHYLBENZENE	mg/kg	880	1,000	70	ND (0.55)	0.0016 J	0.56	ND (0.28)	ND (0.33)	ND (0.32)	ND (0.0050)	ND (0.0057)
ISOPROPYLBENZENE (CUMENE)	mg/kg	10,000	10,000	2,500	4.1	0.017	0.94	0.27 J	0.028 J	0.32	ND (0.0050)	ND (0.0057)
METHYL TERTIARY BUTYL ETHER	mg/kg	8,500	9,800	2	ND (0.55)	0.012	ND (0.33)	ND (0.28)	**2.9**[C]	ND (0.32)	ND (0.0050)	ND (0.0057)
TERT-BUTYL ALCOHOL	mg/kg	n/v	n/v	n/v	ND (11)	1.4	ND (6.5)	ND (5.6)	61	ND (6.4) TL	ND (0.099)	ND (0.11)
TOLUENE	mg/kg	10,000	10,000	100	ND (0.55)	0.0013 J	0.094 J	ND (0.28)	ND (0.33)	ND (0.32)	ND (0.0050)	ND (0.0057)
1,2,4-TRIMETHYLBENZENE	mg/kg	4,700	5,400	300	ND (0.55)	0.0020 J	6.9	ND (0.28)	ND (0.33)	ND (0.32)	ND (0.0050)	ND (0.0057)
1,3,5-TRIMETHYLBENZENE	mg/kg	4,700	5,400	93	ND (0.55)	0.0019 J	2.4	ND (0.28)	ND (0.33)	ND (0.32)	ND (0.0050)	ND (0.0057)
XYLENES, TOTAL (DIMETHYLBENZENE)	mg/kg	7,900	9,100	1,000	ND (1.1)	0.0041 J	0.45 J	ND (0.56)	ND (0.66)	ND (0.64)	ND (0.0099)	ND (0.011)
Semi-Volatile Organic Compounds												
ANTHRACENE	mg/kg	190,000	190,000	350	0.053	0.0053 J	0.026	0.014 J	0.028	0.013 J	ND (0.019)	ND (0.019)
BENZO(A)ANTHRACENE	mg/kg	130	190,000	340	0.026	ND (0.020)	0.032	ND (0.019)	0.024	0.013 J	ND (0.019)	ND (0.019)
BENZO(A)PYRENE	mg/kg	91	190,000	46	ND (0.019)	ND (0.020)	0.011 J	0.0045 J	0.017 J	0.0091 J	ND (0.019)	ND (0.019)
BENZO(B)FLUORANTHENE	mg/kg	76	190,000	170	0.016 J	ND (0.020)	0.016 J	0.0056 J	0.028	0.012 J	ND (0.019)	ND (0.019)
BENZO(G,H,I)PERYLENE	mg/kg	190,000	190,000	180	ND (0.019)	ND (0.020)	ND (0.019)	ND (0.019)	0.013 J	0.0062 J	ND (0.019)	ND (0.019)
CHRYSENE	mg/kg	760	190,000	230	ND (0.019)	ND (0.020)	0.028	0.0059 J	0.028	0.016 J	ND (0.019)	ND (0.019)
FLUORENE	mg/kg	130,000	190,000	3,800	0.22	0.012 J	0.11	0.11	0.039	0.019 J	ND (0.019)	ND (0.019)
NAPHTHALENE	mg/kg	66	77	25	ND (0.019)	ND (0.020)	1.2	ND (0.019)	0.37	ND (0.020)	ND (0.019)	ND (0.019)
PHENANTHRENE	mg/kg	190,000	190,000	10,000	0.24	0.015 J	0.067	0.10	0.15	0.058	0.0052 J	0.0068 J
PYRENE	mg/kg	96,000	190,000	2,200	0.071	0.016 J	0.063	0.010 J	0.063	0.035	0.0053 J	0.0068 J
Metals												
LEAD, Total	mg/kg	1,000	190,000	450	12	6.5	13	7.7	14	14	3.2	1.6

Notes:

MSC-PA	Pennsylvania Department of Environmental Protection - 2021
A	MSC for Organic/Inorganic Regulated Substances in Soil – Non-Residential Direct Contact Surface Soil (0-2 ft)
B	MSC for Organic/Inorganic Regulated Substances in Soil – Non-Residential Direct Contact Surface Soil (2-15 ft)
C	MSC for Organic/Inorganic Regulated Substances in Soil – Non-Residential Soil to Groundwater (unsaturated)
563[C]	Concentration exceeds standard C.
11,200[BC]	Concentration exceeds standards B and C.
ND (0.03)	Concentration not detected above the laboratory reporting limit (in parentheses) except when the reporting limit is greater than the applicable standard in which case the method detection limit is listed in parentheses.
ND (0.50)	Indicates the laboratory method detection limit (if available) was above the applicable standard. The reporting limit is shown if the laboratory method detection limit is not available.
15.2	Measured concentration did not exceed the indicated standard.
mg/kg	milligrams per kilogram
n/v	No standard/guideline value.
ft	feet
-	Parameter not analyzed / not available.
B	Indicates the analyte is detected in the associated blank as well as in the sample.
F2	MS/MSD relative percent difference exceeds control limits.
H	Sample was prepped or analyzed beyond the specified holding time.
J	Indicates an estimated value
TL	Internal standard (ISTD) response or retention time outside acceptable limits.

Table 3-5a
Soil Analytical Results Summary, Medium Specific Concentrations
Belmont Terminal
Philadelphia Refinery Operations, a series of Evergreen Resources Group, LLC

Sample Location					S-459_CD			S-460_CD			S-461_CD	
Sample Date					4-Jan-21	4-Jan-21	6-Jan-21	7-Jan-21	7-Jan-21	11-Jan-21	12-Jan-21	13-Jan-21
Sample ID					BT-13-S-22-20210104	BT-13-S-5-20210104	BT-13-S-60-20210106	BT-14-S-25-20210107	BT-14-S-34-20210107	BT-14-S-60-20210111	BT-17B-S-15-20210112	BT-17B-S-45-20210113
Sample Depth					22 ft	5 ft	60 ft	25 ft	34 ft	60 ft	15 ft	45 ft
Sampling Company					STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC
Laboratory					LANCASTER	LANCASTER	LANCASTER	LANCASTER	LANCASTER	LANCASTER	LANCASTER	LANCASTER
Laboratory Work Order		MSC-PA	MSC-PA	MSC-PA	410-25450-1	410-25450-1	410-25584-1	410-25740-1	410-25740-1	410-26092-1	410-26291-1	410-26291-1
Laboratory Sample ID	Units	A	B	C	410-25450-2	410-25450-1	410-25584-1	410-25740-1	410-25740-2	410-26092-1	410-26291-1	410-26291-3
Volatile Organic Compounds												
BENZENE	mg/kg	280	330	0.5	**1.0[C]**	ND (0.28)	ND (0.0056)	**4.7[C]**	ND (0.30)	0.0014 J	0.12 J	0.014
1,2-DIBROMOETHANE (EDB)	mg/kg	3.7	4.2	0.005	*ND (0.025)*	*ND (0.023)*	ND (0.00045)	*ND (0.032)*	*ND (0.024)*	ND (0.0040)	*ND (0.021)*	ND (0.0049)
1,2-DICHLOROETHANE (EDC)	mg/kg	85	98	0.5	ND (0.31)	ND (0.28)	0.0010 J	ND (0.39)	ND (0.30)	ND (0.0040)	ND (0.26)	ND (0.0049)
ETHYLBENZENE	mg/kg	880	1,000	70	0.40	ND (0.28)	ND (0.0056)	9.8	ND (0.30)	0.0016 J	0.23 J	ND (0.0049)
ISOPROPYLBENZENE (CUMENE)	mg/kg	10,000	10,000	2,500	0.092 J	1.2	ND (0.0056)	0.89	0.11 J	ND (0.0040)	0.66	ND (0.0049)
METHYL TERTIARY BUTYL ETHER	mg/kg	8,500	9,800	2	ND (0.31)	ND (0.28)	ND (0.0056)	**5.1[C]**	ND (0.30)	0.00092 J	ND (0.26)	ND (0.0049)
TERT-BUTYL ALCOHOL	mg/kg	n/v	n/v	n/v	ND (6.2)	ND (5.7)	0.039 J	21	ND (6.0)	ND (0.079)	1.6 J	0.076 J
TOLUENE	mg/kg	10,000	10,000	100	ND (0.31)	ND (0.28)	ND (0.0056)	26	0.054 J	0.0076	ND (0.26)	ND (0.0049)
1,2,4-TRIMETHYLBENZENE	mg/kg	4,700	5,400	300	1.1	ND (0.28)	0.00092 J	23	0.048 J	0.0018 J	0.12 J	ND (0.0049)
1,3,5-TRIMETHYLBENZENE	mg/kg	4,700	5,400	93	0.40	ND (0.28)	ND (0.0056)	7.7	ND (0.30)	0.00062 J	0.069 J	ND (0.0049)
XYLENES, TOTAL (DIMETHYLBENZENE)	mg/kg	7,900	9,100	1,000	0.48 J	ND (0.57)	ND (0.011)	57	0.13 J	0.0076 J	0.93	ND (0.0098)
Semi-Volatile Organic Compounds												
ANTHRACENE	mg/kg	190,000	190,000	350	0.031	ND (0.019)	ND (0.019)	0.11 B	0.48	ND (0.019)	0.28	ND (0.035)
BENZO(A)ANTHRACENE	mg/kg	130	190,000	340	ND (0.023)	ND (0.019)	ND (0.019)	0.037	0.15	ND (0.019)	0.010 J	ND (0.035)
BENZO(A)PYRENE	mg/kg	91	190,000	46	ND (0.023)	ND (0.019)	ND (0.019)	0.023	0.092	ND (0.019)	0.0067 J	ND (0.035)
BENZO(B)FLUORANTHENE	mg/kg	76	190,000	170	ND (0.023)	ND (0.019)	ND (0.019)	0.025	0.11	ND (0.019)	0.0060 J	ND (0.035)
BENZO(G,H,I)PERYLENE	mg/kg	190,000	190,000	180	ND (0.023)	ND (0.019)	ND (0.019)	0.023	0.040	ND (0.019)	0.0044 J	ND (0.035)
CHRYSENE	mg/kg	760	190,000	230	0.0092 J	0.044	ND (0.019)	0.038	0.17	ND (0.019)	0.013 J	ND (0.035)
FLUORENE	mg/kg	130,000	190,000	3,800	0.21	ND (0.019)	0.0071 J	0.37 B	1.2	0.0047 J	1.1	ND (0.035)
NAPHTHALENE	mg/kg	66	77	25	5.8	ND (0.019)	0.014 J	13 B	0.079	0.016 J	1.5	ND (0.035)
PHENANTHRENE	mg/kg	190,000	190,000	10,000	0.26	ND (0.019)	0.011 J	0.69 B	1.9	0.012 J	3.3	ND (0.035)
PYRENE	mg/kg	96,000	190,000	2,200	0.049	0.13	0.0063 J	0.16	0.51	0.0049 J	0.10	ND (0.035)
Metals												
LEAD, Total	mg/kg	1,000	190,000	450	13	7.3	1.2	6.5	5.8	18	5.4	11

Notes:

MSC-PA	Pennsylvania Department of Environmental Protection - 2021
A	MSC for Organic/Inorganic Regulated Substances in Soil – Non-Residential Direct Contact Surface Soil (0-2 ft)
B	MSC for Organic/Inorganic Regulated Substances in Soil – Non-Residential Direct Contact Surface Soil (2-15 ft)
C	MSC for Organic/Inorganic Regulated Substances in Soil – Non-Residential Soil to Groundwater (unsaturated)
563[C]	Concentration exceeds standard C.
11,200[BC]	Concentration exceeds standards B and C.
ND (0.03)	Concentration not detected above the laboratory reporting limit (in parentheses) except when the reporting limit is greater than the applicable standard in which case the method detection limit is listed in parentheses.
ND (0.50)	Indicates the laboratory method detection limit (if available) was above the applicable standard. The reporting limit is shown if the laboratory method detection limit is not available.
15.2	Measured concentration did not exceed the indicated standard.
mg/kg	milligrams per kilogram
n/v	No standard/guideline value.
ft	feet
-	Parameter not analyzed / not available.
B	Indicates the analyte is detected in the associated blank as well as in the sample.
F2	MS/MSD relative percent difference exceeds control limits.
H	Sample was prepped or analyzed beyond the specified holding time.
J	Indicates an estimated value
TL	Internal standard (ISTD) response or retention time outside acceptable limits.

Table 3-5a
Soil Analytical Results Summary, Medium Specific Concentrations
Belmont Terminal
Philadelphia Refinery Operations, a series of Evergreen Resources Group, LLC

Sample Location					S-462_CD				S-463_CD		
Sample Date					13-Jan-21	14-Jan-21	15-Jan-21	19-Jan-21	20-Jan-21	21-Jan-21	22-Jan-21
Sample ID					BT-17A-S-13-20210113	BT-17A-S-43-20210114	BT-17A-S-76-20210115	BT-17A-S-79-20210119	BT-18A-S-10-20210120	BT-18A-S-26-20210121	BT-18A-S-49-20210122
Sample Depth					13 ft	43 ft	76 ft	79 ft	10 ft	26 ft	49 ft
Sampling Company					STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC
Laboratory					LANCASTER	LANCASTER	LANCASTER	LANCASTER	LANCASTER	LANCASTER	LANCASTER
Laboratory Work Order					410-26447-1	410-26586-1	410-26586-1	410-27011-1	410-27204-1	410-27204-1	410-27301-1
Laboratory Sample ID	Units	MSC-PA A	MSC-PA B	MSC-PA C	410-26447-1	410-26586-3	410-26586-4	410-27011-3	410-27204-1	410-27204-4	410-27301-3
Volatile Organic Compounds											
BENZENE	mg/kg	280	330	0.5	1.6[C]	1.9[C]	0.043	ND (0.0067)	1,000 H[BC]	210 H[C]	0.056 J
1,2-DIBROMOETHANE (EDB)	mg/kg	3.7	4.2	0.005	*ND (0.021)*	ND (0.00050)	ND (0.0046)	ND (0.00054)	*ND (0.28) H*	*ND (0.027)*	*ND (0.034)*
1,2-DICHLOROETHANE (EDC)	mg/kg	85	98	0.5	ND (0.26)	ND (0.0063)	ND (0.0046)	ND (0.0067)	ND (0.41) H	ND (0.34)	ND (0.43)
ETHYLBENZENE	mg/kg	880	1,000	70	22	0.010	0.054	0.00065 J	13 H	1.7	0.16 J
ISOPROPYLBENZENE (CUMENE)	mg/kg	10,000	10,000	2,500	2.2	0.0041 J	0.0054	ND (0.0067)	33 H	6.0	0.038 J
METHYL TERTIARY BUTYL ETHER	mg/kg	8,500	9,800	2	0.89	0.0020 J	0.0037 J	ND (0.0067)	ND (0.34) H	ND (0.34)	ND (0.43)
TERT-BUTYL ALCOHOL	mg/kg	n/v	n/v	n/v	13	0.45	ND (0.092)	ND (0.13)	ND (69) H	ND (6.8)	9.2
TOLUENE	mg/kg	10,000	10,000	100	32	0.037	0.20	0.0023 J	320 H[C]	8.0	ND (0.43)
1,2,4-TRIMETHYLBENZENE	mg/kg	4,700	5,400	300	73	0.011	0.096	0.0016 J	3.0 J H	1.0	0.061 J
1,3,5-TRIMETHYLBENZENE	mg/kg	4,700	5,400	93	23	0.0046 J	0.035	ND (0.0067)	1.9 J H	0.59	ND (0.43)
XYLENES, TOTAL (DIMETHYLBENZENE)	mg/kg	7,900	9,100	1,000	130	0.044	0.33	0.0035 J	51 H	5.9	ND (0.85)
Semi-Volatile Organic Compounds											
ANTHRACENE	mg/kg	190,000	190,000	350	0.011 J	ND (0.022)	ND (0.019)	ND (0.023)	ND (0.020)	ND (0.47)	ND (0.22)
BENZO(A)ANTHRACENE	mg/kg	130	190,000	340	ND (0.018)	ND (0.022)	ND (0.019)	ND (0.023)	0.060	0.72	ND (0.22)
BENZO(A)PYRENE	mg/kg	91	190,000	46	0.0045 J	ND (0.022)	ND (0.019)	ND (0.023)	0.051	0.64	1.3
BENZO(B)FLUORANTHENE	mg/kg	76	190,000	170	0.0041 J	0.0049 J	ND (0.019)	ND (0.023)	0.060	0.62	ND (0.22)
BENZO(G,H,I)PERYLENE	mg/kg	190,000	190,000	180	0.0044 J	ND (0.022)	ND (0.019)	ND (0.023)	0.030	0.30 J	ND (0.22)
CHRYSENE	mg/kg	760	190,000	230	0.0046 J	ND (0.022)	0.0038 J	ND (0.023)	0.068	1.1	ND (0.22)
FLUORENE	mg/kg	130,000	190,000	3,800	0.051	ND (0.022)	ND (0.019)	ND (0.023)	0.12	ND (0.47)	ND (0.22)
NAPHTHALENE	mg/kg	66	77	25	1.2	ND (0.022)	0.010 J	ND (0.023)	0.79	6.5	ND (0.22)
PHENANTHRENE	mg/kg	190,000	190,000	10,000	0.098	ND (0.022)	ND (0.019)	ND (0.023)	0.29	5.2	ND (0.22)
PYRENE	mg/kg	96,000	190,000	2,200	0.023	0.0064 J	ND (0.019)	ND (0.023)	0.17	2.1	ND (0.22)
Metals											
LEAD, Total	mg/kg	1,000	190,000	450	11	13	3.0	3.5	31	16	25

Notes:

MSC-PA	Pennsylvania Department of Environmental Protection - 2021
A	MSC for Organic/Inorganic Regulated Substances in Soil – Non-Residential Direct Contact Surface Soil (0-2 ft)
B	MSC for Organic/Inorganic Regulated Substances in Soil – Non-Residential Direct Contact Surface Soil (2-15 ft)
C	MSC for Organic/Inorganic Regulated Substances in Soil – Non-Residential Soil to Groundwater (unsaturated)
563[C]	Concentration exceeds standard C.
11,200[BC]	Concentration exceeds standards B and C.
ND (0.03)	Concentration not detected above the laboratory reporting limit (in parentheses) except when the reporting limit is greater than the applicable standard in which case the method detection limit is listed in parentheses.
ND (0.50)	Indicates the laboratory method detection limit (if available) was above the applicable standard. The reporting limit is shown if the laboratory method detection limit is not available.
15.2	Measured concentration did not exceed the indicated standard.
mg/kg	milligrams per kilogram
n/v	No standard/guideline value.
ft	feet
-	Parameter not analyzed / not available.
B	Indicates the analyte is detected in the associated blank as well as in the sample.
F2	MS/MSD relative percent difference exceeds control limits.
H	Sample was prepped or analyzed beyond the specified holding time.
J	Indicates an estimated value
TL	Internal standard (ISTD) response or retention time outside acceptable limits.

Table 3-5a
Soil Analytical Results Summary, Medium Specific Concentrations
Belmont Terminal
Philadelphia Refinery Operations, a series of Evergreen Resources Group, LLC

Sample Location					S-464_CD			S-465_CD			S-466_CD		
Sample Date					26-Jan-21	26-Jan-21	27-Jan-21	21-Jan-21	4-Feb-21	4-Feb-21	28-Jan-21	28-Jan-21	29-Jan-21
Sample ID					BT-18B-S-11-20210126	BT-18B-S-26-20210126	BT-18B-S-49-20210127	BT-21-S-15-20210121	BT-21-S-26-20210204	BT-21-S-42-20210204	BT-03-S-18-20210128	BT-03-S-46-20210128	BT-03-S-72-20210129
Sample Depth					11 ft	26 ft	49 ft	15 ft	26 ft	42 ft	18 ft	46 ft	72 ft
Sampling Company					STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC
Laboratory					LANCASTER	LANCASTER	LANCASTER	LANCASTER	LANCASTER	LANCASTER	LANCASTER	LANCASTER	LANCASTER
Laboratory Work Order		MSC-PA	MSC-PA	MSC-PA	410-27600-1	410-27600-1	410-27735-1	410-27204-1	410-28485-1	410-28654-1	410-27876-1	410-28040-1	410-28040-1
Laboratory Sample ID	Units	A	B	C	410-27600-1	410-27600-3	410-27735-2	410-27204-3	410-28485-1	410-28654-1	410-27876-1	410-28040-1	410-28040-3
Volatile Organic Compounds													
BENZENE	mg/kg	280	330	0.5	**880 H[BC]**	**640[C]**	**12[C]**	**87[C]**	**5.9[C]**	0.0017 J	**0.93[C]**	**1.8[C]**	ND (0.0052)
1,2-DIBROMOETHANE (EDB)	mg/kg	3.7	4.2	0.005	*ND (0.56)*	*ND (1.1)*	*ND (0.027)*	*ND (0.023)*	ND (0.0045)	ND (0.00042)	*ND (0.022)*	*ND (0.028)*	ND (0.00042)
1,2-DICHLOROETHANE (EDC)	mg/kg	85	98	0.5	*ND (0.84)*	*ND (1.7)*	ND (0.33)	ND (0.29)	0.073	ND (0.0053)	ND (0.27)	ND (0.35)	ND (0.0052)
ETHYLBENZENE	mg/kg	880	1,000	70	7.4	7.6 J	ND (0.33)	14	0.025	ND (0.0053)	3.3	ND (0.35)	ND (0.0052)
ISOPROPYLBENZENE (CUMENE)	mg/kg	10,000	10,000	2,500	16	15	ND (0.33)	8.7	0.032	ND (0.0053)	1.6	ND (0.35)	ND (0.0052)
METHYL TERTIARY BUTYL ETHER	mg/kg	8,500	9,800	2	ND (0.70)	ND (1.4)	ND (0.33)	ND (0.29)	ND (0.0045)	ND (0.0053)	ND (0.27)	0.23 J	ND (0.0052)
TERT-BUTYL ALCOHOL	mg/kg	n/v	n/v	n/v	ND (140)	ND (280)	3.0 J	ND (5.7) TL	ND (0.091)	ND (0.11)	ND (5.4)	60	ND (0.10)
TOLUENE	mg/kg	10,000	10,000	100	**150[C]**	62	0.046 J	62	0.080	ND (0.0053)	0.18 J	0.097 J	ND (0.0052)
1,2,4-TRIMETHYLBENZENE	mg/kg	4,700	5,400	300	1.2 J	3.8 J	ND (0.33)	38	0.011	ND (0.0053)	11	ND (0.35)	ND (0.0052)
1,3,5-TRIMETHYLBENZENE	mg/kg	4,700	5,400	93	0.72 J	1.6 J	ND (0.33)	13	0.0054	ND (0.0053)	3.8	ND (0.35)	ND (0.0052)
XYLENES, TOTAL (DIMETHYLBENZENE)	mg/kg	7,900	9,100	1,000	33	37	ND (0.66)	87	0.14	ND (0.011)	11	ND (0.70)	ND (0.010)
Semi-Volatile Organic Compounds													
ANTHRACENE	mg/kg	190,000	190,000	350	0.22	0.11	ND (0.021)	0.33	ND (0.018)	ND (0.021)	ND (0.018)	0.049	0.0089 J
BENZO(A)ANTHRACENE	mg/kg	130	190,000	340	0.22	0.16	ND (0.021)	0.18	ND (0.018)	ND (0.021)	ND (0.018)	0.031	0.0096 J
BENZO(A)PYRENE	mg/kg	91	190,000	46	0.17	0.090	ND (0.021)	0.13	ND (0.018)	ND (0.021)	ND (0.018)	0.024	ND (0.021)
BENZO(B)FLUORANTHENE	mg/kg	76	190,000	170	0.17	0.12	0.0047 J	0.15	ND (0.018)	ND (0.021)	ND (0.018)	0.025	0.0074 J
BENZO(G,H,I)PERYLENE	mg/kg	190,000	190,000	180	0.10	0.069	ND (0.021)	0.068	ND (0.018)	ND (0.021)	ND (0.018)	0.0096 J	ND (0.021)
CHRYSENE	mg/kg	760	190,000	230	0.22	0.16	ND (0.021)	0.19	0.0038 J	ND (0.021)	ND (0.018)	0.037	0.0082 J
FLUORENE	mg/kg	130,000	190,000	3,800	0.20	0.12	ND (0.021)	0.69	0.0055 J	ND (0.021)	ND (0.018)	0.086	0.015 J
NAPHTHALENE	mg/kg	66	77	25	0.65	0.36	ND (0.021)	12	0.034	0.017 J	1.2	0.16	0.074
PHENANTHRENE	mg/kg	190,000	190,000	10,000	0.84	0.53	ND (0.021)	1.3	0.023 B	0.0055 J	ND (0.018)	0.26	0.039
PYRENE	mg/kg	96,000	190,000	2,200	0.47	0.32	0.0067 J	0.49	0.012 J	0.0057 J	ND (0.018)	0.096	0.017 J
Metals													
LEAD, Total	mg/kg	1,000	190,000	450	17	30	16	7.5	7.0	15	8.6	19	16

Notes:

MSC-PA	Pennsylvania Department of Environmental Protection - 2021
A	MSC for Organic/Inorganic Regulated Substances in Soil – Non-Residential Direct Contact Surface Soil (0-2 ft)
B	MSC for Organic/Inorganic Regulated Substances in Soil – Non-Residential Direct Contact Surface Soil (2-15 ft)
C	MSC for Organic/Inorganic Regulated Substances in Soil – Non-Residential Soil to Groundwater (unsaturated)
563[C]	Concentration exceeds standard C.
11,200[BC]	Concentration exceeds standards B and C.
ND (0.03)	Concentration not detected above the laboratory reporting limit (in parentheses) except when the reporting limit is greater than the applicable standard in which case the method detection limit is listed in parentheses.
ND (0.50)	Indicates the laboratory method detection limit (if available) was above the applicable standard. The reporting limit is shown if the laboratory method detection limit is not available.
15.2	Measured concentration did not exceed the indicated standard.
mg/kg	milligrams per kilogram
n/v	No standard/guideline value.
ft	feet
-	Parameter not analyzed / not available.
B	Indicates the analyte is detected in the associated blank as well as in the sample.
F2	MS/MSD relative percent difference exceeds control limits.
H	Sample was prepped or analyzed beyond the specified holding time.
J	Indicates an estimated value
TL	Internal standard (ISTD) response or retention time outside acceptable limits.

Table 3-5a
Soil Analytical Results Summary, Medium Specific Concentrations
Belmont Terminal
Philadelphia Refinery Operations, a series of Evergreen Resources Group, LLC

Sample Location					S-467_CD			S-468_CD		S-469_CD	
Sample Date					17-Feb-21	22-Feb-21	22-Feb-21	12-Feb-21	16-Feb-21	9-Feb-21	9-Feb-21
Sample ID					BT-22B-S-14-20210217	BT-22B-S-31-20210222	BT-22B-S-40-20210222	BT-01-S-15-20210212	BT-01-S-44-45-20210216	BT-08A-S-11-20210209	BT-08A-S-38-20210209
Sample Depth					14 ft	31 ft	40 ft	15 ft	44 - 45 ft	11 ft	38 ft
Sampling Company					STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC
Laboratory					LANCASTER	LANCASTER	LANCASTER	LANCASTER	LANCASTER	LANCASTER	LANCASTER
Laboratory Work Order		MSC-PA	MSC-PA	MSC-PA	410-29945-1	410-30035-1	410-30035-1	410-29478-1	410-29616-1	410-28885-1	410-29037-1
Laboratory Sample ID	Units	A	B	C	410-29945-1	410-30035-1	410-30035-2	410-29478-1	410-29616-1	410-28885-1	410-29037-1
Volatile Organic Compounds											
BENZENE	mg/kg	280	330	0.5	**37[C]**	0.14 J	0.25 J	ND (0.30)	0.00061 J	ND (0.0054)	0.00086 J
1,2-DIBROMOETHANE (EDB)	mg/kg	3.7	4.2	0.005	*ND (0.29)*	*ND (0.021)*	ND (0.00046)	*ND (0.024)*	ND (0.00041)	ND (0.00043)	ND (0.00046)
1,2-DICHLOROETHANE (EDC)	mg/kg	85	98	0.5	ND (0.43)	ND (0.26)	ND (0.0058)	ND (0.30)	ND (0.0052)	ND (0.0054)	ND (0.0058)
ETHYLBENZENE	mg/kg	880	1,000	70	38	0.84	0.070	0.053 J	0.00046 J	ND (0.0054)	ND (0.0058)
ISOPROPYLBENZENE (CUMENE)	mg/kg	10,000	10,000	2,500	29	3.0	0.069	0.32	ND (0.0052)	ND (0.0054)	ND (0.0058)
METHYL TERTIARY BUTYL ETHER	mg/kg	8,500	9,800	2	ND (0.36)	ND (0.26)	0.62	ND (0.30)	0.048	ND (0.0054)	ND (0.0058)
TERT-BUTYL ALCOHOL	mg/kg	n/v	n/v	n/v	ND (72)	ND (5.1)	61 TL	ND (6.0)	1.3	ND (0.11)	ND (0.12)
TOLUENE	mg/kg	10,000	10,000	100	0.55 J	0.064 J	0.0088	0.047 J	0.00083 J	ND (0.0054)	ND (0.0058)
1,2,4-TRIMETHYLBENZENE	mg/kg	4,700	5,400	300	**660[C]**	0.47	0.063	ND (0.30)	ND (0.0052)	ND (0.0054)	ND (0.0058)
1,3,5-TRIMETHYLBENZENE	mg/kg	4,700	5,400	93	**95[C]**	3.2	0.013	ND (0.30)	ND (0.0052)	ND (0.0054)	ND (0.0058)
XYLENES, TOTAL (DIMETHYLBENZENE)	mg/kg	7,900	9,100	1,000	49	0.57	0.10	ND (0.60)	ND (0.010)	ND (0.011)	ND (0.012)
Semi-Volatile Organic Compounds											
ANTHRACENE	mg/kg	190,000	190,000	350	0.017 J	6.4	0.0091 J	0.0092 J	ND (0.020)	ND (0.021)	ND (0.020)
BENZO(A)ANTHRACENE	mg/kg	130	190,000	340	0.0052 J	2.7	ND (0.022)	0.0067 J	0.0040 J	ND (0.021)	ND (0.020)
BENZO(A)PYRENE	mg/kg	91	190,000	46	ND (0.019)	2.2	ND (0.022)	ND (0.020)	ND (0.020)	ND (0.021)	ND (0.020)
BENZO(B)FLUORANTHENE	mg/kg	76	190,000	170	0.0040 J	2.1	ND (0.022)	ND (0.020)	ND (0.020)	ND (0.021)	ND (0.020)
BENZO(G,H,I)PERYLENE	mg/kg	190,000	190,000	180	ND (0.019)	0.82	ND (0.022)	ND (0.020)	ND (0.020)	ND (0.021)	ND (0.020)
CHRYSENE	mg/kg	760	190,000	230	0.0055 J	2.9	ND (0.022)	ND (0.020)	ND (0.020)	ND (0.021)	ND (0.020)
FLUORENE	mg/kg	130,000	190,000	3,800	0.090	8.0	0.011 J	ND (0.020)	ND (0.020)	ND (0.021)	ND (0.020)
NAPHTHALENE	mg/kg	66	77	25	1.2	22	3.8	ND (0.020)	0.0080 J	0.010 J	ND (0.020)
PHENANTHRENE	mg/kg	190,000	190,000	10,000	0.12	26	0.025	0.036	0.0095 J	ND (0.021)	ND (0.020)
PYRENE	mg/kg	96,000	190,000	2,200	0.013 J	8.7	0.014 J	0.018 J	0.0073 J	ND (0.021)	ND (0.020)
Metals											
LEAD, Total	mg/kg	1,000	190,000	450	5.8	5.2	9.4	5.0	7.5	16	5.9 F2

Notes:

MSC-PA	Pennsylvania Department of Environmental Protection - 2021
A	MSC for Organic/Inorganic Regulated Substances in Soil – Non-Residential Direct Contact Surface Soil (0-2 ft)
B	MSC for Organic/Inorganic Regulated Substances in Soil – Non-Residential Direct Contact Surface Soil (2-15 ft)
C	MSC for Organic/Inorganic Regulated Substances in Soil – Non-Residential Soil to Groundwater (unsaturated)
563[C]	Concentration exceeds standard C.
11,200[BC]	Concentration exceeds standards B and C.
ND (0.03)	Concentration not detected above the laboratory reporting limit (in parentheses) except when the reporting limit is greater than the applicable standard in which case the method detection limit is listed in parentheses.
ND (0.50)	Indicates the laboratory method detection limit (if available) was above the applicable standard. The reporting limit is shown if the laboratory method detection limit is not available.
15.2	Measured concentration did not exceed the indicated standard.
mg/kg	milligrams per kilogram
n/v	No standard/guideline value.
ft	feet
-	Parameter not analyzed / not available.
B	Indicates the analyte is detected in the associated blank as well as in the sample.
F2	MS/MSD relative percent difference exceeds control limits.
H	Sample was prepped or analyzed beyond the specified holding time.
J	Indicates an estimated value
TL	Internal standard (ISTD) response or retention time outside acceptable limits.

Table 3-5b: Soil Analytical Results Summary, USEPA Regional Screening Levels
Belmont Terminal
Philadelphia Refinery Operations, a series of Evergreen Resources Group, LLC

Sample Location			BT-BH-23-01	BT-BH-23-02	BT-BH-23-03	BT-BH-23-04	BT-BH-23-05	S-330						
Sample Date			4-Aug-23	4-Aug-23	4-Aug-23	4-Aug-23	4-Aug-23	9-May-11	9-May-11	16-May-11	16-May-11	16-May-11	16-May-11	16-May-11
Sample ID			BT-BH-23-01-0-2	BT-BH-23-02-0-2	BT-BH-23-03-0-2	BT-BH-23-04-0-2	BT-BH-23-05-0-2	S-330 (1.5-2)	S-330 (6-6.5)	S-330 (10-10.5)	S-330 (15-15.5)	S-330 (20-20.5)	S-330 (25-25.5)	S-330 (27-27.5)
Sample Depth			0 - 2 ft	0 - 2 ft	0 - 2 ft	0 - 2 ft	0 - 2 ft	1.5 - 2 ft	6 - 6.5 ft	10 - 10.5 ft	15 - 15.5 ft	20 - 20.5 ft	25 - 25.5 ft	27 - 27.5 ft
Sampling Company			STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC
Laboratory			SGS	SGS	SGS	SGS	SGS	LL	LL	LL	LL	LL	LL	LL
Laboratory Work Order		USEPA RSL	JD70550	JD70550	JD70550	JD70550	JD70550	1246013	1246013	1247263	1247263	1247263	1247263	1247263
Laboratory Sample ID	Units	A	JD70550-1	JD70550-2	JD70550-3	JD70550-4	JD70550-5	6281302	6281303	6289561	6289562	6289563	6289564	6289565
Volatile Organic Compounds														
BENZENE	mg/kg	5.1	ND (0.00055)	ND (0.00068)	ND (0.00077)	ND (0.00078)	ND (0.00064)	0.002 J	ND (0.0006)	ND (0.0006)	0.007	ND (0.027)	0.003 J	0.082 J
1,2-DIBROMOETHANE (EDB)	mg/kg	0.16	-	-	-	-	-	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.054)	ND (0.001)	ND (0.056)
1,2-DICHLOROETHANE (EDC)	mg/kg	2	ND (0.0011)	ND (0.0014)	ND (0.0015)	ND (0.0016)	ND (0.0013)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.054)	ND (0.001)	ND (0.056)
ETHYLBENZENE	mg/kg	25	ND (0.0011)	ND (0.0014)	ND (0.0015)	ND (0.0016)	ND (0.0013)	ND (0.001)	ND (0.001)	ND (0.001)	0.009	ND (0.054)	0.006	ND (0.056)
ISOPROPYLBENZENE (CUMENE)	mg/kg	990	ND (0.0022)	ND (0.0027)	ND (0.0031)	ND (0.0031)	ND (0.0026)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.054)	ND (0.001)	1.3
METHYL TERTIARY BUTYL ETHER	mg/kg	210	ND (0.0011)	ND (0.0014)	ND (0.0015)	ND (0.0016)	ND (0.0013)	ND (0.0006)	ND (0.0006)	ND (0.0006)	ND (0.0005)	ND (0.027)	ND (0.0005)	ND (0.028)
TERT-BUTYL ALCOHOL	mg/kg	6,500	-	-	-	-	-	-	-	-	-	-	-	-
TOLUENE	mg/kg	4,700	ND (0.0011)	ND (0.0014)	ND (0.0015)	ND (0.0016)	ND (0.0013)	ND (0.001)	ND (0.001)	ND (0.001)	0.150	ND (0.054)	0.061	ND (0.056)
1,2,4-TRIMETHYLBENZENE	mg/kg	180	ND (0.0022)	ND (0.0027)	ND (0.0031)	ND (0.0031)	ND (0.0026)	-	-	-	-	-	-	-
1,3,5-TRIMETHYLBENZENE	mg/kg	150	ND (0.0022)	ND (0.0027)	ND (0.0031)	ND (0.0031)	ND (0.0026)	-	-	-	-	-	-	-
XYLENES, TOTAL (DIMETHYLBENZENE)	mg/kg	250	ND (0.0011)	ND (0.0014)	ND (0.0015)	ND (0.0016)	ND (0.0013)	ND (0.001)	ND (0.001)	ND (0.001)	0.055	ND (0.054)	0.033	ND (0.056)
Semi-Volatile Organic Compounds														
ANTHRACENE	mg/kg	23,000	0.134	0.149	ND (0.043)	0.138	0.0961	0.037	0.0015 J	0.0016 J	ND (0.00078)	0.0046	0.0033	ND (0.094)
BENZO(A)ANTHRACENE	mg/kg	21	0.516	0.564	0.0189 J	0.589	0.476	0.170	0.0046	0.0057	ND (0.00039)	0.014	0.015	0.019
BENZO(A)PYRENE	mg/kg	2.1	0.499	0.671	ND (0.043)	0.513	0.596	0.210	0.0043	0.0073	0.0005 J	0.018	0.020	0.012
BENZO(B)FLUORANTHENE	mg/kg	21	0.661	0.741	0.0224 J	0.634	0.829	0.170	0.0030	0.0083	0.00063 J	0.021	0.022	0.0083
BENZO(G,H,I)PERYLENE	mg/kg	n/v	0.345	0.475	ND (0.043)	0.303	0.431	0.310	0.0061 J	0.011	ND (0.0023)	0.028	0.030	0.011
CHRYSENE	mg/kg	2,100	0.496	0.567	0.0186 J	0.554	0.529	0.270	0.042	0.016	ND (0.0035)	0.044	0.036	0.057
FLUORENE	mg/kg	3,000	0.0450	0.0211 J	ND (0.043)	0.0325 J	0.0226 J	ND (0.039)	ND (0.0041)	ND (0.0039)	ND (0.0039)	ND (0.0038)	0.0046 J	0.140
NAPHTHALENE	mg/kg	8.6	0.0462	0.0946	0.0912	0.0375	0.0359 J	-	-	-	-	-	-	-
PHENANTHRENE	mg/kg	n/v	0.570	0.314	0.0305 J	0.574	0.437	0.200	ND (0.0025)	0.020	0.0027 J	0.046	0.045	0.420
PYRENE	mg/kg	2,300	0.809	0.963	0.0300 J	0.844	0.902	0.360	ND (0.024)	0.020	ND (0.0039)	0.049	0.050	ND (0.270)
Metals														
LEAD, Total	mg/kg	800	78.1	563	181	254	223	188	6.54	8.15	11.1	5.25	5.40	2.41

Notes:

USEPA RSL	United States Environmental Protection Agency Regional Screening Levels (RSLs)
A	Industrial Soil Screening Levels (TR=1E-06, THQ=0.1) (November 2023)
6.5[A]	Concentration exceeds the indicated standard.
15.2	Measured concentration did not exceed the indicated standard.
ND (0.50)	Indicates the laboratory method detection limit (if available) was above the applicable standard. The reporting limit is shown if the laboratory method detection limit is not available.
ND (0.03)	Concentration not detected above the laboratory reporting limit (in parentheses) except when the reporting limit is greater than the applicable standard in which case the method detection limit is listed in parentheses.
15.2	Measured concentration did not exceed the indicated standard.
mg/kg	milligrams per kilogram
n/v	No standard/guideline value.
ft	feet
-	Parameter not analyzed / not available.
B	Indicates the analyte is detected in the associated blank as well as in the sample.
F2	MS/MSD relative percent difference exceeds control limits.
H	Sample was prepped or analyzed beyond the specified holding time.
J	Indicates an estimated value
TL	Internal standard (ISTD) response or retention time outside acceptable limits.

Table 3-5b: Soil Analytical Results Summary, USEPA Regional Screening Levels
Belmont Terminal
Philadelphia Refinery Operations, a series of Evergreen Resources Group, LLC

Sample Location			S-331				S-332							S-393D	
Sample Date			16-May-11	16-May-11	17-May-11	17-May-11	9-May-11	9-May-11	18-May-11	18-May-11	18-May-11	19-May-11	19-May-11	4-Feb-14	4-Feb-14
Sample ID			S-331 (10-10.5)	S-331 (15-15.5)	S-331 (20-20.5)	S-331 (25-25.5)	S-332 (3-3.5)	S-332 (6-6.5)	S-332 (12-12.5)	S-332 (15-15.5)	S-332 (20-20.5)	S-332 (25-25.5)	S-332 (26.5-27)	S-393D_14-15_020414	S-393D_27-28_020414
Sample Depth			10 - 10.5 ft	15 - 15.5 ft	20 - 20.5 ft	25 - 25.5 ft	3 - 3.5 ft	6 - 6.5 ft	12 - 12.5 ft	15 - 15.5 ft	20 - 20.5 ft	25 - 25.5 ft	26.5 - 27 ft	14 - 15 ft	27 - 28 ft
Sampling Company			STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	AQUATERRA	AQUATERRA
Laboratory			LL	LL	LL	LL	LL	LL	LL	LL	LL	LL	LL	PACE	PACE
Laboratory Work Order		USEPA RSL	1247263	1247263	1247263	1247263	1246013	1246013	1247750	1247750	1247750	1247750	1247750	30113107/30113108	30113107/30113108
Laboratory Sample ID	Units	A	6289566	6289567	6289568	6289569	6281300	6281301	6292908	6292909	6292910	6292911	6292912	30113107001/	30113107002/
Volatile Organic Compounds															
BENZENE	mg/kg	5.1	ND (0.0006)	ND (0.0005)	ND (0.0005)	0.001 J	ND (0.0006)	ND (0.0005)	0.036 J	0.092	0.062	0.013	0.940 J	**11,200[A]**	**98.8[A]**
1,2-DIBROMOETHANE (EDB)	mg/kg	0.16	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.057)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	*ND (1.71)*	ND (0.131)
1,2-DICHLOROETHANE (EDC)	mg/kg	2	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.057)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.240)	ND (0.595)	ND (0.251)
ETHYLBENZENE	mg/kg	25	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	0.100 J	ND (0.001)	0.003 J	0.002 J	0.650 J	**31.6[A]**	0.583
ISOPROPYLBENZENE (CUMENE)	mg/kg	990	ND (0.001)	ND (0.001)	ND (0.001)	0.001 J	ND (0.001)	ND (0.001)	0.093 J	ND (0.001)	0.006	0.007	4.9	88.7	1.56
METHYL TERTIARY BUTYL ETHER	mg/kg	210	ND (0.0006)	ND (0.0005)	ND (0.0005)	0.0008 J	ND (0.0006)	ND (0.0005)	ND (0.028)	ND (0.0007)	ND (0.0006)	ND (0.0005)	ND (0.120)	ND (3.27)	ND (0.251)
TERT-BUTYL ALCOHOL	mg/kg	6,500	-	-	-	-	-	-	-	-	-	-	-	-	-
TOLUENE	mg/kg	4,700	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.057)	0.003 J	ND (0.001)	ND (0.001)	ND (0.240)	1,010	10.4
1,2,4-TRIMETHYLBENZENE	mg/kg	180	-	-	-	-	-	-	-	-	-	-	-	5.95	0.213 J
1,3,5-TRIMETHYLBENZENE	mg/kg	150	-	-	-	-	-	-	-	-	-	-	-	4.86	ND (0.251)
XYLENES, TOTAL (DIMETHYLBENZENE)	mg/kg	250	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	0.190 J	ND (0.001)	0.005 J	0.003 J	0.700 J	138	2.47
Semi-Volatile Organic Compounds															
ANTHRACENE	mg/kg	23,000	0.780	0.013	0.970	0.930	ND (0.00082)	ND (0.00081)	0.0035	0.0015 J	0.0010 J	0.0010 J	0.150	1.03 J	0.0194
BENZO(A)ANTHRACENE	mg/kg	21	0.260	0.0048	0.310	0.360	0.0031	0.0033	0.0023	0.0020	0.00083 J	0.00058 J	0.022	1.34 J	0.0191
BENZO(A)PYRENE	mg/kg	2.1	0.150	0.0033	0.170	0.190	0.0056	0.0097	0.0021	0.0078	ND (0.0035)	0.0019	0.012	*ND (2.23)*	0.0122
BENZO(B)FLUORANTHENE	mg/kg	21	0.130	0.0025	0.160	0.180	0.0042	0.0049	0.0018	ND (0.013)	ND (0.0040)	ND (0.00080)	0.0099	ND (3.98)	0.0140
BENZO(G,H,I)PERYLENE	mg/kg	n/v	0.150	0.0065 J	0.170	0.190	0.0097 J	0.038	0.0030 J	ND (0.0026)	ND (0.0024)	ND (0.0023)	0.011	ND (3.98)	0.0060 J
CHRYSENE	mg/kg	2,100	0.340	0.0058 J	0.410	0.460	ND (0.0057)	0.0073	0.0055 J	0.014	0.0046 J	0.0037 J	0.100	1.04 J	0.0184
FLUORENE	mg/kg	3,000	1.1	0.014 J	1.6	1.8	ND (0.0041)	ND (0.0040)	ND (0.0037)	ND (0.0043)	ND (0.0040)	ND (0.0038)	0.700	1.07 J	0.0272
NAPHTHALENE	mg/kg	8.6	-	-	-	-	-	-	-	-	-	-	-	3.67 J	0.0744
PHENANTHRENE	mg/kg	n/v	3.0	0.049	3.9	4.4	0.0034 J	0.0035 J	0.0085	0.0053 J	0.0040 J	0.0043 J	0.590	4.79	0.0936
PYRENE	mg/kg	2,300	0.990	0.019	1.2	1.4	ND (0.0041)	ND (0.0040)	0.0056 J	ND (0.018)	ND (0.012)	0.0048 J	ND (0.380)	2.45 J	0.0495
Metals															
LEAD, Total	mg/kg	800	11.8	10.6	9.12	11.0	17.7	9.38	3.01	11.5	8.39	9.02	7.46	23.2	5.5

Notes:

USEPA RSL	United States Environmental Protection Agency Regional Screening Levels (RSLs)
A	Industrial Soil Screening Levels (TR=1E-06, THQ=0.1) (November 2023)
6.5[A]	Concentration exceeds the indicated standard.
15.2	Measured concentration did not exceed the indicated standard.
ND (0.50)	Indicates the laboratory method detection limit (if available) was above the applicable standard. The reporting limit is shown if the laboratory method detection limit is not available.
ND (0.03)	Concentration not detected above the laboratory reporting limit (in parentheses) except when the reporting limit is greater than the applicable standard in which case the method detection limit is listed in parentheses.
15.2	Measured concentration did not exceed the indicated standard.
mg/kg	milligrams per kilogram
n/v	No standard/guideline value.
ft	feet
-	Parameter not analyzed / not available.
B	Indicates the analyte is detected in the associated blank as well as in the sample.
F2	MS/MSD relative percent difference exceeds control limits.
H	Sample was prepped or analyzed beyond the specified holding time.
J	Indicates an estimated value
TL	Internal standard (ISTD) response or retention time outside acceptable limits.

Table 3-5b: Soil Analytical Results Summary, USEPA Regional Screening Levels
Belmont Terminal
Philadelphia Refinery Operations, a series of Evergreen Resources Group, LLC

Sample Location			S-452_CD	S-453_CD		S-454_CD			S-455_CD	S-456_CD	
Sample Date			1-Dec-20	2-Dec-20	3-Dec-20	3-Dec-20	8-Dec-20	8-Dec-20	10-Dec-20	14-Dec-20	15-Dec-20
Sample ID			BT-02B-S-10-20201201	BT-11A-S-8-20201202	BT-11A-S-32-20201203	BT-11B-S-8-20201203	BT-11B-S-50-20201208	BT-11B-S-78-20201208	BT-05-S-9-20201210	BT-02A-S-10-20201214	BT-02A-S-37-20201215
Sample Depth			10 ft	8 ft	32 ft	8 ft	50 ft	78 ft	9 ft	10 ft	37 ft
Sampling Company			STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC
Laboratory			LANCASTER	LANCASTER	LANCASTER	LANCASTER	LANCASTER	LANCASTER	LANCASTER	LANCASTER	LANCASTER
Laboratory Work Order		USEPA RSL	410-22543-1	410-22720-1	410-22720-1	410-22930-1	410-23184-1	410-23368-1	410-23573-1	410-24132-1	410-24132-1
Laboratory Sample ID	Units	A	410-22543-1	410-22720-1	410-22720-3	410-22930-1	410-23184-2	410-23368-1	410-23573-1	410-24132-1	410-24132-2
Volatile Organic Compounds											
BENZENE	mg/kg	5.1	0.0042 H	0.29 J	0.66 H	ND (0.33)	4.5 H	0.0024 J	1.2	ND (0.55)	0.021
1,2-DIBROMOETHANE (EDB)	mg/kg	0.16	ND (0.0042) H	ND (0.024)	ND (0.0053)	ND (0.027)	ND (0.0044)	ND (0.0048)	ND (0.024)	ND (0.044)	ND (0.0050)
1,2-DICHLOROETHANE (EDC)	mg/kg	2	ND (0.0042) H	ND (0.30)	0.0049 J	ND (0.33)	0.0024 J	ND (0.0048)	ND (0.31)	ND (0.55)	ND (0.0050)
ETHYLBENZENE	mg/kg	25	ND (0.0042) H	0.029 J	0.0075	0.055 J	1.3 H	0.0028 J	6.6	ND (0.55)	0.0016 J
ISOPROPYLBENZENE (CUMENE)	mg/kg	990	ND (0.0042) H	0.64	0.010	4.2	0.023	0.00078 J	11	4.1	0.017
METHYL TERTIARY BUTYL ETHER	mg/kg	210	0.0024 J H	ND (0.30)	0.24	ND (0.33)	0.11	0.00091 J	ND (0.31)	ND (0.55)	0.012
TERT-BUTYL ALCOHOL	mg/kg	6,500	0.35 H	ND (6.0)	61 H	ND (6.7)	160 H	0.094 J	ND (6.1)	ND (11)	1.4
TOLUENE	mg/kg	4,700	0.00068 J H	ND (0.30)	ND (0.0053)	ND (0.33)	0.027	ND (0.0048)	0.61	ND (0.55)	0.0013 J
1,2,4-TRIMETHYLBENZENE	mg/kg	180	ND (0.0042) H	ND (0.30)	0.0022 J	0.036 J	0.059	0.0037 J	0.15 J	ND (0.55)	0.0020 J
1,3,5-TRIMETHYLBENZENE	mg/kg	150	ND (0.0042) H	ND (0.30)	0.00098 J	0.035 J	0.018	0.00089 J	5.3	ND (0.55)	0.0019 J
XYLENES, TOTAL (DIMETHYLBENZENE)	mg/kg	250	ND (0.0085) H	ND (0.60)	0.0016 J	0.14 J	0.52	0.0034 J	6.4	ND (1.1)	0.0041 J
Semi-Volatile Organic Compounds											
ANTHRACENE	mg/kg	23,000	ND (0.019)	ND (0.021)	ND (0.021)	0.044	0.0043 J	ND (0.020)	ND (0.020)	0.053	0.0053 J
BENZO(A)ANTHRACENE	mg/kg	21	ND (0.019)	0.013 J	ND (0.021)	0.012 J	ND (0.020)	ND (0.020)	0.0087 J	0.026	ND (0.020)
BENZO(A)PYRENE	mg/kg	2.1	ND (0.019)	0.011 J	ND (0.021)	0.0082 J	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.019)	ND (0.020)
BENZO(B)FLUORANTHENE	mg/kg	21	ND (0.019)	0.010 J	ND (0.021)	0.0074 J	0.0058 J	ND (0.020)	0.0097 J	0.016 J	ND (0.020)
BENZO(G,H,I)PERYLENE	mg/kg	n/v	ND (0.019)	ND (0.021)	ND (0.021)	0.0046 J	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.019)	ND (0.020)
CHRYSENE	mg/kg	2,100	ND (0.019)	0.020 J	ND (0.021)	0.0089 J	0.0054 J	ND (0.020)	0.011 J	ND (0.019)	ND (0.020)
FLUORENE	mg/kg	3,000	ND (0.019)	1.8	ND (0.021)	0.66	0.0054 J	ND (0.020)	0.027	0.22	0.012 J
NAPHTHALENE	mg/kg	8.6	ND (0.019)	ND (0.021)	ND (0.021)	ND (0.020)	0.45	0.010 J	2.6	ND (0.019)	ND (0.020)
PHENANTHRENE	mg/kg	n/v	ND (0.019)	3.9	0.0056 J	0.35	0.017 J	0.0091 J	0.058	0.24	0.015 J
PYRENE	mg/kg	2,300	ND (0.019)	0.055	ND (0.021)	0.031	0.0082 J	ND (0.020)	0.022	0.071	0.016 J
Metals											
LEAD, Total	mg/kg	800	8.4	9.8	22	11	14	2.7	9.9	12	6.5

Notes:

USEPA RSL	United States Environmental Protection Agency Regional Screening Levels (RSLs)
A	Industrial Soil Screening Levels (TR=1E-06, THQ=0.1) (November 2023)
6.5[A]	Concentration exceeds the indicated standard.
15.2	Measured concentration did not exceed the indicated standard.
ND (0.50)	Indicates the laboratory method detection limit (if available) was above the applicable standard. The reporting limit is shown if the laboratory method detection limit is not available.
ND (0.03)	Concentration not detected above the laboratory reporting limit (in parentheses) except when the reporting limit is greater than the applicable standard in which case the method detection limit is listed in parentheses.
15.2	Measured concentration did not exceed the indicated standard.
mg/kg	milligrams per kilogram
n/v	No standard/guideline value.
ft	feet
-	Parameter not analyzed / not available.
B	Indicates the analyte is detected in the associated blank as well as in the sample.
F2	MS/MSD relative percent difference exceeds control limits.
H	Sample was prepped or analyzed beyond the specified holding time.
J	Indicates an estimated value
TL	Internal standard (ISTD) response or retention time outside acceptable limits.

Table 3-5b: Soil Analytical Results Summary, USEPA Regional Screening Levels
Belmont Terminal
Philadelphia Refinery Operations, a series of Evergreen Resources Group, LLC

Sample Location			S-457_CD			S-458_CD			S-459_CD		
Sample Date			16-Dec-20	28-Dec-20	29-Dec-20	29-Dec-20	29-Dec-20	30-Dec-20	4-Jan-21	4-Jan-21	6-Jan-21
Sample ID			BT-09-S-22-20201216	BT-09-S-8-20201228	BT-09-S-47-20201229	BT-19-S-15-20201229	BT-19-S-40-20201229	BT-19-S-50-20201230	BT-13-S-22-20210104	BT-13-S-5-20210104	BT-13-S-60-20210106
Sample Depth			22 ft	8 ft	47 ft	15 ft	40 ft	50 ft	22 ft	5 ft	60 ft
Sampling Company			STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC
Laboratory			LANCASTER	LANCASTER	LANCASTER	LANCASTER	LANCASTER	LANCASTER	LANCASTER	LANCASTER	LANCASTER
Laboratory Work Order		USEPA RSL	410-24240-1	410-25174-1	410-25174-1	410-25174-1	410-25255-1	410-25255-1	410-25450-1	410-25450-1	410-25584-1
Laboratory Sample ID	Units	A	410-24240-2	410-25174-1	410-25174-3	410-25174-4	410-25255-1	410-25255-4	410-25450-2	410-25450-1	410-25584-1
Volatile Organic Compounds											
BENZENE	mg/kg	5.1	0.23 J	ND (0.28)	**6.6**[A]	ND (0.32)	0.0032 J	0.0047 J	1.0	ND (0.28)	ND (0.0056)
1,2-DIBROMOETHANE (EDB)	mg/kg	0.16	ND (0.026)	ND (0.022)	ND (0.026)	ND (0.026)	ND (0.0050)	ND (0.0057)	ND (0.025)	ND (0.023)	ND (0.0056)
1,2-DICHLOROETHANE (EDC)	mg/kg	2	ND (0.33)	ND (0.28)	ND (0.33)	ND (0.32)	ND (0.0050)	ND (0.0057)	ND (0.31)	ND (0.28)	0.0010 J
ETHYLBENZENE	mg/kg	25	0.56	ND (0.28)	ND (0.33)	ND (0.32)	ND (0.0050)	ND (0.0057)	0.40	ND (0.28)	ND (0.0056)
ISOPROPYLBENZENE (CUMENE)	mg/kg	990	0.94	0.27 J	0.028 J	0.32	ND (0.0050)	ND (0.0057)	0.092 J	1.2	ND (0.0056)
METHYL TERTIARY BUTYL ETHER	mg/kg	210	ND (0.33)	ND (0.28)	2.9	ND (0.32)	ND (0.0050)	ND (0.0057)	ND (0.31)	ND (0.28)	ND (0.0056)
TERT-BUTYL ALCOHOL	mg/kg	6,500	ND (6.5)	ND (5.6)	61	ND (6.4) TL	ND (0.099)	ND (0.11)	ND (6.2)	ND (5.7)	0.039 J
TOLUENE	mg/kg	4,700	0.094 J	ND (0.28)	ND (0.33)	ND (0.32)	ND (0.0050)	ND (0.0057)	ND (0.31)	ND (0.28)	ND (0.0056)
1,2,4-TRIMETHYLBENZENE	mg/kg	180	6.9	ND (0.28)	ND (0.33)	ND (0.32)	ND (0.0050)	ND (0.0057)	1.1	ND (0.28)	0.00092 J
1,3,5-TRIMETHYLBENZENE	mg/kg	150	2.4	ND (0.28)	ND (0.33)	ND (0.32)	ND (0.0050)	ND (0.0057)	0.40	ND (0.28)	ND (0.0056)
XYLENES, TOTAL (DIMETHYLBENZENE)	mg/kg	250	0.45 J	ND (0.56)	ND (0.66)	ND (0.64)	ND (0.0099)	ND (0.011)	0.48 J	ND (0.57)	ND (0.011)
Semi-Volatile Organic Compounds											
ANTHRACENE	mg/kg	23,000	0.026	0.014 J	0.028	0.013 J	ND (0.019)	ND (0.019)	0.031	ND (0.019)	ND (0.019)
BENZO(A)ANTHRACENE	mg/kg	21	0.032	ND (0.019)	0.024	0.013 J	ND (0.019)	ND (0.019)	ND (0.023)	ND (0.019)	ND (0.019)
BENZO(A)PYRENE	mg/kg	2.1	0.011 J	0.0045 J	0.017 J	0.0091 J	ND (0.019)	ND (0.019)	ND (0.023)	ND (0.019)	ND (0.019)
BENZO(B)FLUORANTHENE	mg/kg	21	0.016 J	0.0056 J	0.028	0.012 J	ND (0.019)	ND (0.019)	ND (0.023)	ND (0.019)	ND (0.019)
BENZO(G,H,I)PERYLENE	mg/kg	n/v	ND (0.019)	ND (0.019)	0.013 J	0.0062 J	ND (0.019)	ND (0.019)	ND (0.023)	ND (0.019)	ND (0.019)
CHRYSENE	mg/kg	2,100	0.028	0.0059 J	0.028	0.016 J	ND (0.019)	ND (0.019)	0.0092 J	0.044	ND (0.019)
FLUORENE	mg/kg	3,000	0.11	0.11	0.039	0.019 J	ND (0.019)	ND (0.019)	0.21	ND (0.019)	0.0071 J
NAPHTHALENE	mg/kg	8.6	1.2	ND (0.019)	0.37	ND (0.020)	ND (0.019)	ND (0.019)	5.8	ND (0.019)	0.014 J
PHENANTHRENE	mg/kg	n/v	0.067	0.10	0.15	0.058	0.0052 J	0.0068 J	0.26	ND (0.019)	0.011 J
PYRENE	mg/kg	2,300	0.063	0.010 J	0.063	0.035	0.0053 J	0.0068 J	0.049	0.13	0.0063 J
Metals											
LEAD, Total	mg/kg	800	13	7.7	14	14	3.2	1.6	13	7.3	1.2

Notes:

USEPA RSL	United States Environmental Protection Agency Regional Screening Levels (RSLs)
A	Industrial Soil Screening Levels (TR=1E-06, THQ=0.1) (November 2023)
6.5[A]	Concentration exceeds the indicated standard.
15.2	Measured concentration did not exceed the indicated standard.
ND (0.50)	Indicates the laboratory method detection limit (if available) was above the applicable standard. The reporting limit is shown if the laboratory method detection limit is not available.
ND (0.03)	Concentration not detected above the laboratory reporting limit (in parentheses) except when the reporting limit is greater than the applicable standard in which case the method detection limit is listed in parentheses.
15.2	Measured concentration did not exceed the indicated standard.
mg/kg	milligrams per kilogram
n/v	No standard/guideline value.
ft	feet
-	Parameter not analyzed / not available.
B	Indicates the analyte is detected in the associated blank as well as in the sample.
F2	MS/MSD relative percent difference exceeds control limits.
H	Sample was prepped or analyzed beyond the specified holding time.
J	Indicates an estimated value
TL	Internal standard (ISTD) response or retention time outside acceptable limits.

Table 3-5b: Soil Analytical Results Summary, USEPA Regional Screening Levels
Belmont Terminal
Philadelphia Refinery Operations, a series of Evergreen Resources Group, LLC

Sample Location			S-460_CD			S-461_CD		S-462_CD			
Sample Date			7-Jan-21	7-Jan-21	11-Jan-21	12-Jan-21	13-Jan-21	13-Jan-21	14-Jan-21	15-Jan-21	19-Jan-21
Sample ID			BT-14-S-25-20210107	BT-14-S-34-20210107	BT-14-S-60-20210111	BT-17B-S-15-20210112	BT-17B-S-45-20210113	BT-17A-S-13-20210113	BT-17A-S-43-20210114	BT-17A-S-76-20210115	BT-17A-S-79-20210119
Sample Depth			25 ft	34 ft	60 ft	15 ft	45 ft	13 ft	43 ft	76 ft	79 ft
Sampling Company			STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC
Laboratory			LANCASTER	LANCASTER	LANCASTER	LANCASTER	LANCASTER	LANCASTER	LANCASTER	LANCASTER	LANCASTER
Laboratory Work Order		USEPA RSL	410-25740-1	410-25740-1	410-26092-1	410-26291-1	410-26291-1	410-26447-1	410-26586-1	410-26586-1	410-27011-1
Laboratory Sample ID	Units	A	410-25740-1	410-25740-2	410-26092-1	410-26291-1	410-26291-3	410-26447-1	410-26586-3	410-26586-4	410-27011-3
Volatile Organic Compounds											
BENZENE	mg/kg	5.1	4.7	ND (0.30)	0.0014 J	0.12 J	0.014	1.6	1.9	0.043	ND (0.0067)
1,2-DIBROMOETHANE (EDB)	mg/kg	0.16	ND (0.032)	ND (0.024)	ND (0.0040)	ND (0.021)	ND (0.0049)	ND (0.021)	ND (0.0063)	ND (0.0046)	ND (0.0067)
1,2-DICHLOROETHANE (EDC)	mg/kg	2	ND (0.39)	ND (0.30)	ND (0.0040)	ND (0.26)	ND (0.0049)	ND (0.26)	ND (0.0063)	ND (0.0046)	ND (0.0067)
ETHYLBENZENE	mg/kg	25	9.8	ND (0.30)	0.0016 J	0.23 J	ND (0.0049)	22	0.010	0.054	0.00065 J
ISOPROPYLBENZENE (CUMENE)	mg/kg	990	0.89	0.11 J	ND (0.0040)	0.66	ND (0.0049)	2.2	0.0041 J	0.0054	ND (0.0067)
METHYL TERTIARY BUTYL ETHER	mg/kg	210	5.1	ND (0.30)	0.00092 J	ND (0.26)	ND (0.0049)	0.89	0.0020 J	0.0037 J	ND (0.0067)
TERT-BUTYL ALCOHOL	mg/kg	6,500	21	ND (6.0)	ND (0.079)	1.6 J	0.076 J	13	0.45	ND (0.092)	ND (0.13)
TOLUENE	mg/kg	4,700	26	0.054 J	0.0076	ND (0.26)	ND (0.0049)	32	0.037	0.20	0.0023 J
1,2,4-TRIMETHYLBENZENE	mg/kg	180	23	0.048 J	0.0018 J	0.12 J	ND (0.0049)	73	0.011	0.096	0.0016 J
1,3,5-TRIMETHYLBENZENE	mg/kg	150	7.7	ND (0.30)	0.00062 J	0.069 J	ND (0.0049)	23	0.0046 J	0.035	ND (0.0067)
XYLENES, TOTAL (DIMETHYLBENZENE)	mg/kg	250	57	0.13 J	0.0076 J	0.93	ND (0.0098)	130	0.044	0.33	0.0035 J
Semi-Volatile Organic Compounds											
ANTHRACENE	mg/kg	23,000	0.11 B	0.48	ND (0.019)	0.28	ND (0.035)	0.011 J	ND (0.022)	ND (0.019)	ND (0.023)
BENZO(A)ANTHRACENE	mg/kg	21	0.037	0.15	ND (0.019)	0.010 J	ND (0.035)	ND (0.018)	ND (0.022)	ND (0.019)	ND (0.023)
BENZO(A)PYRENE	mg/kg	2.1	0.023	0.092	ND (0.019)	0.0067 J	ND (0.035)	0.0045 J	ND (0.022)	ND (0.019)	ND (0.023)
BENZO(B)FLUORANTHENE	mg/kg	21	0.025	0.11	ND (0.019)	0.0060 J	ND (0.035)	0.0041 J	0.0049 J	ND (0.019)	ND (0.023)
BENZO(G,H,I)PERYLENE	mg/kg	n/v	0.023	0.040	ND (0.019)	0.0044 J	ND (0.035)	0.0044 J	ND (0.022)	ND (0.019)	ND (0.023)
CHRYSENE	mg/kg	2,100	0.038	0.17	ND (0.019)	0.013 J	ND (0.035)	0.0046 J	ND (0.022)	0.0038 J	ND (0.023)
FLUORENE	mg/kg	3,000	0.37 B	1.2	0.0047 J	1.1	ND (0.035)	0.051	ND (0.022)	ND (0.019)	ND (0.023)
NAPHTHALENE	mg/kg	8.6	**13 B[A]**	0.079	0.016 J	1.5	ND (0.035)	1.2	ND (0.022)	0.010 J	ND (0.023)
PHENANTHRENE	mg/kg	n/v	0.69 B	1.9	0.012 J	3.3	ND (0.035)	0.098	ND (0.022)	ND (0.019)	ND (0.023)
PYRENE	mg/kg	2,300	0.16	0.51	0.0049 J	0.10	ND (0.035)	0.023	0.0064 J	ND (0.019)	ND (0.023)
Metals											
LEAD, Total	mg/kg	800	6.5	5.8	18	5.4	11	11	13	3.0	3.5

Notes:

USEPA RSL	United States Environmental Protection Agency Regional Screening Levels (RSLs)
A	Industrial Soil Screening Levels (TR=1E-06, THQ=0.1) (November 2023)
6.5[A]	Concentration exceeds the indicated standard.
15.2	Measured concentration did not exceed the indicated standard.
ND (0.50)	Indicates the laboratory method detection limit (if available) was above the applicable standard. The reporting limit is shown if the laboratory method detection limit is not available.
ND (0.03)	Concentration not detected above the laboratory reporting limit (in parentheses) except when the reporting limit is greater than the applicable standard in which case the method detection limit is listed in parentheses.
15.2	Measured concentration did not exceed the indicated standard.
mg/kg	milligrams per kilogram
n/v	No standard/guideline value.
ft	feet
-	Parameter not analyzed / not available.
B	Indicates the analyte is detected in the associated blank as well as in the sample.
F2	MS/MSD relative percent difference exceeds control limits.
H	Sample was prepped or analyzed beyond the specified holding time.
J	Indicates an estimated value
TL	Internal standard (ISTD) response or retention time outside acceptable limits.

Table 3-5b: Soil Analytical Results Summary, USEPA Regional Screening Levels
Belmont Terminal
Philadelphia Refinery Operations, a series of Evergreen Resources Group, LLC

Sample Location			S-463_CD			S-464_CD				S-465_CD		
Sample Date			20-Jan-21	21-Jan-21	22-Jan-21	26-Jan-21	26-Jan-21	27-Jan-21	21-Jan-21	4-Feb-21	4-Feb-21
Sample ID			BT-18A-S-10-20210120	BT-18A-S-26-20210121	BT-18A-S-49-20210122	BT-18B-S-11-20210126	BT-18B-S-26-20210126	BT-18B-S-49-20210127	BT-21-S-15-20210121	BT-21-S-26-20210204	BT-21-S-42-20210204
Sample Depth			10 ft	26 ft	49 ft	11 ft	26 ft	49 ft	15 ft	26 ft	42 ft
Sampling Company			STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC
Laboratory			LANCASTER	LANCASTER	LANCASTER	LANCASTER	LANCASTER	LANCASTER	LANCASTER	LANCASTER	LANCASTER
Laboratory Work Order		USEPA RSL	410-27204-1	410-27204-1	410-27301-1	410-27600-1	410-27600-1	410-27735-1	410-27204-1	410-28485-1	410-28654-1
Laboratory Sample ID	Units	A	410-27204-1	410-27204-4	410-27301-3	410-27600-1	410-27600-3	410-27735-2	410-27204-3	410-28485-1	410-28654-1
Volatile Organic Compounds											
BENZENE	mg/kg	5.1	1.000 H[A]	210 H[A]	0.056 J	880 H[A]	640[A]	12[A]	87[A]	5.9[A]	0.0017 J
1,2-DIBROMOETHANE (EDB)	mg/kg	0.16	*ND (0.28) H*	ND (0.027)	ND (0.034)	*ND (0.56)*	*ND (1.1)*	ND (0.027)	ND (0.023)	ND (0.0045)	ND (0.0053)
1,2-DICHLOROETHANE (EDC)	mg/kg	2	ND (0.41) H	ND (0.34)	ND (0.43)	ND (0.84)	ND (1.7)	ND (0.33)	ND (0.29)	0.073	ND (0.0053)
ETHYLBENZENE	mg/kg	25	13 H	1.7	0.16 J	7.4	7.6 J	ND (0.33)	14	0.025	ND (0.0053)
ISOPROPYLBENZENE (CUMENE)	mg/kg	990	33 H	6.0	0.038 J	16	15	ND (0.33)	8.7	0.032	ND (0.0053)
METHYL TERTIARY BUTYL ETHER	mg/kg	210	ND (3.4) H	ND (0.34)	ND (0.43)	ND (7.0)	ND (14)	ND (0.33)	ND (0.29)	ND (0.0045)	ND (0.0053)
TERT-BUTYL ALCOHOL	mg/kg	6,500	ND (69) H	ND (6.8)	9.2	ND (140)	ND (280)	3.0 J	ND (5.7) TL	ND (0.091)	ND (0.11)
TOLUENE	mg/kg	4,700	320 H	8.0	ND (0.43)	150	62	0.046 J	62	0.080	ND (0.0053)
1,2,4-TRIMETHYLBENZENE	mg/kg	180	3.0 J H	1.0	0.061 J	1.2 J	3.8 J	ND (0.33)	38	0.011	ND (0.0053)
1,3,5-TRIMETHYLBENZENE	mg/kg	150	1.9 J H	0.59	ND (0.43)	0.72 J	1.6 J	ND (0.33)	13	0.0054	ND (0.0053)
XYLENES, TOTAL (DIMETHYLBENZENE)	mg/kg	250	51 H	5.9	ND (0.85)	33	37	ND (0.66)	87	0.14	ND (0.011)
Semi-Volatile Organic Compounds											
ANTHRACENE	mg/kg	23,000	ND (0.020)	ND (0.47)	ND (0.22)	0.22	0.11	ND (0.021)	0.33	ND (0.018)	ND (0.021)
BENZO(A)ANTHRACENE	mg/kg	21	0.060	0.72	ND (0.22)	0.22	0.16	ND (0.021)	0.18	ND (0.018)	ND (0.021)
BENZO(A)PYRENE	mg/kg	2.1	0.051	0.64	1.3	0.17	0.090	ND (0.021)	0.13	ND (0.018)	ND (0.021)
BENZO(B)FLUORANTHENE	mg/kg	21	0.060	0.62	ND (0.22)	0.17	0.12	0.0047 J	0.15	ND (0.018)	ND (0.021)
BENZO(G,H,I)PERYLENE	mg/kg	n/v	0.030	0.30 J	ND (0.22)	0.10	0.069	ND (0.021)	0.068	ND (0.018)	ND (0.021)
CHRYSENE	mg/kg	2,100	0.068	1.1	ND (0.22)	0.22	0.16	ND (0.021)	0.19	0.0038 J	ND (0.021)
FLUORENE	mg/kg	3,000	0.12	ND (0.47)	ND (0.22)	0.20	0.12	ND (0.021)	0.69	0.0055 J	ND (0.021)
NAPHTHALENE	mg/kg	8.6	0.79	6.5	ND (0.22)	0.65	0.36	ND (0.021)	12[A]	0.034	0.017 J
PHENANTHRENE	mg/kg	n/v	0.29	5.2	ND (0.22)	0.84	0.53	ND (0.021)	1.3	0.023 B	0.0055 J
PYRENE	mg/kg	2,300	0.17	2.1	ND (0.22)	0.47	0.32	0.0067 J	0.49	0.012 J	0.0057 J
Metals											
LEAD, Total	mg/kg	800	31	16	25	17	30	16	7.5	7.0	15

Notes:

USEPA RSL	United States Environmental Protection Agency Regional Screening Levels (RSLs)
[A]	Industrial Soil Screening Levels (TR=1E-06, THQ=0.1) (November 2023)
6.5[A]	Concentration exceeds the indicated standard.
15.2	Measured concentration did not exceed the indicated standard.
ND (0.50)	Indicates the laboratory method detection limit (if available) was above the applicable standard. The reporting limit is shown if the laboratory method detection limit is not available.
ND (0.03)	Concentration not detected above the laboratory reporting limit (in parentheses) except when the reporting limit is greater than the applicable standard in which case the method detection limit is listed in parentheses.
15.2	Measured concentration did not exceed the indicated standard.
mg/kg	milligrams per kilogram
n/v	No standard/guideline value.
ft	feet
-	Parameter not analyzed / not available.
B	Indicates the analyte is detected in the associated blank as well as in the sample.
F2	MS/MSD relative percent difference exceeds control limits.
H	Sample was prepped or analyzed beyond the specified holding time.
J	Indicates an estimated value
TL	Internal standard (ISTD) response or retention time outside acceptable limits.

Table 3-5b: Soil Analytical Results Summary, USEPA Regional Screening Levels
Belmont Terminal
Philadelphia Refinery Operations, a series of Evergreen Resources Group, LLC

Sample Location			S-466_CD			S-467_CD			S-468_CD		S-469_CD	
Sample Date			28-Jan-21	28-Jan-21	29-Jan-21	17-Feb-21	22-Feb-21	22-Feb-21	12-Feb-21	16-Feb-21	9-Feb-21	9-Feb-21
Sample ID			BT-03-S-18-20210128	BT-03-S-46-20210128	BT-03-S-72-20210129	BT-22B-S-14-20210217	BT-22B-S-31-20210222	BT-22B-S-40-20210222	BT-01-S-15-20210212	BT-01-S-44-45-20210216	BT-08A-S-11-20210209	BT-08A-S-38-20210209
Sample Depth			18 ft	46 ft	72 ft	14 ft	31 ft	40 ft	15 ft	44 - 45 ft	11 ft	38 ft
Sampling Company			STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC
Laboratory			LANCASTER	LANCASTER	LANCASTER	LANCASTER	LANCASTER	LANCASTER	LANCASTER	LANCASTER	LANCASTER	LANCASTER
Laboratory Work Order		USEPA RSL	410-27876-1	410-28040-1	410-28040-1	410-29945-1	410-30035-1	410-30035-1	410-29478-1	410-29616-1	410-28885-1	410-29037-1
Laboratory Sample ID	Units	A	410-27876-1	410-28040-1	410-28040-3	410-29945-1	410-30035-1	410-30035-2	410-29478-1	410-29616-1	410-28885-1	410-29037-1
Volatile Organic Compounds												
BENZENE	mg/kg	5.1	0.93	1.8	ND (0.0052)	**37[A]**	0.14 J	0.25 J	ND (0.30)	0.00061 J	ND (0.0054)	0.00086 J
1,2-DIBROMOETHANE (EDB)	mg/kg	0.16	ND (0.022)	ND (0.028)	ND (0.0052)	*ND (0.29)*	ND (0.021)	ND (0.0058)	ND (0.024)	ND (0.0052)	ND (0.0054)	ND (0.0058)
1,2-DICHLOROETHANE (EDC)	mg/kg	2	ND (0.27)	ND (0.35)	ND (0.0052)	ND (0.43)	ND (0.26)	ND (0.0058)	ND (0.30)	ND (0.0052)	ND (0.0054)	ND (0.0058)
ETHYLBENZENE	mg/kg	25	3.3	ND (0.35)	ND (0.0052)	**38[A]**	0.84	0.070	0.053 J	0.00046 J	ND (0.0054)	ND (0.0058)
ISOPROPYLBENZENE (CUMENE)	mg/kg	990	1.6	ND (0.35)	ND (0.0052)	29	3.0	0.069	0.32	ND (0.0052)	ND (0.0054)	ND (0.0058)
METHYL TERTIARY BUTYL ETHER	mg/kg	210	ND (0.27)	0.23 J	ND (0.0052)	ND (3.6)	ND (0.26)	0.62	ND (0.30)	0.048	ND (0.0054)	ND (0.0058)
TERT-BUTYL ALCOHOL	mg/kg	6,500	ND (5.4)	60	ND (0.10)	ND (72)	ND (5.1)	61 TL	ND (6.0)	1.3	ND (0.11)	ND (0.12)
TOLUENE	mg/kg	4,700	0.18 J	0.097 J	ND (0.0052)	0.55 J	0.064 J	0.0088	0.047 J	0.00083 J	ND (0.0054)	ND (0.0058)
1,2,4-TRIMETHYLBENZENE	mg/kg	180	11	ND (0.35)	ND (0.0052)	**660[A]**	0.47	0.063	ND (0.30)	ND (0.0052)	ND (0.0054)	ND (0.0058)
1,3,5-TRIMETHYLBENZENE	mg/kg	150	3.8	ND (0.35)	ND (0.0052)	95	3.2	0.013	ND (0.30)	ND (0.0052)	ND (0.0054)	ND (0.0058)
XYLENES, TOTAL (DIMETHYLBENZENE)	mg/kg	250	11	ND (0.70)	ND (0.010)	49	0.57	0.10	ND (0.60)	ND (0.010)	ND (0.011)	ND (0.012)
Semi-Volatile Organic Compounds												
ANTHRACENE	mg/kg	23,000	ND (0.018)	0.049	0.0089 J	0.017 J	6.4	0.0091 J	0.0092 J	ND (0.020)	ND (0.021)	ND (0.020)
BENZO(A)ANTHRACENE	mg/kg	21	ND (0.018)	0.031	0.0096 J	0.0052 J	2.7	ND (0.022)	0.0067 J	0.0040 J	ND (0.021)	ND (0.020)
BENZO(A)PYRENE	mg/kg	2.1	ND (0.018)	0.024	ND (0.021)	ND (0.019)	**2.2[A]**	ND (0.022)	ND (0.020)	ND (0.020)	ND (0.021)	ND (0.020)
BENZO(B)FLUORANTHENE	mg/kg	21	ND (0.018)	0.025	0.0074 J	0.0040 J	2.1	ND (0.022)	ND (0.020)	ND (0.020)	ND (0.021)	ND (0.020)
BENZO(G,H,I)PERYLENE	mg/kg	n/v	ND (0.018)	0.0096 J	ND (0.021)	ND (0.019)	0.82	ND (0.022)	ND (0.020)	ND (0.020)	ND (0.021)	ND (0.020)
CHRYSENE	mg/kg	2,100	ND (0.018)	0.037	0.0082 J	0.0055 J	2.9	ND (0.022)	ND (0.020)	ND (0.020)	ND (0.021)	ND (0.020)
FLUORENE	mg/kg	3,000	ND (0.018)	0.086	0.015 J	0.090	8.0	0.011 J	ND (0.020)	ND (0.020)	ND (0.021)	ND (0.020)
NAPHTHALENE	mg/kg	8.6	1.2	0.16	0.074	1.2	**22[A]**	3.8	ND (0.020)	0.0080 J	0.010 J	ND (0.020)
PHENANTHRENE	mg/kg	n/v	ND (0.018)	0.26	0.039	0.12	26	0.025	0.036	0.0095 J	ND (0.021)	ND (0.020)
PYRENE	mg/kg	2,300	ND (0.018)	0.096	0.017 J	0.013 J	8.7	0.014 J	0.018 J	0.0073 J	ND (0.021)	ND (0.020)
Metals												
LEAD, Total	mg/kg	800	8.6	19	16	5.8	5.2	9.4	5.0	7.5	16	5.9 F2

Notes:

USEPA RSL	United States Environmental Protection Agency Regional Screening Levels (RSLs)
A	Industrial Soil Screening Levels (TR=1E-06, THQ=0.1) (November 2023)
6.5[A]	Concentration exceeds the indicated standard.
15.2	Measured concentration did not exceed the indicated standard.
ND (0.50)	Indicates the laboratory method detection limit (if available) was above the applicable standard. The reporting limit is shown if the laboratory method detection limit is not available.
ND (0.03)	Concentration not detected above the laboratory reporting limit (in parentheses) except when the reporting limit is greater than the applicable standard in which case the method detection limit is listed in parentheses.
15.2	Measured concentration did not exceed the indicated standard.
mg/kg	milligrams per kilogram
n/v	No standard/guideline value.
ft	feet
-	Parameter not analyzed / not available.
B	Indicates the analyte is detected in the associated blank as well as in the sample.
F2	MS/MSD relative percent difference exceeds control limits.
H	Sample was prepped or analyzed beyond the specified holding time.
J	Indicates an estimated value
TL	Internal standard (ISTD) response or retention time outside acceptable limits.

Table 2
Summary of 2020 Soil Analytical Results
Former Tank Car Corporation of America Site
1725 Walnut Avenue
Springfield Twp., Montgomery County, PA
BL Project No. 17L5438

Sample ID:			Residential		Non Res	Non Res	B-1A	B-1B	B-2A	B-2B	B3-A	B-3B	B-4A	B-4B	B-5A	B-5B	B-6A	B-6B	B-7A	B-7B	B-8A	B-8B	B-9A	B-9B	B-10A	B-10B	B-11A	B12-A	B-12B	B-13A	B-13B	B-14A	B-14B	B-15A	B-15B	B-16A	B-16B
Depth:			Direct		Direct	Direct	1-2'	12-13'	1-2'	9-10'	0.5-1.5'	6-7'	0.5-1.5'	5-6'	0.5-1.5'	3-4'	1-2'	5-6'	0-1'	4.5-5.5'	0.5-1.5'	3.5-4.5'	1-2'	2.5-3.5'	1-2'	2-3'	1-2'	1-2'	5-6'	1-2'	4.5-5.5'	1-2'	12-13'	1-2'	5-6'	1-2'	5-6'
Date Sampled:		Residetnial	Contact	Non Res	Contact	Contact	9/28/20	9/28/20	9/28/20	9/28/20	9/28/20	9/28/20	9/28/20	9/28/20	9/28/20	9/28/20	9/28/20	9/28/20	9/28/20	9/28/20	9/28/20	9/28/20	9/29/20	9/29/20	9/29/20	9/29/20	9/29/20	9/29/20	9/29/20	9/29/20	9/29/20	9/29/20	9/29/20	9/29/20	9/29/20	9/29/20	9/29/20	9/29/20
	Units	Soil to GW	0-15 ft	Soil to GW	0-2 ft	2-15 ft																															
Volatile Organic Compounds																																					
Acetone	mg/kg	3100	10000	8800	10000	10000	<0.016	0.010 J	<0.012	<0.011	<0.012	0.0058 J	<0.0094	<0.012	<0.010	0.184	<0.015	<0.012	<0.011	0.0173	<0.0093	0.0213	0.0378	<18	<0.017	<0.011	<2.5	0.0275	<0.012	0.0162	<0.013	<0.017	<0.018	<0.015	<0.011	<0.016	<0.011
2-Butanone (MEK)	mg/kg	400	10000	400	10000	10000	<0.016 [a]	<0.011 [a]	<0.012 [a]	<0.011 [a]	<0.012	<0.0097	<0.0094	<0.012	<0.010	0.0277	<0.015	<0.012	<0.011	<0.00056	<0.0093	<0.020	<0.016	<18	<0.017	<0.011	<2.5	<0.022	<0.012	<0.015	<0.013	<0.017	<0.018	<0.015	<0.011	<0.016	<0.011
Benzene	mg/kg	0.5	57	0.5	280	330	<0.00079	<0.00055	<0.00060	<0.00056	<0.00061	<0.00049	<0.00047	<0.00060	<0.00052	<0.00052	<0.00075	<0.00059	<0.00055	<0.00056	<0.00047	<0.0010	<0.00062	<0.91	<0.00084	<0.00055	0.361	<0.0011	<0.00061	<0.00077	<0.00067	<0.00086	<0.00091	<0.00074	<0.00056	<0.00078	<0.00057
Carbon disulfide	mg/kg	150	10000	620	10000	10000	<0.0031	<0.0022	<0.0024	<0.0022	<0.0024	<0.0019	<0.0019	<0.0024	<0.0021	0.003	<0.0030	<0.0024	<0.0022	<0.0023	<0.0019	<0.0041	<0.0033	<3.7	<0.0034	<0.0022	<0.49	<0.0044	<0.0024	<0.0031	<0.0027	<0.0035	<0.0037	<0.0030	<0.0022	<0.0031	<0.0023
Chloroform	mg/kg	8	19	8	96	110	<0.0031	<0.0022	<0.0024	<0.0022	<0.0024	<0.0019	<0.0019	<0.0024	<0.0021	<0.0021	<0.0030	<0.0024	<0.0022	<0.0023	<0.0019	<0.0041	<0.0033	<3.7	<0.0034	<0.0022	<0.49	<0.0044	<0.0024	<0.0031	<0.0027	0.0012 J	<0.0037	<0.0030	<0.0022	<0.0031	<0.0023
Ethylbenzene	mg/kg	70	180	70	880	1000	<0.0016	<0.0011	<0.0012	<0.0011	<0.0012	<0.00097	<0.00094	<0.0012	<0.0010	<0.0010	<0.0015	<0.0012	<0.0011	<0.0011	<0.00093	<0.0020	<0.0016	4.35	<0.0017	<0.0011	1.69	<0.0022	<0.0012	<0.0015	<0.0013	<0.0017	<0.0018	<0.0015	<0.0011	<0.0016	<0.0011
Styrene	mg/kg	24	10000	24	10000	10000	<0.0031	<0.0022	<0.0024	<0.0022	<0.0024	<0.0019	<0.0019	<0.0024	<0.0021	<0.0021	<0.0030	<0.0024	<0.0022	<0.0023	<0.0019	<0.0041	<0.0033	3.09 J	<0.0034	<0.0022	1.14	<0.0044	<0.0024	<0.0031	<0.0027	<0.0035	<0.0037	<0.0030	<0.0022	<0.0031	<0.0023
Toluene	mg/kg	100	10000	100	10000	10000	<0.0016	<0.0011	<0.0012	<0.0011	<0.0012	<0.00097	<0.00094	<0.0012	<0.0010	<0.0010	<0.0015	<0.0012	<0.0011	<0.0011	<0.00093	<0.0020	<0.0016	2.72	<0.0017	<0.0011	1.32	<0.0022	<0.0012	<0.0015	<0.0013	<0.0017	<0.0018	<0.0015	<0.0011	<0.0016	<0.0011
Xylenes (total)	mg/kg	1000	1900	1000	7900	9100	<0.0016	<0.0011	<0.0012	<0.0011	<0.0012	<0.00097	<0.00094	<0.0012	<0.0010	<0.0010	<0.0015	<0.0012	<0.0011	<0.0011	<0.00093	<0.0020	<0.0016	22.4	<0.0017	<0.0011	8.78	<0.0022	<0.0012	<0.0015	<0.0013	<0.0017	<0.0018	<0.0015	<0.0011	<0.0016	<0.0011
Semivolatile Organic Compounds																																					
Acenaphthene	mg/kg	2600	13000	4700	190000	190000	<0.036	<0.038	<0.038	<0.039	<0.038	0.0166 J	0.657	0.0194 J	<0.039	0.773	<0.040	<0.039	<0.038	<0.040	<0.033	<0.040	42.3	10.4	0.0361 J	<0.040	4.04	0.102 J	<0.041	0.0275 J	0.0273 J	0.0149 J	<0.041	<0.039	<0.039	<0.039	<0.039
Acenaphthylene	mg/kg	2400	13000	6600	190000	190000	<0.036	<0.038	<0.038	<0.039	0.0399	0.138	0.698	<0.038	<0.039	0.958	<0.040	<0.039	<0.038	<0.040	<0.033	<0.040	25.7	7.88	0.3	<0.040	1.17	0.186 J	<0.041	0.295	0.115	0.177	<0.041	<0.039	<0.039	<0.039	<0.039
Anthracene	mg/kg	350	66000	350	190000	190000	<0.036	<0.038	<0.038	<0.039	0.0416	0.118	2.74	0.0446	<0.039	21.8	<0.040	0.0302 J	<0.038	<0.040	<0.033	<0.040	288	36.5	0.306	<0.040	6.77	0.341	<0.041	0.274	0.134	0.23	<0.041	<0.039	<0.039	<0.039	<0.039
Benzo(a)anthracene	mg/kg	26	6.1	340	130	190000	0.0966	<0.038	<0.038	<0.039	0.127	0.421	**10.3**	0.114	0.0126 J	3.08	<0.040	0.0613	0.0153 J	0.0200 J	0.0924	0.0200 J	**151**	**30.1**	1.02	<0.040	**8.09**	0.756	0.0177 J	0.751	0.461	0.681	0.0211 J	0.0388 J	<0.039	0.0655	<0.039
Benzo(a)pyrene	mg/kg	46	4.2	46	91	190000	0.1	<0.038	<0.038	<0.039	0.117	0.369	**11.4**	0.118	<0.039	3.34	<0.040	0.0714	<0.038	0.0224 J	0.135	<0.040	**110**	**23.8**	1.13	<0.040	**6.51**	0.791	<0.041	0.914	0.515	0.814	<0.041	0.0427	<0.039	0.0718	<0.039
Benzo(b)fluoranthene	mg/kg	25	3.5	170	76	190000	0.14	<0.038	<0.038	<0.039	0.107	0.376	**13.1**	0.148	<0.039	**3.94**	<0.040	0.0808	0.0173 J	0.0301 J	0.173	0.0191 J	**144**	**29.5**	1.55	<0.040	**7.98**	1.22	0.0211 J	1.42	0.714	1.09	<0.041	0.0456	<0.039	0.0935	<0.039
Benzo(g,h,i)perylene	mg/kg	180	13000	1800	190000	190000	0.0595	<0.038	<0.038	<0.039	0.0602	0.242	7.55	0.0686	<0.039	1.94	<0.040	0.0408	<0.038	0.0222 J	0.117	<0.040	53.5	11.9	0.837	<0.040	3.18	0.806	0.0406 J	1.25	0.408	0.598	<0.041	0.0327 J	<0.039	0.0573	<0.039
Benzo(k)fluoranthene	mg/kg	200	3.5	610	76	190000	0.0521	<0.038	<0.038	<0.039	0.0319 J	0.109	**4.96**	0.0528	<0.039	1.55	<0.040	0.0342 J	<0.038	<0.040	0.0659	<0.040	**55.3**	**8.81**	0.514	<0.040	3.1	0.449	<0.041	0.455	0.217	0.348	<0.041	<0.039	<0.039	0.0323 J	<0.039
Chrysene	mg/kg	220	35	230	760	190000	0.112	<0.038	<0.038	<0.039	0.149	0.476	10.3	0.113	<0.039	3.34	<0.040	0.0694	0.0124 J	0.0215 J	0.12	0.0203 J	**147**	26	1.33	<0.040	8.19	1.02	0.0171 J	0.925	0.541	0.731	0.0147 J	0.0364 J	<0.039	0.0793	<0.039
Dibenzo(a,h)anthracene	mg/kg	23	1	270	22	190000	<0.036	<0.038	<0.038	<0.039	<0.038	0.0516	**1.76**	<0.038	<0.039	0.464	<0.040	<0.039	<0.038	<0.040	0.0180 J	<0.040	**17.3**	**3.48**	0.191	<0.040	0.867	0.189 J	<0.041	0.214	0.0838	0.14	<0.041	<0.039	<0.039	<0.039	<0.039
Fluoranthene	mg/kg	3200	8800	3200	130000	190000	0.216	<0.038	<0.038	<0.039	0.17	0.494	18.1	0.255	<0.039	5.93	<0.040	0.111	0.0205 J	0.0335 J	0.17	0.0343 J	434	79.1	2.13	<0.040	23.2	2	0.0281 J	1.52	0.862	1.12	0.0387 J	0.0581	<0.039	0.154	<0.039
Fluorene	mg/kg	2800	8800	3800	130000	190000	<0.036	<0.038	<0.038	<0.039	0.0264 J	0.0524	0.799	0.0195 J	<0.039	2.58	<0.040	<0.039	<0.038	<0.040	<0.033	<0.040	100	30.1	0.0756	<0.040	7.84	0.141 J	0.0261 J	0.0448	0.0514	0.0300 J	<0.041	<0.039	<0.039	<0.039	<0.039
Indeno(1,2,3-cd)pyrene	mg/kg	1400	3.5	18000	76	190000	0.0617	<0.038	<0.038	<0.039	0.0538	0.208	**8.11**	0.0797	<0.039	2.16	<0.040	0.0437	<0.038	0.0223 J	0.107	<0.040	**51.1**	**10.8**	0.684	<0.040	2.88	0.628	<0.041	0.907	0.332	0.519	<0.041	0.0234 J	<0.039	0.0451	<0.039
Naphthalene	mg/kg	25	13	25	66	77	<0.036	<0.038	<0.038	<0.039	0.0152 J	0.0351 J	0.22	0.0134 J	<0.039	1.57	<0.040	0.0168 J	<0.038	<0.040	<0.033	<0.040	12.7	**22.1**	0.0767	<0.040	8.58	0.206	0.0126 J	0.155	1.13	0.0673	<0.041	<0.039	<0.039	<0.039	<0.039
Phenanthrene	mg/kg	10000	66000	10000	190000	190000	0.0926	<0.038	<0.038	<0.039	0.165	0.293	9.77	0.183	<0.039	8.36	<0.040	0.0679	<0.038	<0.040	0.0703	0.0307 J	393	86.4	1.09	0.0143 J	19	1.53	0.0256 J	0.743	0.455	0.374	<0.041	0.0350 J	<0.039	0.072	<0.039
Pyrene	mg/kg	2200	6600	2200	96000	190000	0.195	<0.038	<0.038	<0.039	0.314	1.01	21.5	0.225	0.0138 J	6.28	<0.040	0.111	0.0189 J	0.0300 J	0.19	0.0369 J	322	56.8	1.91	<0.040	16.7	1.49	0.0217 J	1.23	0.758	0.926	0.0289 J	0.0681	<0.039	0.13	<0.039
Priority Pollutant List Metals																																					
Antimony	mg/kg	27	88	27	1300	190000	<2.2	<2.3	<2.3	<2.3	<2.4	<2.3	4.5	<2.3	<2.5	<11 [e]	<2.5	<2.3	<2.4	<2.4	<2.1	<2.5	14.3	**124** [d]	2.6	<2.5	<2.7	<24 [d]	<12 [d]	<12 [d]	<12 [d]	<12 [d]	<12 [e]	<12 [e]	<2.3	<2.4	<2.3	<2.4
Arsenic	mg/kg	29	12	29	61	190000	7.1 [e]	<12 [e]	7.9 [e]	<4.6 [e]	8.3 [e]	<11 [e]	<11 [e]	<11 [e]	<2.5	**12.9** [e]	<13 [e]	<12 [e]	<12 [e]	<12 [e]	6.6 [e]	8.8 [e]	**58.2**	**296** [e]	**15.5**	9.0 [e]	**101** [d]	<24 [d]	<12 [d]	**16.2** [d]	<12 [d]	<12 [d]	<12 [e]	<12 [e]	6.7	9.4 [d]	6.1	4.7
Beryllium	mg/kg	320	440	320	6400	190000	0.91 [e]	8.2 [e]	1.1 [e]	2.0 [e]	1.6 [e]	4.0 [e]	14.2 [e]	2.2 [e]	1.6	43.1 [d]	4.3 [e]	7.5 [e]	2.4 [e]	13.3 [e]	8.3 [e]	1.5 [e]	0.43	<7.2 [d]	0.71	1.9	1.1	11.0 [d]	6.1 [d]	6.0 [d]	2.9 [d]	2.4 [e]	<1.2 [e]	1	1	1.1	1.2
Cadmium	mg/kg	38	110	38	1600	190000	<1.1 [e]	<2.9 [e]	<1.1 [e]	<1.2 [e]	<1.2 [e]	<2.8 [e]	<2.9 [e]	<2.8 [e]	<0.62	<2.7 [e]	<3.1 [e]	<2.9 [e]	<2.9 [e]	<3.0 [e]	<1.6 [e]	<1.2 [e]	<0.66	<18 [e]	3	<1.3 [e]	<1.3 [e]	11.8 [d]	<3.1 [d]	7.0 [d]	<3.1 [d]	<3.0 [e]	<3.0 [e]	<0.58	<1.2 [e]	<0.58	<0.60
Chromium, Total	mg/kg	-	-	-	-	-	28.8	23.4	32.7	20.7	30.1	16	57.2	25.2	4.2	73.9	15.6	41.9	15.1	30.4 [d]	22.2	38.2	21.4	20.7	49.3	23.2	20.9	267	17.4	253	42.1	21.0 [e]	<6.1 [e]	37.5	46.2	19.3	19.5
Copper	mg/kg	43000	7200	43000	100000	190000	12.5 [d]	41.9 [d]	18.8 [d]	9.7 [d]	30.7 [d]	14.1 [d]	574 [d]	35.5 [d]	13.1	1570 [d]	198 [d]	159 [d]	62.9 [d]	487 [d]	449 [d]	22.5 [d]	60	476 [d]	61.7	20.3 [d]	31.4 [d]	5760 [d]	118 [d]	643 [d]	81.7 [d]	<15 [e]	<15 [e]	34.7	20.4 [d]	9.9	14.2
Lead	mg/kg	450	500	450	1000	190000	13.2 [d]	105 [d]	13.3 [d]	8.9 [d]	19.1 [d]	<11 [e]	440 [d]	17.9 [d]	<12 [e]	**793** [d]	75.7 [d]	66.0 [d]	23.5 [d]	153 [d]	223 [d]	14.0 [d]	**790**	**13200**	**578**	15.5 [d]	258 [d]	**4010** [d]	47.0 [d]	**1300** [d]	298 [d]	20.7	13	15.1	10.5 [d]	27.7	9.2
Mercury	mg/kg	10	35	10	510	190000	<0.037	<0.035	0.052	0.049	0.053	<0.035	0.11	<0.037	0.14	0.24	0.11	<0.038	<0.037	<0.038	<0.033	<0.041	0.79	0.18	0.12	<0.033	0.15	1.2	0.082	0.35	0.064	<0.033	<0.039	<0.031	<0.039	<0.037	<0.038
Nickel	mg/kg	650	4400	650	64000	190000	17	32.7	20.2	27.1	21.6	41.8	70.2	25.1	8.6	127	44.6	52.9	28.9	74.8	81.5	23.3	18.7	24.9	17.3	22.8	14.8	108	38.8	69.5	26.7	<24 [e]	<24 [e]	16.3	17.1	13.1	22.5
Selenium	mg/kg	26	1100	26	16000	190000	<4.4 [d]	<12 [d]	<4.6 [d]	<4.6 [d]	<4.7 [d]	<11 [d]	<11 [d]	<11 [d]	<2.5	<11 [d]	<13 [d]	<12 [d]	<12 [d]	<12 [d]	<6.3 [d]	<5.0 [d]	3.8	<72 [d]	<2.3	<5.1 [d]	8.6 [d]	<24 [d]	<12 [d]	<12 [d]	<12 [d]	<12 [d]	<12 [e]	<12 [e]	<2.3	<4.7 [d]	<2.3	<2.4
Silver	mg/kg	84	1100	84	16000	190000	<1.1 [e]	<2.9 [e]	<1.1 [e]	1.6 [d]	<1.2 [e]	<2.8 [e]	<2.9 [e]	<2.8 [e]	<0.62	2.9 [d]	<3.1 [e]	<2.9 [e]	<2.9 [e]	3.4 [d]	1.8 [d]	1.2 [d]	<0.66	<18 [d]	<0.58	<1.3 [d]	<1.3 [d]	<6.0 [d]	<3.1 [d]	<2.9 [d]	<3.1 [d]	<3.0 [e]	<3.0 [e]	<0.58	<1.2 [e]	<0.58	<0.60
Zinc	mg/kg	12000	66000	12000	190000	190000	41.8	256	50	68.2	122	185	3640 [d]	111	56.3	11800	250	753	117	2260 [d]	2100 [d]	73.5	168	982	392	102	199	9180 [d]	210	4420 [d]	318	<120 [e]	<120 [e]	48.5	46.6	41.6	50.1
General Chemistry																																					
Solids, Percent	%	-	-	-	-	-	88.4	83.9	85	84.7	85.9	88.7	90	86.1	80.7	92.6	81.4	83.3	86.8	82.3	97.3	81.7	74.7	69.4	85.1	81.5	76.9	82	80.4	87.5	81.1	80.3	80.4	82.1	83.3	82.3	82.8

Footnotes:

Only detected compounds shown

Bolded and Shaded Value indicates exceedence of an applicable Act 2 Statewide Health Standard or Screening Value.

[a] Associated CCV outside of control limits low.

[b] Associated CCV outside of control limits high, sample was ND. This compound in blank spike is outside in house QC limits bias high.

[c] Associated CCV outside of control limits high, sample was ND.

[d] Elevated detection limit due to dilution required for high interfering element.

[e] Elevated detection limit due to dilution required for matrix interference (indicated by failing internal standard on original analysis).

Table 3-4a
Groundwater Analytical Results Summary and Stabilized Purged Parameters, Unconfined Aquifer
Belmont Terminal
Philadelphia Refinery Operations, a series of Evergreen Resources Group, LLC

Sample Location			MW-28					MW-30											
Sample Date			14-Apr-11	8-Jun-11	12-Jul-12	28-May-14	19-Dec-14	15-Oct-04	27-Apr-05	18-Nov-09	10-Nov-10	14-Apr-11	6-Jun-11	29-Nov-11	12-Jul-12	3-Apr-13	3-Apr-13	28-May-14	10-Dec-14
Sample ID			MW-28	MW-28	MW28_071212	MW-28	MW-28-20141219	MW-30	MW30-042705	MW-30	MW-30	MW-30	MW-30	MW-30	MW30_071212	MW-30	MW-30_040313	MW-30	MW-30-20141210
Sampling Company			STANTEC	STANTEC	UNKNOWN	STANTEC	STANTEC	UNKNOWN	UNKNOWN	UNKNOWN	UNKNOWN	STANTEC	STANTEC	UNKNOWN	UNKNOWN	UNKNOWN	STANTEC	STANTEC	STANTEC
Laboratory		MSC-PA	LL	LL	LL	ACCUTEST	ACCUTEST	UNKNOWN	LL	UNKNOWN	UNKNOWN	LL	LL	UNKNOWN	LL	UNKNOWN	ACCUTEST	ACCUTEST	ACCUTEST
Laboratory Work Order	Units	A	1242460	1250813	1321953	JB67921	JB84819	1985-2013_Hist_GW	UNKNOWN	1985-2013_Hist_GW	1985-2013_Hist_GW	1242460	1250813	1985-2013_Hist_GW	1321953	1985-2013_Hist_GW	JB33198	JB67921	JB83815
Field Parameters																			
DISSOLVED OXYGEN, FIELD MEASURED	mg/L	n/v	-	-	-	0.65	0.47	-	-	-	-	-	-	-	-	-	-	NM	3.92
OXIDATION REDUCTION POTENTIAL, FIELD MEASURED	mV	n/v	-	-	-	8	-33	-	-	-	-	-	-	-	-	-	-	NM	-113
pH, FIELD MEASURED	S.U.	n/v	-	-	-	5.75	6.75	-	-	-	-	-	-	-	-	-	-	NM	6.82
SPECIFIC CONDUCTANCE FIELD	mS/cm	n/v	-	-	-	0.774	1.83	-	-	-	-	-	-	-	-	-	-	NM	1.73
TEMPERATURE, FIELD MEASURED	deg c	n/v	-	-	-	18.30	18.34	-	-	-	-	-	-	-	-	-	-	NM	17.14
TOTAL DISSOLVED SOLIDS, FIELD MEASURED	mg/L	n/v	-	-	-	0.501	-	1,700	-	-	-	-	-	-	-	-	-	NM	1.11
TURBIDITY	NTU	n/v	-	-	-	976	770	-	-	-	-	-	-	-	-	-	-	NM	157
Volatile Organic Compounds																			
BENZENE	µg/L	5	1,500[A]	590[A]	250[A]	1,600[A]	2,960[A]	490[A]	960[A]	300[A]	22[A]	100[A]	210[A]	110[A]	41[A]	-	36.3[A]	21.5[A]	16.9[A]
1,2-DIBROMOETHANE (EDB)	µg/L	0.05	*ND (5)*	*ND (2)*	-	-	-	ND (0.020)	-	ND (0.010)	ND (0.0096)	*ND (1)*	*ND (1)*	ND (0.0098)	-	-	-	-	-
1,2-DICHLOROETHANE (EDC)	µg/L	5	ND (5)	ND (2)	ND (5)	ND (1.0)	*ND (7.5)*	7.3[A]	ND (5)	ND (3)	ND (3)	ND (1)	ND (1)	ND (0.5)	ND (0.5)	-	ND (1.0)	ND (1.0)	ND (1.0)
ETHYLBENZENE	µg/L	700	990[A]	590	160	136	158	24	430	24	3 J	4 J	11	3	2	-	0.40 J	ND (1.0)	ND (1.0)
ISOPROPYLBENZENE (CUMENE)	µg/L	3,500	51	45	11 J	14.9	17.0 J	6.0	61	9 J	ND (3)	3 J	6	3	3	-	3.2	2.7	2.4
METHYL TERTIARY BUTYL ETHER	µg/L	20	110[A]	300[A]	190[A]	465[A]	377[A]	ND (1.8)	ND (5)	ND (3)	ND (3)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	-	ND (1.0)	ND (1.0)	ND (1.0)
NAPHTHALENE	µg/L	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TERT-BUTYL ALCOHOL	µg/L	n/v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOLUENE	µg/L	1,000	2,100[A]	930	300	111	125	3.0	37	5 J	ND (3)	ND (0.7)	4 J	0.9 J	1	-	1.3	3.6	3.0
1,2,4-TRIMETHYLBENZENE	µg/L	530	-	1,300[A]	430	435	449	-	-	8 J	ND (3)	-	11	2	2	-	1.8 J	1.5 J	1.5 J
1,3,5-TRIMETHYLBENZENE	µg/L	530	-	380	130	150	162	-	-	3 J	ND (3)	-	4 J	0.7 J	0.6 J	-	ND (2.0)	0.41 J	0.46 J
XYLENES, TOTAL (DIMETHYLBENZENE)	µg/L	10,000	6,300	3,700	1,300	888	1,000	18	870	15	ND (3)	5	21	5	5	-	2.9	3.0	3.0
Semi-Volatile Organic Compounds																			
ANTHRACENE	µg/L	66	-	-	3 J	0.418	0.275	-	-	-	-	-	-	-	7	-	ND (1.0)	0.794	1.29
BENZO(A)ANTHRACENE	µg/L	3.9	-	-	5 J[A]	0.511	0.529	*ND (10)*	-	-	-	-	-	-	6[A]	-	2.36	5.38[A]	6.12[A]
BENZO(A)PYRENE	µg/L	0.2	-	-	6[A]	0.452[A]	0.451[A]	*ND (10)*	-	-	-	-	-	-	6[A]	-	3.76[A]	8.87[A]	9.84[A]
BENZO(B)FLUORANTHENE	µg/L	1.2	-	-	16[A]	1.55[A]	1.36[A]	*ND (10)*	-	-	-	-	-	-	10[A]	-	7.02[A]	16.2[A]	14.3[A]
BENZO(G,H,I)PERYLENE	µg/L	0.26	-	-	7[A]	0.620[A]	0.607[A]	-	-	-	-	-	-	-	5[A]	-	4.11[A]	8.02[A]	9.63[A]
CHRYSENE	µg/L	1.9	-	94[A]	15[A]	1.49	1.48	ND (0.14)	*ND (10)*	48[A]	70[A]	-	*ND (200)*	*ND (70)*	10[A]	-	5.41[A]	12.2[A]	13.7[A]
FLUORENE	µg/L	1,900	-	40	6	2.11	1.39	ND (10)	ND (96)	-	13 J	-	15	11	19	-	3.48	1.15	2.34
NAPHTHALENE	µg/L	100	-	760[A]	150[A]	52.3	45.3	64	3,000[A]	180[A]	110[A]	-	70	89	55	-	21.9	6.32	6.55
PHENANTHRENE	µg/L	1,100	-	150	19	3.54	2.60	ND (10)	ND (96)	93	52	-	35	43	29	-	8.55	10.4	13.5
PYRENE	µg/L	130	-	110	20	2.06	2.09	ND (10)	ND (96)	110	90	-	23	66	21	-	8.61	20.7	24.0
Metals																			
LEAD, Dissolved	µg/L	5	-	56.7[A]	11.5[A]	6.9[A]	ND (3.0)	ND (5.0)	-	0.17 J	0.30 J	-	ND (0.08)	0.61 J	0.32 J	ND (1)	-	ND (3.0)	2.3 J
LEAD, Total	µg/L	5	-	-	-	-	-	*ND (200)*	ND (2.1)	-	-	-	-	-	-	-	-	-	-

See notes on last page

Table 3-4a
Groundwater Analytical Results Summary and Stabilized Purged Parameters, Unconfined Aquifer
Belmont Terminal
Philadelphia Refinery Operations, a series of Evergreen Resources Group, LLC

Sample Location			MW-30				MW-31						MW-32							
Sample Date			19-May-15	16-May-16	16-May-17	31-Jul-18	26-Apr-05	8-Jun-11	12-Jul-12	28-May-14	17-Dec-14	25-Jul-18	26-Apr-05	10-Nov-05	14-Apr-11	8-Jun-11	18-Jul-12	28-May-14	10-Dec-14	30-Jul-18
Sample ID			MW-30_20150519	MW-30-20160516	MW-30-20170516	MW-30-20180731	MW31-042605	MW-31	MW31_071212	MW-31	MW-31-20141217	MW-31_20180725	MW32-042605	MW-32_11_10_2005	MW-32	MW-32	MW32_071812	MW-32	MW-32-20141210	MW-32_20180730
Sampling Company			STANTEC	STANTEC	STANTEC	STANTEC	UNKNOWN	STANTEC	UNKNOWN	STANTEC	STANTEC	STANTEC	UNKNOWN	UNKNOWN	STANTEC	STANTEC	UNKNOWN	STANTEC	STANTEC	STANTEC
Laboratory		MSC-PA	LL	LL	LL	ESC	LL	LL	LL	ACCUTEST	ACCUTEST	ESC	LL	Blue Marsh	LL	LL	LL	ACCUTEST	ACCUTEST	ESC
Laboratory Work Order	Units	A	1562821	1664163	1803596	L1014154	UNKNOWN	1250813	1321953	JB67921	JB84509	L1013273	UNKNOWN	UNKNOWN	1242460	1250813	1323260	JB67921	JB83815	L1013922
Field Parameters																				
DISSOLVED OXYGEN, FIELD MEASURED	mg/L	n/v	0.26	2.72	-	0	-	-	-	1.17	0.39	0	-	-	-	-	-	1.41	2.13	0
OXIDATION REDUCTION POTENTIAL, FIELD MEASURED	mV	n/v	-143	-104	-	-2	-	-	-	-4	-33	0	-	-	-	-	-	-30	-6	-21
pH, FIELD MEASURED	S.U.	n/v	7.63	7.08	-	6.53	-	-	-	6.08	6.94	6.36	-	-	-	-	-	6.18	6.17	6.58
SPECIFIC CONDUCTANCE FIELD	mS/cm	n/v	17.4	1.88	-	1.39	-	-	-	1.15	1.4	1.40	-	-	-	-	-	2.67	0.334	0.246
TEMPERATURE, FIELD MEASURED	deg c	n/v	19.04	18.37	-	21.51	-	-	-	18.71	19.01	24.98	-	-	-	-	-	19.73	16.77	22.24
TOTAL DISSOLVED SOLIDS, FIELD MEASURED	mg/L	n/v	10.8	1.22	-	-	-	-	-	0.737	-	-	-	-	-	-	-	1.71	0.219	-
TURBIDITY	NTU	n/v	> 800	230	-	240	-	-	-	49.9	625	357	-	-	-	-	-	507	621	0
Volatile Organic Compounds																				
BENZENE	µg/L	5	27[A]	61[A]	12[A]	50.7[A]	2,600[A]	150[A]	260[A]	1,040[A]	964[A]	428[A]	420[A]	801[A]	7 J[A]	23[A]	13[A]	7.6[A]	7.5[A]	19.2[A]
1,2-DIBROMOETHANE (EDB)	µg/L	0.05	-	-	-	-	-	ND (1)	-	-	-	-	-	-	ND (5)	ND (2)	-	-	-	-
1,2-DICHLOROETHANE (EDC)	µg/L	5	ND (1)	ND (0.5)	ND (5)	ND (1.00)	ND (50)	ND (1)	ND (5)	ND (1.0)	ND (2.5)	ND (3.61)	ND (50)	ND (10)	ND (5)	ND (2)	ND (3)	ND (1.0)	ND (1.0)	ND (1.00)
ETHYLBENZENE	µg/L	700	ND (1)	ND (0.5)	ND (5)	2.38	290	2 J	55	34.3	9.6	62.2	1,100[A]	3,160 D[A]	240	670	190	34.2	52.6	196
ISOPROPYLBENZENE (CUMENE)	µg/L	3,500	3 J	1 J	ND (5)	4.35	ND (50)	2 J	35	10.2	5.1	221	ND (250)	-	26	53	19	6.4	11.3	20.9
METHYL TERTIARY BUTYL ETHER	µg/L	20	ND (1)	ND (0.5)	ND (5)	ND (1.00)	ND (25)	0.6 J	ND (5)	144[A]	1.6 J	ND (10.0)	ND (25)	285[A]	5 J	19	18	7.5	5.8	114[A]
NAPHTHALENE	µg/L	100	-	-	-	-	-	-	-	-	-	-	-	436[A]	-	-	-	-	-	-
TERT-BUTYL ALCOHOL	µg/L	n/v	-	-	-	1,440	-	-	-	-	-	-	-	-	-	-	-	-	-	4,000
TOLUENE	µg/L	1,000	2	2	ND (5)	2.80	510	2 J	7 J	60.3	6.1	37.2	4,600[A]	2,430 D[A]	ND (4)	13	3 J	0.79 J	0.64 J	3.37
1,2,4-TRIMETHYLBENZENE	µg/L	530	2 J	1 J	ND (5)	4.74	-	3 J	51	31.0	12.2	366	-	-	-	1,400[A]	570[A]	91.0	178	372
1,3,5-TRIMETHYLBENZENE	µg/L	530	ND (1)	ND (0.5)	ND (5)	1.69	-	4 J	28	11.3	5.6	485	-	-	-	510	210	36.6	72.7	133
XYLENES, TOTAL (DIMETHYLBENZENE)	µg/L	10,000	5	2	ND (5)	5.96	1,000	4 J	190	105	43.2	96.2	6,200	13,100 D[A]	890	2,500	560	89.1	138	351
Semi-Volatile Organic Compounds																				
ANTHRACENE	µg/L	66	0.9	2	0.5	4.11	-	-	79 J[A]	0.568	3.71	6.75	-	-	-	-	3	0.373	1.77	0.306
BENZO(A)ANTHRACENE	µg/L	3.9	10[A]	21[A]	4[A]	7.50[A]	-	-	150[A]	1.31	13.5[A]	3.23	-	14.2[A]	-	-	6[A]	1.22	5.01[A]	1.10
BENZO(A)PYRENE	µg/L	0.2	17[A]	30[A]	7[A]	12.9[A]	-	-	250[A]	1.90[A]	18.3[A]	3.51[A]	-	7.9[A]	-	-	10[A]	1.71[A]	5.49[A]	1.98[A]
BENZO(B)FLUORANTHENE	µg/L	1.2	31[A]	56[A]	12[A]	30.1[A]	-	-	570[A]	4.50[A]	25.5[A]	6.05[A]	-	21.5[A]	-	-	24[A]	4.00[A]	8.72[A]	4.29[A]
BENZO(G,H,I)PERYLENE	µg/L	0.26	16[A]	28[A]	7[A]	16.1[A]	-	-	260[A]	1.89[A]	18.1[A]	3.43[A]	-	5.1[A]	-	-	16[A]	1.93[A]	7.71[A]	2.40[A]
CHRYSENE	µg/L	1.9	30[A]	48[A]	10[A]	19.3[A]	ND (10)	250[A]	330[A]	3.20[A]	24.3[A]	2.75[A]	ND (1)	9.4[A]	-	4.2[A]	15[A]	2.89[A]	7.18[A]	2.66[A]
FLUORENE	µg/L	1,900	2	6	0.8	6.71	ND (100)	67	400	2.54	ND (0.50)	47.6	ND (10)	2.1	-	3.3 J	6	0.984	4.31	0.367
NAPHTHALENE	µg/L	100	11	14	4	15.9	ND (100)	ND (200)	330[A]	ND (0.10)	ND (0.50)	25.4	120[A]	-	-	180[A]	81	12.6	27.8	29.0
PHENANTHRENE	µg/L	1,100	17	34	7	23.8	ND (100)	130	420	3.18	23.7	48.4	ND (10)	17	-	6.0	14	3.00	8.68	1.71
PYRENE	µg/L	130	32	57	13	25.1	ND (100)	ND (690)	530[A]	4.65	34.4	12.8	ND (10)	20.7	-	6.1 J	18	3.84	10.3	3.34
Metals																				
LEAD, Dissolved	µg/L	5	0.095 J	ND (0.13)	ND (0.090)	ND (2.00)	-	0.14 J	1.0 J	1.4 J	ND (3.0)	ND (2.00)	-	-	-	2.4	0.68 J	ND (3.0)	2.6 J	ND (2.00)
LEAD, Total	µg/L	5	-	-	-	-	ND (2.1)	-	-	-	-	-	ND (2.1)	ND (3)	-	-	-	-	-	-

Table 3-4a
Groundwater Analytical Results Summary and Stabilized Purged Parameters, Unconfined Aquifer
Belmont Terminal
Philadelphia Refinery Operations, a series of Evergreen Resources Group, LLC

Sample Location			MW-33							MW-35							MW-36			
Sample Date			6-Nov-08	14-Apr-11	6-Jun-11	12-Jul-12	30-May-14	10-Dec-14	31-Jul-18	27-Apr-05	18-Jul-12	30-May-14	10-Dec-14	1-Aug-18	27-Oct-21	31-Mar-23	25-Apr-05	17-Jul-12	30-May-14	17-Dec-14
Sample ID			MW-33_110608	MW-33	MW-33	MW33_071212	MW-33	MW-33-20141210	MW-33-20180731	MW35-042705	MW35_071812	MW-35	MW-35-20141210	MW-35_20180801	MW-35_20211027	MW-35_20230331	MW36-042505	MW36_071712	MW-36	MW-36-20141217
Sampling Company																				
Laboratory		MSC-PA	UNKNOWN LL	STANTEC LL	STANTEC LL	UNKNOWN LL	STANTEC ACCUTEST	STANTEC ACCUTEST	STANTEC ESC	UNKNOWN LL	UNKNOWN LL	STANTEC ACCUTEST	STANTEC ACCUTEST	STANTEC ESC	STANTEC LANCASTER	STANTEC SGS	UNKNOWN LL	UNKNOWN LL	STANTEC ACCUTEST	STANTEC ACCUTEST
Laboratory Work Order	Units	A	1119109	1242460	1250813	1321953	JB68176	JB83815	L1014154	UNKNOWN	1323260	JB68176	JB83815	L1014699	410-61053-1	JD63211	UNKNOWN	1323260	JB68176	JB84509
Field Parameters																				
DISSOLVED OXYGEN, FIELD MEASURED	mg/L	n/v	-	-	-	-	1.17	2.12	0	-	-	1.13	3.51	0.91	0	0	-	-	0.52	0.37
OXIDATION REDUCTION POTENTIAL, FIELD MEASURED	mV	n/v	-	-	-	-	-65	-18	105	-	-	-109	-99	-159	-137	-64	-	-	-97	-73
pH, FIELD MEASURED	S.U.	n/v	-	-	-	-	6.64	6.77	6.35	-	-	6.84	6.97	6.75	6.46	6.13	-	-	6.59	7.24
SPECIFIC CONDUCTANCE FIELD	mS/cm	n/v	-	-	-	-	1.21	1.58	1.82	-	-	2.38	1.75	2.29	1.42	1.42	-	-	3.26	2.19
TEMPERATURE, FIELD MEASURED	deg c	n/v	-	-	-	-	18.15	17.49	22.63	-	-	15.93	16.98	19.35	20.63	16.96	-	-	17.97	17.6
TOTAL DISSOLVED SOLIDS, FIELD MEASURED	mg/L	n/v	-	-	-	-	0.775	1.02	-	-	-	1.58	1.15	-	-	-	-	-	2.11	-
TURBIDITY	NTU	n/v	-	-	-	-	331	240	988	-	-	57.9	387	53.5	69.5	0	-	-	111	101
Volatile Organic Compounds																				
BENZENE	µg/L	5	**19**[A]	2 J	**94**[A]	**1,800**[A]	**24.5**[A]	3.9	**97.2**[A]	**29**[A]	3 J	**35.4**[A]	3.2	1.24	**16**[A]	**130**[A]	**150,000**[A]	**170,000**[A]	**309,000**[A]	**233,000**[A]
1,2-DIBROMOETHANE (EDB)	µg/L	0.05	-	*ND (1)*	*ND (1)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-DICHLOROETHANE (EDC)	µg/L	5	ND (0.5)	ND (1)	ND (1)	ND (3)	ND (1.0)	ND (1.0)	ND (1.00)	ND (5)	ND (3)	ND (5.0)	ND (4.0)	ND (1.00)	ND (5.0)	ND (1.0)	*ND (1,000)*	**1,100**[A]	ND (3.0)	*ND (60)*
ETHYLBENZENE	µg/L	700	ND (0.5)	ND (0.8)	4 J	22	ND (1.0)	ND (1.0)	ND (1.00)	**970**[A]	300	196	155	15.4	150	5.9	*ND (800)*	**1,000**[A]	**888**[A]	**1,160**[A]
ISOPROPYLBENZENE (CUMENE)	µg/L	3,500	ND (0.5)	ND (1)	1 J	ND (3)	0.33 J	ND (1.0)	ND (1.00)	92	99	51.1	109	36.0	120	47.8	ND (1,000)	ND (250)	70.4	67.6 J
METHYL TERTIARY BUTYL ETHER	µg/L	20	ND (0.5)	ND (0.5)	0.5 J	ND (3)	ND (1.0)	ND (1.0)	ND (1.00)	ND (3)	3 J	ND (5.0)	ND (4.0)	ND (1.00)	2.1 J	0.64 J	*ND (500)*	ND (0.5)	**114**[A]	**138 J**[A]
NAPHTHALENE	µg/L	100	ND (1)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TERT-BUTYL ALCOHOL	µg/L	n/v	-	-	-	-	-	-	62.3	-	-	-	-	ND (5.00)	ND (250)	5.9 J	-	-	-	-
TOLUENE	µg/L	1,000	ND (0.5)	ND (0.7)	6	9	0.32 J	ND (1.0)	ND (1.00)	30	ND (3)	ND (5.0)	0.92 J	ND (1.00)	ND (5.0)	4.1	ND (700)	**2,500**[A]	**4,420**[A]	**4,030**[A]
1,2,4-TRIMETHYLBENZENE	µg/L	530	ND (0.5)	-	13	ND (3)	0.49 J	ND (2.0)	ND (1.00)	-	**570**[A]	276	499	86.6	180	19.2	-	510 J	**538**[A]	515
1,3,5-TRIMETHYLBENZENE	µg/L	530	ND (0.5)	-	9	ND (3)	ND (2.0)	ND (2.0)	ND (1.00)	-	140	67.8	101	18.1	69	7.6	-	ND (250)	159	156 J
XYLENES, TOTAL (DIMETHYLBENZENE)	µg/L	10,000	0.8 J	ND (0.8)	26	4 J	0.35 J	ND (1.0)	ND (3.00)	2,600	340	244	51.4	3.00	64	9.6	ND (5,000)	4,100	3,090	4,190
Semi-Volatile Organic Compounds																				
ANTHRACENE	µg/L	66	-	-	-	2 J	ND (0.10)	0.424	2.21	-	8	2.68	3.64	2.63	5.3	2.71	-	11	2.32	1.26
BENZO(A)ANTHRACENE	µg/L	3.9	-	-	-	3 J	0.148	2.47	**23.8**[A]	-	0.7	0.122	0.143	ND (0.0500)	0.38 J	0.0751	-	3 J	0.396	0.184
BENZO(A)PYRENE	µg/L	0.2	-	-	-	**5**[A]	**0.321**[A]	**4.41**[A]	**34.8**[A]	-	**0.8**[A]	ND (0.10)	0.175	ND (0.0500)	**0.26 J**[A]	0.0425	-	**2 J**[A]	**0.252**[A]	ND (0.10)
BENZO(B)FLUORANTHENE	µg/L	1.2	-	-	-	**9**[A]	0.583	**5.58**[A]	**58.4**[A]	-	1	ND (0.10)	0.275	ND (0.0500)	0.31 J	0.0749	-	**2 J**[A]	0.297	ND (0.10)
BENZO(G,H,I)PERYLENE	µg/L	0.26	-	-	-	**5 J**[A]	**0.373**[A]	**4.51**[A]	**36.7**[A]	-	**0.7**[A]	ND (0.10)	0.187	ND (0.0500)	0.12 J	ND (0.077)	-	*ND (1)*	0.132	ND (0.10)
CHRYSENE	µg/L	1.9	**63**[A]	-	*ND (24,000)*	**6**[A]	0.400	**5.28**[A]	**41.9**[A]	*ND (10)*	0.8	0.140	0.186	ND (0.0500)	0.43 J	0.0956	*ND (10)*	**4 J**[A]	0.447	0.182
FLUORENE	µg/L	1,900	-	-	790	2 J	0.684	0.243	ND (1.00)	150	51	20.5	36.4	22.0	48	23.8	23	38	20.8	5.50
NAPHTHALENE	µg/L	100	-	-	**3,400**[A]	ND (1)	1.70	0.111	ND (5.00)	**5,700**[A]	**1,900**[A]	**971**[A]	**1,550**[A]	**228**[A]	**730**[A]	6.34 B	**5,800**[A]	**6,100**[A]	**3,230**[A]	**1,920**[A]
PHENANTHRENE	µg/L	1,100	49	-	**3,600**[A]	5	0.262	3.03	12.5	320	38	15.8	26.1	11.7	32	8.35	25	49	18.1	6.29
PYRENE	µg/L	130	79	-	*ND (5,100)*	12	0.521	6.33	45.1	ND (97)	3	1.07	1.22	0.620	2.1	0.889	ND (10)	10	1.51	0.862
Metals																				
LEAD, Dissolved	µg/L	5	0.097 J	-	0.59 J	1.1	3.2	ND (3.0)	ND (2.00)	-	1.0	ND (3.0)	ND (3.0)	ND (2.00)	ND (0.52)	ND (1.0)	-	0.64 J	2.9 J	ND (3.0)
LEAD, Total	µg/L	5	-	-	-	-	-	-	-	ND (2.1)	-	-	-	-	-	-	*ND (10)*	-	-	-

Table 3-4a
Groundwater Analytical Results Summary and Stabilized Purged Parameters, Unconfined Aquifer
Belmont Terminal
Philadelphia Refinery Operations, a series of Evergreen Resources Group, LLC

Sample Location			MW-36											MW-37						
Sample Date			3-Aug-18	16-Jul-19	7-Nov-19	23-Mar-21	17-May-21	29-Oct-21	19-Oct-22	19-Oct-22	17-Nov-22	17-Nov-22	27-Mar-23	26-Apr-05	18-Dec-07	7-Nov-08	18-Nov-09	10-Nov-10	29-Nov-11	17-Jul-12
Sample ID			MW-36_20180803	MW-36_20190716	MW-36_20191107	MW-36-20210323	MW-36_DDT_20210517	MW-36_20211029	DUP-01	MW-36_20221019	MW-36_20221117	DUP-01_20221117	MW-36_20230327	MW37-042605	MW-37	MW-37_110708	MW-37	MW-37	MW-37	MW37_071712
Sampling Company			STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	GEOSYNTEC	GEOSYNTEC	GEOSYNTEC	GEOSYNTEC	STANTEC	UNKNOWN	UNKNOWN	UNKNOWN	UNKNOWN	UNKNOWN	UNKNOWN	UNKNOWN
Laboratory		MSC-PA	ESC	LL	LL	LANCASTER	LANCASTER	LANCASTER	PACE	PACE	PACE	PACE	SGS	LL	UNKNOWN	LL	UNKNOWN	UNKNOWN	UNKNOWN	LL
Laboratory Work Order	Units	A	L1015766	2053831	2073752	410-33523-1	410-40441-1	410-61302-1	L1548740	L1548740	L1559852	L1559852	JD63001	UNKNOWN	1985-2013_Hist_GW	1119109	1985-2013_Hist_GW	1985-2013_Hist_GW	1985-2013_Hist_GW	1323260
Field Parameters																				
DISSOLVED OXYGEN, FIELD MEASURED	mg/L	n/v	0	0	0	0.54	0.7	8.79	-	-	-	-	0	-	-	-	-	-	-	-
OXIDATION REDUCTION POTENTIAL, FIELD MEASURED	mV	n/v	-18	-130	-137	-112	-92	-90	-	-	-	-	-66	-	-	-	-	-	-	-
pH, FIELD MEASURED	S.U.	n/v	6.51	6.84	7.34	6.38	6.01	5.68	-	-	-	-	6.31	-	-	-	-	-	-	-
SPECIFIC CONDUCTANCE FIELD	mS/cm	n/v	7.03	1.22	1.98	8.97	7.94	5.21	-	-	-	-	4.34	-	-	-	-	-	-	-
TEMPERATURE, FIELD MEASURED	deg c	n/v	20.64	19.99	19.51	20.38	19.09	20.17	-	-	-	-	18	-	-	-	-	-	-	-
TOTAL DISSOLVED SOLIDS, FIELD MEASURED	mg/L	n/v	-	0.778	1.27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TURBIDITY	NTU	n/v	271	76.6	21.1	36	106	27.6	-	-	-	-	1.2	-	-	-	-	-	-	-
Volatile Organic Compounds																				
BENZENE	µg/L	5	313,000[A]	60,000[A]	190,000[A]	550,000[A]	-	490,000[A]	230,000[A]	233,000[A]	182,000[A]	181,000[A]	256,000[A]	370,000[A]	15,000[A]	130,000[A]	79,000[A]	29,000[A]	130,000[A]	200,000[A]
1,2-DIBROMOETHANE (EDB)	µg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	-	ND (0.0094)	-	ND (0.0098)	ND (0.0095)	ND (0.0099)	-
1,2-DICHLOROETHANE (EDC)	µg/L	5	*ND (361)*	ND (2)	470 J[A]	1,600[A]	-	1,100[A]	-	-	-	-	782[A]	*ND (2,000)*	*ND (10)*	ND (1)	*ND (25)*	*ND (25)*	*ND (25)*	ND (0.5)
ETHYLBENZENE	µg/L	700	*ND (1,920)*	440	580	250	-	500	493	459	927[A]	849[A]	756[A]	12,000[A]	37	ND (250)	44 J	ND (25)	32 J	ND (250)
ISOPROPYLBENZENE (CUMENE)	µg/L	3,500	ND (1,000)	39 J	41 J	83 J	-	ND (2,500)	-	-	-	-	ND (500)	ND (2,000)	97	ND (250)	120	67 J	62 J	ND (250)
METHYL TERTIARY BUTYL ETHER	µg/L	20	*ND (367)*	ND (20)	28 J[A]	40 J[A]	-	*ND (100)*	*ND (20.2)*	*ND (20.2)*	ND (10.1)	ND (10.1)	*ND (250)*	*ND (1,000)*	-	ND (0.5)	*ND (25)*	*ND (25)*	*ND (25)*	ND (0.5)
NAPHTHALENE	µg/L	100	-	-	-	670[A]	-	-	-	-	-	-	-	-	-	ND (1)	-	-	-	-
TERT-BUTYL ALCOHOL	µg/L	n/v	ND (5,000)	ND (1,000)	ND (1,000)	ND (5,000)	-	ND (25,000)	-	-	-	-	ND (5,000)	-	-	-	-	-	-	-
TOLUENE	µg/L	1,000	6,650[A]	1,600[A]	3,300[A]	12,000[A]	-	9,200[A]	4,960[A]	5,100[A]	5,900[A]	5,960[A]	4,000[A]	31,000[A]	300	640	800	390	1,400[A]	1,200[A]
1,2,4-TRIMETHYLBENZENE	µg/L	530	*ND (1,860)*	210 J	240 J	130 J	-	ND (500)	-	-	-	-	ND (500)	-	-	ND (250)	ND (25)	ND (25)	ND (25)	ND (250)
1,3,5-TRIMETHYLBENZENE	µg/L	530	ND (387)	74 J	81 J	49 J	-	ND (150)	-	-	-	-	ND (500)	-	-	ND (250)	ND (25)	ND (25)	ND (25)	ND (250)
XYLENES, TOTAL (DIMETHYLBENZENE)	µg/L	10,000	3,250	1,600	2,000	920	-	1,700 J	1,890	1,760	3,410	3,150	2,710	41,000[A]	130	ND (250)	150	31 J	120	ND (250)
Semi-Volatile Organic Compounds																				
ANTHRACENE	µg/L	66	2.23	2	1	1.4	-	1.2	-	-	-	-	1.9	-	-	-	-	-	-	0.7
BENZO(A)ANTHRACENE	µg/L	3.9	ND (0.250)	0.3 J	0.2 J	ND (0.53)	-	ND (0.58)	-	-	-	-	0.0497	-	-	-	-	-	-	3
BENZO(A)PYRENE	µg/L	0.2	ND (0.0580)	0.2 J	0.3 J[A]	ND (0.12)	-	ND (0.13)	-	-	-	-	ND (0.033)	-	-	-	-	-	-	3[A]
BENZO(B)FLUORANTHENE	µg/L	1.2	ND (0.250)	0.3 J	0.4 J	ND (0.53)	-	ND (0.58)	-	-	-	-	ND (0.033)	-	-	-	-	-	-	4[A]
BENZO(G,H,I)PERYLENE	µg/L	0.26	ND (0.250)	0.1 J	ND (0.1)	ND (0.11)	-	ND (0.12)	-	-	-	-	ND (0.067)	-	-	-	-	-	-	2[A]
CHRYSENE	µg/L	1.9	ND (0.250)	0.5 J	0.3 J	0.12 J	-	ND (0.58)	-	-	-	-	0.0530 J	ND (1)	ND (1.0)	ND (1)	ND (0.25)	ND (1)	ND (0.079)	4[A]
FLUORENE	µg/L	1,900	16.8	11	9	8.3	-	5.1	-	-	-	-	6.24	ND (10)	2.0 J	-	-	1 J	ND (0.50)	0.7
NAPHTHALENE	µg/L	100	3,230[A]	1,500[A]	1,800[A]	550[A]	-	770[A]	-	-	-	-	1,010[A]	25	63 J	-	ND (50)	3 J	11	10
PHENANTHRENE	µg/L	1,100	12.6	11	8	8.1	-	6.2	-	-	-	-	5.88	ND (10)	3.0 J	2 J	1.6	ND (1)	0.55	8
PYRENE	µg/L	130	1.11	1	0.9	0.72	-	0.40 J	-	-	-	-	0.261	ND (10)	2.0 J	1 J	0.60 J	1 J	ND (0.098)	7
Metals																				
LEAD, Dissolved	µg/L	5	2.25 B	ND (1.1)	0.80	ND (0.52)	-	0.091 J	-	-	-	-	ND (1.0)	-	0.051 J	ND (0.050)	0.052 J	ND (0.052)	ND (0.080)	0.067 J
LEAD, Total	µg/L	5	-	-	-	-	-	-	-	-	-	-	-	ND (2.1)	-	-	-	-	-	-

Table 3-4a
Groundwater Analytical Results Summary and Stabilized Purged Parameters, Unconfined Aquifer
Belmont Terminal
Philadelphia Refinery Operations, a series of Evergreen Resources Group, LLC

Sample Location			MW-37																
Sample Date			3-Apr-13	3-Apr-13	30-May-14	17-Dec-14	19-May-15	16-May-16	16-May-17	1-Aug-18	2-Jul-19	7-Nov-19	23-Mar-21	29-Oct-21	30-Mar-22	30-Mar-22	19-Oct-22	15-Nov-22	23-Mar-23
Sample ID			MW-37	MW-37_040313	MW-37	MW-37-20141217	MW-37_20150519	MW-37-20160516	MW-37-20170516	MW-37_20180801	MW-37_20190702	MW-37_20191107	MW-37-20210323	MW-37_20211029	MW-37_20220330	DUP-2_20220330	MW-37_20221019	MW-37_20221115	MW-37_20230323
Sampling Company			UNKNOWN	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	GEOSYNTEC	GEOSYNTEC	STANTEC
Laboratory		MSC-PA	UNKNOWN	ACCUTEST	ACCUTEST	ACCUTEST	LL	LL	LL	ESC	LL	LL	LANCASTER	LANCASTER	SGSA	SGSA	PACE	PACE	SGS
Laboratory Work Order	Units	A	1985-2013_Hist_GW	JB33198	JB68176	JB84509	1562821	1664163	1803596	L1014699	2052178	2073752	410-33523-1	410-61302-1	JD42387	JD42387	L1548740	L1559852	JD62757
Field Parameters																			
DISSOLVED OXYGEN, FIELD MEASURED	mg/L	n/v	-	-	0.71	0.34	0.51	2.23	-	0	0	0	1.18	0.38	0.19	-	-	-	0.98
OXIDATION REDUCTION POTENTIAL, FIELD MEASURED	mV	n/v	-	-	-86	-62	-121	-110	-	-20	-163	-118	-117	-85	-37	-	-	-	-36
pH, FIELD MEASURED	S.U.	n/v	-	-	6.30	7.11	7.61	6.98	-	6.43	6.43	7.43	6.19	6.36	5.8	-	-	-	6.32
SPECIFIC CONDUCTANCE FIELD	mS/cm	n/v	-	-	2.09	1.63	1.55	2.15	-	4.81	3.97	2.92	1.24	0.593	0.756	-	-	-	1.2
TEMPERATURE, FIELD MEASURED	deg c	n/v	-	-	18.42	17.49	21.07	18.12	-	24.01	18.52	17.64	17.85	15.93	14.6	-	-	-	16.02
TOTAL DISSOLVED SOLIDS, FIELD MEASURED	mg/L	n/v	-	-	1.34	-	1.1	1.38	-	-	2.24	1.87	-	-	-	-	-	-	-
TURBIDITY	NTU	n/v	-	-	307	96.1	225	42.9	-	55.2	66.2	41.6	20.9	50.3	139	-	-	-	10.8
Volatile Organic Compounds																			
BENZENE	µg/L	5	-	**96,600**[A]	**236,000**[A]	**197,000**[A]	**90,000**[A]	**130,000**[A]	**160,000**[A]	**262,000**[A]	**290,000**[A]	**170,000**[A]	**210,000**[A]	**160,000**[A]	**195,000**[A]	**185,000**[A]	**208,000**[A]	**111,000**[A]	**306,000**[A]
1,2-DIBROMOETHANE (EDB)	µg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-DICHLOROETHANE (EDC)	µg/L	5	-	*ND (65)*	*ND (30)*	*ND (300)*	ND (0.5)	ND (0.5)	ND (0.5)	*ND (3,610)*	ND (2)	ND (2)	*ND (30)*	*ND (30)*	*ND (300)*	*ND (6.0)*	-	-	*ND (600)*
ETHYLBENZENE	µg/L	700	-	ND (250)	ND (100)	ND (400)	ND (50)	ND (100)	ND (250)	*ND (3,840)*	ND (40)	28 J	ND (100)	ND (100)	ND (500)	8.2 J	ND (200)	ND (100)	ND (600)
ISOPROPYLBENZENE (CUMENE)	µg/L	3,500	-	ND (500)	58.9 J	ND (1,000)	ND (50)	ND (100)	ND (250)	*ND (10,000)*	ND (60)	33 J	28 J	ND (500)	ND (500)	9.8 J	-	-	ND (1,000)
METHYL TERTIARY BUTYL ETHER	µg/L	20	-	*ND (41)*	*ND (26)*	*ND (260)*	ND (0.5)	ND (0.5)	ND (0.5)	*ND (3,670)*	ND (0.2)	ND (20)	ND (20)	ND (20)	*ND (250)*	ND (10)	*ND (20.2)*	ND (10.1)	*ND (510)*
NAPHTHALENE	µg/L	100	-	-	-	-	-	-	-	-	-	-	*ND (500)*	-	-	-	-	-	-
TERT-BUTYL ALCOHOL	µg/L	n/v	-	-	-	-	-	-	-	ND (50,000)	ND (2,000)	ND (1,000)	ND (5,000)	ND (5,000)	ND (5,000)	ND (100)	-	-	ND (10,000)
TOLUENE	µg/L	1,000	-	**1,250**[A]	**3,040**[A]	**2,220**[A]	**1,400**[A]	**1,100**[A]	**1,200**[A]	*ND (4,120)*	560	680	**1,700**[A]	**1,200**[A]	997	868	**1,440**[A]	**2,010**[A]	**2,920**[A]
1,2,4-TRIMETHYLBENZENE	µg/L	530	-	ND (500)	ND (200)	ND (190)	ND (50)	ND (100)	ND (250)	*ND (3,730)*	ND (60)	ND (30)	ND (500)	ND (500)	ND (500)	ND (20)	-	-	*ND (1,000)*
1,3,5-TRIMETHYLBENZENE	µg/L	530	-	ND (500)	ND (200)	ND (170)	ND (50)	ND (100)	ND (250)	*ND (3,870)*	ND (60)	ND (30)	ND (500)	ND (500)	ND (500)	ND (20)	-	-	*ND (1,000)*
XYLENES, TOTAL (DIMETHYLBENZENE)	µg/L	10,000	-	70.7 J	197	ND (1,000)	91 J	ND (100)	ND (250)	*ND (10,600)*	140 J	170 J	ND (600)	ND (600)	ND (500)	66.5	ND (600)	ND (300)	ND (1,000)
Semi-Volatile Organic Compounds																			
ANTHRACENE	µg/L	66	-	ND (0.10)	0.244	ND (0.10)	0.1 J	0.2 J	0.1 J	0.144	ND (0.09)	ND (0.1)	0.23 J	0.14 J	0.131	0.102	-	-	0.390
BENZO(A)ANTHRACENE	µg/L	3.9	-	ND (0.10)	0.126	ND (0.10)	0.2 J	ND (0.1)	ND (0.1)	ND (0.0500)	ND (0.09)	0.1 J	0.40 J	0.35 J	0.202	0.144	-	-	0.0724
BENZO(A)PYRENE	µg/L	0.2	-	ND (0.10)	0.140	ND (0.10)	0.2 J	ND (0.1)	0.1 J	ND (0.0500)	ND (0.09)	0.2 J	**0.58**[A]	**0.38 J**[A]	**0.396**[A]	**0.236**[A]	-	-	0.0465
BENZO(B)FLUORANTHENE	µg/L	1.2	-	ND (0.10)	0.227	ND (0.10)	0.3 J	ND (0.1)	ND (0.1)	ND (0.0500)	ND (0.09)	0.4 J	1.1	0.62	0.806	0.516	-	-	0.105
BENZO(G,H,I)PERYLENE	µg/L	0.26	-	ND (0.10)	0.138	ND (0.10)	0.2 J	ND (0.1)	ND (0.1)	ND (0.0500)	ND (0.09)	0.2 J	**0.41 J**[A]	0.26 J	**0.552**[A]	**0.262**[A]	-	-	0.0636 J
CHRYSENE	µg/L	1.9	-	ND (0.10)	0.173	ND (0.10)	0.3 J	ND (0.1)	0.1 J	ND (0.0500)	ND (0.09)	ND (0.1)	0.81	0.45 J	0.497	0.382	-	-	0.0803 J
FLUORENE	µg/L	1,900	-	0.409	0.615	0.342	0.4 J	0.7	0.4 J	0.613	0.4 J	0.4 J	0.55	0.28 J	0.166	0.170	-	-	0.180
NAPHTHALENE	µg/L	100	-	2.91	4.52	3.60	6	10	5	4.76	5	4	5.1	2.1	1.46 B	0.918 B	-	-	1.97
PHENANTHRENE	µg/L	1,100	-	0.248	0.767	0.351	0.6	0.8	0.7	0.609	0.7	0.6	1.4	0.73	0.782	0.630	-	-	0.931
PYRENE	µg/L	130	-	ND (0.10)	0.485	0.171	0.6	0.2 J	0.3 J	0.178	0.3 J	0.3 J	1.3	0.84	0.812	0.580	-	-	0.186
Metals																			
LEAD, Dissolved	µg/L	5	ND (1)	-	**17.5**[A]	1.3 J	ND (0.082)	ND (0.13)	ND (0.090)	ND (2.00)	ND (1.1)	1.4	0.13 J	0.85	2.0	3.2	-	-	ND (1.0)
LEAD, Total	µg/L	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 3-4a
Groundwater Analytical Results Summary and Stabilized Purged Parameters, Unconfined Aquifer
Belmont Terminal
Philadelphia Refinery Operations, a series of Evergreen Resources Group, LLC

Sample Location			MW-38												MW-39				
Sample Date			26-Apr-05	12-Jul-12	28-May-14	11-Dec-14	26-Jul-18	2-Jul-19	6-Nov-19	6-Nov-19	22-Apr-21	26-Oct-21	29-Mar-22	30-Mar-23	26-Apr-05	12-Jul-12	28-May-14	8-Dec-14	26-Jul-18
Sample ID			MW38-042605	MS38_071212	MW-38	MW-38-20141211	MW-38-20180726	MW-38_20190702	DUP-4_20191106	MW-38_20191106	MW-38_20210422	MW-38_20211026	MW-38_20220329	MW-38_20230330	MW39-042605	MS39_071212	MW-39	MW-39-20141208	MW-39-20180726
Sampling Company																			
Laboratory		MSC-PA	UNKNOWN LL	UNKNOWN LL	STANTEC ACCUTEST	STANTEC ACCUTEST	STANTEC ESC	STANTEC LL	STANTEC LL	STANTEC LL	STANTEC LANCASTER	STANTEC LANCASTER	STANTEC SGSA	STANTEC SGS	UNKNOWN LL	UNKNOWN LL	STANTEC ACCUTEST	STANTEC ACCUTEST	STANTEC ESC
Laboratory Work Order	Units	A	UNKNOWN	1321953	JB67921	JB84134	L1013273	2052178	2073752	2073752	410-37142-1	410-60816-1	JD42234	JD63001	UNKNOWN	1321953	JB67921	JB83579	L1013273
Field Parameters																			
DISSOLVED OXYGEN, FIELD MEASURED	mg/L	n/v	-	-	1.01	3.04	0	0	-	0	0	0.78	0	1.97	-	-	1.05	2.46	0
OXIDATION REDUCTION POTENTIAL, FIELD MEASURED	mV	n/v	-	-	-75	-55	8	-125	-	-103	-23	-119	-47	29	-	-	-84	-85	17
pH, FIELD MEASURED	S.U.	n/v	-	-	6.41	6.78	6.59	6.57	-	7.30	5.53	6.99	6.46	5.79	-	-	6.67	6.91	6.58
SPECIFIC CONDUCTANCE FIELD	mS/cm	n/v	-	-	1.95	1.91	2.19	2.26	-	1.95	1.82	1.9	2.01	1.67	-	-	2.05	2.26	2.18
TEMPERATURE, FIELD MEASURED	deg c	n/v	-	-	7.11	16.95	19.18	26.41	-	19.02	15.89	16.89	14.99	16.47	-	-	16.31	17.27	19.63
TOTAL DISSOLVED SOLIDS, FIELD MEASURED	mg/L	n/v	-	-	1.31	1.22	-	1.45	-	1.25	-	-	-	-	-	-	1.32	1.44	-
TURBIDITY	NTU	n/v	-	-	61.7	723	0	56.9	-	7.1	5.1	14.9	4.5	0	-	-	97.0	175	0
Volatile Organic Compounds																			
BENZENE	µg/L	5	110[A]	41[A]	57.4[A]	4.2	ND (1.00)	3	ND (1)	ND (0.2)	0.62 J	ND (1.0)	ND (0.50)	ND (0.50)	8[A]	ND (0.5)	0.27 J	0.36 J	ND (1.00)
1,2-DIBROMOETHANE (EDB)	µg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-DICHLOROETHANE (EDC)	µg/L	5	ND (5)	ND (0.5)	ND (1.0)	ND (1.0)	ND (1.00)	ND (2)	ND (2)	ND (2)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (5)	ND (0.5)	ND (1.0)	ND (1.0)	ND (1.00)
ETHYLBENZENE	µg/L	700	ND (5)	ND (0.5)	2.1	ND (1.0)	ND (1.00)	ND (0.2)	ND (1)	ND (0.2)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (5)	ND (0.5)	ND (1.0)	ND (1.0)	ND (1.00)
ISOPROPYLBENZENE (CUMENE)	µg/L	3,500	ND (5)	ND (0.5)	1.7	0.51 J	ND (1.00)	ND (0.3)	ND (2)	ND (0.3)	ND (5.0)	ND (5.0)	ND (1.0)	ND (1.0)	ND (5)	ND (0.5)	1.4	0.95 J	ND (1.00)
METHYL TERTIARY BUTYL ETHER	µg/L	20	11	33[A]	185[A]	37.8[A]	1.18	2	2 J	2	2.0	150[A]	72.8[A]	11.5	18	2	19.1	26.5[A]	6.79
NAPHTHALENE	µg/L	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TERT-BUTYL ALCOHOL	µg/L	n/v	-	-	-	-	-	50	98 J	100	13 J	820	459	75.5	-	-	-	-	-
TOLUENE	µg/L	1,000	ND (5)	ND (0.5)	2.3	ND (1.0)	ND (1.00)	ND (0.2)	ND (1)	ND (0.2)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (5)	ND (0.5)	ND (1.0)	ND (1.0)	ND (1.00)
1,2,4-TRIMETHYLBENZENE	µg/L	530	-	ND (0.5)	0.96 J	ND (2.0)	ND (1.00)	ND (0.3)	ND (2)	ND (0.3)	ND (5.0)	ND (5.0)	ND (2.0)	ND (2.0)	-	ND (0.5)	0.28 J	ND (2.0)	ND (1.00)
1,3,5-TRIMETHYLBENZENE	µg/L	530	-	ND (0.5)	0.42 J	ND (2.0)	ND (1.00)	ND (0.3)	ND (2)	ND (0.3)	ND (5.0)	ND (5.0)	ND (2.0)	ND (2.0)	-	ND (0.5)	ND (2.0)	ND (2.0)	ND (1.00)
XYLENES, TOTAL (DIMETHYLBENZENE)	µg/L	10,000	ND (5)	ND (0.5)	2.4	ND (1.0)	ND (3.00)	ND (0.5)	ND (4)	ND (0.8)	ND (6.0)	ND (6.0)	ND (1.0)	ND (1.0)	8	ND (0.5)	ND (1.0)	0.25 J	ND (3.00)
Semi-Volatile Organic Compounds																			
ANTHRACENE	µg/L	66	-	0.9	ND (0.10)	ND (0.10)	ND (0.0500)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.51)	ND (0.53)	0.0752 J	0.255	-	11	ND (0.10)	ND (0.10)	ND (0.0500)
BENZO(A)ANTHRACENE	µg/L	3.9	-	0.1 J	ND (0.10)	ND (0.10)	ND (0.0500)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.51)	ND (0.53)	ND (0.040)	0.0378 J	-	ND (1)	ND (0.10)	ND (0.10)	ND (0.0500)
BENZO(A)PYRENE	µg/L	0.2	-	ND (0.09)	ND (0.10)	ND (0.10)	ND (0.0500)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.11)	ND (0.12)	ND (0.040)	ND (0.040)	-	1 J[A]	ND (0.10)	ND (0.10)	ND (0.0500)
BENZO(B)FLUORANTHENE	µg/L	1.2	-	0.1 J	ND (0.10)	ND (0.10)	ND (0.0500)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.51)	ND (0.53)	ND (0.040)	ND (0.040)	-	ND (1)	0.165	ND (0.10)	ND (0.0500)
BENZO(G,H,I)PERYLENE	µg/L	0.26	-	ND (0.09)	ND (0.10)	ND (0.10)	ND (0.0500)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.10)	ND (0.11)	ND (0.080)	ND (0.080)	-	ND (0.1)	ND (0.10)	ND (0.10)	ND (0.0500)
CHRYSENE	µg/L	1.9	ND (1)	0.1 J	ND (0.10)	ND (0.10)	ND (0.0500)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.51)	ND (0.53)	ND (0.080)	ND (0.080)	ND (1)	1 J	0.140	ND (0.10)	ND (0.0500)
FLUORENE	µg/L	1,900	24	0.5	0.947	ND (0.10)	ND (0.0500)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.51)	ND (0.53)	ND (0.080)	0.0804	51	4 J	1.91	3.11	0.161
NAPHTHALENE	µg/L	100	ND (10)	0.2 J	ND (0.10)	ND (0.10)	ND (0.250)	ND (0.1)	ND (0.1)	ND (0.1)	0.96	ND (0.53)	0.130	0.241	ND (10)	ND (1)	0.182	ND (0.10)	ND (0.250)
PHENANTHRENE	µg/L	1,100	ND (10)	0.4 J	0.544	ND (0.10)	ND (0.0500)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.51)	ND (0.53)	0.0645 J	0.246	24	2 J	0.815	1.01	ND (0.0500)
PYRENE	µg/L	130	ND (10)	2	1.27	0.734	0.316	0.4 J	0.4 J	0.3 J	0.37 J	0.32 J	0.125	0.262	ND (10)	9	1.04	0.448	0.223
Metals																			
LEAD, Dissolved	µg/L	5	-	0.11 J	1.9 J	ND (3.0)	ND (2.00)	ND (1.1)	0.080 J	0.083 J	ND (0.52)	ND (0.52)	ND (1.0)	ND (1.0)	-	0.46 J	ND (3.0)	1.4 J	ND (2.00)
LEAD, Total	µg/L	5	ND (2.1)	-	-	-	-	-	-	-	-	-	-	-	ND (2.1)	-	-	-	-

Table 3-4a
Groundwater Analytical Results Summary and Stabilized Purged Parameters, Unconfined Aquifer
Belmont Terminal
Philadelphia Refinery Operations, a series of Evergreen Resources Group, LLC

Sample Location			MW-40		MW-41			MW-43									MW-44			
Sample Date			26-Apr-05	2-Aug-18	28-May-14	11-Dec-14	2-Aug-18	2-May-05	5-Dec-06	19-Dec-07	14-Apr-11	7-Jun-11	19-Jul-12	30-May-14	18-Dec-14	27-Jul-18	22-Sep-05	6-Jun-11	29-May-14	17-Dec-14
Sample ID			MW40-042605	MW-40-20180802	MW-41	MW-41-20141211	MW-41-20180802_FLD	MW43-050205	MW-43	MW-43	MW-43	MW-43	MW43_071912	MW-43	MW-43-20141218	MW-43_20180727	MW-44_092205	MW-44	MW-44	MW-44-20141217
Sampling Company																				
Laboratory		MSC-PA	UNKNOWN LL	STANTEC ESC	STANTEC ACCUTEST	STANTEC ACCUTEST	STANTEC FLD	UNKNOWN LL	UNKNOWN UNKNOWN 1985-2013_Hist_GW	UNKNOWN UNKNOWN 1985-2013_Hist_GW	STANTEC LL	STANTEC LL	UNKNOWN LL	STANTEC ACCUTEST	STANTEC ACCUTEST	STANTEC ESC	UNKNOWN LL	STANTEC LL	STANTEC ACCUTEST	STANTEC ACCUTEST
Laboratory Work Order	Units	A	UNKNOWN	L1015848	JB67921	JB84134	2018_Belmont_Fld_GW	UNKNOWN			1242460	1250813	1323558	JB68176	JB84819	L1013922	961035	1250813	JB68176	JB84509
Field Parameters																				
DISSOLVED OXYGEN, FIELD MEASURED	mg/L	n/v	-	0	1.17	1.13	5.63	-	-	-	-	-	-	0.80	0.57	0	-	-	1.32	4.65
OXIDATION REDUCTION POTENTIAL, FIELD MEASURED	mV	n/v	-	41	-57	-37	118	-	-	-	-	-	-	-101	-90	59	-	-	-77	-31
pH, FIELD MEASURED	S.U.	n/v	-	6.28	6.51	6.58	7.07	-	-	-	-	-	-	6.71	7.45	6.08	-	-	6.39	6.03
SPECIFIC CONDUCTANCE FIELD	mS/cm	n/v	-	1.6	0.474	0.831	0.142	-	-	-	-	-	-	1.47	1.66	0.803	-	-	1.80	0.978
TEMPERATURE, FIELD MEASURED	deg c	n/v	-	21.1	17.21	16.83	23.54	-	-	-	-	-	-	18.12	NMNM	19.45	-	-	16.89	16.84
TOTAL DISSOLVED SOLIDS, FIELD MEASURED	mg/L	n/v	-	-	0.306	0.531	-	-	-	-	-	-	-	0.961	-	-	-	-	1.14	0.631
TURBIDITY	NTU	n/v	-	263	304	> 800	0	-	-	-	-	-	-	24.9	27.9	27.1	-	-	453	303
Volatile Organic Compounds																				
BENZENE	µg/L	5	**370**[A]	1.76 SL	**47.7**[A]	**169**[A]	-	**5,400**[A]	**2,300**[A]	**2,600**[A]	**800**[A]	**2,500**[A]	**970**[A]	**1,110**[A]	**681**[A]	**165**[A]	**1,400**[A]	**21,000**[A]	**13,000**[A]	**6,660**[A]
1,2-DIBROMOETHANE (EDB)	µg/L	0.05	-	-	-	-	-	-	ND (0.0097)	ND (0.0096)	*ND (10)*	*ND (20)*	-	-	-	-	-	*ND (20)*	-	-
1,2-DICHLOROETHANE (EDC)	µg/L	5	ND (5)	ND (1.00) SL	ND (1.0)	ND (1.0)	-	*ND (25)*	ND (5.0)	*ND (25)*	**21 J**[A]	*ND (20)*	ND (3)	*ND (6.0)*	ND (1.0)	ND (1.00)	-	*ND (20)*	*ND (15)*	*ND (15)*
ETHYLBENZENE	µg/L	700	150	ND (1.00) SL	3.7	5.3	-	**1,000**[A]	**1,300**[A]	**2,400**[A]	560	**3,100**[A]	**1,500**[A]	**3,200**[A]	63.2	191	ND (50)	**2,900**[A]	**1,600**[A]	**1,300**[A]
ISOPROPYLBENZENE (CUMENE)	µg/L	3,500	42	9.75 SL	3.3	6.1	-	ND (130)	140	150	120	150	130	185	100	46.2	ND (50)	100	66.7	46.6 J
METHYL TERTIARY BUTYL ETHER	µg/L	20	ND (3)	1.64 SL	4.8	15.1	-	ND (13)	13 J	-	7 J	**29 J**[A]	6	5.3 J	5.2	1.36	**82**[A]	**720**[A]	**623**[A]	ND (13)
NAPHTHALENE	µg/L	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ND (50)	-	-	-
TERT-BUTYL ALCOHOL	µg/L	n/v	-	91.6 SL	-	-	-	-	-	-	-	-	-	-	-	78.7	-	-	-	-
TOLUENE	µg/L	1,000	ND (25)	ND (1.00) SL	0.65 J	1.6	-	ND (130)	63	88	34 J	210	47	75.9	22.5	10.8	ND (50)	**6,000**[A]	**2,690**[A]	848
1,2,4-TRIMETHYLBENZENE	µg/L	530	-	ND (1.00) SL	14.3	12.5	-	-	-	-	-	**750**[A]	390	**802**[A]	14.4	51.6	-	**2,600**[A]	**2,130**[A]	**1,330**[A]
1,3,5-TRIMETHYLBENZENE	µg/L	530	-	ND (1.00) SL	21.9	27.1	-	-	-	-	-	250	100	200	6.7	14.6	-	**810**[A]	**624**[A]	403
XYLENES, TOTAL (DIMETHYLBENZENE)	µg/L	10,000	300	ND (3.00) SL	7.0	7.2	-	490	740	1,300	320	2,100	900	1,710	73.7	122	ND (50)	**15,000**[A]	8,950	6,750
Semi-Volatile Organic Compounds																				
ANTHRACENE	µg/L	66	-	ND (0.500) SL	1.25	3.03	-	-	-	-	-	-	10	10.2	2.20	2.28	-	-	2.54	4.94
BENZO(A)ANTHRACENE	µg/L	3.9	-	ND (0.500) SL	1.43	**4.21**[A]	-	-	-	-	-	-	0.6	0.622	0.701	0.471	-	-	1.08	**6.30**[A]
BENZO(A)PYRENE	µg/L	0.2	-	ND (0.116) SL	**1.70**[A]	**6.75**[A]	-	-	-	-	-	-	**0.4 J**[A]	**0.597**[A]	**0.555**[A]	**0.640**[A]	-	-	**0.634**[A]	**11.4**[A]
BENZO(B)FLUORANTHENE	µg/L	1.2	-	ND (0.500) SL	**3.89**[A]	**10.7**[A]	-	-	-	-	-	-	0.6	0.992	0.960	**1.22**[A]	-	-	1.11	**17.3**[A]
BENZO(G,H,I)PERYLENE	µg/L	0.26	-	ND (0.0227) SL	**1.81**[A]	**7.09**[A]	-	-	-	-	-	-	**0.3 J**[A]	**0.660**[A]	**0.482**[A]	**0.607**[A]	-	-	**0.429**[A]	**12.9**[A]
CHRYSENE	µg/L	1.9	*ND (10)*	ND (0.500) SL	**3.27**[A]	**11.6**[A]	-	*ND (10)*	**88.0**[A]	**8.0**[A]	-	1.1 J	0.8	0.895	0.964	0.941	-	**39**[A]	1.10	**16.8**[A]
FLUORENE	µg/L	1,900	110	10.4 SL	3.99	8.03	-	ND (99)	170	65	-	52	51	50.1	15.9	11.4	-	110	9.15	18.6
NAPHTHALENE	µg/L	100	**150**[A]	6.28 SL	5.33	3.03	-	**7,400**[A]	**7,500**[A]	**9,700**[A]	-	**7,100**[A]	**5,100**[A]	**7,070**[A]	**124**[A]	**847**[A]	-	**2,900**[A]	**346**[A]	**646**[A]
PHENANTHRENE	µg/L	1,100	150	11.8 SL	5.72	19.4	-	170	320	79	-	47	54	56.0	15.9	12.9	-	250	14.8	40.9
PYRENE	µg/L	130	ND (96)	0.998 SL	4.78	14.9	-	ND (99)	**190**[A]	24	-	4.3	4	3.51	1.91	2.03	-	*ND (270)*	3.14	23.4
Metals																				
LEAD, Dissolved	µg/L	5	-	ND (2.00) SL	**11.0**[A]	2.4 J	-	-	0.16 J	ND (0.047)	-	ND (0.08)	ND (0.034)	ND (3.0)	ND (3.0)	ND (2.00)	-	**27.4**[A]	**38.6**[A]	**7.8**[A]
LEAD, Total	µg/L	5	ND (2.1)	-	-	-	-	ND (1)	-	-	-	-	-	-	-	-	-	-	-	-

Table 3-4a
Groundwater Analytical Results Summary and Stabilized Purged Parameters, Unconfined Aquifer
Belmont Terminal
Philadelphia Refinery Operations, a series of Evergreen Resources Group, LLC

Sample Location			MW-44							OW-2				OW-13					
Sample Date			1-Aug-18	1-Jul-19	12-Nov-19	23-Apr-21	27-Oct-21	25-Apr-22	28-Mar-23	17-Jul-12	27-May-14	17-Dec-14	13-Aug-18	17-Jul-12	27-May-14	18-Dec-14	14-Aug-18	19-Oct-22	18-Nov-22
Sample ID			MW-44_20180801	MW-44_20190701	MW-44_20191112	MW-44_20210423	MW-44_20211027	MW-44_SL_20220425	MW-44_20230328	OW2_071712	OW-2	OW-2-20141217	OW-2-20180813	OW13_071712	OW-13	OW-13-20141218	OW_13_20180814	OW-13_20221019	OW-13_20221118
Sampling Company																			
Laboratory		MSC-PA	STANTEC ESC	STANTEC LL	STANTEC LL	STANTEC LANCASTER	STANTEC LANCASTER	STANTEC SGSA	STANTEC SGS	UNKNOWN LL	STANTEC ACCUTEST	STANTEC ACCUTEST	STANTEC ESC	UNKNOWN LL	STANTEC ACCUTEST	STANTEC ACCUTEST	STANTEC ESC	GEOSYNTEC PACE	GEOSYNTEC PACE
Laboratory Work Order	Units	A	L1014699	2052178	2074487	410-37313-1	410-61053-1	JD43905	JD63001	1323260	JB67921	JB84509	L1017387	1323260	JB67921	JB84819	L1017806	L1548740	L1560135
Field Parameters																			
DISSOLVED OXYGEN, FIELD MEASURED	mg/L	n/v	0	0.61	1.59	0.01	0	2.64 SL	0	-	0.70	0.68	0.31	-	1.04	0.41	0.39	-	-
OXIDATION REDUCTION POTENTIAL, FIELD MEASURED	mV	n/v	22	-30	11	-41	-102	-76 SL	-14	-	-105	-97	-98	-	-131	-112	-56	-	-
pH, FIELD MEASURED	S.U.	n/v	6.15	5.53	6.42	5.2	6.07	6.57 SL	5.67	-	6.80	7.02	6.93	-	6.93	7.31	6.67	-	-
SPECIFIC CONDUCTANCE FIELD	mS/cm	n/v	1.25	1.11	0.079	1.7	1.46	0.775 SL	1.9	-	2.23	2.51	2.83	-	1.93	1.9	1.88	-	-
TEMPERATURE, FIELD MEASURED	deg c	n/v	20.4	21.1	15.32	15.51	20.95	18.56 SL	18.41	-	19.22	19.53	21.58	-	18.99	18.29	20.62	-	-
TOTAL DISSOLVED SOLIDS, FIELD MEASURED	mg/L	n/v	-	0.722	0.046	-	-	-	-	-	1.47	-	-	-	1.19	-	-	-	-
TURBIDITY	NTU	n/v	89.3	30.7	174	102	38.9	296 SL	41.1	-	244	74.2	21.3	-	681	88.3	47.1	-	-
Volatile Organic Compounds																			
BENZENE	µg/L	5	8,870[A]	8,700[A]	3,000[A]	11,000[A]	12,000[A]	4,320 SL[A]	15,400[A]	1,700[A]	5,500[A]	26,700[A]	333[A]	75,000[A]	55,900[A]	72,700[A]	39,600[A]	42,700[A]	47,500[A]
1,2-DIBROMOETHANE (EDB)	µg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-DICHLOROETHANE (EDC)	µg/L	5	*ND (36.1)*	ND (2)	ND (2)	ND (3.0)	ND (3.0)	*ND (6.0) SL*	*ND (60)*	ND (5)	ND (3.0)	*ND (30)*	ND (1.00)	ND (0.5)	*ND (150)*	*ND (60)*	*ND (36.1)*	-	-
ETHYLBENZENE	µg/L	700	1,740[A]	990[A]	500	1,400[A]	1,300[A]	1,060 SL[A]	1,600[A]	25	204	531	10.3	910[A]	987[A]	1,310[A]	709[A]	1,290[A]	1,420[A]
ISOPROPYLBENZENE (CUMENE)	µg/L	3,500	ND (100)	43 J	22 J	55	54	57.7 SL	ND (100)	39	40.7	33.0 J	20.7	43 J	ND (500)	80.2 J	ND (100)	-	-
METHYL TERTIARY BUTYL ETHER	µg/L	20	345[A]	120[A]	50[A]	160[A]	480[A]	99.6 SL[A]	645[A]	650[A]	117[A]	153[A]	2.34	79[A]	*ND (130)*	171 J[A]	*ND (36.7)*	ND (10.1)	*ND (101)*
NAPHTHALENE	µg/L	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TERT-BUTYL ALCOHOL	µg/L	n/v	3,500	740	350	1,400	9,200	935 SL	6,430	-	-	-	-	-	-	-	-	-	-
TOLUENE	µg/L	1,000	1,330[A]	220	320	390	200	216 SL	155	140	1,080[A]	4,520[A]	3.16	13,000[A]	13,400[A]	20,200[A]	8,280[A]	11,500[A]	11,300[A]
1,2,4-TRIMETHYLBENZENE	µg/L	530	1,700[A]	1,200[A]	690[A]	1,500[A]	1,300[A]	1,570 SL[A]	1,660[A]	750[A]	946[A]	875[A]	9.95	1,300[A]	2,020[A]	1,740[A]	913[A]	-	-
1,3,5-TRIMETHYLBENZENE	µg/L	530	496	360	220	450	410	451 SL	477	290	368	319	ND (1.00)	440	680 J[A]	548[A]	295	-	-
XYLENES, TOTAL (DIMETHYLBENZENE)	µg/L	10,000	10,500[A]	5,300	3,800	7,900	5,200	6,830 SL	8,660	2,800	3,120	5,080	22.9	10,000	12,400[A]	13,500[A]	7,970	11,900[A]	11,600[A]
Semi-Volatile Organic Compounds																			
ANTHRACENE	µg/L	66	1.15	0.7	2	1.0	0.88	5.20 SL	1.46	0.9	0.273	0.193	0.213	1	1.54	0.242	0.112	-	-
BENZO(A)ANTHRACENE	µg/L	3.9	ND (0.500)	0.7	3	1.9	0.33 J	7.46 SL[A]	1.92	0.6	0.109	0.164	ND (0.0500)	0.8	2.14	0.119	ND (0.100)	-	-
BENZO(A)PYRENE	µg/L	0.2	ND (0.116)	1[A]	4[A]	3.0[A]	0.43 J[A]	9.38 SL[A]	2.04[A]	0.7[A]	0.138	0.181	ND (0.0500)	0.7[A]	1.39[A]	ND (0.10)	ND (0.100)	-	-
BENZO(B)FLUORANTHENE	µg/L	1.2	0.846	2[A]	8[A]	4.8[A]	0.73	17.3 SL[A]	4.48[A]	0.9	0.171	0.268	ND (0.0500)	1	3.27[A]	0.144	ND (0.100)	-	-
BENZO(G,H,I)PERYLENE	µg/L	0.26	ND (0.0227)	0.9[A]	4[A]	2.0[A]	0.42 J[A]	8.19 SL[A]	2.12[A]	0.8[A]	0.226	0.214	ND (0.0500)	0.6[A]	1.92[A]	ND (0.10)	ND (0.100)	-	-
CHRYSENE	µg/L	1.9	0.748	2[A]	7[A]	4.5[A]	0.57	14.9 SL[A]	3.16[A]	0.7	0.144	0.219	ND (0.0500)	1	2.24[A]	0.132	ND (0.100)	-	-
FLUORENE	µg/L	1,900	7.07	4	6	4.6	5.3	14.3 SL	3.85	4	1.57	1.42	0.437	3	4.55	1.17	0.724	-	-
NAPHTHALENE	µg/L	100	594[A]	270[A]	120[A]	330[A]	320[A]	565 SL[A]	230[A]	23	27.6	77.1	0.870	370[A]	333[A]	200[A]	165[A]	-	-
PHENANTHRENE	µg/L	1,100	8.22	6	12	8.7	6.5	36.8 SL	9.88	5	1.44	1.33	0.0714	6	8.89	1.39	0.641	-	-
PYRENE	µg/L	130	1.85	3	9	6.5	1.3	22.9 SL	6.36	3	0.444	0.480	0.331	6	7.67	0.484	0.160	-	-
Metals																			
LEAD, Dissolved	µg/L	5	16.0[A]	4.5	7.1[A]	5.4[A]	4.0	10.8 SL[A]	8.8[A]	0.86 J	ND (3.0)	ND (3.0)	ND (2.00)	4.6	2.5 J	ND (3.0)	2.16	-	-
LEAD, Total	µg/L	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 3-4a
Groundwater Analytical Results Summary and Stabilized Purged Parameters, Unconfined Aquifer
Belmont Terminal
Philadelphia Refinery Operations, a series of Evergreen Resources Group, LLC

Sample Location			OW-14						OW-16		OW-17				OW-18			
Sample Date			15-Oct-04	25-Apr-05	13-Jul-12	27-May-14	8-Dec-14	26-Jul-18	17-Jul-12	15-Aug-18	18-Jul-12	27-May-14	10-Dec-14	30-Jul-18	26-Jul-12	29-May-14	17-Dec-14	1-Aug-18
Sample ID			OW-14	OW14-042505	OW-14_071312	OW-14	OW-14-20141208	OW-14_20180726	OW16_071712	OW-16_20180815	OW-17_071812	OW-17	OW-17-20141210	OW-17_20180730	OW-18_072612	OW-18	OW-18-20141217	OW-18_20180801
Sampling Company			UNKNOWN	UNKNOWN	UNKNOWN	STANTEC	STANTEC	STANTEC	UNKNOWN	STANTEC	UNKNOWN	STANTEC	STANTEC	STANTEC	UNKNOWN	STANTEC	STANTEC	STANTEC
Laboratory		MSC-PA	UNKNOWN	LL	LL	ACCUTEST	ACCUTEST	ESC	LL	ESC	LL	ACCUTEST	ACCUTEST	ESC	LL	ACCUTEST	ACCUTEST	ESC
Laboratory Work Order	Units	A	1985-2013_Hist_GW	UNKNOWN	1321953	JB67921	JB83579	L1013275	1323260	L1018273	1323260	JB67921	JB83815	L1013922	1324781	JB68176	JB84509	L1014699
Field Parameters																		
DISSOLVED OXYGEN, FIELD MEASURED	mg/L	n/v	-	-	-	0.82	9.82	0	-	0	-	0.89	2.01	0	-	1.90	1.42	0
OXIDATION REDUCTION POTENTIAL, FIELD MEASURED	mV	n/v	-	-	-	-86	-90	-12	-	-17	-	-33	-71	-2	-	-116	-140	-151
pH, FIELD MEASURED	S.U.	n/v	-	-	-	6.61	6.81	6.62	-	6.62	-	5.68	6.51	6.46	-	6.41	6.88	6.76
SPECIFIC CONDUCTANCE FIELD	mS/cm	n/v	-	-	-	1.15	1.88	2.45	-	3.99	-	1.49	0.805	2.66	-	1.81	1.47	1.89
TEMPERATURE, FIELD MEASURED	deg c	n/v	-	-	-	19.59	16.29	20.31	-	19.84	-	20.17	15.72	21.43	-	18.09	15.81	19.33
TOTAL DISSOLVED SOLIDS, FIELD MEASURED	mg/L	n/v	-	-	-	0.719	1.2	-	-	-	-	0.943	0.403	-	-	1.16	0.972	-
TURBIDITY	NTU	n/v	-	-	-	79.9	> 800	59.8	-	399	-	63.4	363	15.8	-	815	90.1	98
Volatile Organic Compounds																		
BENZENE	µg/L	5	72[A]	160[A]	110[A]	2.4	ND (0.50)	ND (1.00)	18,000[A]	14,600 SL[A]	26[A]	35.5[A]	10.9[A]	*ND (16.6)*	4,700[A]	2,150[A]	2,200[A]	445[A]
1,2-DIBROMOETHANE (EDB)	µg/L	0.05	ND (0.020)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-DICHLOROETHANE (EDC)	µg/L	5	ND (5.0)	ND (5)	ND (0.5)	ND (1.0)	ND (1.0)	ND (1.00)	ND (0.5)	*ND (361) SL*	ND (3)	ND (1.0)	ND (1.0)	*ND (18.0)*	ND (5)	*ND (6.0)*	*ND (6.0)*	*ND (90.2)*
ETHYLBENZENE	µg/L	700	ND (5.0)	ND (5)	2	0.77 J	ND (1.0)	ND (1.00)	1,800[A]	3,340 SL[A]	14	10.3	1.5	ND (50.0)	3,100[A]	2,640[A]	1,450[A]	1,010[A]
ISOPROPYLBENZENE (CUMENE)	µg/L	3,500	ND (5.0)	ND (5)	38	28.1	3.2	ND (1.00)	ND (250)	ND (1,000) SL	35	64.1	25.5	81.0	140	145	74.3	ND (250)
METHYL TERTIARY BUTYL ETHER	µg/L	20	16	ND (5)	8	1.6	0.80 J	ND (1.00)	590,000[A]	156,000 SL[A]	140[A]	414[A]	518[A]	54.8[A]	240[A]	71.0[A]	ND (20)	*ND (91.8)*
NAPHTHALENE	µg/L	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TERT-BUTYL ALCOHOL	µg/L	n/v	-	-	-	-	-	ND (5.00)	-	-	-	-	-	56,400	-	-	-	12,400
TOLUENE	µg/L	1,000	ND (5.0)	5	3	1.1	ND (1.0)	ND (1.00)	40,000[A]	37,000 SL[A]	3 J	2.2	1.2	ND (50.0)	3,100[A]	183	28.2	ND (250)
1,2,4-TRIMETHYLBENZENE	µg/L	530	-	-	1 J	ND (2.0)	ND (2.0)	ND (1.00)	4,200[A]	8,400 SL[A]	22	5.0	5.5	ND (50.0)	3,300[A]	3,100[A]	1,670[A]	807[A]
1,3,5-TRIMETHYLBENZENE	µg/L	530	-	-	ND (0.5)	ND (2.0)	ND (2.0)	ND (1.00)	1,400[A]	3,010 SL[A]	3 J	1.9 J	3.5	ND (50.0)	1,200[A]	848[A]	312	ND (250)
XYLENES, TOTAL (DIMETHYLBENZENE)	µg/L	10,000	ND (10)	8	5	1.6	ND (1.0)	ND (3.00)	31,000[A]	36,600 SL[A]	20	10.6	14.2	ND (150)	18,000[A]	9,820	3,020	1,170
Semi-Volatile Organic Compounds																		
ANTHRACENE	µg/L	66	-	-	0.1 J	ND (0.10)	ND (0.10)	ND (0.0500)	18	6.54 SL	57	2.89	6.68	8.25	10	1.75	1.69	7.45
BENZO(A)ANTHRACENE	µg/L	3.9	-	-	0.1 J	ND (0.10)	ND (0.10)	ND (0.0500)	11[A]	1.72 SL	26[A]	0.491	2.89	1.42	6 J[A]	0.544	0.533	2.37
BENZO(A)PYRENE	µg/L	0.2	-	-	0.1 J	ND (0.10)	ND (0.10)	ND (0.0500)	7[A]	0.942 SL[A]	35[A]	0.493[A]	3.25[A]	1.10[A]	5 J[A]	0.264[A]	0.210[A]	1.38[A]
BENZO(B)FLUORANTHENE	µg/L	1.2	-	-	0.2 J	ND (0.10)	ND (0.10)	0.0899	9[A]	1.23 SL[A]	51[A]	0.727	4.43[A]	1.51[A]	7 J[A]	0.441	0.277	1.69[A]
BENZO(G,H,I)PERYLENE	µg/L	0.26	-	-	0.1 J	ND (0.10)	ND (0.10)	0.0617	5 J[A]	0.772 SL[A]	30[A]	0.400[A]	2.79[A]	0.571[A]	4 J[A]	0.161	0.136	0.657[A]
CHRYSENE	µg/L	1.9	ND (0.14)	ND (1)	0.2 J	ND (0.10)	ND (0.10)	0.0591	11[A]	1.47 SL	40[A]	0.682	3.53[A]	1.51	7 J[A]	0.528	0.444	2.64[A]
FLUORENE	µg/L	1,900	ND (10)	ND (10)	1	0.198	ND (0.10)	ND (0.0500)	55	21.5 SL	120	11.3	20.8	28.1	22	4.32	5.08	17.0
NAPHTHALENE	µg/L	100	27	10	1	ND (0.10)	ND (0.10)	ND (0.250)	2,700[A]	816 SL[A]	ND (1)	38.0	4.49	82.2	580[A]	255[A]	700[A]	659[A]
PHENANTHRENE	µg/L	1,100	ND (10)	ND (10)	0.5	ND (0.10)	0.110	ND (0.0500)	86	19.8 SL	200	9.86	30.6	36.8	41	7.45	6.59	32.6
PYRENE	µg/L	130	ND (10)	ND (10)	0.8	ND (0.10)	ND (0.10)	0.132	42	10.5 SL	170[A]	2.62	10.1	7.81	18	1.65	1.72	8.63
Metals																		
LEAD, Dissolved	µg/L	5	ND (5.0)	-	0.036 J	2.2 J	3.4	ND (2.00)	2.7	ND (2.00) SL	0.78 J	10.1[A]	1.8 J	2.31	1.9	7.8[A]	ND (3.0)	2.52 B
LEAD, Total	µg/L	5	-	ND (2.1)	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 3-4a
Groundwater Analytical Results Summary and Stabilized Purged Parameters, Unconfined Aquifer
Belmont Terminal
Philadelphia Refinery Operations, a series of Evergreen Resources Group, LLC

Sample Location			OW-19									OW-20							
Sample Date			26-Jul-12	28-May-14	18-Dec-14	15-Aug-18	1-Jul-19	20-Nov-19	29-Oct-21	1-Nov-21	22-Mar-23	17-Jul-12	27-May-14	17-Dec-14	3-Aug-18	23-Apr-21	29-Oct-21	30-Mar-22	30-Mar-23
Sample ID			OW-19_072612	OW-19	OW-19-20141218	OW-19_20180815	OW-19_20190701	OW-19-SL_20191120	OW-19_20211029	OW-19_20211101	OW-19_20230322	OW20_071712	OW-20	OW-20-20141217	OW-20_20180803	OW-20_20210423	OW-20_20211029	OW-20_20220330	OW-20_20230330
Sampling Company																			
Laboratory		MSC-PA	UNKNOWN LL	STANTEC ACCUTEST	STANTEC ACCUTEST	STANTEC ESC	STANTEC LL	STANTEC LL	STANTEC LANCASTER	STANTEC LANCASTER	STANTEC SGS	UNKNOWN LL	STANTEC ACCUTEST	STANTEC ACCUTEST	STANTEC ESC	STANTEC LANCASTER	STANTEC LANCASTER	STANTEC SGSA	STANTEC SGS
Laboratory Work Order	Units	A	1324781	JB67921	JB84819	L1018273	2052178	2075960	410-61302-1	410-61414-1	JD62757	1323260	JB67921	JB84509	L1015766	410-37313-1	410-61302-1	JD42387	JD63001
Field Parameters																			
DISSOLVED OXYGEN, FIELD MEASURED	mg/L	n/v	-	0.48	0.53	0.23	0	3.68 SL	0.21	-	0	-	3.21	0.35	0	0.46	0.91	0.11	0
OXIDATION REDUCTION POTENTIAL, FIELD MEASURED	mV	n/v	-	-121	-68	20.2	-127	-98 SL	-149	-	-78	-	-96	-82	-54	-125	-160	-131	-86
pH, FIELD MEASURED	S.U.	n/v	-	6.62	7.26	6.45	6.58	6.50 SL	6.87	-	6.08	-	6.68	7.41	6.81	5.85	6.69	6.31	5.97
SPECIFIC CONDUCTANCE FIELD	mS/cm	n/v	-	4.10	4.63	5.29	4.32	3.58 SL	5.31	-	2.95	-	3.73	4.55	4.07	5.8	6.88	5.31	4.93
TEMPERATURE, FIELD MEASURED	deg c	n/v	-	18.85	15.55	19.91	23.57	15.73 SL	20.18	-	17.82	-	19.83	18.69	20.98	18.29	17.07	14.01	16.55
TOTAL DISSOLVED SOLIDS, FIELD MEASURED	mg/L	n/v	-	2.63	-	-	2.77	2.29 SL	-	-	-	-	2.41	-	-	-	-	-	-
TURBIDITY	NTU	n/v	-	> 1,000	363	76.6	186	468 SL	1,000	-	851	-	484	389	1,000	0	961	562	138
Volatile Organic Compounds																			
BENZENE	µg/L	5	12,000[A]	20,900[A]	20,600[A]	18,000[A]	8,600[A]	6,300 SL[A]	7,300[A]	-	6,130[A]	35,000[A]	66,300[A]	82,900[A]	22,900[A]	19,000[A]	25,000[A]	20,000[A]	16,700[A]
1,2-DIBROMOETHANE (EDB)	µg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-DICHLOROETHANE (EDC)	µg/L	5	32 J[A]	*ND (15)*	*ND (60)*	*ND (1,800)*	ND (2)	ND (2) SL	*ND (15)*	-	*ND (6.0)*	250[A]	*ND (150)*	445 J[A]	*ND (180)*	*ND (300)*	150[A]	*ND (60)*	137[A]
ETHYLBENZENE	µg/L	700	2,700[A]	4,000[A]	4,750[A]	13,100[A]	1,400[A]	440 SL	3,500[A]	-	1,720[A]	790[A]	542	1,240[A]	3,460[A]	1,200[A]	890[A]	946[A]	1,200[A]
ISOPROPYLBENZENE (CUMENE)	µg/L	3,500	150	156	329	*ND (5,000)*	68 J	24 J SL	400	-	117	66 J	ND (500)	ND (500)	548	1,600 J	67 J	72.8 J	89.2
METHYL TERTIARY BUTYL ETHER	µg/L	20	420,000[A]	184,000[A]	418,000[A]	172,000[A]	63,000[A]	13,000 SL[A]	22,000[A]	-	3,800[A]	29,000[A]	27,300[A]	37,800[A]	5,250[A]	2,700[A]	4,200[A]	2,790[A]	103[A]
NAPHTHALENE	µg/L	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TERT-BUTYL ALCOHOL	µg/L	n/v	-	-	-	-	40,000	15,000 SL	36,000	-	14,200	-	-	-	17,500	20,000 J	19,000	34,800	30,300
TOLUENE	µg/L	1,000	8,600[A]	39,300[A]	33,500[A]	43,500[A]	11,000[A]	5,500 SL[A]	18,000[A]	-	8,330[A]	10,000[A]	10,200[A]	14,600[A]	16,100[A]	10,000[A]	7,800[A]	9,730[A]	9,470[A]
1,2,4-TRIMETHYLBENZENE	µg/L	530	4,000[A]	4,060[A]	7,890[A]	33,600[A]	1,900[A]	1,400 SL[A]	22,000[A]	-	1,660[A]	2,100[A]	1,890[A]	2,670[A]	12,500[A]	2,000 J[A]	1,800[A]	1,830[A]	2,230[A]
1,3,5-TRIMETHYLBENZENE	µg/L	530	1,400[A]	1,200[A]	2,590[A]	11,200[A]	630[A]	470 SL	4,800[A]	-	1,330[A]	700[A]	659 J[A]	924 J[A]	4,260[A]	720 J[A]	660[A]	678[A]	765[A]
XYLENES, TOTAL (DIMETHYLBENZENE)	µg/L	10,000	18,000[A]	26,400[A]	31,600[A]	87,600[A]	9,800	8,900 SL	50,000[A]	-	11,600[A]	15,000[A]	14,200[A]	19,600[A]	41,800[A]	15,000[A]	11,000[A]	12,700[A]	15,300[A]
Semi-Volatile Organic Compounds																			
ANTHRACENE	µg/L	66	200[A]	2.22	2.87	60.4	26	2 SL	-	6.2	23.3	6	0.945	9.33	28.0	36	7.0	2.59	6.96
BENZO(A)ANTHRACENE	µg/L	3.9	140[A]	0.946	1.80	27.5[A]	18[A]	2 SL	-	7.7[A]	31.8[A]	4 J[A]	0.468	4.97[A]	16.3[A]	25[A]	4.1 J[A]	1.98	4.72[A]
BENZO(A)PYRENE	µg/L	0.2	110[A]	0.506[A]	1.19[A]	18.1[A]	17[A]	1 SL[A]	-	5.6[A]	22.8[A]	2 J[A]	0.339[A]	2.33[A]	9.62[A]	17[A]	3.6 J[A]	0.812[A]	2.49[A]
BENZO(B)FLUORANTHENE	µg/L	1.2	140[A]	0.705	1.53[A]	23.1[A]	14[A]	1 SL	-	6.4[A]	31.2[A]	3 J[A]	0.450	2.92[A]	11.6[A]	21[A]	3.1 J[A]	1.20	3.48[A]
BENZO(G,H,I)PERYLENE	µg/L	0.26	62[A]	0.265[A]	0.802[A]	10.7[A]	7[A]	ND (0.1) SL	-	2.8 J[A]	18.0[A]	2 J[A]	0.256	1.42[A]	5.53[A]	6.8[A]	1.6 J[A]	0.557[A]	1.82[A]
CHRYSENE	µg/L	1.9	130[A]	0.866	1.87	27.4[A]	18[A]	2 SL[A]	-	7.9[A]	31.9[A]	4 J[A]	0.439	4.95[A]	16.2[A]	24[A]	3.7 J[A]	1.69	4.12[A]
FLUORENE	µg/L	1,900	450	4.29	11.2	106	33	4 SL	-	18	43.3	18	2.68	21.2	38.6	57	11	2.15	9.01
NAPHTHALENE	µg/L	100	9,500[A]	765[A]	562[A]	3,120[A]	600[A]	160 SL[A]	-	370[A]	795[A]	530[A]	177[A]	722[A]	549[A]	1,300[A]	290[A]	187 B[A]	265[A]
PHENANTHRENE	µg/L	1,100	890	7.62	20.4	215	85	9 SL	-	28	97.9	32	3.32	46.1	109	130	26	9.60	24.6
PYRENE	µg/L	130	440[A]	3.02	4.60	86.2	54	4 SL	-	21	90.5	11	1.81	15.2	52.1	82	17	6.80	12.8
Metals																			
LEAD, Dissolved	µg/L	5	1.2	3.1	7.7[A]	ND (2.16)	ND (1.1)	4.0 SL	-	11[A]	1.2	6.6[A]	3.9	3.3	4.46 B	2.8	25[A]	12.8[A]	ND (1.0)
LEAD, Total	µg/L	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 3-4a
Groundwater Analytical Results Summary and Stabilized Purged Parameters, Unconfined Aquifer
Belmont Terminal
Philadelphia Refinery Operations, a series of Evergreen Resources Group, LLC

Sample Location			PGW-MW-11S	PGW-MW-12S	PZ-400		RW-1								RW-4		RW-6	
Sample Date			3-Mar-16	3-Mar-16	12-Jul-12	8-Dec-14	9-May-00	26-Jul-12	28-May-14	19-Dec-14	14-Aug-18	26-Mar-21	27-Oct-21	28-Mar-23	9-May-00	9-May-00	3-May-07	13-Jul-12
Sample ID			MW-11S	MW-12S	PZ-400_071212	PZ-400-20141208	RW-1	RW1_072612	RW-1	RW-1-20141219	RW_1_20180814	RW-1-20210326	RW-1_20211027	RW-1_20230328	RW-4	RW-6	RW-6_050307	RW6_071312
Sampling Company			LEIDOS	LEIDOS	UNKNOWN	STANTEC	UNKNOWN	UNKNOWN	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	UNKNOWN	UNKNOWN	UNKNOWN	UNKNOWN
Laboratory		MSC-PA	LL	LL	LL	ACCUTEST	UNKNOWN	LL	ACCUTEST	ACCUTEST	ESC	LANCASTER	LANCASTER	SGS	UNKNOWN	UNKNOWN	PITB	LL
Laboratory Work Order	Units	A	1637604	1637604	1321953	JB83579	2000_Belmont_Hist_GW	1324781	JB67921	JB84819	L1017806	410-33879-1	410-61053-1	JD63001	2000_Belmont_Hist_GW	2000_Belmont_Hist_GW	73491	1321953
Field Parameters																		
DISSOLVED OXYGEN, FIELD MEASURED	mg/L	n/v	-	-	-	1.6	-	-	0.45	0.4	1.79	0.52	7.78	0	-	-	-	-
OXIDATION REDUCTION POTENTIAL, FIELD MEASURED	mV	n/v	-	-	-	-84	-	-	-103	-31	-32	-116	-91	-89	-	-	-	-
pH, FIELD MEASURED	S.U.	n/v	-	-	-	6.88	-	-	6.51	7.17	6.66	5.96	6.08	5.19	-	-	-	-
SPECIFIC CONDUCTANCE FIELD	mS/cm	n/v	-	-	-	1.8	-	-	2.46	3.38	3.65	3.6	3.16	2.67	-	-	-	-
TEMPERATURE, FIELD MEASURED	deg c	n/v	-	-	-	15.63	-	-	18.01	17.9	20.69	23.46	21.29	18.6	-	-	-	-
TOTAL DISSOLVED SOLIDS, FIELD MEASURED	mg/L	n/v	-	-	-	1.15	-	-	1.73	-	-	-	-	-	-	-	-	-
TURBIDITY	NTU	n/v	-	-	-	229	-	-	34.8	115	32.1	5	74.1	0	-	-	-	-
Volatile Organic Compounds																		
BENZENE	µg/L	5	590[A]	2,800[A]	5	2.7	20,000[A]	5,200[A]	5,720[A]	9,170[A]	543[A]	230[A]	250[A]	67.0[A]	17,000[A]	12,000[A]	ND (5)	2
1,2-DIBROMOETHANE (EDB)	µg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-DICHLOROETHANE (EDC)	µg/L	5	ND (2)	ND (5)	ND (3)	ND (1.0)	-	ND (0.5)	*ND (150)*	*ND (15)*	*ND (36.1)*	ND (5.0)	ND (5.0)	*ND (6.0)*	-	-	ND (5)	ND (0.5)
ETHYLBENZENE	µg/L	700	480	3,000[A]	8	0.84 J	26,000[A]	790[A]	979[A]	1,160[A]	121	28	68	23.3	6,500[A]	ND (100)	ND (5)	ND (0.5)
ISOPROPYLBENZENE (CUMENE)	µg/L	3,500	-	-	14	19.9	-	150	ND (500)	119	ND (100)	61	89	101	-	-	ND (5)	0.6 J
METHYL TERTIARY BUTYL ETHER	µg/L	20	-	-	9	27.1[A]	2,000,000[A]	190,000[A]	223,000[A]	282,000[A]	11,200[A]	11,000[A]	6,500[A]	3,120[A]	6,000,000[A]	9,600[A]	ND (5)	ND (0.5)
NAPHTHALENE	µg/L	100	-	-	-	-	-	-	-	-	-	99	-	-	-	-	-	-
TERT-BUTYL ALCOHOL	µg/L	n/v	-	-	-	-	-	-	-	-	-	48,000	26,000	12,100	-	-	-	-
TOLUENE	µg/L	1,000	7	38	ND (3)	1.1	130,000[A]	150	2,110[A]	4,400[A]	260	27	180	30.5	73,000[A]	670	ND (5)	ND (0.5)
1,2,4-TRIMETHYLBENZENE	µg/L	530	-	-	25	2.0	-	4,000[A]	2,030[A]	2,150[A]	1,480[A]	810[A]	890[A]	498	-	-	-	3
1,3,5-TRIMETHYLBENZENE	µg/L	530	-	-	27	6.5	-	1,400[A]	606 J[A]	660[A]	357	200	210	49.7	-	-	-	0.8 J
XYLENES, TOTAL (DIMETHYLBENZENE)	µg/L	10,000	45	2,200	7	2.5	176,000[A]	9,600	7,630	9,820	3,990	1,100	1,400	298	39,000[A]	230	ND (5)	10
Semi-Volatile Organic Compounds																		
ANTHRACENE	µg/L	66	2	17	9	1.11	6	38	5.35	5.83	3.34	2.3	4.9 IQ	2.08	ND (1)	ND (1)	-	ND (0.1)
BENZO(A)ANTHRACENE	µg/L	3.9	0.3 J	7[A]	3 J	0.748	5[A]	14[A]	1.69	2.89	0.279	0.32 J	1.5 IQ	0.324	ND (1)	ND (1)	-	ND (0.1)
BENZO(A)PYRENE	µg/L	0.2	0.2 J	7[A]	1 J[A]	0.238[A]	2[A]	8[A]	0.810[A]	1.27[A]	0.128	0.17 J	0.72 IQ[A]	0.166	*ND (2)*	*ND (2)*	-	ND (0.1)
BENZO(B)FLUORANTHENE	µg/L	1.2	0.3 J	7[A]	2 J[A]	0.336	*ND (3)*	10[A]	0.953	1.66[A]	0.155	0.19 J	0.76 IQ	0.175	*ND (3)*	*ND (3)*	-	ND (0.1)
BENZO(G,H,I)PERYLENE	µg/L	0.26	ND (0.1)	3[A]	1 J[A]	0.159	4 J[A]	3[A]	0.400[A]	0.740[A]	ND (0.100)	ND (0.10)	0.38 J IQ[A]	0.112	*ND (5)*	*ND (5)*	-	ND (0.1)
CHRYSENE	µg/L	1.9	0.4 J	9[A]	4 J[A]	0.644	4[A]	15[A]	1.58	2.33[A]	0.232	0.35 J	1.4 IQ	0.304	ND (1)	ND (1)	ND (1)	ND (0.1)
FLUORENE	µg/L	1,900	23	67	21	2.39	35	81	18.0	19.9	21.5	12	16 IQ	9.97	2	ND (2)	ND (1)	ND (0.1)
NAPHTHALENE	µg/L	100	2,600[A]	10,000[A]	13	ND (0.10)	2,800[A]	800[A]	550[A]	543[A]	303[A]	61	79 IQ	18.9	230[A]	8	ND (1)	0.4 J
PHENANTHRENE	µg/L	1,100	7	77	31	1.23	63	110	20.8	22.6	15.7	9.9	18 IQ	8.81	4	ND (2)	ND (1)	ND (0.1)
PYRENE	µg/L	130	2	16	15	2.02	22	69	8.27	11.9	2.44	2.5	7.2 IQ	1.99	2 J	ND (2)	ND (1)	0.1 J
Metals																		
LEAD, Dissolved	µg/L	5	ND (0.0150)	ND (0.0150)	2.5	13.0[A]	-	2.5	2.6 J	ND (3.0)	ND (2.00)	0.84	1.1	ND (1.0)	-	-	ND (0.8)	ND (0.034)
LEAD, Total	µg/L	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 3-4a
Groundwater Analytical Results Summary and Stabilized Purged Parameters, Unconfined Aquifer
Belmont Terminal
Philadelphia Refinery Operations, a series of Evergreen Resources Group, LLC

Sample Location			RW-6			RW-7					RW-15					RW-21			RW-22
Sample Date			27-May-14	11-Dec-14	13-Aug-18	9-May-00	17-Jul-12	27-May-14	19-Dec-14	14-Aug-18	9-May-00	11-Jul-12	29-May-14	17-Dec-14	1-Aug-18	30-May-14	15-Dec-14	17-Aug-18	30-May-14
Sample ID			RW-6	RW-6-20141211	RW-6-20180813	RW-7	RW7_071712	RW-7	RW-7-20141219	RW_7_20180814	RW-15	RW15_071112	RW-15	RW-15-20141217	RW-15_20180801	RW-21	RW-21-20141215	RW-21_20180817	RW-22
Sampling Company																			
Laboratory		MSC-PA	STANTEC ACCUTEST	STANTEC ACCUTEST	STANTEC ESC	UNKNOWN UNKNOWN 2000_Belmont_Hist_GW	UNKNOWN LL	STANTEC ACCUTEST	STANTEC ACCUTEST	STANTEC ESC	UNKNOWN UNKNOWN 2000_Belmont_Hist_GW	UNKNOWN LL	STANTEC ACCUTEST	STANTEC ACCUTEST	STANTEC ESC	STANTEC ACCUTEST	STANTEC ACCUTEST	STANTEC ESC	STANTEC ACCUTEST
Laboratory Work Order	Units	A	JB67921	JB84134	L1017387		1323260	JB67921	JB84819	L1017806		1321953	JB68176	JB84509	L1014699	JB68176	JB84215	L1018964	JB68176
Field Parameters																			
DISSOLVED OXYGEN, FIELD MEASURED	mg/L	n/v	0.66	1.77	0.28	-	-	1.91	0.39	0	-	-	1.82	1.66	0	0.66	1.44	3.21	0.80
OXIDATION REDUCTION POTENTIAL, FIELD MEASURED	mV	n/v	-104	-74	7	-	-	-99	-80	-65	-	-	-108	-110	-149	-68	-63	20	146
pH, FIELD MEASURED	S.U.	n/v	6.93	6.71	6.56	-	-	6.21	7.39	6.65	-	-	6.64	6.82	6.52	6.70	6.52	6.00	6.35
SPECIFIC CONDUCTANCE FIELD	mS/cm	n/v	1.33	1.91	1.63	-	-	4.83	3.25	2.81	-	-	1.42	1.78	1.7	1.30	1.48	1.78	1.74
TEMPERATURE, FIELD MEASURED	deg c	n/v	20.71	16.1	19.44	-	-	19.58	19.39	19.35	-	-	18.15	17.1	18.99	18.79	17.01	18.86	18.68
TOTAL DISSOLVED SOLIDS, FIELD MEASURED	mg/L	n/v	0.814	1.22	-	-	-	3.03	-	-	-	-	0.906	1.18	-	0.840	0.955	-	1.11
TURBIDITY	NTU	n/v	117	64.8	36.3	-	-	39.4	94	150	-	-	27.8	40	112	58.3	84.6	74.3	48.0
Volatile Organic Compounds																			
BENZENE	µg/L	5	**9.7**[A]	**18.7**[A]	ND (1.00)	**4,900**[A]	**250**[A]	**16,000**[A]	**13,200**[A]	**1,180**[A]	**14,000**[A]	**40**[A]	**1,510**[A]	**2,260**[A]	*ND (82.8)*	**183**[A]	**111**[A]	**454 SL**[A]	**1,670**[A]
1,2-DIBROMOETHANE (EDB)	µg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-DICHLOROETHANE (EDC)	µg/L	5	ND (1.0)	ND (1.0)	ND (1.00)	-	ND (3)	*ND (30)*	*ND (7.5)*	ND (1.00)	-	ND (5)	ND (3.0)	*ND (6.0)*	*ND (90.2)*	*ND (6.0)*	*ND (6.0)*	ND (1.00) SL	ND (3.0)
ETHYLBENZENE	µg/L	700	2.3	3.6	ND (1.00)	560	4 J	156	313	89.9	**19,000**[A]	ND (5)	**1,820**[A]	**1,530**[A]	**1,030**[A]	8.8 J	ND (20)	16.1 SL	168
ISOPROPYLBENZENE (CUMENE)	µg/L	3,500	5.4	24.0	16.7	-	38	77.0 J	69.7	54.4	-	ND (5)	153	164	ND (250)	33.6	28.1	29.5 SL	27.8
METHYL TERTIARY BUTYL ETHER	µg/L	20	1.9	1.7	1.01	**110,000**[A]	ND (3)	*ND (26)*	**20.5 J**[A]	ND (1.00)	**1,100,000**[A]	**2,300**[A]	**2,050**[A]	**7,030**[A]	*ND (91.8)*	**5,900**[A]	**5,440**[A]	**481 SL**[A]	**2,830**[A]
NAPHTHALENE	µg/L	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TERT-BUTYL ALCOHOL	µg/L	n/v	-	-	-	-	-	-	-	-	-	-	-	-	9,100	-	-	-	-
TOLUENE	µg/L	1,000	1.4	4.6	ND (1.00)	**4,800**[A]	42	**2,680**[A]	**4,490**[A]	**3,050**[A]	**69,000**[A]	7 J	75.6	40.3	ND (250)	12.4 J	7.1 J	47.2 SL	683
1,2,4-TRIMETHYLBENZENE	µg/L	530	44.4	158	16.8	-	28	82.6 J	208	229	-	ND (5)	**1,530**[A]	**983**[A]	**612**[A]	137	57.6	35.5 SL	**606**[A]
1,3,5-TRIMETHYLBENZENE	µg/L	530	9.3	35.6	ND (1.00)	-	6 J	ND (200)	47.8 J	52.4	-	10 J	327	191	ND (250)	63.3	23.8 J	15.6 SL	151
XYLENES, TOTAL (DIMETHYLBENZENE)	µg/L	10,000	54.5	142	3.70	3,010	42	931	1,980	2,160	**116,000**[A]	78	1,960	1,020	ND (750)	122	46.2	152 SL	1,370
Semi-Volatile Organic Compounds																			
ANTHRACENE	µg/L	66	ND (0.10)	ND (0.10)	0.0550	ND (1)	2	0.135	0.485	0.718	13	2	2.02	3.11	5.46	3.78	1.93	2.17 SL	0.834
BENZO(A)ANTHRACENE	µg/L	3.9	ND (0.10)	ND (0.10)	ND (0.0500)	ND (1)	0.3 J	ND (0.10)	ND (0.10)	0.0873	**6**[A]	0.7	0.207	0.231	0.410	1.92	0.426	0.268 SL	0.229
BENZO(A)PYRENE	µg/L	0.2	ND (0.10)	ND (0.10)	ND (0.0500)	*ND (2)*	0.2 J	ND (0.10)	ND (0.10)	ND (0.0500)	**4**[A]	**0.7**[A]	0.117	ND (0.10)	**0.243**[A]	**0.756**[A]	0.140	0.0706 SL	ND (0.10)
BENZO(B)FLUORANTHENE	µg/L	1.2	ND (0.10)	ND (0.10)	ND (0.0500)	*ND (3)*	0.4 J	ND (0.10)	ND (0.10)	0.0875	**3**[A]	1	0.244	0.124	0.335	1.01	0.184	0.0981 SL	0.157
BENZO(G,H,I)PERYLENE	µg/L	0.26	ND (0.10)	ND (0.10)	ND (0.0500)	*ND (5)*	0.2 J	ND (0.10)	ND (0.10)	ND (0.0500)	**4 J**[A]	**0.4 J**[A]	0.116	ND (0.10)	0.205	**0.428**[A]	ND (0.10)	ND (0.0500) SL	0.105
CHRYSENE	µg/L	1.9	ND (0.10)	ND (0.10)	ND (0.0500)	ND (1)	0.5 J	ND (0.10)	ND (0.10)	0.0771	**8**[A]	0.9	0.201	0.189	0.394	1.30	0.355	0.192 SL	0.200
FLUORENE	µg/L	1,900	0.346	ND (0.10)	0.269	4	7	1.05	2.50	5.05	45	4	12.2	22.0	40.5	15.4	8.05	8.23 SL	3.85
NAPHTHALENE	µg/L	100	4.27	0.435	7.47	68	27	39.6	**174**[A]	56.9	**3,900**[A]	2	**3,170**[A]	**4,930**[A]	**6,510**[A]	20.2	54.4	19.4 SL	59.6
PHENANTHRENE	µg/L	1,100	ND (0.10)	ND (0.10)	0.141	3	2	0.542	1.13	1.77	89	7	10.1	17.7	31.4	14.8	6.98	7.57 SL	2.26
PYRENE	µg/L	130	ND (0.10)	ND (0.10)	0.0716	1 J	3	ND (0.10)	0.402	0.891	26	2	1.11	1.26	3.05	13.9	3.86	3.65 SL	1.98
Metals																			
LEAD, Dissolved	µg/L	5	ND (3.0)	ND (3.0)	ND (2.00)	-	0.36 J	ND (3.0)	ND (3.0)	ND (2.00)	-	**24.8**[A]	ND (3.0)	ND (3.0)	ND (2.00)	3.3	2.0 J	ND (2.00) SL	3.8
LEAD, Total	µg/L	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 3-4a
Groundwater Analytical Results Summary and Stabilized Purged Parameters, Unconfined Aquifer
Belmont Terminal
Philadelphia Refinery Operations, a series of Evergreen Resources Group, LLC

Sample Location			RW-24		RW-25	RW-26											
Sample Date			30-May-14	19-Dec-14	26-Jul-18	7-Jun-11	11-Jul-12	29-May-14	17-Dec-14	1-Aug-18	3-Jul-19	12-Nov-19	22-Apr-21	22-Apr-21	27-Oct-21	30-Mar-22	27-Mar-23
Sample ID			RW-24	RW-24-20141219	RW-25_20180726	RW-26	RW26_071112	RW-26	RW-26-20141217	RW-26_20180801	RW-26_20190703	RW-26_20191112	RW-26_20210422	DUP-2_20210422	RW-26_20211027	RW-26_20220330	RW-26_20230327
Sampling Company																	
Laboratory		MSC-PA	STANTEC ACCUTEST	STANTEC ACCUTEST	STANTEC ESC	STANTEC LL	UNKNOWN LL	STANTEC ACCUTEST	STANTEC ACCUTEST	STANTEC ESC	STANTEC LL	STANTEC LL	STANTEC LANCASTER	STANTEC LANCASTER	STANTEC LANCASTER	STANTEC SGSA	STANTEC SGS
Laboratory Work Order	Units	A	JB68176	JB84819	L1013273	1250813	1321953	JB68176	JB84509	L1014699	2052178	2074487	410-37142-1	410-37142-1	410-61053-1	JD42387	JD63001
Field Parameters																	
DISSOLVED OXYGEN, FIELD MEASURED	mg/L	n/v	0.49	0.36	-	-	-	0.29	1.83	0	2.61	0	0.1	-	7.12	0	2.12
OXIDATION REDUCTION POTENTIAL, FIELD MEASURED	mV	n/v	-91	-103	-	-	-	-86	-122	-180	-46	-175	-106	-	-111	-175	-136
pH, FIELD MEASURED	S.U.	n/v	6.40	7.3	-	-	-	6.55	6.88	6.86	5.95	7.55	5.8	-	6.13	6.8	6.59
SPECIFIC CONDUCTANCE FIELD	mS/cm	n/v	2.54	3.87	-	-	-	2.44	2.4	2.06	1.81	1.66	1.9	-	2.34	2.08	1.26
TEMPERATURE, FIELD MEASURED	deg c	n/v	17.59	18.01	-	-	-	17.66	16.61	19.11	20.78	16.79	16.88	-	19.5	16.01	18.35
TOTAL DISSOLVED SOLIDS, FIELD MEASURED	mg/L	n/v	1.63	-	-	-	-	1.56	1.54	-	1.16	1.08	-	-	-	-	-
TURBIDITY	NTU	n/v	22.6	36.7	-	-	-	174	40.6	119	318	132	145	-	30.5	12.3	6.2
Volatile Organic Compounds																	
BENZENE	µg/L	5	1,990[A]	7,020[A]	583 SL[A]	5,400[A]	10,000[A]	6,020[A]	7,500[A]	3,570[A]	1,000[A]	2,800[A]	440[A]	440[A]	130[A]	335[A]	172[A]
1,2-DIBROMOETHANE (EDB)	µg/L	0.05	-	-	-	*ND (10)*	-	-	-	-	-	-	-	-	-	-	-
1,2-DICHLOROETHANE (EDC)	µg/L	5	ND (3.0)	*ND (15)*	3.72 SL	*ND (10)*	ND (0.5)	*ND (15)*	*ND (7.5)*	*ND (90.2)*	ND (2)	ND (2)	ND (5.0)	ND (5.0)	ND (1.0)	ND (1.0)	ND (1.0)
ETHYLBENZENE	µg/L	700	765[A]	1,360[A]	145 SL	200	1,100[A]	902[A]	992[A]	589	230	500	170	180	5.1	78.6	7.7
ISOPROPYLBENZENE (CUMENE)	µg/L	3,500	60.7	173	40.8 SL	13 J	ND (100)	83.5	69.5	ND (250)	49	59	22 J	23 J	8.5	24.2	19.0
METHYL TERTIARY BUTYL ETHER	µg/L	20	1,450[A]	12,900[A]	2,770 SL[A]	24,000[A]	210,000[A]	1,580[A]	5,320[A]	1,840[A]	1,000[A]	1,200[A]	350[A]	350[A]	390[A]	10.5	13.6
NAPHTHALENE	µg/L	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TERT-BUTYL ALCOHOL	µg/L	n/v	-	-	-	-	-	-	-	52,700	8,700	42,000	18,000 E	18,000 E	22,000	135	861
TOLUENE	µg/L	1,000	769	4,150[A]	329 SL	150	ND (100)	31.7 J	172	ND (250)	16	26	6.7	6.8	5.3	31.1	15.9
1,2,4-TRIMETHYLBENZENE	µg/L	530	1,550[A]	1,780[A]	99.5 SL	350	520	491	384	327	400	310	100	100	27	94.6	78.9
1,3,5-TRIMETHYLBENZENE	µg/L	530	436	566[A]	30.1 SL	160	150 J	104	89.1	ND (250)	24 J	84	27	28	6.7	34.6	28.3
XYLENES, TOTAL (DIMETHYLBENZENE)	µg/L	10,000	4,680	8,260	444 SL	1,500	1,800	1,220	1,620	ND (750)	380	620	170	170	42	343	315
Semi-Volatile Organic Compounds																	
ANTHRACENE	µg/L	66	1.31	6.62	2.49 SL	-	9	2.26	4.98	6.05	3	3	2.0	1.9	0.33 J	0.139	0.592
BENZO(A)ANTHRACENE	µg/L	3.9	0.286	1.48	0.479 SL	-	ND (1)	0.111	1.02	0.347	0.7	ND (0.1)	0.11 J	ND (0.54)	ND (0.52)	ND (0.043)	0.102
BENZO(A)PYRENE	µg/L	0.2	0.117	0.500[A]	ND (0.0500) SL	-	*ND (1)*	ND (0.10)	0.506[A]	0.134	0.6[A]	ND (0.1)	ND (0.12)	ND (0.12)	ND (0.11)	ND (0.043)	0.055
BENZO(B)FLUORANTHENE	µg/L	1.2	0.184	0.718	ND (0.0500) SL	-	ND (1)	0.112	0.627	0.172	0.8	ND (0.1)	ND (0.53)	ND (0.54)	ND (0.52)	ND (0.043)	0.0664
BENZO(G,H,I)PERYLENE	µg/L	0.26	ND (0.10)	0.328[A]	ND (0.0500) SL	-	*ND (1)*	ND (0.10)	0.214	0.0524	0.6[A]	ND (0.1)	ND (0.11)	ND (0.11)	ND (0.10)	ND (0.087)	ND (0.080)
CHRYSENE	µg/L	1.9	0.320	1.44	0.459 SL	1.1	ND (1)	0.113	0.967	0.342	0.9	ND (0.1)	0.11 J	0.11 J	ND (0.52)	ND (0.087)	0.106
FLUORENE	µg/L	1,900	12.1	29.6	14.3 SL	15	58	16.5	22.8	37.3	12	19	13	13	2.4	0.832	2.41
NAPHTHALENE	µg/L	100	389[A]	751[A]	385 SL[A]	49	9,500[A]	6,680[A]	6,000[A]	3,680[A]	930[A]	1,600[A]	1,900[A]	1,800[A]	97	41.0 B	44.7
PHENANTHRENE	µg/L	1,100	4.93	34.1	7.04 SL	8.8	48	12.4	25.4	33.8	20	17	12	12	1.9	0.807	3.05
PYRENE	µg/L	130	1.79	9.64	10.1 SL	2.7	4 J	0.789	3.45	2.96	4	1	1.1	1.0	0.18 J	0.126	0.459
Metals																	
LEAD, Dissolved	µg/L	5	8.2[A]	4.2	ND (2.00) SL	1.5	0.19 J	1.3 J	ND (3.0)	ND (2.00)	ND (1.1)	ND (0.071)	ND (0.52)	ND (0.52)	ND (0.52)	ND (1.0)	ND (1.0)
LEAD, Total	µg/L	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 3-4a
Groundwater Analytical Results Summary and Stabilized Purged Parameters, Unconfined Aquifer
Belmont Terminal
Philadelphia Refinery Operations, a series of Evergreen Resources Group, LLC

Sample Location			RW-27					RW-28					RW-29				
Sample Date			7-Jun-11	11-Jul-12	29-May-14	17-Dec-14	1-Aug-18	14-Apr-11	8-Jun-11	29-May-14	8-Dec-14	1-Aug-18	7-Jun-11	11-Jul-12	29-May-14	15-Dec-14	31-Jul-18
Sample ID			RW-27	RW27_071112	RW-27	RW-27-20141217	RW-27_20180801	RW-28	RW-28	RW-28	RW-28-20141208	RW-28_20180801	RW-29	RW29_071112	RW-29	RW-29-20141215	RW-29-20180731
Sampling Company			STANTEC	UNKNOWN	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	UNKNOWN	STANTEC	STANTEC	STANTEC
Laboratory		MSC-PA	LL	LL	ACCUTEST	ACCUTEST	ESC	LL	LL	ACCUTEST	ACCUTEST	ESC	LL	LL	ACCUTEST	ACCUTEST	ESC
Laboratory Work Order	Units	A	1250813	1321953	JB68176	JB84509	L1014699	1242460	1250813	JB68176	JB83579	L1014699	1250813	1321313	JB68176	JB84215	L1014154
Field Parameters																	
DISSOLVED OXYGEN, FIELD MEASURED	mg/L	n/v	-	-	0.62	2.46	0	-	-	0.84	7.15	0.28	-	-	0.81	1.39	0.43
OXIDATION REDUCTION POTENTIAL, FIELD MEASURED	mV	n/v	-	-	-90	-90	-91	-	-	-49	32	212	-	-	-106	-89	-156
pH, FIELD MEASURED	S.U.	n/v	-	-	6.50	6.73	6.66	-	-	6.41	6.8	6.33	-	-	6.67	6.93	6.49
SPECIFIC CONDUCTANCE FIELD	mS/cm	n/v	-	-	2.06	2.11	2.3	-	-	1.65	2.17	2.49	-	-	1.09	1.22	1.27
TEMPERATURE, FIELD MEASURED	deg c	n/v	-	-	18.51	16.47	19.14	-	-	18.22	15.71	21.00	-	-	18.13	18.14	19.16
TOTAL DISSOLVED SOLIDS, FIELD MEASURED	mg/L	n/v	-	-	1.32	1.3	-	-	-	1.33	1.43	-	-	-	0.699	0.781	-
TURBIDITY	NTU	n/v	-	-	64.2	121	91.3	-	-	66.3	121	20.5	-	-	87.7	108	104
Volatile Organic Compounds																	
BENZENE	µg/L	5	**18,000**[A]	**320**[A]	**2,350**[A]	**7,230**[A]	**3,270**[A]	**210**[A]	**560**[A]	ND (0.50)	**7.1**[A]	ND (1.00)	**340**[A]	**340**[A]	**353**[A]	**406**[A]	**226**[A]
1,2-DIBROMOETHANE (EDB)	µg/L	0.05	*ND (20)*	-	-	-	-	*ND (1)*	*ND (1)*	-	-	-	*ND (2)*	-	-	-	-
1,2-DICHLOROETHANE (EDC)	µg/L	5	*ND (20)*	ND (3)	*ND (15)*	*ND (30)*	ND (3.61)	ND (1)	ND (1)	ND (1.0)	ND (1.0)	ND (1.00)	ND (2)	ND (5)	ND (3.0)	ND (5.0)	*ND (18.0)*
ETHYLBENZENE	µg/L	700	**4,700**[A]	ND (3)	**839**[A]	**1,820**[A]	568	3 J	190	ND (1.0)	ND (1.0)	ND (1.00)	33	92	71.0	38.7	ND (50.0)
ISOPROPYLBENZENE (CUMENE)	µg/L	3,500	340	ND (3)	42.6 J	76.0 J	77.7	ND (1)	20	ND (1.0)	ND (1.0)	ND (1.00)	84	94	120	91.5	107
METHYL TERTIARY BUTYL ETHER	µg/L	20	**4,900**[A]	**1,300**[A]	**13,300**[A]	**31,300**[A]	**4,340**[A]	3 J	**120**[A]	ND (1.0)	ND (1.0)	ND (1.00)	**300**[A]	**510**[A]	**1,110**[A]	**799**[A]	**191**[A]
NAPHTHALENE	µg/L	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TERT-BUTYL ALCOHOL	µg/L	n/v	-	-	-	-	69,900	-	-	-	-	ND (5.00)	-	-	-	-	389
TOLUENE	µg/L	1,000	**9,200**[A]	16	65.6	167	43.0	3 J	28	ND (1.0)	ND (1.0)	ND (1.00)	14	15	14.4	14.1	ND (50.0)
1,2,4-TRIMETHYLBENZENE	µg/L	530	**2,400**[A]	33	**640**[A]	**675**[A]	**933**[A]	-	140	0.59 J	ND (2.0)	ND (1.00)	73	130	29.0	14.0	ND (50.0)
1,3,5-TRIMETHYLBENZENE	µg/L	530	**3,000**[A]	27	180	194 J	64.8	-	46	ND (2.0)	ND (2.0)	ND (1.00)	31	53	12.6 J	5.9 J	ND (50.0)
XYLENES, TOTAL (DIMETHYLBENZENE)	µg/L	10,000	**15,000**[A]	260	2,360	4,210	1,080	23	610	ND (1.0)	0.69 J	ND (3.00)	56	58	40.1	38.0	ND (150)
Semi-Volatile Organic Compounds																	
ANTHRACENE	µg/L	66	-	39	2.41	3.47	2.85	-	-	0.219	ND (0.10)	ND (0.0500)	-	15	6.75	4.99	7.82
BENZO(A)ANTHRACENE	µg/L	3.9	-	**6**[A]	0.816	0.397	0.347	-	-	0.285	ND (0.10)	ND (0.0500)	-	1	1.42	0.232	0.476
BENZO(A)PYRENE	µg/L	0.2	-	**3 J**[A]	**0.358**[A]	0.196	0.187	-	-	**0.350**[A]	0.113	ND (0.0500)	-	**0.5**[A]	**0.674**[A]	ND (0.10)	**0.248**[A]
BENZO(B)FLUORANTHENE	µg/L	1.2	-	**5 J**[A]	0.660	0.264	0.244	-	-	0.831	0.199	ND (0.0500)	-	0.7	1.03	ND (0.10)	0.296
BENZO(G,H,I)PERYLENE	µg/L	0.26	-	**2 J**[A]	**0.280**[A]	0.136	0.145	-	-	**0.462**[A]	0.120	ND (0.0500)	-	0.2 J	**0.308**[A]	ND (0.10)	0.107
CHRYSENE	µg/L	1.9	**82**[A]	**9**[A]	0.685	0.343	0.309	-	**40**[A]	0.507	0.133	ND (0.0500)	**6.6**[A]	1	1.27	0.243	0.469
FLUORENE	µg/L	1,900	570	120	8.98	19.8	25.2	-	36	0.570	ND (0.10)	ND (0.0500)	69	76	21.7	30.4	51.8
NAPHTHALENE	µg/L	100	**16,000**[A]	**2,700**[A]	**1,350**[A]	**4,870**[A]	**2,340**[A]	-	**260**[A]	ND (0.10)	ND (0.10)	ND (0.250)	**200**[A]	**750**[A]	4.68	16.9	17.8
PHENANTHRENE	µg/L	1,100	1,000	190	14.9	19.7	23.0	-	100	1.24	0.160	0.0539	63	71	27.6	23.4	41.4
PYRENE	µg/L	130	ND (4.0)	38	3.83	2.80	2.26	-	98	0.841	0.191	ND (0.0500)	20	7	5.79	1.84	3.54
Metals																	
LEAD, Dissolved	µg/L	5	**25.7**[A]	4.6	ND (3.0)	ND (3.0)	ND (2.00)	-	1.1	ND (3.0)	ND (3.0)	ND (2.00)	0.24	0.16 J	ND (3.0)	ND (3.0)	ND (2.00)
LEAD, Total	µg/L	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 3-4a
Groundwater Analytical Results Summary and Stabilized Purged Parameters, Unconfined Aquifer
Belmont Terminal
Philadelphia Refinery Operations, a series of Evergreen Resources Group, LLC

Sample Location			RW-30					RW-31					RW-32				RW-400			
Sample Date			7-Jun-11	11-Jul-12	29-May-14	15-Dec-14	31-Jul-18	7-Jun-11	11-Jul-12	29-May-14	11-Dec-14	31-Jul-18	11-Jul-12	29-May-14	8-Dec-14	31-Jul-18	12-Jul-12	28-May-14	11-Dec-14	17-Feb-23
Sample ID			RW-30	RW30_071112	RW-30	RW-30-20141215	RW-30-20180731	RW-31	RW31_071112	RW-31	RW-31-20141211	RW-31-20180731	RW32_071112	RW-32	RW-32-20141208	RW-32-20180731	RW400_071212	RW-400	RW-400-20141211	RW-400_20230217
Sampling Company			STANTEC	UNKNOWN	STANTEC	STANTEC	STANTEC	STANTEC	UNKNOWN	STANTEC	STANTEC	STANTEC	UNKNOWN	STANTEC	STANTEC	STANTEC	UNKNOWN	STANTEC	STANTEC	STANTEC
Laboratory		MSC-PA	LL	LL	ACCUTEST	ACCUTEST	ESC	LL	LL	ACCUTEST	ACCUTEST	ESC	LL	ACCUTEST	ACCUTEST	ESC	LL	ACCUTEST	ACCUTEST	SGS
Laboratory Work Order	Units	A	1250813	1321313	JB68176	JB84215	L1014154	1250813	1321313	JB68176	JB84134	L1014154	1321313	JB68176	JB83579	L1014154	1321953	JB67921	JB84134	JD60518
Field Parameters																				
DISSOLVED OXYGEN, FIELD MEASURED	mg/L	n/v	-	-	1.08	1.18	1.92	-	-	1.48	3.27	0	-	4.11	5.31	0.51	-	3.42	1.36	-
OXIDATION REDUCTION POTENTIAL, FIELD MEASURED	mV	n/v	-	-	-78	-64	-143	-	-	-22	-117	-165	-	141	69	104	-	-95	-145	-
pH, FIELD MEASURED	S.U.	n/v	-	-	6.45	6.59	6.57	-	-	6.49	6.93	6.65	-	6.68	7.32	7.1	-	6.71	7.14	-
SPECIFIC CONDUCTANCE FIELD	mS/cm	n/v	-	-	1.65	1.45	1.83	-	-	1.04	1.16	1.36	-	0.892	0.855	1.18	-	1.82	2.17	-
TEMPERATURE, FIELD MEASURED	deg c	n/v	-	-	19.21	18.98	20.07	-	-	16.17	15.85	18.09	-	16.13	12.12	21.31	-	17.55	16.85	-
TOTAL DISSOLVED SOLIDS, FIELD MEASURED	mg/L	n/v	-	-	1.06	0.928	-	-	-	0.668	0.762	-	-	0.570	0.546	-	-	1.16	1.39	-
TURBIDITY	NTU	n/v	-	-	25.7	101	218	-	-	28.7	177	21.8	-	762	586	0	-	59.2	195	-
Volatile Organic Compounds																				
BENZENE	µg/L	5	**250**[A]	**100**[A]	**435**[A]	**983**[A]	**375**[A]	**250**[A]	**200**[A]	**41.1**[A]	**67.8**[A]	**51.0**[A]	**220**[A]	ND (0.50)	ND (0.50)	ND (1.00)	1	**30.9**[A]	**12.7**[A]	3.2
1,2-DIBROMOETHANE (EDB)	µg/L	0.05	*ND (2)*	-	-	-	-	*ND (2)*	-	-	-	-	-	-	-	-	-	-	-	-
1,2-DICHLOROETHANE (EDC)	µg/L	5	ND (2)	ND (3)	ND (5.0)	ND (5.0)	ND (3.61)	ND (2)	ND (3)	ND (1.0)	ND (1.0)	ND (5.00)	ND (0.5)	ND (1.0)	ND (1.0)	ND (1.00)	ND (0.5)	ND (1.0)	ND (1.0)	ND (1.0)
ETHYLBENZENE	µg/L	700	88	25	30.1	30.2	ND (10.0)	60	48	2.8	5.6	ND (5.00)	6	ND (1.0)	ND (1.0)	ND (1.00)	ND (0.5)	0.44 J	0.51 J	ND (1.0)
ISOPROPYLBENZENE (CUMENE)	µg/L	3,500	140	39	64.9	74.9	55.3	93	61	5.6	19.1	30.4	2 J	ND (1.0)	ND (1.0)	ND (1.00)	5	16.4	15.2	26.7
METHYL TERTIARY BUTYL ETHER	µg/L	20	**140**[A]	**180**[A]	**471**[A]	**609**[A]	**90.1**[A]	**29**[A]	**120**[A]	**76.4**[A]	**77.8**[A]	17.9	**230**[A]	ND (1.0)	ND (1.0)	ND (1.00)	12	**79.9**[A]	16.2	**57.0**[A]
NAPHTHALENE	µg/L	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TERT-BUTYL ALCOHOL	µg/L	n/v	-	-	-	-	137	-	-	-	-	469	-	-	-	ND (5.00)	-	-	-	-
TOLUENE	µg/L	1,000	23	8	11.9	14.8	11.4	10	9	0.93 J	2.6	ND (5.00)	0.8 J	ND (1.0)	ND (1.0)	ND (1.00)	ND (0.5)	0.37 J	0.57 J	ND (1.0)
1,2,4-TRIMETHYLBENZENE	µg/L	530	160	71	80.5	87.3	40.8	70	37	3.6	4.6	ND (5.00)	0.5 J	0.32 J	ND (2.0)	ND (1.00)	0.6 J	0.21 J	0.26 J	ND (2.0)
1,3,5-TRIMETHYLBENZENE	µg/L	530	60	26	30.1	32.4	18.2	17	9 J	0.78 J	1.3 J	ND (5.00)	ND (0.5)	ND (2.0)	ND (2.0)	ND (1.00)	1 J	0.22 J	0.82 J	ND (2.0)
XYLENES, TOTAL (DIMETHYLBENZENE)	µg/L	10,000	120	38	41.9	46.7	ND (30.0)	24	17	2.1	4.8	ND (15.0)	2	ND (1.0)	ND (1.0)	ND (3.00)	ND (0.5)	0.63 J	1.7	4.6
Semi-Volatile Organic Compounds																				
ANTHRACENE	µg/L	66	-	14	2.17	6.50 J-	6.82	-	6	0.221	0.403	0.288	0.2 J	ND (0.10)	ND (0.10)	ND (0.0500)	0.1 J	1.58	1.28	0.982
BENZO(A)ANTHRACENE	µg/L	3.9	-	**14**[A]	0.289	0.340 J-	1.57	-	0.1 J	ND (0.10)	ND (0.10)	ND (0.0500)	0.4 J	ND (0.10)	ND (0.10)	ND (0.0500)	0.2 J	0.118	ND (0.10)	0.0761
BENZO(A)PYRENE	µg/L	0.2	-	**10**[A]	0.139	0.130 J-	**1.16**[A]	-	ND (0.1)	ND (0.10)	ND (0.10)	ND (0.0500)	**0.9**[A]	ND (0.10)	ND (0.10)	0.0911	0.2 J	ND (0.10)	ND (0.10)	ND (0.041)
BENZO(B)FLUORANTHENE	µg/L	1.2	-	**12**[A]	0.247	0.155 J-	**1.22**[A]	-	ND (0.1)	ND (0.10)	ND (0.10)	ND (0.0500)	1	ND (0.10)	ND (0.10)	0.185	0.2 J	ND (0.10)	ND (0.10)	0.0282 J
BENZO(G,H,I)PERYLENE	µg/L	0.26	-	**4 J**[A]	ND (0.10)	RR	**0.536**[A]	-	ND (0.1)	ND (0.10)	ND (0.10)	ND (0.0500)	**0.6**[A]	ND (0.10)	ND (0.10)	0.125	0.2 J	ND (0.10)	ND (0.10)	ND (0.082)
CHRYSENE	µg/L	1.9	**7.4**[A]	**15**[A]	0.275	0.375 J-	1.58	0.14 J	0.2 J	ND (0.10)	ND (0.10)	ND (0.0500)	0.7	ND (0.10)	ND (0.10)	0.125	0.3 J	0.141	0.119	0.0847
FLUORENE	µg/L	1,900	74	40	8.18	34.7 J-	26.0	17	33	1.00	2.38	3.52	0.4 J	ND (0.10)	ND (0.10)	ND (0.0500)	0.3 J	3.36	3.42	5.23
NAPHTHALENE	µg/L	100	**230**[A]	**280**[A]	34.1	**132 J-**[A]	50.2	82	83	1.10	2.41	1.67	0.9	ND (0.10)	ND (0.10)	ND (0.250)	ND (0.1)	ND (0.10)	ND (0.10)	ND (0.082)
PHENANTHRENE	µg/L	1,100	72	44	8.91	34.2 J-	31.4	10	26	0.884	1.79	1.03	0.3 J	ND (0.10)	ND (0.10)	0.0704	0.1 J	0.389	0.686	2.72
PYRENE	µg/L	130	20	29	1.29	2.77 J-	5.92	1.6	2	0.143	0.476	0.182	0.6	ND (0.10)	ND (0.10)	0.151	3	1.51	1.15	0.797
Metals																				
LEAD, Dissolved	µg/L	5	0.11 J	2.0	ND (3.0)	3.5	ND (2.00)	0.098 J	0.98 J	ND (3.0)	ND (3.0)	ND (2.00)	0.72 J	ND (3.0)	1.3 J	ND (2.00)	3.5	1.4 J	1.7 J	1.7
LEAD, Total	µg/L	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 3-4a
Groundwater Analytical Results Summary and Stabilized Purged Parameters, Unconfined Aquifer
Belmont Terminal
Philadelphia Refinery Operations, a series of Evergreen Resources Group, LLC

Sample Location			S-74															
Sample Date			15-Oct-04	26-Apr-05	18-Dec-07	7-Nov-08	18-Nov-09	10-Nov-10	29-Nov-11	12-Jul-12	3-Apr-13	3-Apr-13	27-May-14	8-Dec-14	19-May-15	16-May-16	16-May-17	26-Jul-18
Sample ID			S-74	S74-042605	S-74	S-74_110708	S-74	S-74	S-74	S-74_071212	S-74	S-74_040313	S-74	S-74-20141208	S-74_20150519	S-74-20160516	S-74-20170516	S-74_20180726
Sampling Company			UNKNOWN	UNKNOWN	UNKNOWN	UNKNOWN	UNKNOWN	UNKNOWN	UNKNOWN	UNKNOWN	UNKNOWN	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC
Laboratory		MSC-PA	UNKNOWN	LL	UNKNOWN	LL	UNKNOWN	UNKNOWN	UNKNOWN	LL	UNKNOWN	ACCUTEST	ACCUTEST	ACCUTEST	LL	LL	LL	ESC
Laboratory Work Order	Units	A	1985-2013_Hist_GW	UNKNOWN	1985-2013_Hist_GW	1119109	1985-2013_Hist_GW	1985-2013_Hist_GW	1985-2013_Hist_GW	1321953	1985-2013_Hist_GW	JB33198	JB67921	JB83579	1562821	1664163	1803596	L1013273
Field Parameters																		
DISSOLVED OXYGEN, FIELD MEASURED	mg/L	n/v	-	-	-	-	-	-	-	-	-	-	1.08	1.99	1	1.33	-	0
OXIDATION REDUCTION POTENTIAL, FIELD MEASURED	mV	n/v	-	-	-	-	-	-	-	-	-	-	-43	-24	-90	-84	-	47
pH, FIELD MEASURED	S.U.	n/v	-	-	-	-	-	-	-	-	-	-	5.99	6.65	7.48	7	-	6.49
SPECIFIC CONDUCTANCE FIELD	mS/cm	n/v	-	-	-	-	-	-	-	-	-	-	1.61	2.13	1.62	1.78	-	1.89
TEMPERATURE, FIELD MEASURED	deg c	n/v	-	-	-	-	-	-	-	-	-	-	19.41	15.34	18.69	17.55	-	17.92
TOTAL DISSOLVED SOLIDS, FIELD MEASURED	mg/L	n/v	-	-	-	-	-	-	-	-	-	-	1.01	1.36	1.07	1.11	-	-
TURBIDITY	NTU	n/v	-	-	-	-	-	-	-	-	-	-	460	> 800	483	5.7	-	0
Volatile Organic Compounds																		
BENZENE	µg/L	5	ND (1.0)	ND (5)	ND (0.5)	0.8 J	**94**[A]	ND (0.5)	0.6 J	ND (0.5)	-	ND (1.0)	3.0	ND (0.50)	ND (0.5)	ND (0.5)	3	ND (1.00)
1,2-DIBROMOETHANE (EDB)	µg/L	0.05	ND (0.020)	-	ND (0.0094)	-	ND (0.0098)	ND (0.0098)	ND (0.0098)	-	-	-	-	-	-	-	-	-
1,2-DICHLOROETHANE (EDC)	µg/L	5	ND (5.0)	ND (5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	-	ND (1.0)	ND (1.0)	ND (1.0)	ND (0.5)	ND (0.5)	ND (0.5)	ND (1.00)
ETHYLBENZENE	µg/L	700	ND (5.0)	ND (5)	ND (0.5)	3	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	-	ND (1.0)	ND (1.0)	ND (1.0)	ND (0.5)	ND (0.5)	ND (0.5)	ND (1.00)
ISOPROPYLBENZENE (CUMENE)	µg/L	3,500	ND (5.0)	ND (5)	ND (0.5)	1 J	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	-	ND (2.0)	ND (1.0)	ND (1.0)	ND (0.5)	ND (0.5)	ND (0.5)	ND (1.00)
METHYL TERTIARY BUTYL ETHER	µg/L	20	ND (5.0)	ND (5)	-	0.7 J	ND (0.5)	0.5 J	ND (0.5)	0.6 J	-	ND (1.0)	0.69 J	0.37 J	2	ND (0.5)	ND (0.5)	ND (1.00)
NAPHTHALENE	µg/L	100	-	-	-	48	-	-	-	-	-	-	-	-	-	-	-	-
TERT-BUTYL ALCOHOL	µg/L	n/v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOLUENE	µg/L	1,000	ND (5.0)	ND (5)	ND (0.5)	ND (0.5)	2	ND (0.5)	ND (0.5)	ND (0.5)	-	ND (1.0)	1.2	ND (1.0)	ND (0.5)	ND (0.5)	ND (0.5)	ND (1.00)
1,2,4-TRIMETHYLBENZENE	µg/L	530	-	-	-	9	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	-	ND (2.0)	0.67 J	0.54 J	ND (0.5)	ND (0.5)	ND (0.5)	ND (1.00)
1,3,5-TRIMETHYLBENZENE	µg/L	530	-	-	-	0.9 J	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	-	ND (2.0)	ND (2.0)	0.34 J	ND (0.5)	ND (0.5)	ND (0.5)	ND (1.00)
XYLENES, TOTAL (DIMETHYLBENZENE)	µg/L	10,000	ND (10)	ND (5)	ND (0.5)	0.6 J	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	-	ND (1.0)	2.4	0.72 J	ND (0.5)	ND (0.5)	ND (0.5)	ND (3.00)
Semi-Volatile Organic Compounds																		
ANTHRACENE	µg/L	66	-	-	-	-	-	-	-	ND (0.1)	-	ND (0.10)	0.110	ND (0.10)	ND (0.1)	ND (0.1)	0.1 J	ND (0.0500)
BENZO(A)ANTHRACENE	µg/L	3.9	-	-	-	-	-	-	-	0.2 J	-	ND (0.10)	0.130	0.141	0.2 J	ND (0.1)	ND (0.1)	ND (0.0500)
BENZO(A)PYRENE	µg/L	0.2	-	-	-	-	-	-	-	0.2 J	-	ND (0.10)	ND (0.10)	0.167	**0.8**[A]	ND (0.1)	ND (0.1)	ND (0.0500)
BENZO(B)FLUORANTHENE	µg/L	1.2	-	-	-	-	-	-	-	0.3 J	-	ND (0.10)	0.165	0.317	0.8	ND (0.1)	ND (0.1)	ND (0.0500)
BENZO(G,H,I)PERYLENE	µg/L	0.26	-	-	-	-	-	-	-	0.1 J	-	ND (0.10)	ND (0.10)	0.164	**0.5**[A]	ND (0.1)	ND (0.1)	ND (0.0500)
CHRYSENE	µg/L	1.9	ND (0.14)	ND (1)	ND (1.0)	ND (1)	ND (0.057)	ND (1)	0.75	0.1 J	-	ND (0.10)	0.191	0.244	0.5	ND (0.1)	ND (0.1)	ND (0.0500)
FLUORENE	µg/L	1,900	ND (10)	ND (10)	ND (1.0)	-	-	ND (1)	ND (0.099)	ND (0.1)	-	ND (0.10)	0.183	ND (0.10)	ND (0.1)	ND (0.1)	0.1 J	ND (0.0500)
NAPHTHALENE	µg/L	100	ND (5.0)	ND (10)	ND (1.0)	-	ND (1)	ND (1)	ND (0.99)	ND (0.1)	-	1.20	0.580	0.138	ND (0.1)	ND (0.1)	0.8	ND (0.250)
PHENANTHRENE	µg/L	1,100	ND (10)	ND (10)	ND (1.0)	1 J	0.066 J	ND (1)	0.64	0.2 J	-	ND (0.10)	0.614	0.250	0.3 J	ND (0.1)	0.3 J	ND (0.0500)
PYRENE	µg/L	130	ND (10)	ND (10)	3.0 J	2 J	0.46	ND (1)	1.3	1	-	ND (0.10)	0.462	0.412	1	ND (0.1)	0.5	0.162
Metals																		
LEAD, Dissolved	µg/L	5	ND (5.0)	-	0.064 J	ND (0.050)	ND (0.050)	ND (0.052)	ND (0.080)	0.13 J	ND (1)	-	ND (3.0)	1.8 J	ND (0.082)	ND (0.13)	ND (0.090)	ND (2.00)
LEAD, Total	µg/L	5	-	ND (2.1)	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 3-4a
Groundwater Analytical Results Summary and Stabilized Purged Parameters, Unconfined Aquifer
Belmont Terminal
Philadelphia Refinery Operations, a series of Evergreen Resources Group, LLC

Sample Location			S-75							S-76	S-200					S-330				
Sample Date			12-Jul-12	28-May-14	11-Dec-14	2-Aug-18	2-Jul-19	2-Jul-19	13-Nov-19	2-Aug-18	10-Jul-12	28-May-14	15-Dec-14	25-Jul-18	19-May-21	8-Jun-11	12-Jul-12	29-May-14	15-Dec-14	24-Jul-18
Sample ID			S-75_071212	S-75	S-75-20141211	S-75-20180802	S-75_20190702	DUP-5_20190702	S-75_20191113	S-76-20180802	S-200_071012	S-200	S-200-20141215	S-200_20180725	S-200_20210519	S-330	S-330_071212	S-330	S-330-20141215	S-330_20180724
Sampling Company			UNKNOWN	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	UNKNOWN	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	UNKNOWN	STANTEC	STANTEC	STANTEC
Laboratory		MSC-PA	LL	ACCUTEST	ACCUTEST	ESC	LL	LL	LL	ESC	LL	ACCUTEST	ACCUTEST	ESC	LANCASTER	LL	LL	ACCUTEST	ACCUTEST	ESC
Laboratory Work Order	Units	A	1321953	JB67921	JB84134	L1015848	2052178	2052178	2075052	L1015848	1321313	JB67921	JB84215	L1013273	410-40660-1	1250813	1321953	JB68176	JB84215	L1013273
Field Parameters																				
DISSOLVED OXYGEN, FIELD MEASURED	mg/L	n/v	-	0.81	2.47	-	0	-	0	-	-	2.01	1.31	0	1.3	-	-	1.41	1.87	0
OXIDATION REDUCTION POTENTIAL, FIELD MEASURED	mV	n/v	-	-86	-73	-	-172	-	-105	-	-	-126	-63	-35	-26	-	-	-48	-38	21
pH, FIELD MEASURED	S.U.	n/v	-	6.49	6.74	-	6.67	-	6.88	-	-	6.56	7.3	6.62	5.73	-	-	6.35	6.48	5.99
SPECIFIC CONDUCTANCE FIELD	mS/cm	n/v	-	1.62	1.77	-	2.09	-	2.03	-	-	3.25	1.09	2.82	0.643	-	-	0.558	0.809	0.466
TEMPERATURE, FIELD MEASURED	deg c	n/v	-	17.11	16.32	-	18.15	-	16.98	-	-	17.31	16.35	20.79	20.49	-	-	18.55	18.22	21.05
TOTAL DISSOLVED SOLIDS, FIELD MEASURED	mg/L	n/v	-	1.04	1.13	-	1.31	-	1.28	-	-	2.13	-	-	-	-	-	0.357	0.518	-
TURBIDITY	NTU	n/v	-	256	416	-	63.4	-	66.9	-	-	63	350	10.5	179	-	-	60.7	146	0
Volatile Organic Compounds																				
BENZENE	µg/L	5	5	**8.9**[A]	**9.9**[A]	2.32 SL	**6**[A]	**6**[A]	**39**[A]	**2,100 SL**[A]	**5,800**[A]	**623**[A]	**9,590**[A]	**7,600**[A]	**6,200**[A]	**140**[A]	**2,600**[A]	**197**[A]	**1,330**[A]	**73.4**[A]
1,2-DIBROMOETHANE (EDB)	µg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	*ND (2)*	-	-	-	-
1,2-DICHLOROETHANE (EDC)	µg/L	5	ND (1)	ND (1.0)	ND (1.0)	ND (1.00) SL	ND (2)	ND (2)	ND (2)	*ND (9.02) SL*	ND (0.5)	ND (2.5)	ND (3.0)	ND (3.61)	ND (1.0)	ND (2)	ND (0.5)	ND (1.0)	ND (5.0)	ND (1.00)
ETHYLBENZENE	µg/L	700	6	12.5	4.5	ND (1.00) SL	2	2	0.6 J	46.0 SL	**880**[A]	74.8	**1,140**[A]	585	380	11	74	7.2	30.4	1.61
ISOPROPYLBENZENE (CUMENE)	µg/L	3,500	61	62.3	56.9	60.2 SL	31	29	14	ND (25.0) SL	80	6.4	93.6	35.2	32	65	ND (13)	5.4	14.2	21.8
METHYL TERTIARY BUTYL ETHER	µg/L	20	4	14.0	13.5	**29.3 SL**[A]	**24**[A]	**22**[A]	4	ND (9.18) SL	**770**[A]	**27.1**[A]	**1,700**[A]	**1,360**[A]	**240**[A]	**100**[A]	**110**[A]	16.7	**90.9**[A]	20.0
NAPHTHALENE	µg/L	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TERT-BUTYL ALCOHOL	µg/L	n/v	-	-	-	169 SL	410	480	43	1,470 SL	-	-	-	-	270	-	-	-	-	-
TOLUENE	µg/L	1,000	2	3.7	4.0	1.43 SL	2	2	2	52.5 SL	330	29.7	373	108	63	16	330	7.6	24.1	4.52
1,2,4-TRIMETHYLBENZENE	µg/L	530	3 J	5.8	4.1	ND (1.00) SL	0.6 J	0.5 J	ND (0.3)	194 SL	**1,400**[A]	484	**1,500**[A]	**831**[A]	**580**[A]	2 J	41 J	10.9	8.3 J	1.01
1,3,5-TRIMETHYLBENZENE	µg/L	530	10	15.3	9.5	7.15 SL	7	6	0.6 J	**683 SL**[A]	**540**[A]	260	**537**[A]	344	290	ND (2)	15 J	4.1	3.9 J	1.61
XYLENES, TOTAL (DIMETHYLBENZENE)	µg/L	10,000	3	5.2	5.9	ND (3.00) SL	1 J	1 J	1 J	399 SL	5,800	841	5,030	1,300	580	16	340	16.4	40.6	10.5
Semi-Volatile Organic Compounds																				
ANTHRACENE	µg/L	66	11	ND (0.10)	ND (0.10)	ND (0.250) SL	ND (0.1)	ND (0.1)	0.6	**89.1 SL**[A]	**660**[A]	0.930	6.09	9.24	6.2	-	ND (5)	0.279	0.128 J-	0.204
BENZO(A)ANTHRACENE	µg/L	3.9	1 J	0.515	0.526	0.698 SL	ND (0.1)	ND (0.1)	ND (0.1)	**62.0 SL**[A]	**320**[A]	0.975	1.68	3.11	3.3	-	ND (0.1)	ND (0.10)	ND (0.10) J	ND (0.0500)
BENZO(A)PYRENE	µg/L	0.2	ND (0.1)	**0.297**[A]	**0.311**[A]	**0.336 SL**[A]	ND (0.1)	ND (0.1)	ND (0.1)	**33.2 SL**[A]	**210**[A]	**0.832**[A]	**0.704**[A]	**1.85**[A]	**2.0**[A]	-	ND (0.1)	ND (0.10)	ND (0.10) J	ND (0.0500)
BENZO(B)FLUORANTHENE	µg/L	1.2	1 J	0.436	0.407	0.372 SL	ND (0.1)	ND (0.1)	ND (0.1)	**51.2 SL**[A]	**260**[A]	1.19	0.991	**2.54**[A]	**2.2**[A]	-	ND (0.1)	ND (0.10)	ND (0.10) J	ND (0.0500)
BENZO(G,H,I)PERYLENE	µg/L	0.26	**1 J**[A]	**0.440**[A]	**0.376**[A]	**0.295 SL**[A]	ND (0.1)	ND (0.1)	ND (0.1)	**18.0 SL**[A]	**78**[A]	**0.543**[A]	**0.327**[A]	**0.719**[A]	**0.70**[A]	-	ND (0.1)	ND (0.10)	ND (0.10) J	ND (0.0500)
CHRYSENE	µg/L	1.9	1 J	0.529	0.506	0.740 SL	ND (0.1)	ND (0.1)	ND (0.1)	**47.2 SL**[A]	**360**[A]	1.47	1.68	**3.32**[A]	**2.9**[A]	*ND (28)*	ND (0.1)	ND (0.10)	ND (0.10) J	ND (0.0500)
FLUORENE	µg/L	1,900	64	19.8	20.9	8.33 SL	3	2	2	202 SL	1,100	2.26	25.1	36.5	22	63	ND (5)	1.35	1.00 J-	2.79
NAPHTHALENE	µg/L	100	23	ND (0.10)	ND (0.10)	6.12 SL	1	3	ND (0.1)	**870 SL**[A]	**12,000**[A]	30.5	**1,980**[A]	**1,380**[A]	**660**[A]	11 J	11 J	16.5	1.46 J-	0.994
PHENANTHRENE	µg/L	1,100	110	32.7	40.0	6.31 SL	3	2	1	345 SL	**3,000**[A]	1.60	31.8	47.2	15	82	ND (5)	1.18	0.886 J-	1.38
PYRENE	µg/L	130	10	3.38	3.96	3.97 SL	ND (0.1)	ND (0.1)	ND (0.1)	**179 SL**[A]	**950**[A]	3.10	4.64	10.6	9.8	ND (54)	ND (5)	0.224	ND (0.10) J	0.0601
Metals																				
LEAD, Dissolved	µg/L	5	**26.1**[A]	**6.7**[A]	**8.6**[A]	3.92 B SL	2.3 J	2.5 J	0.97	**86.3 SL**[A]	**6.2**[A]	2.9 J	**6.1**[A]	ND (2.00)	0.81	0.89 J	4.3	ND (3.0)	ND (3.0)	ND (2.00)
LEAD, Total	µg/L	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 3-4a
Groundwater Analytical Results Summary and Stabilized Purged Parameters, Unconfined Aquifer
Belmont Terminal
Philadelphia Refinery Operations, a series of Evergreen Resources Group, LLC

Sample Location			S-331					S-332					S-395						
Sample Date			8-Jun-11	12-Jul-12	28-May-14	15-Dec-14	24-Jul-18	7-Jun-11	19-Jul-12	29-May-14	15-Dec-14	27-Jul-18	27-May-14	15-Dec-14	1-Aug-18	8-Jul-19	6-Nov-19	22-Apr-21	28-Oct-21
Sample ID			S-331	S-331_071212	S-331	S-331-20141215	S-331_20180724	S-332	S-332_071912	S-332	S-332-20141215	S-332_20180727	S-395	S-395-20141215	S-395_20180801	S-395_20190708	S-395_20191106	S-395_20210422	S-395_20211028
Sampling Company			STANTEC	UNKNOWN	STANTEC	STANTEC	STANTEC	STANTEC	UNKNOWN	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC
Laboratory		MSC-PA	LL	LL	ACCUTEST	ACCUTEST	ESC	LL	LL	ACCUTEST	ACCUTEST	ESC	ACCUTEST	ACCUTEST	ESC	LL	LL	LANCASTER	LANCASTER
Laboratory Work Order	Units	A	1250813	1321953	JB67921	JB84215	L1013273	1250813	1323558	JB68176	JB84215	L1013922	JB67921	JB84215	L1014699	2052789	2073752	410-37142-1	410-61302-1
Field Parameters																			
DISSOLVED OXYGEN, FIELD MEASURED	mg/L	n/v	-	-	1.26	1.39	0	-	-	0.53	1.07	0	2.33	3.47	0	0	0	0.15	0.69
OXIDATION REDUCTION POTENTIAL, FIELD MEASURED	mV	n/v	-	-	-114	-30	-92	-	-	-120	-85	245	-11	-47	36	-97	-80	-19	-91
pH, FIELD MEASURED	S.U.	n/v	-	-	6.63	6.77	6.42	-	-	6.72	7.44	6.25	6.88	7.06	6.4	6.50	7.18	5.42	6.63
SPECIFIC CONDUCTANCE FIELD	mS/cm	n/v	-	-	1.35	1.13	1.29	-	-	1.72	1.41	1.40	1.29	1.65	2.12	1.93	1.69	1.23	0.978
TEMPERATURE, FIELD MEASURED	deg c	n/v	-	-	22.76	22.23	27.9	-	-	17.18	16.66	19.86	19.12	14.81	20.58	18.70	17.21	17.46	18.81
TOTAL DISSOLVED SOLIDS, FIELD MEASURED	mg/L	n/v	-	-	0.840	0.717	-	-	-	1.10	-	-	0.861	0.981	-	1.24	1.08	-	-
TURBIDITY	NTU	n/v	-	-	399	> 800	79.2	-	-	65.7	45.5	17.4	32.8	137	16.7	2.70	2.9	55.2	8.1
Volatile Organic Compounds																			
BENZENE	µg/L	5	**240**[A]	**350**[A]	**117**[A]	**55.1**[A]	**42.0**[A]	**1,400**[A]	**300**[A]	**509**[A]	**432**[A]	**110**[A]	**312**[A]	**11.3**[A]	ND (1.00)	ND (0.2)	ND (0.2)	0.45 J	ND (1.0)
1,2-DIBROMOETHANE (EDB)	µg/L	0.05	*ND (3)*	-	-	-	-	*ND (2)*	-	-	-	-	-	-	-	-	-	-	-
1,2-DICHLOROETHANE (EDC)	µg/L	5	ND (3)	ND (3)	ND (3.0)	ND (5.0)	ND (1.00)	ND (2)	ND (3)	ND (5.0)	ND (1.0)	ND (1.00)	ND (1.0)	ND (1.0)	ND (1.00)	ND (2)	ND (2)	ND (1.0)	ND (1.0)
ETHYLBENZENE	µg/L	700	6 J	18	ND (10)	ND (5.0)	1.08	160	22	52.8	35.4	18.3	0.58 J	ND (1.0)	ND (1.00)	ND (0.2)	ND (0.2)	ND (1.0)	ND (1.0)
ISOPROPYLBENZENE (CUMENE)	µg/L	3,500	ND (3)	10 J	19.8	12.5	17.0	55	24	70.3	55.5	25.8	1.5	0.87 J	ND (1.00)	ND (0.3)	ND (0.3)	ND (5.0)	ND (5.0)
METHYL TERTIARY BUTYL ETHER	µg/L	20	**2,400**[A]	**3,600**[A]	**3,030**[A]	**1,330**[A]	**2,220**[A]	12	ND (3)	2.6 J	4.3	1.39	ND (1.0)	ND (1.0)	ND (1.00)	ND (0.2)	ND (0.2)	ND (1.0)	ND (1.0)
NAPHTHALENE	µg/L	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TERT-BUTYL ALCOHOL	µg/L	n/v	-	-	-	-	-	-	-	-	-	39.4	-	-	ND (5.00)	ND (10)	ND (10)	ND (50)	ND (50)
TOLUENE	µg/L	1,000	3 J	5 J	2.9 J	3.8 J	4.06	26	5	17.3	16.4	5.67	2.1	ND (1.0)	ND (1.00)	ND (0.2)	ND (0.2)	ND (1.0)	ND (1.0)
1,2,4-TRIMETHYLBENZENE	µg/L	530	16	32	3.0 J	1.7 J	ND (1.00)	66	16	4.5 J	5.1	ND (1.00)	0.30 J	ND (2.0)	ND (1.00)	ND (0.3)	ND (0.3)	ND (5.0)	ND (5.0)
1,3,5-TRIMETHYLBENZENE	µg/L	530	12 J	17	ND (20)	ND (10)	ND (1.00)	24	6 J	5.0 J	5.3	1.55	ND (2.0)	ND (2.0)	ND (1.00)	ND (0.3)	ND (0.3)	ND (5.0)	ND (5.0)
XYLENES, TOTAL (DIMETHYLBENZENE)	µg/L	10,000	34	42	9.0 J	7.6	15.0	78	16	40.4	35.8	21.2	1.3	ND (1.0)	ND (3.00)	ND (0.5)	ND (0.8)	ND (6.0)	ND (6.0)
Semi-Volatile Organic Compounds																			
ANTHRACENE	µg/L	66	-	3	0.592	1.33	0.591	-	5	2.07	2.53	0.839	ND (0.10)	ND (0.10)	ND (0.0500)	ND (0.1)	ND (0.1)	ND (0.53)	ND (0.51)
BENZO(A)ANTHRACENE	µg/L	3.9	-	1	0.229	0.377	0.172	-	0.5	ND (0.10)	ND (0.10)	ND (0.0500)	ND (0.10)	ND (0.10) J	ND (0.0500)	ND (0.1)	ND (0.1)	ND (0.53)	ND (0.51)
BENZO(A)PYRENE	µg/L	0.2	-	**0.9**[A]	0.117	0.197	0.170	-	0.2 J	ND (0.10)	ND (0.10)	ND (0.0500)	ND (0.10)	ND (0.10)	ND (0.0500)	ND (0.1)	ND (0.1)	ND (0.12)	ND (0.11)
BENZO(B)FLUORANTHENE	µg/L	1.2	-	1	0.214	0.292	0.255	-	0.3 J	ND (0.10)	ND (0.10)	ND (0.0500)	ND (0.10)	ND (0.10)	ND (0.0500)	ND (0.1)	ND (0.1)	ND (0.53)	ND (0.51)
BENZO(G,H,I)PERYLENE	µg/L	0.26	-	**0.4 J**[A]	ND (0.10)	0.152	0.141	-	ND (0.09)	ND (0.10)	ND (0.10)	ND (0.0500)	ND (0.10)	ND (0.10)	ND (0.0500)	ND (0.1)	ND (0.1)	ND (0.11)	ND (0.10)
CHRYSENE	µg/L	1.9	*ND (15)*	1	0.163	0.408	0.249	1.2	0.5	ND (0.10)	ND (0.10)	ND (0.0500)	ND (0.10)	ND (0.10)	ND (0.0500)	ND (0.1)	ND (0.1)	ND (0.53)	ND (0.51)
FLUORENE	µg/L	1,900	4.1	8	3.53	5.39	3.11	27	14	10.9	12.5	4.29	ND (0.10)	ND (0.10)	ND (0.0500)	ND (0.1)	ND (0.1)	ND (0.53)	ND (0.51)
NAPHTHALENE	µg/L	100	2.7	28	2.40	2.47	1.91	82	29	9.30	14.0	7.68	0.212	ND (0.10)	ND (0.250)	ND (0.1)	ND (0.1)	0.52 J	0.59
PHENANTHRENE	µg/L	1,100	3.3	12	2.55	6.18	2.95	23	20	7.85	10.5	1.89	ND (0.10)	ND (0.10)	ND (0.0500)	ND (0.1)	ND (0.1)	ND (0.53)	ND (0.51)
PYRENE	µg/L	130	ND (8.0)	5	0.702	1.74	1.03	4.3	3	0.757	1.01	0.531	ND (0.10)	ND (0.10)	0.0659	ND (0.1)	ND (0.1)	ND (0.53)	ND (0.51)
Metals																			
LEAD, Dissolved	µg/L	5	0.40 J	0.65 J	ND (3.0)	3.1	ND (2.00)	ND (0.08)	0.41 J	ND (3.0)	ND (3.0)	ND (2.00)	ND (3.0)	1.3 J	ND (2.00)	ND (1.1)	0.12 J	0.28 J	ND (0.52)
LEAD, Total	µg/L	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 3-4a
Groundwater Analytical Results Summary and Stabilized Purged Parameters, Unconfined Aquifer
Belmont Terminal
Philadelphia Refinery Operations, a series of Evergreen Resources Group, LLC

Sample Location			S-395		S-452				S-453				S-455						
Sample Date			29-Mar-22	27-Mar-23	26-Mar-21	28-Oct-21	28-Mar-22	27-Mar-23	26-Mar-21	27-Oct-21	28-Mar-22	22-Mar-23	26-Mar-21	28-Oct-21	28-Oct-21	28-Mar-22	28-Mar-22	22-Mar-23	22-Mar-23
Sample ID			S-395_20220329	S-395_20230327	S-452-20210326	S-452_20211028	S-452_20220328	S-452_20230327	S-453-20210326	S-453_20211027	S-453_20220328	S-453_20230322	S-455-20210326	S-455_20211028	DUP-1_20211028	S-455_20220328	DUP-1_20220328	S-455_20230322	DUP1_20230322
Sampling Company			STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC
Laboratory		MSC-PA	SGSA	SGS	LANCASTER	LANCASTER	SGSA	SGS	LANCASTER	LANCASTER	SGSA	SGS	LANCASTER	LANCASTER	LANCASTER	SGSA	SGSA	SGS	SGS
Laboratory Work Order	Units	A	JD42234	JD63001	410-33879-1	410-61302-1	JD42234	JD63001	410-33879-1	410-61053-1	JD42234	JD62757	410-33879-1	410-61302-1	410-61302-1	JD42234	JD42234	JD62757	JD62757
Field Parameters																			
DISSOLVED OXYGEN, FIELD MEASURED	mg/L	n/v	0	0	0.94	0	0	2.92	0.52	10.38	0	2.32	0.42	0	-	0	-	0.9	-
OXIDATION REDUCTION POTENTIAL, FIELD MEASURED	mV	n/v	-68	0	-125	-144	-131	-121	-118	-68	-159	-199	-110	-149	-	-227	-	-69	-
pH, FIELD MEASURED	S.U.	n/v	6.52	6.04	6.64	6.71	6.69	6.35	6.52	5.46	7.32	6.44	6.03	6.79	-	8.29	-	6.66	-
SPECIFIC CONDUCTANCE FIELD	mS/cm	n/v	1.2	1.35	1.32	1.31	1.03	0.905	1.34	1.46	1.64	2.31	2.67	2.8	-	2.3	-	2.32	-
TEMPERATURE, FIELD MEASURED	deg c	n/v	16.15	17.85	21.81	22.21	16	20.67	21.26	22.66	17.4	20.19	21.17	21.19	-	17.33	-	19.43	-
TOTAL DISSOLVED SOLIDS, FIELD MEASURED	mg/L	n/v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TURBIDITY	NTU	n/v	24.6	1.5	43	45.1	96.2	38.7	7.5	147	46.7	13	0	2.1	-	15.3	-	4.3	-
Volatile Organic Compounds																			
BENZENE	µg/L	5	ND (0.50)	ND (0.50)	3,200[A]	6,400[A]	3,280[A]	8,260[A]	3,800[A]	3,900[A]	3,990[A]	3,590[A]	6,300[A]	7,700[A]	7,700[A]	5,720[A]	6,010[A]	1,940[A]	3,760[A]
1,2-DIBROMOETHANE (EDB)	µg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-DICHLOROETHANE (EDC)	µg/L	5	ND (1.0)	ND (1.0)	ND (5.0)	ND (3.0)	ND (4.0)	*ND (30)*	ND (5.0)	ND (5.0)	*ND (6.0)*	*ND (12)*	ND (5.0)	ND (3.0)	ND (3.0)	*ND (12)*	*ND (12)*	*ND (6.0)*	*ND (12)*
ETHYLBENZENE	µg/L	700	ND (1.0)	ND (1.0)	760[A]	1,100[A]	773[A]	980[A]	1,300[A]	1,300[A]	1,510[A]	1,910[A]	530	700	700	421	445	155	233
ISOPROPYLBENZENE (CUMENE)	µg/L	3,500	ND (1.0)	ND (1.0)	83	110	136	135	66	75	98.7	91.3	120	130	130	150	152	112	116
METHYL TERTIARY BUTYL ETHER	µg/L	20	ND (1.0)	ND (1.0)	1,000[A]	2,000[A]	678[A]	3,050[A]	50[A]	90[A]	93.6[A]	68.3[A]	400[A]	360[A]	380[A]	148[A]	147[A]	90.4[A]	97.9[A]
NAPHTHALENE	µg/L	100	-	-	1,300[A]	-	-	-	400[A]	-	-	-	4,800[A]	-	-	-	-	-	-
TERT-BUTYL ALCOHOL	µg/L	n/v	ND (10)	ND (10)	22,000	44,000	23,800	35,000	ND (250)	5,400	2,820	2,430	2,200	3,200	3,200	6,750	6,770	13,200	13,300
TOLUENE	µg/L	1,000	ND (1.0)	ND (1.0)	57	97	81.9	114	50	51	63.0	63.4	410	550	590	48.7	49.5	29.7	35.5
1,2,4-TRIMETHYLBENZENE	µg/L	530	ND (2.0)	ND (2.0)	320	430	399	497	690[A]	670[A]	974[A]	1,250[A]	280	300	300	193	198	96.7	124
1,3,5-TRIMETHYLBENZENE	µg/L	530	ND (2.0)	ND (2.0)	110	160	152	159	220	200	294	304	170	190	190	143	145	74.2	99.1
XYLENES, TOTAL (DIMETHYLBENZENE)	µg/L	10,000	ND (1.0)	ND (1.0)	1,600	2,200	1,620	2,190	1,800	2,000	2,340	3,580	580	960	1,000	356	375	238	277
Semi-Volatile Organic Compounds																			
ANTHRACENE	µg/L	66	ND (0.083)	0.0471 J	5.6	6.1	3.30	15.1	ND (0.51)	ND (0.57)	0.162	1.15	6.9	6.9	7.4	5.46	6.34	9.30	7.93 H
BENZO(A)ANTHRACENE	µg/L	3.9	ND (0.042)	0.0204 J	1.0	1.2	1.23	7.60[A]	ND (0.51)	0.18 J	0.0717	0.635	0.29 J	0.20 J	0.22 J	0.179	0.180	0.420	0.245 H
BENZO(A)PYRENE	µg/L	0.2	ND (0.042)	0.033	0.58[A]	0.72[A]	0.665[A]	3.67[A]	ND (0.11)	0.15 J	0.0374 J	0.420[A]	ND (0.11)	ND (0.12)	ND (0.12)	0.0772	0.0825	0.245[A]	0.118 H
BENZO(B)FLUORANTHENE	µg/L	1.2	0.0261 J	0.0619	0.77	0.84	0.972	4.80[A]	ND (0.51)	0.20 J	0.0715	0.661	0.11 J	ND (0.52)	ND (0.54)	0.0970	0.105	0.281	0.133 H
BENZO(G,H,I)PERYLENE	µg/L	0.26	ND (0.083)	0.0499 J	0.27 J[A]	0.27 J[A]	0.385[A]	1.68[A]	ND (0.10)	0.12 J	ND (0.087)	0.346[A]	ND (0.10)	ND (0.10)	ND (0.11)	ND (0.085)	0.0538 J	0.153	0.0571 J H
CHRYSENE	µg/L	1.9	ND (0.083)	0.0446 J	1.2	1.2	1.20	7.27[A]	ND (0.51)	0.21 J	0.113	0.712	*ND (10)*	0.28 J	0.27 J	0.189	0.207	0.396	0.252 H
FLUORENE	µg/L	1,900	ND (0.083)	ND (0.067)	21	17	16.0	36.0	2.7	1.9	1.01	3.19	43	37	46	36.7	38.5	46.8	43.8 H
NAPHTHALENE	µg/L	100	0.110	0.0486 J	1,300[A]	1,700[A]	1,560[A]	1,570[A]	300[A]	270[A]	308[A]	425[A]	4,400[A]	2,900[A]	2,900[A]	2,280[A]	2,410[A]	1,410[A]	1,870 H[A]
PHENANTHRENE	µg/L	1,100	0.0459 J	0.0885	30	31	28.3	65.5	1.9	1.9	1.94	12.0	38	37	36	31.2	33.1	45.4	44.2 H
PYRENE	µg/L	130	0.0534 J	0.0978	4.6	4.6	3.53	19.1	0.17 J	0.43 J	0.161	1.27	2.8	2.7	2.7	1.94	2.09	2.68	2.22 H
Metals																			
LEAD, Dissolved	µg/L	5	ND (1.0)	ND (1.0)	1.0	2.9	5.2[A]	2.8	8.9[A]	9.1[A]	11.6[A]	25.1[A]	3.3	3.0	3.0	2.5	2.4	1.3	1.5
LEAD, Total	µg/L	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 3-4a
Groundwater Analytical Results Summary and Stabilized Purged Parameters, Unconfined Aquifer
Belmont Terminal
Philadelphia Refinery Operations, a series of Evergreen Resources Group, LLC

Sample Location			S-456				S-457				S-458				S-461				
Sample Date			24-Mar-21	27-Oct-21	29-Mar-22	23-Mar-23	26-Mar-21	29-Oct-21	30-Mar-22	30-Mar-23	23-Mar-21	26-Oct-21	29-Mar-22	22-Mar-23	22-Mar-21	17-May-21	27-Oct-21	30-Mar-22	27-Mar-23
Sample ID			S-456-20210324	S-456_20211027	S-456_20220329	S-456_20230322	S-457-20210326	S-457_20211029	S-457_20220330	S-457_20230330	S-458-20210323	S-458_20211026	S-458_20220329	S-458_20230322	S-461-20210322	S-461_DDT_20210517	S-461_20211027	S-461_20220330	S-461_20230327
Sampling Company																			
Laboratory		MSC-PA	STANTEC LANCASTER	STANTEC LANCASTER	STANTEC SGSA	STANTEC SGS	STANTEC LANCASTER	STANTEC LANCASTER	STANTEC SGSA	STANTEC SGS	STANTEC LANCASTER	STANTEC LANCASTER	STANTEC SGSA	STANTEC SGS	STANTEC LANCASTER	STANTEC LANCASTER	STANTEC LANCASTER	STANTEC SGSA	STANTEC SGS
Laboratory Work Order	Units	A	410-33879-1	410-61053-1	JD42234	JD62757	410-33879-1	410-61302-1	JD42387	JD63001	410-33523-1	410-60816-1	JD42234	JD62757	410-33523-1	410-40441-1	410-61053-1	JD42387	JD63001
Field Parameters																			
DISSOLVED OXYGEN, FIELD MEASURED	mg/L	n/v	0.06	0	0.36	1.85	0.88	5.18	0.3	0	0.15	0.6	0.53	2.38	0.75	0.5	0	0	2.18
OXIDATION REDUCTION POTENTIAL, FIELD MEASURED	mV	n/v	-37	-129	-100	-115	-144	-66	-126	-60	23	-65	-1	-18	-98	-88	-102	-148	-126
pH, FIELD MEASURED	S.U.	n/v	5.89	6.34	5.95	6.5	6.82	5.71	6.43	5.74	5.87	7.14	5.95	6.82	6.32	6.04	6.42	6.91	6.58
SPECIFIC CONDUCTANCE FIELD	mS/cm	n/v	1.4	1.61	1.17	1.54	1.91	2.56	1.45	3.28	1.67	1.5	1.24	1.83	2.17	1.7	2.23	1.67	1.51
TEMPERATURE, FIELD MEASURED	deg c	n/v	18.21	21.33	15.25	18.97	18.38	18.58	15.2	18.18	19.26	16.61	14.42	18.76	19.62	18.59	19.06	16.03	18.77
TOTAL DISSOLVED SOLIDS, FIELD MEASURED	mg/L	n/v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TURBIDITY	NTU	n/v	228	223	100	800	37.1	230	179	17.7	8.9	37.4	200	1.6	40.7	200	107	5.3	9.7
Volatile Organic Compounds																			
BENZENE	µg/L	5	**220**[A]	**160**[A]	**96.9**[A]	**89.5**[A]	**18,000**[A]	**20,000**[A]	**25,100**[A]	**26,100**[A]	**270**[A]	**560**[A]	**1,090**[A]	**397**[A]	**1,000**[A]	-	**30**[A]	**18.6**[A]	**87.6**[A]
1,2-DIBROMOETHANE (EDB)	µg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-DICHLOROETHANE (EDC)	µg/L	5	ND (1.0)	ND (1.0)	ND (2.5)	ND (1.0)	ND (3.0)	*ND (15)*	*ND (30)*	*ND (120)*	**6.4**[A]	ND (5.0)	ND (1.0)	ND (1.0)	ND (5.0)	-	ND (5.0)	ND (1.0)	ND (1.0)
ETHYLBENZENE	µg/L	700	9.6	23	16.4	10.4	**1,400**[A]	**1,800**[A]	**1,860**[A]	**3,020**[A]	ND (5.0)	ND (5.0)	0.72 J	ND (1.0)	21	-	5.7	1.8	4.3
ISOPROPYLBENZENE (CUMENE)	µg/L	3,500	44	86	70.5	56.9	53	63 J	71.9	ND (200)	ND (25)	2.1 J	1.5	ND (1.0)	25	-	14 J	27.9	60.5
METHYL TERTIARY BUTYL ETHER	µg/L	20	**33**[A]	**100**[A]	**97.1**[A]	**72.4**[A]	**3,700**[A]	**4,400**[A]	**6,020**[A]	**4,350**[A]	ND (5.0)	ND (5.0)	ND (1.0)	ND (1.0)	**28**[A]	-	**140**[A]	17.3	**26.2**[A]
NAPHTHALENE	µg/L	100	23	-	-	-	**4,300**[A]	-	-	-	ND (25)	-	-	-	ND (25)	-	-	-	-
TERT-BUTYL ALCOHOL	µg/L	n/v	1,200	3,900	3,720	1,370	23,000	22,000	22,000	21,800	ND (250)	ND (250)	ND (10)	ND (10)	1,100	-	820	550	478
TOLUENE	µg/L	1,000	14	10	7.1	6.5	770	**1,100**[A]	**1,390**[A]	**1,910**[A]	2.5 J	ND (5.0)	ND (1.0)	ND (1.0)	470	-	8.9	2.0	7.3
1,2,4-TRIMETHYLBENZENE	µg/L	530	6.5	12	9.3	7.0	**550**[A]	**770**[A]	**690**[A]	**1,200**[A]	5.2 J	ND (25)	ND (2.0)	ND (2.0)	18 J	-	ND (25)	2.1	24.0
1,3,5-TRIMETHYLBENZENE	µg/L	530	4.6 J	11	7.9	7.8	150	210 J	190	345 J	2.3 J	ND (25)	ND (2.0)	ND (2.0)	1.8 J	-	ND (25)	ND (2.0)	3.5
XYLENES, TOTAL (DIMETHYLBENZENE)	µg/L	10,000	10	19	13.5	10.5	3,500	5,200	5,550	8,590	ND (30)	ND (30)	1.0	ND (1.0)	200	-	45	19.4	128
Semi-Volatile Organic Compounds																			
ANTHRACENE	µg/L	66	2.4	5.0	3.17	2.14	1.6	2.3	0.907	**132**[A]	ND (0.53)	ND (0.51)	ND (0.080)	ND (0.077)	ND (0.51)	-	ND (0.52)	0.0450 J	0.0988
BENZO(A)ANTHRACENE	µg/L	3.9	1.9	0.36 J	0.217	0.431	0.15 J	0.81	0.201	**80.8**[A]	ND (0.53)	ND (0.51)	ND (0.040)	ND (0.038)	ND (0.51)	-	0.11 J	ND (0.043)	0.0415
BENZO(A)PYRENE	µg/L	0.2	**2.8**[A]	**0.24 J**[A]	0.101	**0.399**[A]	ND (0.11)	**0.35 J**[A]	0.121	**40.7**[A]	ND (0.12)	ND (0.11)	ND (0.040)	ND (0.038)	ND (0.11)	-	ND (0.11)	ND (0.043)	ND (0.040)
BENZO(B)FLUORANTHENE	µg/L	1.2	**6.0**[A]	0.38 J	0.141	0.877	ND (0.51)	0.44 J	0.165	**65.1**[A]	ND (0.53)	ND (0.51)	ND (0.040)	ND (0.038)	ND (0.51)	-	ND (0.52)	ND (0.043)	ND (0.040)
BENZO(G,H,I)PERYLENE	µg/L	0.26	**2.6**[A]	0.17 J	0.0657 J	**0.502**[A]	ND (0.10)	0.16 J	0.0621 J	**19.1**[A]	ND (0.11)	ND (0.10)	ND (0.080)	ND (0.077)	ND (0.10)	-	ND (0.10)	ND (0.087)	ND (0.080)
CHRYSENE	µg/L	1.9	**5.5**[A]	0.45 J	0.223	0.949	0.19 J	0.79	0.222	**76.4**[A]	ND (0.53)	ND (0.51)	ND (0.080)	ND (0.077)	ND (0.51)	-	ND (0.52)	ND (0.087)	ND (0.080)
FLUORENE	µg/L	1,900	9.6	29	19.9	15.4	14	10	9.60	266	ND (0.53)	ND (0.51)	ND (0.080)	ND (0.077)	0.25 J	-	ND (0.52)	0.105	0.181
NAPHTHALENE	µg/L	100	7.1	25	17.0	6.76	**3,100**[A]	**2,500**[A]	**2,290 B**[A]	**7,700**[A]	0.67	ND (0.51)	0.0709 J	0.178	0.94	-	0.79	1.04 B	1.38
PHENANTHRENE	µg/L	1,100	5.7	19	16.0	8.98	13	15	6.50	625	0.22 J	ND (0.51)	0.0657 J	0.0992	0.24 J	-	0.13 J	0.0579 J	0.2
PYRENE	µg/L	130	8.6	2.5	1.26	2.39	0.86	2.4	0.818	**200**[A]	ND (0.53)	ND (0.51)	0.0451 J	0.0393 J	0.25 J	-	1.1	0.128	0.287
Metals																			
LEAD, Dissolved	µg/L	5	ND (0.52)	0.36 J	ND (1.0)	ND (1.0)	1.3	**5.2**[A]	3.2	**8.5**[A]	ND (0.52)	ND (0.52)	ND (1.0)	ND (1.0)	ND (0.52)	-	ND (0.52)	ND (1.0)	ND (1.0)
LEAD, Total	µg/L	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 3-4a
Groundwater Analytical Results Summary and Stabilized Purged Parameters, Unconfined Aquifer
Belmont Terminal
Philadelphia Refinery Operations, a series of Evergreen Resources Group, LLC

Sample Location			S-463				S-464						S-465						
Sample Date			22-Mar-21	28-Oct-21	30-Mar-22	23-Mar-23	22-Mar-21	28-Oct-21	30-Mar-22	19-Oct-22	15-Nov-22	23-Mar-23	25-Mar-21	19-May-21	28-Oct-21	1-Apr-22	20-Oct-22	17-Nov-22	28-Mar-23
Sample ID			S-463-20210322	S-463_20211028	S-463_20220330	S-463_20230323	S-464-20210322	S-464_20211028	S-464_20220330	S-464_20221019	S-464_20221115	S-464_20230323	S-465-20210325	S-465_DDT_20210519	S-465_20211028	S-465_20220401	S-465_20221020	S-465_20221117	S-465_20230328
Sampling Company			STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	GEOSYNTEC	GEOSYNTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	GEOSYNTEC	GEOSYNTEC	STANTEC
Laboratory		MSC-PA	LANCASTER	LANCASTER	SGSA	SGS	LANCASTER	LANCASTER	SGSA	PACE	PACE	SGS	LANCASTER	LANCASTER	LANCASTER	SGSA	PACE	PACE	SGS
Laboratory Work Order	Units	A	410-33523-1	410-61302-1	JD42387	JD62757	410-33523-1	410-61302-1	JD42387	L1548740	L1559852	JD62757	410-33879-1	410-40661-1	410-61302-1	JD42387	L1549409	L1559852	JD63001
Field Parameters																			
DISSOLVED OXYGEN, FIELD MEASURED	mg/L	n/v	0.27	1.2	0	0.63	0.56	4.73	0	-	-	0.61	0.32	0	0	0.989	-	-	0
OXIDATION REDUCTION POTENTIAL, FIELD MEASURED	mV	n/v	-44	-66	-84	-71	-103	-37	-33	-	-	-62	-42	17	-109	200	-	-	-11
pH, FIELD MEASURED	S.U.	n/v	6.22	6.89	6.82	6.3	6.32	5.52	6.18	-	-	6.43	6.56	5.87	6.71	6.37	-	-	5.86
SPECIFIC CONDUCTANCE FIELD	mS/cm	n/v	1.14	0.885	0.984	1.53	1.62	1.11	0.462	-	-	1.22	1.43	1.25	1.4	0.901	-	-	1.24
TEMPERATURE, FIELD MEASURED	deg c	n/v	19.92	19.66	17.81	16.25	18.73	21.07	14.35	-	-	14.75	17.17	18.39	18.61	14.64	-	-	17.08
TOTAL DISSOLVED SOLIDS, FIELD MEASURED	mg/L	n/v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TURBIDITY	NTU	n/v	0.5	0	8.7	4.9	2	2.8	180	-	-	19.8	31.1	200	5	21	-	-	0
Volatile Organic Compounds																			
BENZENE	µg/L	5	8,400[A]	2,300[A]	5,420[A]	31,700[A]	120,000[A]	170,000[A]	159,000[A]	96,500[A]	65,100[A]	48,100[A]	30,000[A]	-	32,000[A]	22,900[A]	61,700[A]	22,100[A]	21,900[A]
1,2-DIBROMOETHANE (EDB)	µg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-DICHLOROETHANE (EDC)	µg/L	5	2.2 J	ND (5.0)	*ND (15)*	*ND (60)*	*ND (30)*	*ND (6.0)*	*ND (6.0)*	-	-	*ND (120)*	ND (3.0)	-	*ND (15)*	*ND (60)*	-	-	*ND (30)*
ETHYLBENZENE	µg/L	700	3.8 J	ND (5.0)	ND (25)	74.3 J	70 J	69	41.1	ND (100)	ND (50.0)	ND (200)	88	-	86	ND (100)	179	67.5	81.9
ISOPROPYLBENZENE (CUMENE)	µg/L	3,500	4.4 J	ND (25)	ND (25)	82.9 J	92 J	84 J	43.3	-	-	ND (200)	19 J	-	23 J	ND (100)	-	-	ND (50)
METHYL TERTIARY BUTYL ETHER	µg/L	20	ND (5.0)	ND (5.0)	ND (13)	*ND (51)*	ND (20)	ND (20)	ND (10)	ND (10.1)	ND (5.05)	*ND (100)*	ND (10)	-	ND (10)	*ND (51)*	ND (10.1)	ND (20.0)	*ND (25)*
NAPHTHALENE	µg/L	100	ND (25)	-	-	-	ND (100)	-	-	-	-	-	36 J	-	-	-	-	-	-
TERT-BUTYL ALCOHOL	µg/L	n/v	ND (250)	ND (250)	ND (250)	ND (1,000)	ND (5,000)	ND (1,000)	ND (100)	-	-	ND (2,000)	ND (500)	-	ND (2,500)	ND (1,000)	-	-	ND (500)
TOLUENE	µg/L	1,000	16	6.7	ND (25)	325	750	1,000	512	544	596	ND (200)	1,300[A]	-	520	195	946	232	117
1,2,4-TRIMETHYLBENZENE	µg/L	530	ND (25)	ND (25)	ND (50)	ND (200)	ND (500)	ND (100)	ND (20)	-	-	ND (400)	36 J	-	ND (250)	ND (200)	-	-	ND (100)
1,3,5-TRIMETHYLBENZENE	µg/L	530	ND (25)	ND (25)	ND (50)	ND (200)	ND (500)	ND (100)	ND (20)	-	-	ND (400)	12 J	-	ND (250)	ND (200)	-	-	ND (100)
XYLENES, TOTAL (DIMETHYLBENZENE)	µg/L	10,000	17 J	ND (30)	ND (25)	294	320 J	270	165	ND (300)	ND (150)	ND (200)	470	-	450	232	894	262	245
Semi-Volatile Organic Compounds																			
ANTHRACENE	µg/L	66	ND (0.52)	ND (0.51)	0.0505 J	0.348	0.13 J	ND (0.57)	0.0763 J	-	-	0.0520 J	0.14 J	-	0.14 J	ND (0.080)	-	-	0.206
BENZO(A)ANTHRACENE	µg/L	3.9	ND (0.52)	ND (0.51)	ND (0.043)	0.817	ND (0.51)	ND (0.57)	0.0526	-	-	0.0335 J	ND (0.51)	-	ND (0.51)	0.0352 JB	-	-	0.0463
BENZO(A)PYRENE	µg/L	0.2	ND (0.11)	ND (0.11)	ND (0.043)	1.03[A]	ND (0.11)	ND (0.13)	0.0632	-	-	0.0263 J	ND (0.11)	-	ND (0.11)	ND (0.040)	-	-	ND (0.040)
BENZO(B)FLUORANTHENE	µg/L	1.2	ND (0.52)	ND (0.51)	ND (0.043)	2.15[A]	ND (0.51)	ND (0.57)	0.0848	-	-	0.0725	ND (0.51)	-	ND (0.51)	ND (0.040)	-	-	0.0265 J
BENZO(G,H,I)PERYLENE	µg/L	0.26	ND (0.10)	ND (0.10)	ND (0.087)	1.17[A]	ND (0.10)	ND (0.11)	0.0538 J	-	-	ND (0.083)	ND (0.10)	-	ND (0.10)	ND (0.080)	-	-	ND (0.080)
CHRYSENE	µg/L	1.9	ND (0.52)	ND (0.51)	ND (0.087)	1.52	ND (0.51)	ND (0.57)	0.0675 J	-	-	ND (0.083)	ND (0.51)	-	ND (0.51)	0.0426 J	-	-	0.0623 J
FLUORENE	µg/L	1,900	ND (0.52)	0.13 J	0.141	0.455	0.42 J	0.24 J	0.126	-	-	0.118	0.24 J	-	0.38 J	0.0657 JB	-	-	0.258
NAPHTHALENE	µg/L	100	3.4	0.35 J	1.21 B	1.57	9.6	7.2	1.88 B	-	-	1.39	21	-	19	6.20	-	-	21.4
PHENANTHRENE	µg/L	1,100	0.21 J	0.19 J	0.0895	2.18	0.64	0.31 J	0.199	-	-	0.160	0.13 J	-	0.48 J	ND (0.080)	-	-	0.0695 J
PYRENE	µg/L	130	ND (0.52)	ND (0.51)	0.0529 J	2.32	ND (0.51)	ND (0.57)	0.100	-	-	0.0572 J	ND (0.51)	-	0.19 J	0.135	-	-	0.186
Metals																			
LEAD, Dissolved	µg/L	5	ND (0.52)	ND (0.52)	ND (1.0)	ND (1.0)	ND (0.52)	ND (0.52)	ND (1.0)	-	-	ND (1.0)	0.12 J	-	ND (0.52)	ND (1.0)	-	-	ND (1.0)
LEAD, Total	µg/L	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 3-4a
Groundwater Analytical Results Summary and Stabilized Purged Parameters, Unconfined Aquifer
Belmont Terminal
Philadelphia Refinery Operations, a series of Evergreen Resources Group, LLC

Sample Location			S-467				S-468				S-469				S-472				S-487	
Sample Date			24-Mar-21	26-Oct-21	28-Mar-22	23-Mar-23	24-Mar-21	26-Oct-21	29-Mar-22	23-Mar-23	25-Mar-21	27-Oct-21	29-Mar-22	28-Mar-23	24-Mar-21	29-Oct-21	30-Mar-22	28-Mar-23	18-Oct-22	17-Nov-22
Sample ID			S-467-20210324	S-467_20211026	S-467_20220328	S-467_20230323	S-468-20210324	S-468_20211026	S-468_20220329	S-468_20230323	S-469-20210325	S-469_20211027	S-469_20220329	S-469_20230328	S-472-20210324	S-472_20211029	S-472_20220330	S-472_20230328	S-487_20221018	S-487_20221117
Sampling Company			STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	GEOSYNTEC	GEOSYNTEC
Laboratory		MSC-PA	LANCASTER	LANCASTER	SGSA	SGS	LANCASTER	LANCASTER	SGSA	SGS	LANCASTER	LANCASTER	SGSA	SGS	LANCASTER	LANCASTER	SGSA	SGS	PACE	PACE
Laboratory Work Order	Units	A	410-33879-1	410-60816-1	JD42234	JD62757	410-33879-1	410-60816-1	JD42234	JD62757	410-33879-1	410-61053-1	JD42234	JD63001	410-33879-1	410-61302-1	JD42387	JD63001	L1548740	L1559852
Field Parameters																				
DISSOLVED OXYGEN, FIELD MEASURED	mg/L	n/v	0.83	0.87	0	1.97	1.81	0.17	0.18	2.58	0.35	0	0	0	1.92	0	0	0	-	-
OXIDATION REDUCTION POTENTIAL, FIELD MEASURED	mV	n/v	-145	-135	-140	-165	-178	-172	-136	-174	59	-18	-80	-18	-87	-61	-92	-86	-	-
pH, FIELD MEASURED	S.U.	n/v	6.83	7.29	6.67	6.75	6.99	7.57	6.39	6.66	6.54	6.28	7.03	5.64	6.44	5.51	6.23	5.06	-	-
SPECIFIC CONDUCTANCE FIELD	mS/cm	n/v	2.88	1.64	1.77	1.87	2.11	2.5	1.23	1.71	1.74	1.45	1.72	1.91	2.67	3.02	6.73	2.65	-	-
TEMPERATURE, FIELD MEASURED	deg c	n/v	18.3	18.43	16.27	18.58	18.82	18.13	15.18	19.7	16.54	21.93	15.77	17.19	17.89	19.37	17.51	18.42	-	-
TOTAL DISSOLVED SOLIDS, FIELD MEASURED	mg/L	n/v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TURBIDITY	NTU	n/v	7	7.3	7.3	44.1	105	33.5	90.1	59	11.8	13.9	0	0.4	211	184	15.5	0	-	-
Volatile Organic Compounds																				
BENZENE	µg/L	5	**370**[A]	**500**[A]	**194**[A]	**342**[A]	**410**[A]	**360**[A]	**391**[A]	**308**[A]	**28**[A]	3.4	ND (0.50)	4.3	**180**[A]	**190**[A]	**219**[A]	**257**[A]	**549,000**[A]	**510,000**[A]
1,2-DIBROMOETHANE (EDB)	µg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-DICHLOROETHANE (EDC)	µg/L	5	0.65 J	ND (1.0)	ND (1.0)	ND (2.0)	ND (1.0)	ND (5.0)	ND (4.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (5.0)	*ND (6.0)*	*ND (15)*	-	-
ETHYLBENZENE	µg/L	700	25	33	14.9	14.4	400	370	329	308	ND (1.0)	ND (1.0)	ND (1.0)	0.82 J	**970**[A]	**1,500**[A]	**1,610**[A]	**1,510**[A]	ND (500)	ND (500)
ISOPROPYLBENZENE (CUMENE)	µg/L	3,500	100	87	115	137	130	130	139	138	ND (5.0)	ND (5.0)	ND (1.0)	ND (1.0)	110	160	181	172	-	-
METHYL TERTIARY BUTYL ETHER	µg/L	20	**78**[A]	**160**[A]	**385**[A]	**743**[A]	13	10	10.6	17.2	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	0.79 J	ND (5.0)	ND (10)	ND (13)	*ND (50.5)*	*ND (50.5)*
NAPHTHALENE	µg/L	100	85	-	-	-	**3,100**[A]	-	-	-	ND (5.0)	-	-	-	**3,500**[A]	-	-	-	-	-
TERT-BUTYL ALCOHOL	µg/L	n/v	570	900	520	1,920	360	ND (250)	471	343	ND (50)	ND (50)	ND (10)	ND (10)	25 J	ND (250)	ND (100)	ND (250)	-	-
TOLUENE	µg/L	1,000	20	21	14.3	17.3	23	17	16.3	16.9	1.1	ND (1.0)	ND (1.0)	ND (1.0)	8.8	7.2	7.9 J	ND (25)	**14,500**[A]	**12,600**[A]
1,2,4-TRIMETHYLBENZENE	µg/L	530	64	39	9.2	8.6	280	260	215	239	ND (5.0)	ND (5.0)	ND (2.0)	ND (2.0)	490	**750**[A]	**882**[A]	**820**[A]	-	-
1,3,5-TRIMETHYLBENZENE	µg/L	530	22	29	8.9	8.5	94	76	66.1	71.1	ND (5.0)	ND (5.0)	ND (2.0)	ND (2.0)	130	210	222	205	-	-
XYLENES, TOTAL (DIMETHYLBENZENE)	µg/L	10,000	55	51	39.9	43.1	210	170	162	183	ND (6.0)	ND (6.0)	ND (1.0)	4.2	290	480	517	473	ND (1,500)	ND (1,500)
Semi-Volatile Organic Compounds																				
ANTHRACENE	µg/L	66	6.3	2.5	1.71	12.8	16	13	3.26	29.2	ND (0.51)	ND (0.51)	ND (0.083)	ND (0.078)	9.9	7.7	6.20	0.0691 J	-	-
BENZO(A)ANTHRACENE	µg/L	3.9	0.38 J	ND (0.53)	0.144	3.23	2.8	3.1	0.406	**10.1**[A]	ND (0.51)	ND (0.51)	ND (0.042)	0.117	2.4	0.93	0.147	0.0277 J	-	-
BENZO(A)PYRENE	µg/L	0.2	0.20 J	ND (0.12)	0.0714	**3.98**[A]	**1.9**[A]	**1.7**[A]	**0.210**[A]	**5.72**[A]	ND (0.11)	ND (0.11)	ND (0.042)	0.133	**1.6**[A]	**0.52 J**[A]	0.0577	ND (0.039)	-	-
BENZO(B)FLUORANTHENE	µg/L	1.2	0.31 J	ND (0.53)	0.0917	**6.37**[A]	**2.0**[A]	**2.0**[A]	0.272	**6.00**[A]	ND (0.51)	ND (0.51)	ND (0.042)	0.174	**1.8**[A]	0.57 J	0.0565	ND (0.039)	-	-
BENZO(G,H,I)PERYLENE	µg/L	0.26	ND (0.13)	ND (0.11)	ND (0.082)	**6.37**[A]	**0.60**[A]	**0.65**[A]	0.106	**2.28**[A]	ND (0.10)	ND (0.10)	ND (0.083)	0.159	**0.62**[A]	0.20 J	ND (0.082)	ND (0.078)	-	-
CHRYSENE	µg/L	1.9	0.55 J	ND (0.53)	0.141	**3.03**[A]	**3.4**[A]	**3.2**[A]	0.394	**9.89**[A]	ND (0.51)	ND (0.51)	ND (0.083)	0.151	**2.7**[A]	1.1	0.157	ND (0.078)	-	-
FLUORENE	µg/L	1,900	32	15	10.8	33.2	67	63	28.0	65.0	ND (0.51)	ND (0.51)	ND (0.083)	ND (0.078)	38	41	50.4	0.133	-	-
NAPHTHALENE	µg/L	100	66	86	8.58	30.3	**3,200**[A]	**2,400**[A]	**1,050**[A]	**1,210**[A]	ND (0.51)	0.56	0.0835	0.309	**5,800**[A]	**5,500**[A]	**11,400 B**[A]	**3,040**[A]	-	-
PHENANTHRENE	µg/L	1,100	39	13	13.0	53.4	85	76	28.4	111	ND (0.51)	ND (0.51)	ND (0.083)	0.207	49	41	36.8	0.315	-	-
PYRENE	µg/L	130	3.0	0.85	0.827	11.3	12	11	1.70	29.5	ND (0.51)	ND (0.51)	ND (0.083)	0.226	8.6	4.3	1.68	0.0841	-	-
Metals																				
LEAD, Dissolved	µg/L	5	0.38 J	0.45 J	ND (1.0)	1.6	ND (0.52)	ND (0.52)	ND (1.0)	ND (1.0)	0.089 J	ND (0.52)	ND (1.0)	ND (1.0)	0.43 J	0.32 J	ND (1.0)	ND (1.0)	-	-
LEAD, Total	µg/L	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 3-4a
Groundwater Analytical Results Summary and Stabilized Purged Parameters, Unconfined Aquifer
Belmont Terminal
Philadelphia Refinery Operations, a series of Evergreen Resources Group, LLC

Sample Location			S-488		S-490		S-492		S-493		S-501		S-502		S-503		S-504		S-506	
Sample Date			18-Oct-22	17-Nov-22	19-Oct-22	15-Nov-22	20-Oct-22	15-Nov-22	18-Oct-22	15-Nov-22	28-Jul-23	26-Oct-23	27-Jul-23	26-Oct-23	27-Jul-23	26-Oct-23	27-Jul-23	26-Oct-23	28-Jul-23	26-Oct-23
Sample ID			S-488_20221018	S-488_20221117	S-490_20221019	S-490_20221115	S-492_20221020	S-492_20221115	S-493_20221018	S-493_20221115	S-501_20230728	S-501_20231026	S-502_20230727	S-502_20231026	S-503_20230727	S-503_20231026	S-504_20230727	S-504_20231026	S-506_20230728	S-506_20231026
Sampling Company			GEOSYNTEC PACE	GEOSYNTEC PACE	GEOSYNTEC PACE	GEOSYNTEC PACE	GEOSYNTEC PACE	GEOSYNTEC PACE	GEOSYNTEC PACE	GEOSYNTEC PACE	STANTEC SGS	STANTEC SGS	STANTEC SGS	STANTEC SGS	STANTEC SGS	STANTEC SGS	STANTEC SGS	STANTEC SGS	STANTEC SGS	STANTEC SGS
Laboratory Work Order	Units	MSC-PA	L1548740	L1559852	L1549409	L1559852	L1549409	L1559852	L1548740	L1559852	JD70134	JD75657	JD70134	JD75657	JD70134	JD75657	JD70134	JD75657	JD70134	JD75657
Field Parameters																				
DISSOLVED OXYGEN, FIELD MEASURED	mg/L	n/v	-	-	-	-	-	-	-	-	0	0	0	0.52	0	0.37	0.33	0.27	0	0
OXIDATION REDUCTION POTENTIAL, FIELD MEASURED	mV	n/v	-	-	-	-	-	-	-	-	-17	-35	-84	-122	-83	-142	-92	-156	-122	-85
pH, FIELD MEASURED	S.U.	n/v	-	-	-	-	-	-	-	-	5.3	5.6	5.66	7.14	5.15	7.2	5.42	6.83	6.41	5.56
SPECIFIC CONDUCTANCE FIELD	mS/cm	n/v	-	-	-	-	-	-	-	-	1.53	0	1.23	1.06	1.01	0.84	0.915	0.857	0.863	0.729
TEMPERATURE, FIELD MEASURED	deg c	n/v	-	-	-	-	-	-	-	-	29.02	20.26	23.14	17.62	18.09	16.54	25.68	17.63	20.04	18.78
TOTAL DISSOLVED SOLIDS, FIELD MEASURED	mg/L	n/v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TURBIDITY	NTU	n/v	-	-	-	-	-	-	-	-	117	89.4	19.5	103	35.9	117	9	78.8	6.4	62.2
Volatile Organic Compounds																				
BENZENE	µg/L	5	**677,000[A]**	**698,000[A]**	**39,700[A]**	**793,000[A]**	**15,300[A]**	**24,200[A]**	**202,000[A]**	**102,000[A]**	**196[A]**	**149[A]**	**88.1[A]**	**101[A]**	**22.0[A]**	**63.7[A]**	**19.2[A]**	**13.9[A]**	**47,400[A]**	**36,800[A]**
1,2-DIBROMOETHANE (EDB)	µg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-DICHLOROETHANE (EDC)	µg/L	5	-	-	-	-	-	-	-	-	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (4.0)	ND (1.0)	ND (4.0)	ND (1.0)	*ND (60)*	*ND (150)*
ETHYLBENZENE	µg/L	700	ND (500)	ND (137)	ND (50.0)	ND (500)	ND (20.0)	ND (500)	ND (200)	122	1.5	0.96 J	18.4	21.7	620	593	66.8	58.3	**6,470[A]**	**5,060[A]**
ISOPROPYLBENZENE (CUMENE)	µg/L	3,500	-	-	-	-	-	-	-	-	3.5	4.8	39.3	41.5	148	83.5	181	115	268	190 J
METHYL TERTIARY BUTYL ETHER	µg/L	20	*ND (50.5)*	*ND (101)*	ND (5.05)	*ND (50.5)*	ND (20.0)	*ND (50.5)*	*ND (20.2)*	ND (10.1)	ND (1.0)	ND (1.0)	0.81 J	0.83 J	ND (4.0)	ND (1.0)	ND (4.0)	1.2	*ND (51)*	*ND (130)*
NAPHTHALENE	µg/L	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TERT-BUTYL ALCOHOL	µg/L	n/v	-	-	-	-	-	-	-	-	ND (10)	ND (10)	ND (10)	ND (10)	ND (40)	ND (10)	ND (40)	ND (10)	ND (1,000)	ND (2,500)
TOLUENE	µg/L	1,000	**19,400[A]**	**24,900[A]**	**1,830[A]**	**13,800[A]**	779	ND (500)	**4,210[A]**	**1,630[A]**	2.1	ND (1.0)	2.1	0.70 J	ND (4.0)	ND (1.0)	ND (4.0)	0.54 J	**18,300[A]**	**16,100[A]**
1,2,4-TRIMETHYLBENZENE	µg/L	530	-	-	-	-	-	-	-	-	ND (2.0)	ND (2.0)	165	155	**676[A]**	485	21.5	24.8	**1,230[A]**	**811[A]**
1,3,5-TRIMETHYLBENZENE	µg/L	530	-	-	-	-	-	-	-	-	ND (2.0)	ND (2.0)	36.2	37.7	200	125	ND (8.0)	3.6	350	262 J
XYLENES, TOTAL (DIMETHYLBENZENE)	µg/L	10,000	ND (1,500)	ND (3,000)	ND (150)	ND (1,500)	ND (60.0)	ND (1,500)	ND (600)	677	2.4	1.5	22.3	21.9	1,620	1,120	3.9 J	7.0	**13,900[A]**	**10,400[A]**
Semi-Volatile Organic Compounds																				
ANTHRACENE	µg/L	66	-	-	-	-	-	-	-	-	0.100	ND (0.080)	1.13	1.31	2.07	3.50	3.94	9.50	19.6	7.54
BENZO(A)ANTHRACENE	µg/L	3.9	-	-	-	-	-	-	-	-	0.0401	ND (0.040)	0.187	0.140	0.313	0.382	0.0518	0.185	**8.06[A]**	1.04
BENZO(A)PYRENE	µg/L	0.2	-	-	-	-	-	-	-	-	ND (0.037)	ND (0.040)	0.0640	0.0593	0.0766	0.110	ND (0.040)	0.0846	**3.39[A]**	**0.599[A]**
BENZO(B)FLUORANTHENE	µg/L	1.2	-	-	-	-	-	-	-	-	0.0317 J	ND (0.040)	0.0904	0.0814	0.107	0.135	ND (0.040)	0.112	**4.15[A]**	0.777
BENZO(G,H,I)PERYLENE	µg/L	0.26	-	-	-	-	-	-	-	-	ND (0.074)	ND (0.080)	ND (0.080)	0.0415 J	ND (0.10)	0.0776 J	ND (0.080)	0.0661 J	**1.64[A]**	**0.268[A]**
CHRYSENE	µg/L	1.9	-	-	-	-	-	-	-	-	0.0422 J	ND (0.080)	0.193	0.146	0.359	0.406	0.0612 J	0.191	**8.61[A]**	1.07
FLUORENE	µg/L	1,900	-	-	-	-	-	-	-	-	0.208	ND (0.080)	69.0	61.6	42.9	38.6	53.3	92.1	54.2	39.0
NAPHTHALENE	µg/L	100	-	-	-	-	-	-	-	-	6.02	0.109	**653[A]**	**570[A]**	**1,700[A]**	**1,960[A]**	38.7 J	58.3	**5,950[A]**	**11,500[A]**
PHENANTHRENE	µg/L	1,100	-	-	-	-	-	-	-	-	0.315	0.0949	1.01	1.38	12.2	13.6	48.3	55.2	73.8	38.2
PYRENE	µg/L	130	-	-	-	-	-	-	-	-	0.123	ND (0.080)	1.92	2.92	4.44	6.64	0.886	2.57	21.0	3.81
Metals																				
LEAD, Dissolved	µg/L	5	-	-	-	-	-	-	-	-	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
LEAD, Total	µg/L	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 3-4a
Groundwater Analytical Results Summary and Stabilized Purged Parameters, Unconfined Aquifer
Belmont Terminal
Philadelphia Refinery Operations, a series of Evergreen Resources Group, LLC

Sample Location			TW-3								TW-5							
Sample Date			15-Oct-04	25-Apr-05	17-Jul-12	30-May-14	17-Dec-14	3-Aug-18	19-Oct-22	18-Nov-22	14-Oct-04	25-Apr-05	13-Jul-12	30-May-14	18-Dec-14	14-Aug-18	3-Jul-19	7-Nov-19
Sample ID			TW-3	TW3-042505	TW3_071712	TW-3	TW-3-20141217	TW-3_20180803	TW-3_20221019	TW-3_20221118	TW-5	TW5-042505	TW-5_071312	TW-5	TW-5-20141218	TW_5_20180814	TW-5_20190703	TW-5_20191107
Sampling Company																		
Laboratory		MSC-PA	UNKNOWN UNKNOWN	UNKNOWN LL	UNKNOWN LL	STANTEC ACCUTEST	STANTEC ACCUTEST	STANTEC ESC	GEOSYNTEC PACE	GEOSYNTEC PACE	UNKNOWN UNKNOWN	UNKNOWN LL	UNKNOWN LL	STANTEC ACCUTEST	STANTEC ACCUTEST	STANTEC ESC	STANTEC LL	STANTEC LL
Laboratory Work Order	Units	A	1985-2013_Hist_GW	UNKNOWN	1323260	JB68176	JB84509	L1015766	L1548740	L1560135	1985-2013_Hist_GW	UNKNOWN	1321953	JB68176	JB84819	L1017806	2052178	2073752
Field Parameters																		
DISSOLVED OXYGEN, FIELD MEASURED	mg/L	n/v	-	-	-	0.80	1.29	0	-	-	-	-	-	1.14	1.49	3.77	0	0
OXIDATION REDUCTION POTENTIAL, FIELD MEASURED	mV	n/v	-	-	-	-81	-49	-49	-	-	-	-	-	-63	52	-22	-151	-122
pH, FIELD MEASURED	S.U.	n/v	-	-	-	6.58	7.24	6.6	-	-	-	-	-	6.41	7.01	6.56	6.45	7.15
SPECIFIC CONDUCTANCE FIELD	mS/cm	n/v	-	-	-	2.05	5.38	1.94	-	-	-	-	-	3.54	3.47	5.67	5.16	3.56
TEMPERATURE, FIELD MEASURED	deg c	n/v	-	-	-	17.47	16.51	21.03	-	-	-	-	-	17.65	14.34	20.23	18.69	18.70
TOTAL DISSOLVED SOLIDS, FIELD MEASURED	mg/L	n/v	-	-	-	1.31	-	-	-	-	-	-	-	2.27	-	-	3.19	2.28
TURBIDITY	NTU	n/v	-	-	-	> 1,000	384	0	-	-	-	-	-	> 1,000	> 800	0	68.4	120
Volatile Organic Compounds																		
BENZENE	µg/L	5	**130,000**[A]	**63,000**[A]	**130,000**[A]	**134,000**[A]	**147,000**[A]	**16,400**[A]	**10,100**[A]	**19,900**[A]	**700,000**[A]	**450,000**[A]	**680,000**[A]	**572,000**[A]	**665,000**[A]	**489,000**[A]	**850,000**[A]	**610,000**[A]
1,2-DIBROMOETHANE (EDB)	µg/L	0.05	ND (0.020)	-	-	-	-	-	-	-	ND (0.020)	-	-	-	-	-	-	-
1,2-DICHLOROETHANE (EDC)	µg/L	5	**2,200**[A]	*ND (100)*	**390 J**[A]	*ND (150)*	*ND (15)*	*ND (180)*	-	-	*ND (200)*	*ND (1,000)*	ND (0.5)	*ND (1,500)*	*ND (15)*	*ND (180)*	ND (2)	ND (2)
ETHYLBENZENE	µg/L	700	**3,500**[A]	**2,700**[A]	**2,000**[A]	**3,580**[A]	**1,460**[A]	**1,260**[A]	199	**4,190**[A]	540	*ND (800)*	670 J	*ND (2,000)*	517	541	410 J	420
ISOPROPYLBENZENE (CUMENE)	µg/L	3,500	ND (780)	ND (500)	ND (250)	480 J	81.3	ND (500)	-	-	ND (200)	ND (1,000)	ND (500)	ND (1,300)	144	ND (500)	ND (150)	110 J
METHYL TERTIARY BUTYL ETHER	µg/L	20	**170,000**[A]	**56,000**[A]	**23,000**[A]	**27,300**[A]	**23,900**[A]	*ND (184)*	**506**[A]	**30,600**[A]	*ND (200)*	*ND (500)*	ND (0.5)	*ND (1,300)*	**22.9 J**[A]	*ND (184)*	ND (0.2)	ND (0.2)
NAPHTHALENE	µg/L	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TERT-BUTYL ALCOHOL	µg/L	n/v	-	-	-	-	-	ND (2,500)	-	-	-	-	-	-	-	-	ND (5,000)	ND (2,000)
TOLUENE	µg/L	1,000	**48,000**[A]	**29,000**[A]	**38,000**[A]	**40,600**[A]	**30,800**[A]	**10,800**[A]	**1,750**[A]	695	**12,000**[A]	**8,500**[A]	**10,000**[A]	**7,340**[A]	**9,320**[A]	*ND (4,120)*	**8,700**[A]	**7,500**[A]
1,2,4-TRIMETHYLBENZENE	µg/L	530	-	-	**1,900**[A]	**11,700**[A]	**1,640**[A]	**1,670**[A]	-	-	-	-	ND (500)	*ND (930)*	26.0 J	*ND (3,730)*	ND (150)	ND (60)
1,3,5-TRIMETHYLBENZENE	µg/L	530	-	-	**590 J**[A]	**3,300**[A]	447	**536**[A]	-	-	-	-	ND (500)	*ND (870)*	13.7 J	ND (500)	ND (150)	ND (60)
XYLENES, TOTAL (DIMETHYLBENZENE)	µg/L	10,000	**20,000**[A]	**17,000**[A]	**18,000**[A]	**34,400**[A]	**15,400**[A]	**10,800**[A]	1,990	1,100	2,100	ND (5,000)	1,900	ND (5,000)	2,450	*ND (10,600)*	1,900 J	1,800
Semi-Volatile Organic Compounds																		
ANTHRACENE	µg/L	66	-	-	20	46.6	7.18	11.8	-	-	-	-	25	1.48	1.06	4.18	0.4 J	ND (0.1)
BENZO(A)ANTHRACENE	µg/L	3.9	-	-	**14**[A]	**20.3**[A]	**4.01**[A]	**5.20**[A]	-	-	-	-	**7**[A]	0.637	0.510	1.33	ND (0.1)	ND (0.1)
BENZO(A)PYRENE	µg/L	0.2	-	-	**14**[A]	**13.5**[A]	**1.91**[A]	**3.27**[A]	-	-	-	-	**5 J**[A]	**0.537**[A]	**0.355**[A]	**0.669**[A]	ND (0.1)	ND (0.1)
BENZO(B)FLUORANTHENE	µg/L	1.2	-	-	**22**[A]	**14.7**[A]	**2.31**[A]	**4.04**[A]	-	-	-	-	**8**[A]	0.844	0.575	1.15	ND (0.1)	ND (0.1)
BENZO(G,H,I)PERYLENE	µg/L	0.26	-	-	**10**[A]	**4.36**[A]	**0.943**[A]	**1.84**[A]	-	-	-	-	**4 J**[A]	**0.413**[A]	**0.289**[A]	**0.528**[A]	ND (0.1)	ND (0.1)
CHRYSENE	µg/L	1.9	**80**[A]	**16**[A]	**21**[A]	**21.2**[A]	**3.64**[A]	**5.24**[A]	-	-	**3.0**[A]	ND (1)	**11**[A]	0.799	0.590	1.27	0.3 J	ND (0.1)
FLUORENE	µg/L	1,900	320	55	40	98.0	15.8	31.0	-	-	ND (14)	ND (10)	28	1.88	1.77	5.44	ND (0.1)	0.5
NAPHTHALENE	µg/L	100	**3,000**[A]	**1,500**[A]	**800**[A]	**866**[A]	**388**[A]	**740**[A]	-	-	*ND (1,000)*	17	**130**[A]	14.3	28.6	27.3	15	14
PHENANTHRENE	µg/L	1,100	640	110	84	162	29.8	43.2	-	-	ND (14)	ND (10)	130	5.70	4.17	21.6	1	1
PYRENE	µg/L	130	**210**[A]	44	46	54.9	10.8	17.4	-	-	ND (14)	ND (10)	48	2.36	1.74	9.67	0.5	ND (0.1)
Metals																		
LEAD, Dissolved	µg/L	5	**50**[A]	-	1.7	**17.8**[A]	ND (3.0)	4.43 B	-	-	ND (5.0)	-	0.077 J	2.4 J	ND (3.0)	ND (2.00)	ND (1.1)	1.2
LEAD, Total	µg/L	5	-	**14.2**[A]	-	-	-	-	-	-	-	ND (2.1)	-	-	-	-	-	-

Table 3-4a
Groundwater Analytical Results Summary and Stabilized Purged Parameters, Unconfined Aquifer
Belmont Terminal
Philadelphia Refinery Operations, a series of Evergreen Resources Group, LLC

Sample Location			TW-5						TW-8								
Sample Date			23-Mar-21	17-May-21	29-Oct-21	18-Oct-22	15-Nov-22	27-Mar-23	15-Oct-04	25-Apr-05	5-Dec-06	18-Dec-07	7-Nov-08	18-Nov-09	10-Nov-10	29-Nov-11	18-Jul-12
Sample ID			TW-5-20210323	TW-5_DDT_20210517	TW-5_20211029	TW-5_20221018	TW-5_20221115	TW-5_20230327	TW-8	TW8-042505	TW-8	TW-8	TW-8_110708	TW-8	TW-8	TW-8	TW-8_071812
Sampling Company			STANTEC	STANTEC	STANTEC	GEOSYNTEC	GEOSYNTEC	STANTEC	UNKNOWN	UNKNOWN	UNKNOWN	UNKNOWN	UNKNOWN	UNKNOWN	UNKNOWN	UNKNOWN	UNKNOWN
Laboratory		MSC-PA	LANCASTER	LANCASTER	LANCASTER	PACE	PACE	SGS	UNKNOWN	LL	UNKNOWN	UNKNOWN	LL	UNKNOWN	UNKNOWN	UNKNOWN	LL
Laboratory Work Order	Units	A	410-33523-1	410-40441-1	410-61302-1	L1548740	L1559852	JD63001	1985-2013_Hist_GW	UNKNOWN	1985-2013_Hist_GW	1985-2013_Hist_GW	1119109	1985-2013_Hist_GW	1985-2013_Hist_GW	1985-2013_Hist_GW	1323260
Field Parameters																	
DISSOLVED OXYGEN, FIELD MEASURED	mg/L	n/v	0.68	0.66	0	-	-	0	-	-	-	-	-	-	-	-	-
OXIDATION REDUCTION POTENTIAL, FIELD MEASURED	mV	n/v	-97	-76	-82	-	-	-21	-	-	-	-	-	-	-	-	-
pH, FIELD MEASURED	S.U.	n/v	6.03	5.93	5.77	-	-	6.15	-	-	-	-	-	-	-	-	-
SPECIFIC CONDUCTANCE FIELD	mS/cm	n/v	3.61	3.59	3.71	-	-	2.89	-	-	-	-	-	-	-	-	-
TEMPERATURE, FIELD MEASURED	deg c	n/v	17.28	19.24	19.48	-	-	20.47	-	-	-	-	-	-	-	-	-
TOTAL DISSOLVED SOLIDS, FIELD MEASURED	mg/L	n/v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TURBIDITY	NTU	n/v	117	1,000	99	-	-	30.6	-	-	-	-	-	-	-	-	-
Volatile Organic Compounds																	
BENZENE	µg/L	5	**640,000[A]**	-	**680,000[A]**	**471,000[A]**	**547,000[A]**	**705,000[A]**	**1,500[A]**	**480[A]**	**150[A]**	**660[A]**	**240[A]**	**240[A]**	**84[A]**	**37[A]**	**80[A]**
1,2-DIBROMOETHANE (EDB)	µg/L	0.05	-	-	-	-	-	-	ND (0.020)	-	ND (0.0099)	ND (0.0094)	-	ND (0.0097)	ND (0.0097)	ND (0.0097)	-
1,2-DICHLOROETHANE (EDC)	µg/L	5	*ND (30)*	-	*ND (150)*	-	-	*ND (1,200)*	*ND (74)*	*ND (50)*	ND (1.0)	*ND (10)*	ND (5)	*ND (10)*	ND (1)	ND (3)	ND (5)
ETHYLBENZENE	µg/L	700	430	-	480 J	322	413	*ND (1,200)*	**2,100[A]**	**2,100[A]**	**2,100[A]**	**1,400[A]**	**1,600[A]**	**1,000[A]**	**1,300[A]**	**1,100[A]**	**1,900[A]**
ISOPROPYLBENZENE (CUMENE)	µg/L	3,500	100 J	-	ND (2,500)	-	-	ND (2,000)	210	280	290	190	170	230	180	200	270
METHYL TERTIARY BUTYL ETHER	µg/L	20	ND (20)	-	*ND (100)*	*ND (25.3)*	*ND (25.3)*	*ND (1,000)*	**290[A]**	*ND (25)*	17	-	**31[A]**	ND (10)	8	8	6 J
NAPHTHALENE	µg/L	100	ND (100)	-	-	-	-	-	-	-	-	-	**13,000[A]**	-	-	-	-
TERT-BUTYL ALCOHOL	µg/L	n/v	ND (5,000)	-	ND (25,000)	-	-	ND (20,000)	-	-	-	-	-	-	-	-	-
TOLUENE	µg/L	1,000	**8,400[A]**	-	**8,100[A]**	**5,570[A]**	**8,240[A]**	**6,500[A]**	ND (80)	ND (250)	5.0	12 J	ND (5)	ND (10)	2	ND (3)	ND (5)
1,2,4-TRIMETHYLBENZENE	µg/L	530	ND (500)	-	ND (500)	-	-	*ND (2,000)*	-	-	-	-	**1,100[A]**	**1,200[A]**	**1,200[A]**	**960[A]**	**1,800[A]**
1,3,5-TRIMETHYLBENZENE	µg/L	530	ND (500)	-	ND (150)	-	-	*ND (2,000)*	-	-	-	-	140	130	91	78	120
XYLENES, TOTAL (DIMETHYLBENZENE)	µg/L	10,000	2,000	-	1,900 J	1,550	2,300	ND (2,000)	1,800	2,800	1,700	870	790	510	430	280	330
Semi-Volatile Organic Compounds																	
ANTHRACENE	µg/L	66	0.21 J	-	0.19 J	-	-	0.201	-	-	-	-	-	-	-	-	44
BENZO(A)ANTHRACENE	µg/L	3.9	ND (0.53)	-	ND (0.57)	-	-	0.0433	-	-	-	-	-	-	-	-	**25[A]**
BENZO(A)PYRENE	µg/L	0.2	ND (0.12)	-	ND (0.12)	-	-	ND (0.034)	-	-	-	-	-	-	-	-	**18[A]**
BENZO(B)FLUORANTHENE	µg/L	1.2	0.11 J	-	ND (0.57)	-	-	0.037	-	-	-	-	-	-	-	-	**22[A]**
BENZO(G,H,I)PERYLENE	µg/L	0.26	ND (0.11)	-	ND (0.11)	-	-	ND (0.069)	-	-	-	-	-	-	-	-	**8[A]**
CHRYSENE	µg/L	1.9	ND (0.53)	-	ND (0.57)	-	-	0.0344 J	**270[A]**	**200[A]**	**580[A]**	**240[A]**	**12[A]**	**16[A]**	**14 J[A]**	*ND (29)*	**26[A]**
FLUORENE	µg/L	1,900	0.72	-	0.36 J	-	-	0.379	800	620	**2,100[A]**	700	-	-	75	120	110
NAPHTHALENE	µg/L	100	18	-	9.7	-	-	10.5	**14,000[A]**	**22,000[A]**	**13,000[A]**	**12,000[A]**	-	**9,100[A]**	**9,200[A]**	**11,000[A]**	**16,000[A]**
PHENANTHRENE	µg/L	1,100	1.2	-	0.57	-	-	0.878	**1,800[A]**	ND (250)	**4,300[A]**	**1,500[A]**	96	180	120	180	180
PYRENE	µg/L	130	0.35 J	-	0.11 J	-	-	0.13	**740[A]**	**500[A]**	**1,700[A]**	**570[A]**	24	63	35 J	68	59
Metals																	
LEAD, Dissolved	µg/L	5	ND (0.52)	-	ND (0.52)	-	-	ND (1.0)	ND (5.0)	-	0.15 J	0.15 J	ND (0.050)	ND (0.050)	0.20 J	0.84 J	0.74 J
LEAD, Total	µg/L	5	-	-	-	-	-	-	-	ND (2.1)	-	-	-	-	-	-	-

Table 3-4a
Groundwater Analytical Results Summary and Stabilized Purged Parameters, Unconfined Aquifer
Belmont Terminal
Philadelphia Refinery Operations, a series of Evergreen Resources Group, LLC

Sample Location			TW-8								TW-9					TW-10	TW-11			
Sample Date			3-Apr-13	3-Apr-13	27-May-14	11-Dec-14	19-May-15	16-May-16	16-May-17	3-Aug-18	14-Oct-04	25-Apr-05	13-Jul-12	27-May-14	8-Dec-14	27-Apr-05	14-Oct-04	25-Apr-05	13-Jul-12	27-May-14
Sample ID			TW-8	TW-8_040313	TW-8	TW-8-20141211	TW-8_20150519	TW-8-20160516	TW-8-20170516	TW-8_20180803	TW-9	TW9-042505	TW-9_071312	TW-9	TW-9-20141208	TW10-042705	TW-11	TW11-042505	TW-11_071312	TW-11
Sampling Company			UNKNOWN	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	UNKNOWN	UNKNOWN	UNKNOWN	STANTEC	STANTEC	UNKNOWN	UNKNOWN	UNKNOWN	UNKNOWN	STANTEC
Laboratory		MSC-PA	UNKNOWN	ACCUTEST	ACCUTEST	ACCUTEST	LL	LL	LL	ESC	UNKNOWN	LL	LL	ACCUTEST	ACCUTEST	LL	UNKNOWN	LL	LL	ACCUTEST
Laboratory Work Order	Units	A	1985-2013_Hist_GW	JB33198	JB67921	JB84134	1562821	1664163	1803596	L1015766	1985-2013_Hist_GW	UNKNOWN	1321953	JB67921	JB83579	UNKNOWN	1985-2013_Hist_GW	UNKNOWN	1321953	JB67921
Field Parameters																				
DISSOLVED OXYGEN, FIELD MEASURED	mg/L	n/v	-	-	1.19	2.33	5.76	1.51	-	5.16	-	-	-	NM	1.78	-	-	-	-	NM
OXIDATION REDUCTION POTENTIAL, FIELD MEASURED	mV	n/v	-	-	-55	-37	-127	-108	-	-96	-	-	-	NM	-13	-	-	-	-	NM
pH, FIELD MEASURED	S.U.	n/v	-	-	5.86	6.81	7.84	7.06	-	6.7	-	-	-	NM	6.98	-	-	-	-	NM
SPECIFIC CONDUCTANCE FIELD	mS/cm	n/v	-	-	1.28	2.13	1.39	1.46	-	1.95	-	-	-	NM	0.301	-	-	-	-	NM
TEMPERATURE, FIELD MEASURED	deg c	n/v	-	-	21.92	15.49	24.06	21.09	-	27	-	-	-	NM	13.68	-	-	-	-	NM
TOTAL DISSOLVED SOLIDS, FIELD MEASURED	mg/L	n/v	-	-	0.825	1.44	0.887	0.955	-	-	-	-	-	NM	0.194	-	-	-	-	NM
TURBIDITY	NTU	n/v	-	-	422	723	357	131	-	616	-	-	-	NM	246	-	-	-	-	NM
Volatile Organic Compounds																				
BENZENE	µg/L	5	-	224[A]	39.3[A]	8.4[A]	63[A]	500[A]	330[A]	307[A]	6.6[A]	360[A]	ND (0.5)	0.33 J	0.22 J	9,200[A]	2.3	ND (5)	ND (0.5)	ND (0.50)
1,2-DIBROMOETHANE (EDB)	µg/L	0.05	-	-	-	-	-	-	-	-	ND (0.020)	-	-	-	-	0.089[A]	ND (0.020)	-	-	-
1,2-DICHLOROETHANE (EDC)	µg/L	5	-	*ND (5.2)*	ND (1.0)	ND (3.0)	5	2	ND (3)	ND (1.00)	ND (5.0)	ND (5)	ND (0.5)	ND (1.0)	ND (1.0)	*ND (100)*	ND (5.0)	ND (5)	ND (0.5)	ND (1.0)
ETHYLBENZENE	µg/L	700	-	874[A]	1,100[A]	184	670	560	560	526	ND (5.0)	ND (25)	ND (0.5)	ND (1.0)	ND (1.0)	3,200[A]	ND (5.0)	ND (5)	ND (0.5)	ND (1.0)
ISOPROPYLBENZENE (CUMENE)	µg/L	3,500	-	216	346	61.8	180	150	180	129	ND (5.0)	ND (25)	ND (0.5)	ND (1.0)	3.1	ND (500)	ND (5.0)	ND (5)	ND (0.5)	ND (1.0)
METHYL TERTIARY BUTYL ETHER	µg/L	20	-	ND (20)	5.3	ND (10)	4 J	4	ND (3)	2.54	ND (5.0)	ND (3)	10	ND (1.0)	0.96 J	84,000[A]	ND (5.0)	ND (5)	ND (0.5)	ND (1.0)
NAPHTHALENE	µg/L	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TERT-BUTYL ALCOHOL	µg/L	n/v	-	-	-	-	-	-	-	8.15	-	-	-	-	-	-	-	-	-	-
TOLUENE	µg/L	1,000	-	ND (20)	0.60 J	ND (10)	ND (3)	0.9 J	3 J	25.9	ND (5.0)	ND (25)	ND (0.5)	ND (1.0)	ND (1.0)	24,000[A]	ND (5.0)	ND (5)	ND (0.5)	ND (1.0)
1,2,4-TRIMETHYLBENZENE	µg/L	530	-	902[A]	1,620[A]	269	880[A]	530	670[A]	466	-	-	ND (0.5)	ND (2.0)	ND (2.0)	-	-	-	ND (0.5)	ND (2.0)
1,3,5-TRIMETHYLBENZENE	µg/L	530	-	52.8	68.4	15.4 J	48	52	63	43.8	-	-	ND (0.5)	ND (2.0)	ND (2.0)	-	-	-	ND (0.5)	ND (2.0)
XYLENES, TOTAL (DIMETHYLBENZENE)	µg/L	10,000	-	192	136	18.8	68	89	69	82.0	ND (10)	ND (25)	ND (0.5)	ND (1.0)	0.20 J	20,000[A]	ND (10)	ND (5)	ND (0.5)	ND (1.0)
Semi-Volatile Organic Compounds																				
ANTHRACENE	µg/L	66	-	8.65	4.80	13.7	12	15	32	7.90	-	-	0.3 J	ND (0.10)	ND (0.10)	-	-	-	0.4 J	ND (0.10)
BENZO(A)ANTHRACENE	µg/L	3.9	-	2.08	0.849	6.39[A]	4[A]	7[A]	17[A]	1.79	-	-	1	0.115	0.292	-	-	-	1	ND (0.10)
BENZO(A)PYRENE	µg/L	0.2	-	1.39[A]	0.552[A]	3.62[A]	3[A]	5[A]	12[A]	1.29[A]	-	-	1[A]	0.155	0.337[A]	-	-	-	2[A]	ND (0.10)
BENZO(B)FLUORANTHENE	µg/L	1.2	-	1.52[A]	0.641	5.02[A]	3[A]	6[A]	14[A]	1.46[A]	-	-	2[A]	0.395	0.703	-	-	-	2[A]	ND (0.10)
BENZO(G,H,I)PERYLENE	µg/L	0.26	-	0.592[A]	0.256	1.55[A]	1[A]	3[A]	7[A]	0.853[A]	-	-	0.8[A]	0.208	0.343[A]	-	-	-	1[A]	ND (0.10)
CHRYSENE	µg/L	1.9	-	1.92[A]	0.946	4.43[A]	5[A]	9[A]	18[A]	1.91[A]	-	ND (1)	1	0.233	0.454	180[A]	ND (0.14)	ND (1)	2[A]	ND (0.10)
FLUORENE	µg/L	1,900	-	37.8	21.3	40.9	56	56	83	44.4	-	ND (11)	0.1 J	0.251	0.146	470	ND (10)	ND (11)	0.2 J	ND (0.10)
NAPHTHALENE	µg/L	100	-	2,400[A]	5,970[A]	3,150[A]	7,300[A]	6,000[A]	4,400[A]	6,530[A]	ND (5.0)	ND (11)	ND (0.1)	2.79	ND (0.10)	12,000[A]	ND (5.0)	ND (11)	0.1 J	ND (0.10)
PHENANTHRENE	µg/L	1,100	-	43.2	16.9	62.1	57	67	140	36.6	-	ND (11)	1	0.243	0.488	1,100	ND (10)	ND (11)	1	ND (0.10)
PYRENE	µg/L	130	-	8.63	3.01	17.0	11	18	41	6.69	-	ND (11)	2	0.318	0.746	430[A]	ND (10)	ND (11)	2	ND (0.10)
Metals																				
LEAD, Dissolved	µg/L	5	ND (1)	-	ND (3.0)	ND (3.0)	0.089 J	ND (0.13)	ND (0.090)	ND (2.00)	ND (5.0)	-	0.16 J	1.7 J	2.1 J	-	ND (5.0)	-	1.4	ND (3.0)
LEAD, Total	µg/L	5	-	-	-	-	-	-	-	-	-	-	-	-	-	10.1[A]	-	ND (2.1)	-	-

Table 3-4a
Groundwater Analytical Results Summary and Stabilized Purged Parameters, Unconfined Aquifer
Belmont Terminal
Philadelphia Refinery Operations, a series of Evergreen Resources Group, LLC

Sample Location			TW-11	PGW-MW-4S		PGW-MW-5S	PGW-MW-6S	PGW-MW-7S	PGW-MW-10S
Sample Date			8-Dec-14	3-Mar-16	3-Mar-16	3-Mar-16	3-Mar-16	3-Mar-16	3-Mar-16
Sample ID			TW-11-20141208	MW-04S	MW-04S DUP	MW-05S	MW-06S	MW-07S	MW-10S
Sampling Company			STANTEC ACCUTEST	LEIDOS ENGINEERING, LLC LL	LEIDOS ENGINEERING, LLC LL	LEIDOS ENGINEERING, LLC LL	LEIDOS ENGINEERING, LLC LL	LEIDOS ENGINEERING, LLC LL	LEIDOS ENGINEERING, LLC LL
Laboratory		MSC-PA	JB83579	1637604	1637604	1637604	1637604	1637604	1637604
Laboratory Work Order	Units	A							
Field Parameters									
DISSOLVED OXYGEN, FIELD MEASURED	mg/L	n/v	6.52	-	-	-	-	-	-
OXIDATION REDUCTION POTENTIAL, FIELD MEASURED	mV	n/v	-81	-	-	-	-	-	-
pH, FIELD MEASURED	S.U.	n/v	6.99	-	-	-	-	-	-
SPECIFIC CONDUCTANCE FIELD	mS/cm	n/v	1.16	-	-	-	-	-	-
TEMPERATURE, FIELD MEASURED	deg c	n/v	15.3	-	-	-	-	-	-
TOTAL DISSOLVED SOLIDS, FIELD MEASURED	mg/L	n/v	0.742	-	-	-	-	-	-
TURBIDITY	NTU	n/v	187	-	-	-	-	-	-
Volatile Organic Compounds									
BENZENE	µg/L	5	ND (0.50)	10,000[A]	10,000[A]	4	3,900[A]	4,100[A]	27,000[A]
1,2-DIBROMOETHANE (EDB)	µg/L	0.05	-	-	-	-	-	-	-
1,2-DICHLOROETHANE (EDC)	µg/L	5	ND (1.0)	*ND (10)*	*ND (10)*	ND (1)	ND (5)	ND (5)	*ND (150)*
ETHYLBENZENE	µg/L	700	ND (1.0)	7,700[A]	7,400[A]	0.9 J	3,900[A]	4,000[A]	4,800[A]
ISOPROPYLBENZENE (CUMENE)	µg/L	3,500	ND (1.0)	-	-	-	-	-	-
METHYL TERTIARY BUTYL ETHER	µg/L	20	ND (1.0)	-	-	-	-	-	-
NAPHTHALENE	µg/L	100	-	-	-	-	-	-	-
TERT-BUTYL ALCOHOL	µg/L	n/v	-	-	-	-	-	-	-
TOLUENE	µg/L	1,000	ND (1.0)	5,900[A]	5,500[A]	ND (1)	2,700[A]	51	15,000[A]
1,2,4-TRIMETHYLBENZENE	µg/L	530	ND (2.0)	-	-	-	-	-	-
1,3,5-TRIMETHYLBENZENE	µg/L	530	ND (2.0)	-	-	-	-	-	-
XYLENES, TOTAL (DIMETHYLBENZENE)	µg/L	10,000	ND (1.0)	8,100	8,200	ND (1)	5,500	5,200	18,000[A]
Semi-Volatile Organic Compounds									
ANTHRACENE	µg/L	66	ND (0.10)	7	8	ND (0.5)	3	4	78[A]
BENZO(A)ANTHRACENE	µg/L	3.9	0.194	3	3	ND (0.5)	1	ND (0.5)	38[A]
BENZO(A)PYRENE	µg/L	0.2	0.158	2[A]	2[A]	ND (0.1)	0.8[A]	ND (0.1)	23[A]
BENZO(B)FLUORANTHENE	µg/L	1.2	0.207	2[A]	2[A]	ND (0.5)	0.9	ND (0.5)	26[A]
BENZO(G,H,I)PERYLENE	µg/L	0.26	0.122	0.8[A]	0.9[A]	ND (0.1)	0.4 J[A]	ND (0.1)	9[A]
CHRYSENE	µg/L	1.9	0.178	3[A]	3[A]	ND (0.5)	1	ND (0.5)	42[A]
FLUORENE	µg/L	1,900	ND (0.10)	37	35	ND (0.5)	17	36	230
NAPHTHALENE	µg/L	100	ND (0.10)	13,000[A]	12,000[A]	4	7,600[A]	8,600[A]	16,000[A]
PHENANTHRENE	µg/L	1,100	0.197	36	36	ND (0.5)	13	27	410
PYRENE	µg/L	130	0.293	8	8	ND (0.5)	3	2	100
Metals									
LEAD, Dissolved	µg/L	5	ND (3.0)	ND (0.0150)	ND (0.0150)	ND (0.0150)	ND (0.0150)	ND (0.0150)	ND (0.0150)
LEAD, Total	µg/L	5	-	-	-	-	-	-	-

Notes:

MSC-PA	Pennsylvania Department of Environmental Protection - 2021
[A]	Medium-Specific Concentrations (MSCs) for Organic/Inorganic Regulated Substances in Groundwater - Used Aquifer, Non Residential, TDS ≤ 2500
6.5[A]	Concentration exceeds standard A.
ND (0.03)	Concentration not detected above the laboratory reporting limit (in parentheses) except when the reporting limit is greater than the applicable standard in which case the method detection limit is listed in parentheses.
ND (0.50)	Indicates the laboratory method detection limit (if available) was above the applicable standard. The reporting limit is shown if the laboratory method detection limit is not available.
15.2	Measured concentration did not exceed the indicated standard.
µg/L	micrograms per liter
mg/L	milligrams per liter
mV	millivolts
S.U.	standard unit
mS/cm	milliSiemens per centimeter
deg c	degrees Celsius
NTU	nephelometric turbidity units

n/v	No standard/guideline value.
-	Parameter not analyzed / not available.
>	Report value is greater than associated value
B	Indicates the analyte is detected in the associated blank as well as in the sample.
E	Indicates compounds whose concentrations exceed the calibration range of the instrument.
H	Sample was prepped or analyzed beyond the specified holding time.
IQ	Indeterminate qualifier. Refer to associated laboratory report.
J	Indicates an estimated value
J-	Indicates an estimated value that is biased low.
JB	Indicates an estimated value and that analyte was found in associated method blank
NM	Not measured
SL	Sample was collected below LNAPL
D	Indicates an identified compound in an analysis that has been diluted. This flag alerts the data user to any differences between the concentrations reported in the two analyses.

Table 3-4b
Groundwater Analytical Results Summary and Stabilized Purged Parameters, Lower Aquifer
Belmont Terminal
Philadelphia Refinery Operations, a series of Evergreen Resources Group, LLC

Sample Location			PGW-MW-12D	S-393D							S-394				
Sample Date			3-Mar-16	21-May-14	5-Dec-14	1-Aug-18	23-Mar-21	27-Oct-21	22-Mar-23	16-May-23	21-May-14	5-Dec-14	1-Aug-18	9-Jul-19	7-Nov-19
Sample ID			MW-12D	S-393D	S-393D-20141205	S-393D_20180801	S-393D-20210323	S-393D_20211027	S-393D_20230322	S-393D_20230516	S-394	S-394-20141205	S-394_20180801	S-394_20190709	S-394_20191107
Sampling Company			LEIDOS	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC
Laboratory		MSC-PA	LL	ACCUTEST	ACCUTEST	ESC	LANCASTER	LANCASTER	SGS	SGS	ACCUTEST	ACCUTEST	ESC	LL	LL
Laboratory Work Order	Units	A	1637604	JB67626	JB83474	L1014699	410-33523-1	410-61053-1	JD62757	JD65808	JB67747	JB83474	L1014699	2052789	2073752
Field Parameters															
DISSOLVED OXYGEN, FIELD MEASURED	mg/L	n/v	-	0.50	0.49	0	0.75	0	0	0	0.50	0.36	0	0	5.16
OXIDATION REDUCTION POTENTIAL, FIELD MEASURED	mV	n/v	-	-15	-62	140	0	29	42	58	-30	-89	53	-18	14
pH, FIELD MEASURED	S.U.	n/v	-	5.96	7.82	5.82	5.88	5.37	6.18	5.29	6.00	7.02	5.98	5.59	6.56
SPECIFIC CONDUCTANCE FIELD	mS/cm	n/v	-	1.04	1.02	0.848	1.02	0.958	0.859	0.710	0.978	0.957	0.869	1.02	0.762
TEMPERATURE, FIELD MEASURED	deg c	n/v	-	17.39	15.93	18.68	16.18	17.33	20.63	17.57	16.96	15.9	18.83	21.08	16.56
TOTAL DISSOLVED SOLIDS, FIELD MEASURED	mg/L	n/v	-	-	-	-	-	-	-	-	-	-	-	0.655	0.488
TURBIDITY	NTU	n/v	-	88.6	5	23.7	4.7	88.4	48.8	53.2	1.3	2.9	51.1	91.2	23.1
Volatile Organic Compounds															
BENZENE	µg/L	5	ND (1)	**58.5**[A]	0.51	ND (1.00)	**65**[A]	ND (1.0)	4.5	ND (0.50)	**8,700**[A]	**22,200**[A]	ND (1.00)	ND (0.2)	ND (0.2)
1,2-DIBROMOETHANE (EDB)	µg/L	0.05	-	ND (0.020)	ND (0.020)	ND (0.0100)	ND (0.028)	ND (0.028)	ND (0.020)	ND (0.021)	ND (0.020)	ND (0.020)	ND (0.0100)	ND (0.0094)	ND (0.0095)
1,2-DICHLOROETHANE (EDC)	µg/L	5	ND (1)	ND (1.0)	ND (1.0)	ND (1.00)	ND (5.0)	ND (1.0)	ND (1.0)	ND (1.0)	*ND (7.5) J*	*ND (30)*	ND (1.00)	ND (2)	ND (2)
ETHYLBENZENE	µg/L	700	ND (1)	ND (1.0)	ND (1.0)	ND (1.00)	ND (5.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (9.9)	ND (40)	ND (1.00)	ND (0.2)	ND (0.2)
ISOPROPYLBENZENE (CUMENE)	µg/L	3,500	-	ND (1.0)	ND (1.0)	ND (1.00)	ND (25)	ND (5.0)	ND (1.0)	ND (1.0)	ND (6.4)	ND (26)	ND (1.00)	ND (0.3)	ND (0.3)
METHYL TERTIARY BUTYL ETHER	µg/L	20	-	ND (1.0)	0.26 J	ND (1.00)	ND (5.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (6.6)	*ND (26)*	ND (1.00)	0.5 J	ND (0.2)
NAPHTHALENE	µg/L	100	-	-	-	-	ND (25)	-	-	-	-	-	-	-	-
TERT-BUTYL ALCOHOL	µg/L	n/v	-	-	-	ND (5.00)	ND (250)	ND (50)	ND (10)	ND (10)	-	-	ND (5.00)	ND (10)	ND (10)
TOLUENE	µg/L	1,000	ND (1)	ND (1.0)	ND (1.0)	ND (1.00)	ND (5.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (25)	ND (22)	ND (1.00)	ND (0.2)	ND (0.2)
1,2,4-TRIMETHYLBENZENE	µg/L	530	-	ND (2.0)	ND (2.0)	ND (1.00)	ND (25)	ND (5.0)	ND (2.0)	ND (2.0)	ND (50)	ND (200)	ND (1.00)	ND (0.3)	ND (0.3)
1,3,5-TRIMETHYLBENZENE	µg/L	530	-	ND (2.0)	ND (2.0)	ND (1.00)	ND (25)	ND (5.0)	ND (2.0)	ND (2.0)	ND (50)	ND (200)	ND (1.00)	ND (0.3)	ND (0.3)
XYLENES, TOTAL (DIMETHYLBENZENE)	µg/L	10,000	ND (1)	ND (1.0)	0.59 J	ND (3.00)	ND (30)	ND (6.0)	ND (1.0)	ND (1.0)	ND (25)	ND (100)	ND (3.00)	ND (0.5)	ND (0.8)
Semi-Volatile Organic Compounds															
ANTHRACENE	µg/L	66	ND (0.5)	ND (0.11)	ND (0.10)	ND (0.0500)	ND (0.52)	ND (0.52)	1.94	0.0750 J	ND (0.10)	ND (0.10)	ND (0.0500)	ND (0.1)	ND (0.1)
BENZO(A)ANTHRACENE	µg/L	4.9	ND (0.5)	ND (0.11)	ND (0.10)	ND (0.0500)	ND (0.52)	ND (0.52)	**7.50**[A]	0.347	ND (0.10)	ND (0.10)	0.0711	ND (0.1)	ND (0.1)
BENZO(A)PYRENE	µg/L	0.2	ND (0.1)	ND (0.11)	ND (0.10)	0.0667	ND (0.11)	ND (0.11)	**12.8**[A]	**0.551**[A]	ND (0.10)	ND (0.10)	0.106	ND (0.1)	ND (0.1)
BENZO(B)FLUORANTHENE	µg/L	1.2	ND (0.1)	ND (0.11)	ND (0.10)	0.114	0.11 J	ND (0.10)	**24.2**[A]	**1.28**[A]	ND (0.10)	ND (0.10)	0.184	ND (0.1)	ND (0.1)
BENZO(G,H,I)PERYLENE	µg/L	0.26	ND (0.1)	ND (0.11)	ND (0.10)	0.0901	ND (0.10)	ND (0.10)	**17.8**[A]	**0.711**[A]	ND (0.10)	ND (0.10)	0.109	ND (0.1)	ND (0.1)
CHRYSENE	µg/L	1.9	ND (0.5)	ND (0.11)	ND (0.10)	0.0735	ND (0.52)	ND (0.52)	**16.1**[A]	0.681	ND (0.10)	ND (0.10)	0.129	ND (0.1)	ND (0.1)
FLUORENE	µg/L	1,900	0.1 J	ND (0.11)	ND (0.10)	ND (0.0500)	ND (0.52)	ND (0.52)	0.549	ND (0.082)	ND (0.10)	ND (0.10)	ND (0.0500)	ND (0.1)	ND (0.1)
NAPHTHALENE	µg/L	100	0.3 J	ND (0.11)	ND (0.10)	ND (0.250)	ND (0.52)	0.38 J	0.253	ND (0.082)	0.350	0.363	ND (0.250)	ND (0.1)	ND (0.1)
PHENANTHRENE	µg/L	1,100	ND (0.5)	ND (0.11)	ND (0.10)	0.0706	ND (0.52)	ND (0.52)	12.4	0.526	0.107	0.166	0.0941	ND (0.1)	ND (0.1)
PYRENE	µg/L	130	ND (0.5)	ND (0.11)	ND (0.10)	0.118	0.10 J	0.11 J	23.7	0.984	ND (0.10)	ND (0.10)	0.226	ND (0.1)	ND (0.1)
Metals															
LEAD, Dissolved	µg/L	5	0.0092 J	4.6	2.0 J	ND (2.00)	0.25 J	ND (0.52)	**589**[A]	ND (1.0)	ND (3.0)	1.4 J	ND (2.00)	ND (1.1)	0.68

See notes on last page

Table 3-4b
Groundwater Analytical Results Summary and Stabilized Purged Parameters, Lower Aquifer
Belmont Terminal
Philadelphia Refinery Operations, a series of Evergreen Resources Group, LLC

Sample Location			S-394				S-454			S-459			S-460		
Sample Date			23-Apr-21	26-Oct-21	29-Mar-22	22-Mar-23	26-Mar-21	26-Oct-21	23-Mar-23	24-Mar-21	26-Oct-21	27-Mar-23	23-Mar-21	26-Oct-21	27-Mar-23
Sample ID			S-394_20210423	S-394_20211026	S-394_20220329	S-394_20230322	S-454-20210326	S-454_20211026	S-454_20230323	S-459-20210324	S-459_20211026	S-459_20230327	S-460-20210323	S-460_20211026	S-460_20230327
Sampling Company			STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC
Laboratory		MSC-PA	LANCASTER	LANCASTER	SGSA	SGS	LANCASTER	LANCASTER	SGS	LANCASTER	LANCASTER	SGS	LANCASTER	LANCASTER	SGS
Laboratory Work Order	Units	A	410-37313-1	410-60816-1	JD42234	JD62757	410-33879-1	410-60816-1	JD62757	410-33523-1	410-60816-1	JD63001	410-33523-1	410-60816-1	JD63001
Field Parameters															
DISSOLVED OXYGEN, FIELD MEASURED	mg/L	n/v	0.99	0	0	0	0.41	0	0	0.27	1.01	0.07	0.94	0.04	0.21
OXIDATION REDUCTION POTENTIAL, FIELD MEASURED	mV	n/v	54	22	-20	59	-8	-28	61	-19	-94	-26	39	-37	-8
pH, FIELD MEASURED	S.U.	n/v	4.75	5.36	6.5	5.94	6.1	5.57	5.98	5.75	5.95	5.79	5.95	5.68	5.74
SPECIFIC CONDUCTANCE FIELD	mS/cm	n/v	1.13	1.08	0.987	1.18	1.07	0.931	1.07	1	0.914	0.746	1.01	0.874	0.762
TEMPERATURE, FIELD MEASURED	deg c	n/v	16.76	19.37	14.96	17.75	18.55	20.36	17.61	16.75	19.97	18.38	17.76	20.18	19.02
TOTAL DISSOLVED SOLIDS, FIELD MEASURED	mg/L	n/v	-	-	-	-	-	-	-	-	-	-	-	-	-
TURBIDITY	NTU	n/v	48.9	37.4	48.7	35.4	50.6	19.1	0	25.5	31	0.2	6.9	15.1	16.7
Volatile Organic Compounds															
BENZENE	µg/L	5	19[A]	ND (1.0)	ND (0.50)	0.50	12[A]	ND (1.0)	ND (0.50)	13[A]	2.3	1.3	22[A]	2.4	ND (0.50)
1,2-DIBROMOETHANE (EDB)	µg/L	0.05	ND (0.029)	ND (0.028)	ND (0.020)	ND (0.020)	ND (0.028)	ND (0.028)	ND (0.020)	ND (0.029)	ND (0.028)	ND (0.021)	ND (0.029)	ND (0.028)	ND (0.021)
1,2-DICHLOROETHANE (EDC)	µg/L	5	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	0.62 J	0.67 J	ND (1.0)	ND (1.0)	ND (1.0)
ETHYLBENZENE	µg/L	700	1.4	ND (1.0)	ND (1.0)	ND (1.0)	0.65 J	ND (1.0)	ND (1.0)	14	2.9	ND (1.0)	4.7	ND (1.0)	ND (1.0)
ISOPROPYLBENZENE (CUMENE)	µg/L	3,500	ND (5.0)	ND (5.0)	ND (1.0)	ND (1.0)	ND (5.0)	ND (5.0)	ND (1.0)	3.3 J	1.3 J	ND (1.0)	1.3 J	ND (5.0)	ND (1.0)
METHYL TERTIARY BUTYL ETHER	µg/L	20	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	0.88 J	0.74 J	0.98 J	ND (1.0)	0.40 J	0.74 J	2.3	0.31 J	0.83 J
NAPHTHALENE	µg/L	100	-	-	-	-	ND (5.0)	-	-	36	-	-	22	-	-
TERT-BUTYL ALCOHOL	µg/L	n/v	ND (50)	ND (50)	ND (10)	ND (10)	ND (50)	ND (50)	ND (10)	ND (50)	120	147	ND (50)	51	58.0
TOLUENE	µg/L	1,000	0.56 J	ND (1.0)	ND (1.0)	ND (1.0)	0.57 J	ND (1.0)	ND (1.0)	0.63 J	ND (1.0)	ND (1.0)	0.68 J	ND (1.0)	ND (1.0)
1,2,4-TRIMETHYLBENZENE	µg/L	530	1.2 J	ND (5.0)	ND (2.0)	ND (2.0)	ND (5.0)	ND (5.0)	ND (2.0)	40	6.6	ND (2.0)	12	ND (5.0)	ND (2.0)
1,3,5-TRIMETHYLBENZENE	µg/L	530	0.45 J	ND (5.0)	ND (2.0)	ND (2.0)	ND (5.0)	ND (5.0)	ND (2.0)	14	2.8 J	ND (2.0)	3.9 J	1.3 J	ND (2.0)
XYLENES, TOTAL (DIMETHYLBENZENE)	µg/L	10,000	8.2	ND (6.0)	ND (1.0)	ND (1.0)	1.7 J	ND (6.0)	ND (1.0)	49	ND (6.0)	ND (1.0)	12	ND (6.0)	ND (1.0)
Semi-Volatile Organic Compounds															
ANTHRACENE	µg/L	66	ND (0.54)	ND (0.52)	ND (0.085)	0.0964	ND (0.51)	ND (0.52)	ND (0.080)	0.14 J	0.11 J	0.0493 J	0.36 J	0.31 J	0.158
BENZO(A)ANTHRACENE	µg/L	4.9	0.69	0.13 J	0.0482	0.413	ND (0.51)	ND (0.52)	ND (0.040)	ND (0.51)	ND (0.51)	ND (0.040)	ND (0.52)	ND (0.50)	ND (0.040)
BENZO(A)PYRENE	µg/L	0.2	1.6[A]	0.34 J[A]	0.0801	0.862[A]	ND (0.11)	ND (0.11)	ND (0.040)	ND (0.11)	ND (0.11)	ND (0.040)	ND (0.12)	ND (0.11)	ND (0.040)
BENZO(B)FLUORANTHENE	µg/L	1.2	2.9[A]	0.63	0.148	1.37[A]	ND (0.10)	ND (0.10)	ND (0.040)	ND (0.10)	ND (0.10)	ND (0.040)	ND (0.10)	ND (0.10)	ND (0.040)
BENZO(G,H,I)PERYLENE	µg/L	0.26	1.3[A]	0.35 J[A]	0.0929	1.11[A]	ND (0.10)	ND (0.10)	ND (0.080)	ND (0.10)	ND (0.10)	ND (0.081)	ND (0.10)	ND (0.10)	ND (0.080)
CHRYSENE	µg/L	1.9	2.1[A]	0.40 J	0.106	1.01	ND (0.51)	ND (0.52)	ND (0.080)	ND (0.51)	ND (0.51)	ND (0.081)	ND (0.52)	ND (0.50)	ND (0.080)
FLUORENE	µg/L	1,900	ND (0.54)	ND (0.52)	ND (0.085)	ND (0.077)	ND (0.51)	ND (0.52)	ND (0.080)	0.92	0.78	0.27	1.2	0.87	0.244
NAPHTHALENE	µg/L	100	0.42 J	0.21 J	0.108	0.129	1.4	0.12 J	ND (0.080)	28	1.4	0.395	1.8	0.11 J	0.0852
PHENANTHRENE	µg/L	1,100	1.4	0.27 J	0.111	0.958	0.18 J	ND (0.52)	ND (0.080)	0.52	0.43 J	0.0433 J	1.6	1.5	0.0485 J
PYRENE	µg/L	130	2.8	0.56	0.158	1.63	0.19 J	ND (0.52)	ND (0.080)	ND (0.51)	ND (0.51)	ND (0.081)	ND (0.52)	0.11 J	0.199
Metals															
LEAD, Dissolved	µg/L	5	0.99	0.082 J	ND (1.0)	ND (1.0)	ND (0.52)	0.24 J	ND (1.0)	0.15 J	ND (0.52)	ND (1.0)	0.11 J	ND (0.52)	ND (1.0)

See notes on last page

Table 3-4b
Groundwater Analytical Results Summary and Stabilized Purged Parameters, Lower Aquifer
Belmont Terminal
Philadelphia Refinery Operations, a series of Evergreen Resources Group, LLC

Sample Location			S-462			S-466			S-505	
Sample Date			23-Mar-21	26-Oct-21	23-Mar-23	24-Mar-21	27-Oct-21	27-Mar-23	27-Jul-23	26-Oct-23
Sample ID			S-462-20210323	S-462_20211026	S-462_20230323	S-466-20210324	S-466_20211027	S-466_20230327	S-505_20230727	S-505_20231026
Sampling Company			STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC
Laboratory		MSC-PA	LANCASTER	LANCASTER	SGS	LANCASTER	LANCASTER	SGS	SGS	SGS
Laboratory Work Order	Units	A	410-33523-1	410-60816-1	JD62757	410-33879-1	410-61053-1	JD63001	JD70134	JD75657
Field Parameters										
DISSOLVED OXYGEN, FIELD MEASURED	mg/L	n/v	-	0	0	0.15	0	0.02	0	0
OXIDATION REDUCTION POTENTIAL, FIELD MEASURED	mV	n/v	-	-32	41	-12	-49	-13	-15	-1
pH, FIELD MEASURED	S.U.	n/v	-	5.52	5.96	5.62	5.83	5.74	5.62	5.34
SPECIFIC CONDUCTANCE FIELD	mS/cm	n/v	-	0.92	1.01	0.979	0.91	0.774	1.06	0.794
TEMPERATURE, FIELD MEASURED	deg c	n/v	-	19.67	17.54	18.09	20.26	17.89	19.45	19.55
TOTAL DISSOLVED SOLIDS, FIELD MEASURED	mg/L	n/v	-	-	-	-	-	-	-	-
TURBIDITY	NTU	n/v	-	301	42.9	12	5.3	44	2.8	21.4
Volatile Organic Compounds										
BENZENE	µg/L	5	**39[A]**	ND (1.0)	ND (0.50)	**18[A]**	ND (1.0)	ND (0.50)	0.95	ND (0.50)
1,2-DIBROMOETHANE (EDB)	µg/L	0.05	ND (0.029)	ND (0.028)	ND (0.020)	ND (0.028)	ND (0.029)	ND (0.021)	ND (0.021)	ND (0.020)
1,2-DICHLOROETHANE (EDC)	µg/L	5	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
ETHYLBENZENE	µg/L	700	17	ND (1.0)	ND (1.0)	10	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
ISOPROPYLBENZENE (CUMENE)	µg/L	3,500	2.2 J	ND (5.0)	ND (1.0)	2.0 J	0.31 J	ND (1.0)	ND (1.0)	ND (1.0)
METHYL TERTIARY BUTYL ETHER	µg/L	20	9.5	ND (1.0)	ND (1.0)	0.64 J	0.75 J	0.73 J	0.54 J	0.59 J
NAPHTHALENE	µg/L	100	5.5	-	-	93	-	-	-	-
TERT-BUTYL ALCOHOL	µg/L	n/v	20 J	ND (50)	ND (10)	ND (50)	ND (50)	ND (10)	ND (10)	ND (10)
TOLUENE	µg/L	1,000	1.8	ND (1.0)	ND (1.0)	1.4	ND (1.0)	ND (1.0)	1.8	ND (1.0)
1,2,4-TRIMETHYLBENZENE	µg/L	530	47	ND (5.0)	ND (2.0)	26	1.3 J	ND (2.0)	ND (2.0)	ND (2.0)
1,3,5-TRIMETHYLBENZENE	µg/L	530	18	ND (5.0)	ND (2.0)	8.0	1.5 J	ND (2.0)	ND (2.0)	ND (2.0)
XYLENES, TOTAL (DIMETHYLBENZENE)	µg/L	10,000	100	ND (6.0)	ND (1.0)	35	ND (6.0)	ND (1.0)	ND (1.0)	ND (1.0)
Semi-Volatile Organic Compounds										
ANTHRACENE	µg/L	66	ND (0.52)	ND (0.66)	0.0434 J	0.37 J	0.21 J	0.174	ND (0.077)	ND (0.080)
BENZO(A)ANTHRACENE	µg/L	4.9	ND (0.52)	ND (0.66)	0.157	ND (0.52)	ND (0.52)	0.109	ND (0.038)	ND (0.040)
BENZO(A)PYRENE	µg/L	0.2	ND (0.11)	ND (0.15)	**0.269[A]**	ND (0.11)	ND (0.12)	**0.216[A]**	ND (0.038)	ND (0.040)
BENZO(B)FLUORANTHENE	µg/L	1.2	ND (0.10)	ND (0.13)	0.495	ND (0.10)	ND (0.10)	0.446	ND (0.038)	ND (0.040)
BENZO(G,H,I)PERYLENE	µg/L	0.26	ND (0.10)	ND (0.13)	**0.317[A]**	ND (0.10)	ND (0.10)	**0.305[A]**	ND (0.077)	ND (0.080)
CHRYSENE	µg/L	1.9	ND (0.52)	ND (0.66)	0.298	ND (0.52)	ND (0.52)	0.286	ND (0.077)	ND (0.080)
FLUORENE	µg/L	1,900	ND (0.52)	ND (0.66)	ND (0.080)	1.9	0.96	0.25	ND (0.077)	ND (0.080)
NAPHTHALENE	µg/L	100	2.2	0.35 J	0.0748 J	57	1.9	0.599	0.185	0.0425 J
PHENANTHRENE	µg/L	1,100	ND (0.52)	ND (0.66)	0.265	1.6	1.4	0.789	ND (0.077)	ND (0.080)
PYRENE	µg/L	130	ND (0.52)	ND (0.66)	0.442	ND (0.52)	ND (0.52)	0.447	ND (0.077)	ND (0.080)
Metals										
LEAD, Dissolved	µg/L	5	ND (0.52)	ND (0.52)	ND (1.0)	ND (0.52)	ND (0.52)	ND (1.0)	ND (1.0)	ND (1.0)

Notes:

MSC-PA [A]	Pennsylvania Department of Environmental Protection - 2021 Medium-Specific Concentrations (MSCs) for Organic/Inorganic Regulated Substances in Groundwater - Used Aquifer, Non Residential, TDS ≤ 2500
6.5[A]	Concentration exceeds standard A.
ND (0.03)	Concentration not detected above the laboratory reporting limit (in parentheses) except when the reporting limit is greater than the applicable standard in which case the method detection limit is listed in parentheses.
ND (0.50)	Indicates the laboratory method detection limit (if available) was above the applicable standard. The reporting limit is shown if the laboratory method detection limit is not available.
15.2	Measured concentration did not exceed the indicated standard.
µg/L	micrograms per liter
mg/L	milligrams per liter
mV	millivolts
S.U.	standard unit
mS/cm	milliSiemens per centimeter
deg c	degrees Celsius
NTU	nephelometric turbidity units
n/v	No standard/guideline value.
-	Parameter not analyzed / not available.
H	Sample was prepped or analyzed beyond the specified holding time.
J	Indicates an estimated value

Table 4
Ground Water Data Summary - Samples from Temporary Wells
Former Tank Car Corporation of America Site
Springfield Township, Montgomery County, Pennsylvania
BL COMPANIES PROJECT NO. 17L5438

Sample ID	Sample Date	Volatile Organic Compounds																												
		Acetone	Benzene	Carbon Disulfide	Chlorobenzene	Chloroform	Cyclohexane	1,2-Dibromo-3-chloropropane	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	1,1-Dichloroethane	1,2-Dichloroethane	1,2-Dichloropropane	cis-1,2-Dichloroethene	cis-1,3-Dichloropropene	trans-1,3-Dichloropropene	Ethylbenzene	2-Hexanone (Methyl n-butyl ketone)	Isopropylbenzene	Methyl isobutyl keytone (MIBK)	Methyl acetate	MTBE	Methylcyclohexane	Methyl Ethyl Ketone (2-Butanone)	Methylene Chloride	Styrene	Tetrachloroethene (PCE)	Toluene	1,1,2-Trichloroethane	Trichloroethene (TCE)	Total Xylenes
TW-01	11/19/2008	22 B	**460**	1.2 J	<5.0	14 B	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	11 B	5.9	<5.0	<5.0	77	<10	7.9	3.1 J	0.86 J	<5.0	16 B	6.3 B	2.8 B	92	**10**	300	2.2 J	<5.0	470
TW-02	11/19/2008	530	**3100**	15	22	0.56 B	1.0 J	<5.0	**890**	7.9	**110**	<5.0	**86**	10 B	13	<5.0	<5.0	290	40	25	89	1.1J	<5.0	17 B	150	22 B	**800**	**5.9**	**3500**	<5.0	**68**	2010
TW-06	11/20/2008	13 B	**580**	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**13**	<5.0	<5.0	<5.0	<5.0	99	<10	4.0 J	<10	<5.0	<5.0	17 B	4.7 B	2.5 B	1.6 J	<5.0	25	<5.0	<5.0	45
TW-09	11/20/2008	14 B	**150**	<5.0	2.9 J	0.58 B	<5.0	**82**	<5.0	<5.0	0.60 J	<5.0	**7.3**	11 B	<5.0	4.6 J	3.3 J	85	20	16	<10	<5.0	<5.0	17 B	4.9 B	3.1 B	3.5 J	<5.0	22	0.52 J	0.69 J	90
ACT 2 STATEWIDE HEALTH STANDARDS																																
Residential Used Aquifer		38,000	5	1,500	100	80	13,000	0.2	600	600	75	31	5	5	70	7.3	NS	700	63	840	3,300	42,000	20	NS	4,000	5	100	5	1,000	5	5	10,000
Non-Residential Used Aquifer		110,000	5	6,200	100	80	53,000	0.2	600	600	75	160	5	5	70	34	NS	700	260	3,500	9,300	120,000	20	NS	4,000	5	100	5	1,000	5	5	10,000

Sample ID	Sample Date	Semi-Volatile Organic Compounds																												
		Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	1,1-Biphenyl	Bis(2-ethylhexyl)phthalate	Carbazole	Dibenzofuran	Chrysene	Dibenzo(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	2-Methylnaphthalene	4-Methylphenol (p-cresol)	Naphthalene	Phenanthrene	Phenol	Pyrene	2,4,5-Trichlorophenol	2-Chlorophenol	2-Methylphenol (o-cresol)	2,4-Dimethylphenol	Pentachlorophenol	N-Nitrosodiphenylamine
TW-01	11/19/2008	73	110 J	**210**	**11**	**6.8**	**9.3**	**4.2 J**	**3.5 J**	43	<5.0	**440**	**110 J**	**21**	**1.2 J**	49	120 J	**4.2 J**	**390 J**	**1000**	**5200**	180	360 J	31	7.2	<5.0	500 J	680 J	<10	<5.0
TW-02	11/19/2008	110 J	72	51	**12**	**6.7**	**8.1**	**3.1 J**	**3.0 J**	39	<5.0	**430 J**	**95 J**	**10**	<5.0	53	140 J	**3.0 J**	**440 J**	**7700**	**5900**	210 J	**3500**	45	3.9 J	**41**	**3400**	**4000**	**5.4 J**	29
TW-06	11/20/2008	16	1.4 J	3.2 J	**1.0 J**	**0.88 J**	**1.2 J**	**0.60 J**	<5.0	3.5 J	0.62 J	16	8.6	1.1 J	<5.0	3.7 J	12	<5.0	21	10	**420**	9.7	5.8	3.1 J	<5.0	<5.0	9.8	36	<10	8.8
TW-09	11/20/2008	220 J	9.7	23	**20**	**14**	**18**	**8.5**	**8.1**	52	1.3 J	**100 J**	**120 J**	**18**	**2.4 J**	69	120 J	**8.6**	96 J	<5.0	**2500**	160 J	<5.0	47	<5.0	<5.0	4.3 J	21	<10	<5.0
ACT 2 STATEWIDE HEALTH STANDARDS																														
Residential Used Aquifer		2,500	2,500	66	0.32	0.2	0.19	0.26	0.19	91	6	37	42	1.9	0.055	260	1,700	0.19	170	210	100	1,100	2,000	130	4,200	40	2,100	830	1	150
Non-Residential Used Aquifer		3,800	7,000	66	4.9	0.2	1.2	0.26	0.55	430	6	170	120	1.9	0.6	260	1,900	2.8	470	580	100	1,100	2,000	130	12,000	40	5,800	2,300	1	690

All results expressed in micrograms per liter (µg/L)
All results reported to the most stringent reporting level, Method Detection Limit or Laboratory Reporting Limit
Ground Water Standards relate to Used Aquifers with Total Dissolved Solids ≤ 2,500
Bolded values meet or exceed the PADEP Residential Statewide Health Standard
Bolded and shaded values meet or exceed the PADEP Residential and Non-Residential Statewide Health Standards
NS - No standard established by PADEP
J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.
B - Not detected substantially above the level reported in the laboratory or field blanks.
NA - Not analyzed
NR - Not Reported